THE PERFORMANCE OF CLINICALLY DEPRESSED CHILDREN AND ADOLESCENTS ON THE MODIFIED STROOP PARADIGM


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Summary—The study investigated selective processing of emotional information in childhood depression using a computerised version of the modified Stroop colour naming task. Three groups of children and adolescents—clinically depressed (n = 19), patients with mixed depression and anxiety (n = 19), and normal controls (n = 26)—were required to name the colours of depression-related, threat-related, trauma-related, happy, and categorised neutral words. Normal subjects, compared with the patient groups, exhibited faster colour naming overall. There were no significant differences on the colour naming of different categories of words and the performance across the three groups was not significantly different for different categories of words. © 1997 Elsevier Science Ltd

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There is now convincing evidence that children and adolescents can and do suffer from depressive disorders which are similar to those of adults in many aspects (e.g. Rutter, 1987). Several research studies have used self-report measures (questionnaires) to investigate the cognitive characteristics of depression in children and adolescents. Results of these studies have shown that depressed children and adolescents display the same kind of cognitive characteristics as those observed in depressed adults, including depressive attributional style, low self esteem, cognitive biases, and less positive self schemata (e.g. Seligman, Peterson, Kaslow, Tanenbaum, Alloy & Abramson, 1984).

Recently researchers have started to use experimental approaches to investigate cognitive biases of emotional disorders in children and adolescents. One of the most frequently used of these tasks is the modified Stroop paradigm. This task requires subjects to name ink colours in which emotional and non-emotional words are written. The emotional Stroop effect refers to the finding that colour-naming times are slower for emotional words than for non-emotional words. This task has been used in several studies with non-clinically and clinically anxious and depressed adults. There is considerable evidence that anxious subjects, but not normal controls, have longer reaction times on colour naming of threatening words in the modified Stroop task (Williams, Mathews & Macleod, 1996). These effects seem much clearer than in the case of depression. In the case of depressed subjects, researchers have used different methods of presentation (card, tachistoscope, and computer), different groups of words (general negative vs. negative self-descriptive adjectives), and they have studied different groups of subjects (clinical, subclinical, mood induced, mixed depressed/anxious). These studies have led to different results. Some have found more Stroop interference for negative or depressed words relative to neutral or positive words (Gotlib & Cane, 1987; Gotlib & MacCann, 1984; Kinderman, 1994; Klieger & Cordner, 1990) while others have not (Hill & Knowles, 1991; Mogg, Bradley, Williams & Mathews, 1993).

There are a few studies using the modified Stroop task in children and adolescents. Schneider, Unnewher, Florin, and Margraf (1992) found that children of phobic patients exhibited higher
interference scores to phobia-relevant words compared with children of patients with panic disorder and children of parents without any psychiatric morbidity. Martin, Horder, and Jones (1992) found that spider-phobic children were significantly slower to colour-name spider words than control words. Taghavi (1996) studied the performance of children and adolescents with Generalised Anxiety Disorder on a modified Stroop task. Results of this study showed that, compared to normal controls, children and adolescents with Generalised Anxiety Disorder showed longer colour-naming times for threat-related and trauma-related words, with longer colour-naming times for threat-related words than trauma-related words. At the time of writing there is no published study on the performance of depressed children and adolescents on the modified Stroop task and the purpose of the present study, therefore, is to investigate the modified Stroop effect in clinically depressed children and adolescents. A third group of children and adolescents with mixed depression/anxiety was used to investigate content-specificity effects with depression-related and anxiety-related material.

METHODOLOGY

Subjects

There were three groups of subjects: depressed, mixed depressed/anxious, and normal controls. All subjects were aged between 9 and 18 yr and their primary language was English. The age range was 10.92–18.33 yr for the depressed group, 9.50–18.00 yr for the mixed depressed/anxious group, and 13.25–18.17 yr for the control group. The patient groups were recruited from a variety of sources including hospital outpatients' and inpatients' services in the UK (Maudsley Hospital, London; Leigh House, Eastleigh; Thelma Golding Centre, London; Bethlem Hospital, London; Brixton Child Guidance Clinic, London; Bloomfield Centre, London; St. Thomas' Hospital, London, and Camberwell Child Guidance Clinic, London). There were 19 subjects (11 girls and eight boys) in the depressed group; the selection criteria were as follows. (a) A primary diagnosis of Major Depressive Disorder according to DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, 4th edition, American Psychiatric Association, 1994) criteria or ICD-10 (International Classification of Diseases, World Health Organization, 10th revision, WHO, 1992) criteria for Depressive Disorder. The diagnosis was determined in a clinical assessment by psychiatrists and psychologists before the patients were introduced to the experimenter. (b) Scores of higher than cut-off on all three depression scales: the Children's Depression Inventory (CDI; Kovacs, 1982), the Depression Self-Rating Scale (DSRS; Birleson, 1981) and the Mood and Feeling Questionnaire (MFQ; Angold, Costello, Pickles & Winder, 1987). There were 19 subjects in the mixed depressed/anxious group (12 girls and seven boys). The selection criteria were diagnoses of both Depressive Disorder and Anxiety Disorder according to DSM-IV, or a primary diagnosis of Mixed Anxiety and Depressive Disorder according to ICD-10 criteria. The control group consisted of 26 subjects (16 girls and 10 boys), with no known history of emotional disorder. Subjects with vision problems, colour blindness, or brain damage were excluded. The patients were generally asked to participate in the study before the commencement of any medication regime. The results of the questionnaires showed that the depressed children and adolescents were very depressed at the time of the study. In order to control for the effects of confounding variables, the groups were matched for sex, age, vocabulary level, and reading ability.

Measures

1. The Depression Self-Rating Scale (DSRS; Birleson, 1981);
2. The Children's Depression Inventory (CDI; Kovacs, 1982);
3. The Mood and Feeling Questionnaire (MFQ; Angold et al., 1987);
4. The Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978);
5. The British Picture Vocabulary Scale (BPVS Short Form, Dunn, Dunn, Whetton & Pintilie, 1982);
6. The Wechsler Objective Reading Dimensions (WORD; Basic Reading; Rust, Golombok & Trickey, 1993).
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