Relationship between anhedonia and impulsivity in schizophrenia, major depression and schizoaffective disorder

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ABSTRACT

Background: Anhedonia and impulsivity are prominent symptoms of many psychiatric disorders and may indicate worse prognosis, notably in schizophrenia and major depression. Despite the convergence of negative outcomes from both dimensions, the relationship between anhedonia and impulsivity in psychiatric disorders has been seldom directly assessed. The objective of the present study is to examine the correlations between anhedonia and impulsivity in three diagnostic groups: major depression, schizophrenia and schizoaffective disorder.
Sampling and methods: 121 outpatients (Mansoura University Hospital, Egypt) with major depressive disorder ($N = 29$), schizophrenia ($N = 59$), and schizoaffective disorder ($N = 33$), were assessed and responded to the Beck Depression Inventory, Barrat's Impulsivity Scale-11, and Chapman's Social and Physical Anhedonia Scales.
Results: Physical and social anhedonia scores were negatively correlated to impulsivity scores in major depression patients. Conversely, higher scores in physical and social anhedonia predicted higher impulsivity scores in schizophrenia. No correlations between impulsivity and anhedonia were evidenced among schizoaffectives.
Conclusion: The relationship between self-reported physical and social anhedonia and impulsivity is diagnosis-specific.

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1. Introduction

Anhedonia and impulsivity are prominent symptoms of many psychiatric disorders, notably schizophrenia and major depression (Iancu et al., 2010; Der-Avakian and Markou, 2012). The term anhedonia, from the Greek *an-*, without, and *hedone*, pleasure (D'Haenen, 1990), was introduced in 1896 by Ribot and was defined as the loss of the capacity or reduced ability to feel pleasure (Snaith, 1992). Chapman et al. (1976) have defined two different types of hedonic deficits: physical anhedonia and social anhedonia. Physical anhedonia represents an inability to feel physical pleasures (such as from eating, touching and sex). Social anhedonia describes the incapacity to experience interpersonal pleasure (such as being with and talking to others).

In schizophrenia, anhedonia is associated with negative symptoms, particularly flattened affect. Andreasen (1982) has incorporated hedonic deficit into the diagnostic criteria for the 'negative syndrome' of schizophrenia, defining a specific 'anhedonia/asociality' subscale in the Scale for the Assessment of Negative Symptoms (SANS). In depression, anhedonia is one of the two core symptoms (American Psychiatric Association, 2000). In the same direction, the International Classification of Diseases, 10th revision (ICD-10), (World Health Organization (WHO), 1992) includes curbing of interests, and the inability to feel pleasure and to experience pleasant emotions, among the 'somatic' symptoms of major depression.

Impulsivity is a multidimensional construct and may be defined as a predisposition toward rapid unplanned reactions to themselves or others (Moeller et al., 2001). It has been proposed to be associated to anhedonia as a dysfunctional adaptation to very high threshold for pleasurable stimuli (Marissen et al., 2012), however, there is little evidence supporting that hypothesis.

Both anhedonia and impulsivity predict worsening of prognosis in the mentally ill. Substance abuse (Leventhal et al., 2010), suicidality (van Spijker et al., 2010), functional impairment (Herbener et al., 2005; Strauss et al., 2011; Jiménez et al., 2012), and also complicated treatment planning and lengthened hospital stays (Hoptman et al., 2002; Moeller et al., 2002) are common consequences of those features.

Despite the convergence of negative outcomes from both dimensions, the relationship between anhedonia and impulsivity in psychiatric disorders has been seldom directly assessed. In borderline personality disorder (Marissen et al., 2012) and bipolar depression (Swann et al., 2008), a positive correlation has been shown, while in schizophrenia and unipolar depression evidence is still lacking.

This study aims at examining the correlations between anhedonia and impulsivity in three diagnostic groups: major depression, schizophrenia and schizoaffective disorder.

2. Sampling and methods

2.1. Sample and setting

A series of consecutive patients attending the outpatient psychiatric clinics of Mansoura University Hospital, Egypt, for maintenance treatment after recent (<1 month) hospitalization were assessed. The psychiatric unit is a public facility with 38 beds, receiving an average of 2500 outpatients a year.

Eligible patients were aged 18–60 years and met the criteria for schizophrenia, schizoaffective disorder or major depression, according to the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV-TR). Exclusion criteria included substance abusers, illiterate patients, markedly cognitively deteriorated patients, and those suffering from mental retardation or organic mental disorders. From May, 2010 to April, 2011, 121 subjects were included, out of 240 recently admitted: 59 with schizophrenia, 33 with schizoaffective disorder and 29 with major depressive disorder.

The protocol was approved by the institutional review board. Written consent was obtained from patients or their legal representatives before entering the study.

2.2. Instruments and measures

Sociodemographic information was gathered regarding age, marital status (married/not-married), education level, and employment status. Age at onset of illness was defined as the age patients or their relatives recalled the first symptoms.

Severity of positive and negative symptoms was assessed using the scales for the assessment of positive and negative symptoms (SAPS and SANS; Andreasen, 1982). Depression severity was assessed using the Beck Depression Inventory (BDI) for depression, Arabic version (Abdel-Khalek, 1998).

The Barratt's Impulsivity Scale, Version 11 (BIS-11) (Patton et al., 1995; validated to Arabic by Agoub, 2005) measures impulsivity in terms of 3 domains: motor impulsiveness, non-planning impulsiveness and cognitive impulsiveness. This auto-evaluation scale consists of 30 items scored on a 4-point scale, and possible scores range from 30 to 120.

Anhedonia was assessed using the scales proposed by Chapman et al. (1976): Scales for Physical and Social Anhedonia (PAS and SAS, respectively). Those are self-report instruments that comprise in total 101 true/false items. PAS and SAS were both translated to Arabic, then back-translated and approved by an independent evaluator.

2.3. Analyses

Descriptive analyses were performed to portray the clinical and sociodemographic characteristics of the sample.

Pearson's (for parametric) and Spearman's rank (for non-parametric) correlation coefficients were calculated to estimate the relation of BDI, BIS, PAS and SAS scores, for each diagnostic category. General linear models were built for estimating the independent effects of sociodemographic and other clinical variables on PAS, SAS and BIS scores. For all analyses, alpha was set at 0.05.

3. Results

Table 1 shows the sociodemographic and clinical features of the sample, comparing by diagnosis. Patients with major depression were more educated and had longer recent hospital stays than schizophrenics.

In the total sample ($N = 121$), physical anhedonia scores were independently and negatively associated to being married ($p < 0.001$) and employed ($p < 0.001$), but positively associated to BDI scores. Social anhedonia scores were independently and negatively associated to educational level ($p < 0.002$) and employment ($p < 0.001$), and positively correlated to duration of hospitalization ($p = 0.041$), age of onset and BDI scores. BIS (impulsivity) scores were not associated to any of the sociodemographic or clinical predictor variables of the model (Table 2). Inclusion of SANS or SAPS scores did not significantly influence results, indicating that the associations were not mediated by positive or negative symptoms.

Physical and social anhedonia scores were negatively correlated to impulsivity scores in major depression patients. Conversely, higher scores in physical and social anhedonia predicted higher impulsivity scores in schizophrenia. No correlations between impulsivity and anhedonia were evidenced among schizoaffectives (Table 3).

Table 1
Univariate comparisons of sociodemographic and clinical characteristics of 121 psychiatric outpatients attending Mansoura University Hospital, according to diagnosis.

	Major depression	Schizoaffective disorder	Schizophrenia	p
N	29	33	59	
Age (median; Q1–Q3)	31; 5	31; 8	31; 8	0.960[b]
Males	48.2%	66.7%	69.5%	0.138[a]
Secondary education or +	55.2%	30.3%	27.1%	0.028[a]
Employed	31.0%	21.2%	18.6%	0.416[a]
Married	34.5%	36.4%	39.0%	0.913[a]
Age of onset (median; Q1–Q3)	24.0; 4.0	23.0; 5.0	23.0; 5.0	0.123[b]
Length of hospital stay (mean; SD)	27.7; 3.9	26.1; 7.4	23.0; 7.7	0.008[c]
SAPS (mean; SD)	NA	38.1; 12.8	39.2; 13.3	0.718[c]
SANS (median; Q1–Q3)	55.0; 45.0	55.0; 38.0	59.0; 30.0	0.711[b]
SAS (median; Q1–Q3)	16.0; 12.0	22.0; 8.5	17.8; 5.0	0.154[b]
BIS (mean; SD)	76.0; 23.0	72.0; 19.5	81.0; 19.0	0.214[c]
BDI (median; Q1–Q3)	23.0; 21.0	27.0; 9.0	17.0; 7.0	<0.001[b]

[a] Chi-square test.
[b] Mood median test.
[c] ANOVA.