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Mentalization in adults with attention deficit hyperactivity disorder: Comparison with controls and patients with borderline personality disorder

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ABSTRACT

Emotion dysregulation and interpersonal hardships constitute core features of borderline personality disorder (BPD). Research has established the link between these core dysregulations and fluctuations in the capacity to appreciate the mental states that underlie behavior (mentalizing, operationalized as reflective functioning (RF)). As emotion dysregulation and interpersonal hardships also characterize adults with attention deficit hyperactivity disorder (ADHD), this study sought to examine the potential RF impairments affecting this population. 101 adults with ADHD, 108 with BPD and 236 controls were assessed using the RF questionnaire (RFQ), evaluating how individuals employ information about mental states to better understand their own and others' behaviors. The RFQ comprises two dimensions, certainty (RF_c) and uncertainty (RF_u) about mental states. RF scores helped distinguish ADHD from controls, but also from BPD ($F = 48.1_{(2/441)}$; $p < 0.0001$ for RF_c and $F = 92.5_{(2/441)}$; $p < 0.0001$ for RF_u). The ADHD group showed intermediary RF scores compared to the controls ($b = -0.70$; $p < 0.0001$ and $b = 0.89$; $p < 0.0001$ for RF_c and RF_u) and BPD group ($b = 0.44$; $p = 0.001$ and $b = -0.56$; $p = 0.001$ for RF_c and RF_u). Lower RF scores correlated with poor anger control and high levels of impulsivity. Higher severity of ADHD (more attentional and hyperactive/impulsive symptoms) was correlated with RF impairments. In conclusion, RF may constitute an important process underlying attentional, hyperactive/impulsive as well as emotional symptoms in ADHD; it should therefore be considered in the assessment of these patients.

1. Introduction

Attention deficit hyperactivity disorder (ADHD) and borderline personality disorder (BPD) share a number of key clinical features, namely impulsivity, emotion dysregulation and interpersonal difficulties (Prada et al., 2014). Developmentally, ADHD represents a potential risk marker for the emergence of BPD in adulthood (Faraone et al., 2003; Matthies and Philipsen, 2014). Furthermore, the development of social cognitive processes, subsumed under the term of mentalizing, appears to be altered in both disorders, which seems to critically contribute to emotional dysregulation and dysfunctions in interpersonal relationships (Bateman and Fonagy, 2004, 2016; Jeung and Herpertz, 2014; Uekermann et al., 2010). Mentalizing encompasses the processes sustaining the attribution of intentional mental states underlying one's own and others' behaviors; for research purposes, it has been operationalized as the psychological process called reflective functioning (RF) (Fonagy et al., 2002). RF is a multidimensional construct that partially overlaps with more narrowly defined social cognitive constructs, such as empathy (targeting the affective and cognitive understanding others' emotions), theory of mind (targeting the cognitive understanding of others' beliefs), and mindfulness (targeting emotional self-awareness), but which seeks to capture the complexity of thinking both about self and others, in emotional as well as cognitive terms, within the interpersonal context (for further discussion on mentalizing dimensions, see (Choi-Kain and Gunderson, 2008; Fonagy and Luyten, 2009). Having good RF implies the acknowledgement of the

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opaqueness of mental states, while being able to form a relatively sensitive model of the mind of oneself and others. This reflective way of thinking about interpersonal relationships helps us to predict, manage and give meaning to one's self and others' behaviors and intentions, and reduces experiences of confusion, loss of control and distrust when faced with strong emotions in ourselves or others. RF is thus fundamental for developing one's sense of agency and sustaining an individual sense of continuity and coherence over time and situation (Fonagy et al., 2002) Consecutively, RF participates in the management of difficult interpersonal situations by helping regulation of distressing feelings.

Pertinently to ADHD, the consolidation of robust RF is dependent upon attentional control and emotional self-regulation during early development (Fonagy et al., 2002). In this perspective, ADHD as a neurodevelopmental disorder may hamper the development of RF. In this context, it appears warranted to examine potential RF deficits in ADHD, in contrast to healthy controls as well as to impaired RF typically observed in BPD.

Several studies attest to the disruptive role of ADHD symptoms along the developmental cascade of acquisitions in social cognition. For example, inattentive symptoms of ADHD have been shown to be associated with the impaired affect recognition abilities found in ADHD subjects (Herrmann et al., 2009; Ibanez et al., 2011; Uekermann et al., 2010). Furthermore, the severity of impairment in first- and second-order Theory of Mind (ToM) tasks observed in ADHD children has sometimes been compared to deficits observed in subjects suffering from autistic spectrum disorders (Bora and Pantelis, 2016); these impairments appear to contribute, at least partly, to social functioning in youths with ADHD (Caillies et al., 2014; Da Fonseca et al., 2009; Ibanez et al., 2011).

Attention deficits might also partially account for the lack of empathy (a construct closely linked to mentalizing) often observed in subjects suffering from ADHD; difficulties to focus attention while interacting with someone could certainly lead to difficulties in understanding their feelings and the ability for cognitive and emotional perspective-taking (Braaten and Rosen, 2000; Deschamps et al., 2015; King et al., 2009; Marton et al., 2009; Matthys et al., 1999; Roy et al., 2013). Taking these findings into account, one might hypothesize that the lack of empathy and the poor social cognition found in ADHD subjects is partly the result of poor RF. Although partially overlapping, RF aims at different targets than empathy and mindfulness, as it typically tries to increase interpersonal understanding and to regulate relationships by helping the subject consider the self-in-relation to others and vice versa (Fonagy and Bateman, 2011).

One potential objection to the role of mentalizing in ADHD may come from the argument that to date, it is mindfulness, rather than mentalizing, that has been heralded as the principle social cognitive mechanism underlying ADHD manifestations. ADHD subjects display deficits in mindfulness skills all along their development (Cairncross and Miller, 2015). Mindfulness is defined as receptive *attention* to present experience, with both state and trait qualities (Smalley et al., 2009). Given the primary role of attention in mindfulness, including dimensions such as the capacity to focus attention on what is experienced here and now, it is clear how the mindfulness construct yields mechanistic clarity to impairments in adults with ADHD (Smalley et al., 2009). Moreover, mindfulness-based therapy has shown to be effective in ADHD subjects (Mitchell et al., 2015). Yet, as any other construct, mindfulness is unlikely to account, by itself, for the complexity of ADHD manifestations. Similarly to mentalizing, mindfulness can be said to implicate imaginative processes dedicated to better understanding one's intentional mental states when determining one's behavior; however it does not explicitly include the orientation of attention to others' mental states (Kabat-Zinn and Hanh, 2009). Furthermore, mindfulness is better recognized as facilitating self-regulation, while mentalizing typically seeks to enhance interpersonal understanding and better regulate relationships, and critically requires the consideration of the self-in-relation to others and vice versa (Fonagy and Bateman, 2011). Therefore, the potential importance of mentalizing in the social cognitive patterns of ADHD cannot entirely be accounted for by mindfulness skills.

The main objective of this study was to examine the potential involvement of impairments of RF/mentalizing, as measured by the Reflective Functioning Questionnaire (RFQ) (Badoud et al., 2015; Fonagy et al., 2016), in a sample of adults suffering from ADHD. First, we compared impairments in RF between ADHD, BPD patients and a healthy control group. Since ADHD patients, compared to controls, have emotion dysregulation and interpersonal difficulties, although at a lesser level than BPD subjects (Nicastro et al., 2016; Prada et al., 2014), we hypothesized that patients with ADHD would score somewhere in between BPD patients and controls on RF. Secondly, as mindfulness skills are believed to be closely related to RF, we wanted to explore whether RF scores would help distinguish ADHD subjects from control subjects and from BPD subjects, over and above effects attributable to mindfulness skills. Finally, we expected RF scores to be associated with current severity of ADHD symptoms (i.e., a higher level of attentional and impulsive/hyperactivity symptoms would be correlated with lower RF capacities) and other clinical dimensions, such as anger control/expression, impulsivity and social functioning.

2. Methods

2.1. Participants

101 adult outpatients suffering from ADHD (female = 41 (41%), Mage = 33.48, SDage = 10.45), and 108 suffering from BPD (female = 101 (94%), Mage = 32.01, SDage = 9.54) were recruited in a specialized center for the diagnosis and care of adults suffering from these disorders at the University Hospitals of Geneva, Switzerland. 236 controls (female = 154 (65%), Mage = 23.27, SDage = 2.69) were recruited from the local Geneva community through written advertisements and word of mouth. The only inclusion criterion was to a minimum age of 18.

2.2. Diagnostic procedure

Participants with ADHD were examined by either general practitioners or psychiatrists for an initial assessment or re-assessment of ADHD psychiatric status. These patients were screened for BPD using the borderline symptom list (BSL-23), assessing specific symptoms of BPD (Nicastro et al., 2016). Subjects positively screened for BPD were then assessed by three trained psychiatrists (NP, SW and PP). Only subjects with ADHD, but without comorbid BPD, were included in the ADHD group. ADHD diagnosis was established according to the DSM-5 criteria, based on a clinical interview with trained psychiatrists. Five or more inattentive and/or hyperactive-impulsive symptoms were required and must have been present before the age of 12. The number of symptoms was used to determine the ADHD presentation (see Table 1). A semi-structured interview assessing childhood and adulthood ADHD based on DSM-IV criteria (DIVA 2.0) ("Entretien diagnostique pour le TDAH chez l'adulte") (Kooij and Francken, 2010) was administered to participants with ADHD. In addition, all subjects with ADHD completed the Wender Utah Rating Scale (WURS) (Ward et al., 1993), a self-report questionnaire assessing the severity of childhood ADHD, and the Adult ADHD Self-Report Scale (ASRS v1.1) (Romo et al., 2010), which assesses the severity of adult ADHD.

BPD patients were referred by their physician or other medical services, due to severe suicidal or self-damaging behaviors and/or emotional dysregulation. Patients were interviewed by a trained psychologist using the Screening Interview for Axis II Disorder (SCID-II) (First et al., 1997) BPD part; only those meeting DSM-IV/V criteria for BPD were accepted in the program. The ASRS v1.1 was used to screen for comorbid ADHD. Subjects positively screened for ADHD were then