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## Confidence judgment in depression and dysphoria: The depressive realism vs. negativity hypotheses

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### ABSTRACT

**Background and objectives:** According to the negativity hypothesis, depressed individuals are over-pessimistic due to negative self-concepts. In contrast, depressive realism suggests that depressed persons are realistic compared to their nondepressed controls. However, evidence supporting depressive realism predominantly comes from judgment comparisons between controls and nonclinical dysphoric samples when the controls showed overconfident bias. This study aimed to test the validity of the two accounts in clinical depression and dysphoria.

**Methods:** Sixty-eight participants, including healthy controls ( $n = 32$ ), patients with DSM-IV major depression ( $n = 20$ ), and dysphoric participants with CDC-defined chronic fatigue syndrome ( $n = 16$ ) performed an adjective recognition task and reported their item-by-item confidence judgments and post-test performance estimate (PTPE).

**Results:** Compared to realistic PTPE made by the controls, patients with major depression showed significant underconfidence. The PTPE of the dysphoric participants was relatively accurate. Both the depressed and dysphoric participants displayed less item-by-item overconfidence as opposed to significant item-by-item overconfidence shown by the controls.

**Limitations:** The judgment-accuracy patterns of the three groups need to be replicated with larger samples using non-memory task domains.

**Conclusion:** The present study confirms depressive realism in dysphoric individuals. However, toward a more severe depressive emotional state, the findings did not support depressive realism but are in line with the prediction of the negativity hypothesis. It is not possible to determine the validity of the two hypotheses when the controls are overconfident. Dissociation between item-by-item and retrospective confidence judgments is discussed.

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### 1. Introduction

The cognitive model of depression forwarded by Beck (Beck, 1967, 1987) proposes that depressed individuals view themselves as defective, inadequate, diseased and deprived. As a result of these negative self-concepts, depressed persons believe that they are undesirable and worthless and tend to underestimate or criticize themselves. The “negativity hypothesis” (Clark, Beck, & Alford, 1999; Gilboa-Schechtman, Erhard-Weiss, & Jeczemien, 2002) thus leads to the prediction that depressed persons will be overly pessimistic in their self-referent evaluations (Dunn, Dalgleish,

Lawrence, & Ogilvie, 2007; Stone, Dodrill, & Johnson, 2001; Whitton, Larson, & Hauser, 2008). However, several studies (Alloy & Abramson, 1979; Alloy & Ahrens, 1987; Crocker, Alloy, & Kayne, 1988) appear to support the contrary view of “depressive realism”. According to depressive realism, depressed persons are neither over-optimistic nor over-pessimistic but rather realistic.

Nevertheless, most studies supporting depressive realism have included only dysphoric/mildly depressed individuals — as defined by Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) scores between 10 and 19 — and often have used decision tasks for which there is no objectively correct answer (e.g., the contingency judgment paradigm). The results obtained from a mildly depressed population may be different from those demonstrated by severely depressed individuals (Clark et al., 1999) and decision tasks without objectively

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correct answers cannot determine the extent to which an individual is over-optimistic, over-pessimistic or realistic (Haaga & Beck, 1995; Stone et al., 2001).

A further shortcoming of many previous studies involves the inclusion of only one outcome measure or task, on which the healthy controls showed overconfidence. It is not possible to differentially test the validity of the two hypotheses if one only compares the judgment accuracy of depressed or dysphoric versus nondepressed individuals when healthy controls show positive bias in their confidence judgments because both hypotheses make the same prediction under this experimental condition (Dobson & Franche, 1989; Fu, Koutstaal, Fu, Poon, & Cleare, 2005). The two hypotheses make competing predictions only when healthy controls show either accurate judgments or underconfidence (Stone et al., 2001). Under these conditions, the negativity hypothesis predicts that depressed individuals will demonstrate a self-deprecating bias, whereas depressive realism predicts that depressed individuals still will be realistic.

The current investigation sought to address each of these methodological shortcomings. First, a clinically depressed group, a dysphoric group, and matched controls were tested. The dysphoric group was comprised of individuals with chronic fatigue syndrome (CFS). Previous research has shown that the BDI scores of these chronic fatigue patients often indicate dysphoria (Johnson, DeLuca, & Natelson, 1996; Moss-Morris & Petrie, 2001). Inclusion of the dysphoric CFS group was to further test the validity of depressive realism in individuals with mild depressive symptoms in the absence of clinical depression.

Second, we used a recognition memory task for which there were objectively correct answers thereby facilitating the measuring of the degree of judgment accuracy. Thirdly, according to our pilot study, healthy controls ( $n = 45$ ) demonstrated the required experimental condition to contrast the validity of the two hypotheses on this recognition task. Specifically, healthy controls showed overconfidence when judgments were made at an item-by-item level, but underconfidence on a retrospective judgment, that is, a post-test performance estimate (PTPE). Because the healthy controls showed differential judgment-accuracy patterns on the two confidence assessments, both types of judgments were included.

In summary, we used a recognition task in which the healthy controls showed distinct patterns of judgment accuracy to test the validity of the depressive realism versus the negativity hypotheses in two patient groups: individuals experiencing a current episode of major depression, and dysphoric individuals with CFS. Under the situations where the healthy controls showed realistic or underconfident judgment, we hypothesized that (1) the confidence assessment of the individuals with depression and dysphoria should be realistic if the depressive realism account is correct; On the other hand, (2) if the negativity hypothesis is valid, then the depressed patients should demonstrate greater underconfidence compared to the healthy controls.

## 2. Materials and methods

### 2.1. Sample

Twenty-three depressed patients who fulfilled DSM-IV-TR criteria for a current episode of major depression, unipolar subtype were invited to participate in the study. Of these, twenty depressed patients gave consent to the study. The depressed patients (inpatients) were recruited from the National Affective Disorders Unit, Bethlem Royal Hospital, Kent. A total of forty-five individuals who fulfilled the Centres for Disease Control (CDC) criteria for CFS (Fukuda et al., 1994) were contacted and twenty-two agreed to take part in the study. Of these, sixteen met the

criterion of dysphoria (a BDI score between 10 and 19). They were recruited from the Chronic Fatigue Research and Treatment Unit, King's College Hospital, London. The healthy controls included 32 volunteers recruited amongst staff and their relatives at South London and Maudsley NHS Foundation Trust.

Exclusion criteria for the depressed, and CFS participants were: history of electroconvulsive treatment in the last year; the presence of neurological disorders, for example, stroke, seizure disorder, etc.; history of head injury with loss of consciousness; and concurrent diagnosis of any of: bipolar disorder, psychosis, current drug or alcohol abuse or dependence, or history of drug or alcohol abuse or dependence within the past 6 months as defined in DSM-IV-TR. Exclusion criteria for the healthy controls were: the presence of psychiatric disorder or drug or alcohol abuse or dependence according to the Patient Health Questionnaire (PHQ) (Spitzer, Kroenke, & Williams, 1999); the presence of neurological disorders, for example, stroke, seizure disorder, etc.; and history of head injury with loss of consciousness. Most of the depressed (19/20) patients were on antidepressants. However, few of the CFS patients (3/22) were on medication for the treatment of CFS.

### 2.2. Measures

#### 2.2.1. Instruments

The Hamilton Depression Rating Scale (HAM-D) (Hamilton, 1967) and BDI (Beck et al., 1961) were included to assess the emotional state of the participants. The HAM-D is the most frequently used clinician rating scale for measuring symptom severity in patients who have been diagnosed as depressed (Iannuzzo, Jaeger, Goldberg, Kafantaris, & Sublette, 2006). It contains 21 items rated on either a 5-point (0–4) or a 3-point (0–2) scale. The BDI is a 21-item self-report instrument designed to assess the severity of depressive symptoms in the previous two weeks (Beck, Steer, & Brown, 1996). It is rated on a 4-point scale (0–3). Higher scores on the HAM-D and BDI indicate more severe symptoms of depressive disorder.

#### 2.2.2. Adjective recognition task

The trait adjectives for this task were taken from adjectives compiled by Alloy, Greenberg, Clements, and Kolden (1983). The adjectives were based on theoretical accounts of the cognitive schemata concerning the self, the world and the future that are held by persons who are depressed, who are anxious, or neither depressed nor anxious. We combined adjectives from the first two groups to obtain 36 items representing the cognitions held by depressed and anxious individuals versus another 36 items regarding the cognitions held by nondepressed non-anxious (control) individuals.

At encoding, participants were presented 36 pseudo-randomly intermixed items, including 18 control adjectives and 18 depression-anxiety relevant adjectives regarding schemata for the self (12 items), the world (12 items) and the future (12 items). Participants were instructed to evaluate whether or not each item applied to themselves (e.g., “worthy”), their world (e.g., “gloomy”) or their future (e.g., “optimistic”) and to indicate their answers (i.e., yes/no) using pre-designated keys on the computer keyboard. Thereafter, participants were given the adjective recognition task (see Fig. 1). This old/new recognition test included the 36 previously presented or “old” items and 36 “new” items not presented previously. Assignment of adjectives to new versus old study status was counterbalanced across participants.

### 2.3. Procedure

This study was approved by the Joint South London and Maudsley and the Institute of Psychiatry NHS Research Ethics

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