

# Do Depressive Symptoms Differ Between Medically Ill and Non-Medically Ill Patients Referred for Psychological Therapy? Comparing Negative Thoughts about the Self in Cancer and Non-Cancer Patients

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**Abstract.** Negative thoughts about the self are a core component of Beck's cognitive triad of depression, and are seen by some as the central cognitive symptom of the disorder. The role of negative thoughts about the self in secondary depression associated with medical illness is less clear: thoughts relating to hopelessness and helplessness rather than guilt, self blame and failure may be more prominent. This study tested the hypothesis that the cognitive symptoms of depression in cancer patients would be less negatively self-referent than a psychiatric control group. Forty patients with cancer referred to a psychological medicine department were matched for age, sex and BDI score with 40 patients referred to a psychological therapies department for CBT. The cognitive-affective section of the BDI (items 1–14) was divided into a negative self-referent cognitions subscale (items 3, 5, 7, 8) and a mood-motivation subscale. These two subscales were then compared with the somatic-performance subscale (items 15–21). As a percentage of the total matched BDI score, the cancer patients had more somatic symptoms (42.7 v 34.8%), equivalent mood/motivation symptoms (44.5 v 45.6%) and less negative self-referent symptoms (12.8 v 19.5%). This difference may apply more to mild symptoms than moderate-severe symptoms. Some preliminary support for the hypothesis is therefore available.

*Keywords:* Cognitive model of depression, cancer, Beck Depression Inventory.

## Introduction

Beck's cognitive model of depression (Beck, 1963) has been one of the most widely influential and most intensively researched psychological theories of the last 40 years. The theory defines the core disturbance in depression as the negative cognitive triad (Beck, 1970): specifically negative thoughts about the self, the world and the future. In 1988 Blackburn (Blackburn and Davidson, 1988; Blackburn, 1988), summarizing the evidence at that time, stated that the negative cognitive triad:

1. Differentiates depressed patients from other psychiatric groups
2. Differentiates depressed patients from normals

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3. Differentiates depressed patients from recovered depressed patients
4. *Does not differentiate between sub-groups of depressed patients i.e. is not sensitive to diagnostic subtypes.*

In a recent review of cognitive theory and therapy of depression Solomon and Haaga (2004) confirm that depressed patients “score higher than controls in each domain of the negative triad.” However, they caution that 50% of depressed patients do not report high frequencies of negative automatic thoughts. Automatic thoughts in one component of the triad do not necessarily predict automatic thoughts in the other two. The possibility that there may be a decoupling of the domains of self, world and future in some people with depression is an intriguing one. In the field of physical illness, it has often been observed clinically that patients may become depressed about their life circumstances, reporting symptoms of helplessness and hopelessness, but remain relatively confident about their intrinsic worth. One cognitive model of adjustment to cancer (Moorey and Greer, 1989, 2002) distinguishes between the threat that cancer poses to survival and to the self-concept. According to this model, one patient with cancer might have an intact sense of self-esteem, but focus on the impending loss of life and loss of control of their body and the world around them, and so experience dysphoria in this aspect of their personal domain. Another might attend more to the loss of status or role, or loss of attractiveness resulting from mutilating surgery and so feel less worthwhile as a person, even if they have a positive view of their prognosis. If this is correct, a population of distressed cancer patients would consist of a mixture of those with negative thoughts about themselves and those with intact self-esteem. Overall, there would be less self-referent negative cognitions in a cancer sample than a group of depressed people without physical illness. This hypothesis has not been explicitly tested, although there is some peripheral evidence that it may be correct. Plumb and Holland (1977) compared 97 cancer patients, 66 next of kin of cancer patients, and 99 physically healthy controls who had been hospitalized following attempted suicide. The cancer patients and psychiatric patients were indistinguishable in terms of physical symptoms of depression, both scoring higher than the next of kin group. Cancer patients scored significantly lower on cognitive-affective Beck Depression Inventory items concerning negative self-referent cognitions (e.g. self dislike, guilt, sense of failure). Clark, Cook and Snow (1998) compared 75 hospitalized medical inpatients with 52 depressed psychiatric inpatients and 25 normal controls: depression in the medical patients seemed to be best distinguished by symptoms of anhedonia, low positive affect, and physiological hyperarousal, whereas depression in the psychiatric patients was characterized by negative cognitive symptoms.

The Beck Depression Inventory (Beck, Ward, Mendelson, Mock and Erbaugh, 1961) measures the full range of depressive symptomatology, encompassing cognitive, affective, somatic and performance (behavioural) items. It represents the cognitive symptoms of depression more adequately than most of the other depression scales. Since its introduction, the BDI has been subjected to many factor-analytic studies (for example, Beck, Steer and Garbin, 1988; Plumb and Holland, 1977; Ritterband and Spielberger, 2001). The composition and number of the factors were dependent on the population studied as well as on the statistical methodology. In general, however, the instrument measures a general second-order syndrome of depression, comprising three first-order factors reflecting a cognitive-affective, a performance and a somatic symptom subscale (Beck et al., 1988; Steer, Beck, Riskind and Brown, 1987). A more cognitive subscale within the group of cognitive-affective items

was found by several factor analyses (“Guilt and failure”, Bouman and Kok, 1987; “Self-denigration”, Startup, Rees and Barkham, 1992). In this study, we explored the BDI sub-scale scores of a group of patients with cancer and a matched group of psychiatric out-patients, both presenting with symptoms of an abnormal adjustment reaction or depression. In particular, we wanted to test the hypothesis that, within the cognitive subscale cancer patients show less endorsement of items measuring negative self-referent cognitions (“guilt/failure” or “self-denigration”). To our knowledge, this is the first study that explores the two subsets within the cognitive-affective subscale of the BDI in cancer patients.

## Methodology

### *Subjects*

Data were available on 50 subjects with adjustment disorder who had previously taken part in a study comparing adjuvant psychological therapy with supportive counselling in patients with cancer (Moorey, Greer, Bliss and Law, 1998). These patients had been referred to the CRC Psychological Medicine Group at the Royal Marsden Hospital, a service specializing in CBT for people with cancer. The comparison group consisted of a sample of outpatients who had been referred to the Maudsley Hospital for an assessment for cognitive behavioural therapy. Taking the cancer patients as the index group, medical records of the non-cancer group were screened by hand in order to generate a comparison group. Each cancer patient was individually matched for:

1. Sex
2. Age (within 5 years)
3. Total BDI score at assessment (within 5 points).

The criteria of matching within 5 points of the BDI and within 5 years of age were chosen pragmatically. Matches were found for 40 patients; the 10 who could not be matched were significantly older (65yrs v 47yrs,  $p < .005$ ). There was no correlation between age and BDI score in the full sample of 50 patients. Analyses were carried out on the 40 matched patients.

The cancer sample consisted mainly of women with breast cancer (45%). Eight percent had Hodgkins disease, 8% colon cancer and 5% had gynaecological cancers. The remaining 44% consisted of various types (1 patient per diagnosis). The demographic variables for the cancer patients and the control group are presented in Table 1. The subjects were paired according to their total BDI score (Table 2), the mean BDI score (SD) for the cancer patients was 19.52 (8.2) and for the control group 19.95 (7.47). There were no significant differences on the matched variables (age, sex, BDI). There were also no differences in marital status or social class. The number of patients in each BDI category (non-depressed, mild depression, moderate depression, severe depression) are listed in Table 3.

### *Beck Depression Inventory*

The Beck Depression Inventory is a self-report questionnaire that evaluates the intensity of depressive symptomatology in adults and adolescents. This questionnaire is one of the 10 most utilized instruments in clinical practice in the United States (Watkins, Campbell, Nieberding and Hallmark, 1995) and its psychometric properties have been well researched (Beck et al., 1988). The BDI contains 21 items covering the main symptom domains of depression, and

**Table 1.** Demographic characteristics

|                        | Cancer patients<br><i>N</i> = 40 | Control group<br><i>N</i> = 40 | Statistical analysis                  |
|------------------------|----------------------------------|--------------------------------|---------------------------------------|
| Mean age ( <i>SD</i> ) | 47.3 (10.7)                      | 46.4 (10.0)                    | $t = -1.663$ ; $df = 39$ ; $p = .104$ |
| Sex: male/female       | 11/29                            | 11/29                          |                                       |
| Marital status         |                                  |                                | $Z = -1.208$ ; $P = .227$             |
| Single                 | 6 (15%)                          | 14 (35%)                       |                                       |
| Married                | 28 (70%)                         | 11 (27.5%)                     |                                       |
| Cohabiting             | 4 (10%)                          | 7 (17.5%)                      |                                       |
| Widowed                | 2 (5%)                           | 2 (5%)                         |                                       |
| Separated/divorced     |                                  | 6 (15%)                        |                                       |
| Social class           |                                  |                                | $Z = -1.730$ ; $p = .084$             |
| I and II               | 17 (42.5%)                       | 14 (35%)                       |                                       |
| III                    | 18 (45%)                         | 13 (32.5%)                     |                                       |
| IV and V               | 2 (5%)                           | 5 (12.5%)                      |                                       |
| Other                  | 3 (7.5%)                         | 8 (20%)                        |                                       |

**Table 2.** Total BDI scores and BDI sub-scale scores

| BDI   | Cancer patients<br>Mean ( <i>SD</i> ) | Control group<br>Mean ( <i>SD</i> ) | Mean difference<br>( <i>SD</i> ) | 95% Confidence Interval of the mean difference | <i>t</i> | <i>df</i> | Sig. (2-tailed) |
|---|---------------------------------------|-------------------------------------|----------------------------------|--|----------|-----------|-----------------|
| Total BDI   | 19.52 (8.2)                           | 19.95 (7.47)                        | -0.43 (3.12)                     | -1.42 to 0.57                                  | -0.861   | 39        | .394            |
| Cognitive subscale (items 1–14)   | 11.6 (6.1)                            | 13.2 (5.6)                          | -1.6 (4.0)                       | -2.9 to 0.3                                    | -2.52    | 39        | .016            |
| Negative self-referent cognitions subscale (items 3, 5, 7, 8)           | 2.9 (2.7)                             | 3.8 (2.0)                           | -0.9 (2.8)                       | -1.8 to 0                                      | -2.05    | 39        | .047            |
| Remaining cognitions subscale (items 1, 2, 4, 6, 9, 10, 11, 12, 13, 14) | 8.7 (3.9)                             | 9.4 (4.6)                           | -0.7 (3.2)                       | -1.7 to 0.3                                    | -1.40    | 39        | .169            |
| Somatic-performance subscale (items 15–21)                              | 7.9 (3.3)                             | 6.8 (3.0)                           | 1.2 (3.1)                        | 0.2 to 2.2                                     | 2.41     | 39        | .021            |

**Table 3.** Numbers of patients by BDI category

|                                  | Cancer patients | Control group |
|----------------------------------|-----------------|---------------|
| Non-depressed (BDI 0–9)          | 5 (12.5%)       | 2 (5%)        |
| Mildly depressed (BDI 10–16)     | 14 (35%)        | 12 (30%)      |
| Moderately depressed (BDI 17–29) | 16 (40%)        | 21 (52.5%)    |
| Severely depressed (BDI 30–63)   | 5 (12.5%)       | 5 (12.5%)     |

each item is scored on a 4-point scale from 0 (absent) to 3 (severe). The total score falls into four categories: scores from 0–9 are considered normal/minimal; 10–16 mild depression; 17–29 moderate depression; 30–63 severe depression (Beck et al., 1988).

### Subscales

In addition to the total BDI score, a score for the somatic-performance item subscale (items 15–21) and for the cognitive-affective subscale (items 1–14) were also calculated. These subscales were described in previous factor analyses (Beck et al., 1988; Steer et al., 1987) and have been confirmed in a group of outpatients with major depressive disorder (Startup et al., 1992) and in a group of cancer patients (Ritterband and Spielberger, 2001). The cognitive-affective subscale was further divided into two subsets: a first group of items rating negative self referent cognitions (items 3, “failure”; 5, “guilt”; 7, “self dislike”; 8, “self blame”), which is consistent with Steer et al.’s (1987) “self denigration” and Bouman and Kok’s (1987) “guilt and failure”. The second subset comprised the remaining items of the cognitive-affective subscale, which had been labelled as “mood/motivation” in previous analyses (Bouman and Kok, 1987).

### Statistical analysis

The validity of the matching process was checked through comparison of the two groups for age, sex and BDI score using *t* tests. Paired *t* tests were also used to compare the subscale scores of the two matched groups and the percentage of the total BDI score that each subscale comprised. Analysis of variance was carried out to test the effect of level of depression on the negative self-referent cognitions subscale.

## Results

The results of the subscale analysis are summarized in Table 2. On the somatic-performance subscale, the mean score (*SD*) of 7.9 (3.3) in the cancer group was significantly higher ( $p = .021$ ) than in the control group (mean, 6.8; *SD*, 3.0).

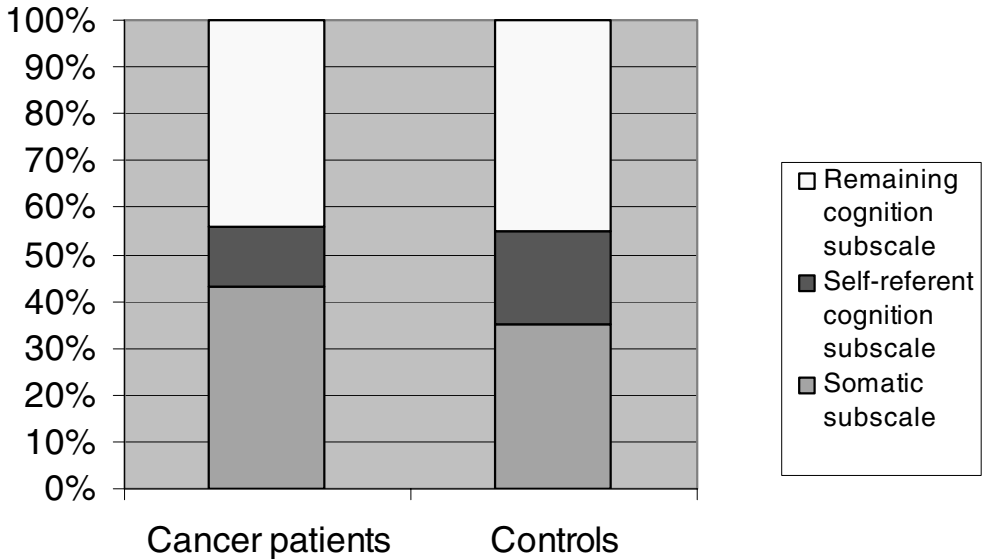
The cognitive-affective subscale scores were significantly different between the two groups, the cancer patients had a mean score (*SD*) of 11.6 and the control group of 13.2 (5.6). Further analysis of the two subsets of this subscale revealed that cancer patients scored significantly lower on negative self-referent items (guilt/failure) with a mean score (*SD*) of 2.9 (2.7) versus 3.8 (2.0) in the control group ( $p = .047$ ). There was no significant difference between the scores on the remaining cognitive-affective items (mood/motivation).

As the two groups were matched for their total BDI score, the relative contribution of the respective subscales scores to the total score was calculated (see Table 4 and Figure 1). In the group of cancer patients, these items accounted for 12.8% (*SD*, 9.4%) of the total BDI scores, but for 19.5% (11.3%) in the control group. There was almost no difference between the two groups with respect to the contribution of the remaining cognitive-performance items (cancer patients: mean, 44.5%; *SD*, 11.2% vs. control group: mean, 45.6%; *SD*, 12.7%). The somatic-performance subscore in the cancer group was 42.7% (*SD*, 13.9%) of the total BDI score and 34.8% (11.4%) in the control group, representing a significant difference. To exclude the possibility that the differences between the two groups were due to differences in scores on physical symptoms, the ratios of negative self-referent to the remaining cognitive-affective symptoms were compared. The ratio for the cancer group was 0.30 (*SD* 0.24) and for the control group 0.56 (*SD* 0.63). This was a statistically significant difference ( $p = .03$ ).

Because the sample of cancer patients had a diagnosis of adjustment disorder with or without depression, the sample was split around the median into patients scoring  $\leq 17$  and  $\geq 18$ ,

**Table 4.** Proportion of sub-scale to total BDI score

| Proportion of sub-scale score to total BDI score | Cancer patients Mean (SD) | Control group Mean (SD) | Mean difference (SD) | Confidence Interval for mean difference | <i>t</i> | <i>df</i> | Sig. (2-tailed) |
|--|---------------------------|-------------------------|----------------------|---|----------|-----------|-----------------|
| Self-referent                                    | 12.8% (9.4)               | 19.5% (11.3)            | -6.7% (14.9)         | -11.5 to -1.9%                          | -2.856   | 39        | .007            |
| Remaining cognitions                             | 44.5% (11.2)              | 45.6% (12.7)            | 1.1% (18.8)          | -4.9 to 7.1%                            | .367     | 39        | .715            |
| Somatic symptoms                                 | 42.7% (13.9)              | 34.8% (11.4)            | 7.8% (18.3)          | 2.0 to 13.7%                            | 2.708    | 39        | .010            |

**Figure 1.** Proportion of BDI sub-scales to total BDI score

thus dividing them into “normal-mildly depressed” and “moderately-severely depressed”, as defined by the BDI. An analysis of variance was carried out, with the median split (normal-mildly depressed v moderately-severely depressed) and the group (cancer v non-cancer) as two factors. There were significant effects for group ( $F = 9.72, p = .003$ ) but not for level of depression ( $F = 2.84, p = .096$ ). There was a significant interaction between group and level of depression ( $F = 5.13, p = .026$ ).

The negative self-referent cognitions were highly significantly correlated with BDI score in both groups (cancer patients  $r = 0.81, p < .0001$ ; controls  $r = 0.54, p < .0001$ ).

### Discussion

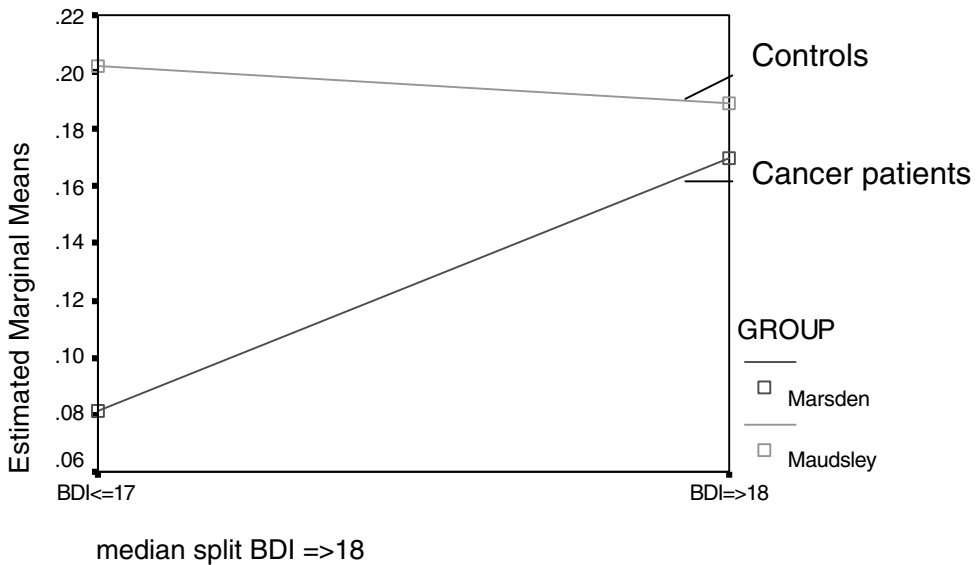
The results from this study partly confirm the hypothesis that depressed cancer patients have less negative thoughts about the self than non-cancer patients with depression. With the overall level of depression on the BDI held constant the cancer patients reported significantly more somatic symptoms (items 15–21) and less cognitive-affective symptoms (items 1–14) than the control group. The difference between the groups in the cognitive-affective subscale score

was a result of lower scores on items referring to the self (BDI item 3, “failure”; item 5, “guilt”; item 7, “self dislike”; item 8, “self blame”). The two groups had similar scores on the remaining cognitive-affective symptoms, which tapped into “mood and motivation” (Bouman and Kok, 1987). This finding is best illustrated by the bar graphs in Figure 1. The results support the clinical observation that while low-self esteem is a core feature of primary depression it may be less so in second depression in physical illness. People with cancer may be more concerned about the threat cancer poses to their survival and have relatively intact self-esteem. No previous studies have specifically addressed this question.

The results in this study also confirmed the expectation that cancer patients score significantly higher on the somatic-performance subscale of the Beck Depression Inventory (BDI) than a control group of psychotherapy outpatients. The diagnosis of depression in patients suffering from cancer is notoriously difficult because somatic symptoms of the medical illness and side-effects of treatment are often indistinguishable from the somatic symptoms associated with depression. On the other hand, even severe depressive symptoms might go undiagnosed, based on the assumption that this is a “natural” reaction to such a medical illness (Massie and Holland, 1990). Therefore, it has been suggested that non-somatic symptoms should be prioritized in order to diagnose depression in cancer patients (Bukberg, Penman and Holland, 1984; Clark and Steer, 1994; Endicott, 1984) and not to use the somatic-performance subscale of the BDI in medically ill patients (Beck et al., 1988; Plumb and Holland, 1977; Ritterband and Spielberger, 2001). The differences between the two groups were not entirely due to the differences in somatic scores, because the ratio of negative self reference items to the remaining cognitive-affective items demonstrated that the cancer patients had proportionately less negative thoughts about the self. In the non-cancer sample, the negative self schema accounted for 56% of the non-somatic score, whereas in the cancer sample this was only 30%.

When we split the sample into two groups of low and high depressive symptoms, the finding that cancer patients had less negative self-referent cognitions held for the less depressed subsample but not the more depressed subsample (Figure 2). It seems that as the total BDI score increases the score on the negative self-referent cognitions items also increases ( $r = 0.81$ ). An earlier study that looked at symptoms that distinguished between high and low levels of depression in a medical sample (Clark, Cavanaugh and Gibbons, 1983) also found that some negative self-referent cognitions (sense of failure and sense of punishment) were associated with more severe depression. In our study, the correlation between total BDI and negative self-referent cognitions for the control group, while also statistically significant, was lower ( $r = 0.54$ ) than in the cancer group. Patients in the control group with lower levels of depression seemed to have a proportionally higher number of negative thoughts about themselves, which may be reflecting co-morbidity with personality pathology in this sample of patients referred to a psychological therapies department. Alternatively, it may be that for lower levels of depressive symptoms in cancer patients the focus of distress is more on the disease and its prognosis, but as patients move into a full blown depressive syndrome negative thoughts about the self, the world and the future all become significant.

One of this study’s strengths is the use of matched case-controls. Other studies that have compared depression in medically ill and psychiatric populations have not matched samples and have often compared samples of different sizes. Nevertheless, there are several limitations. First, there are questions about the validity of matching for total BDI score, given that people with a physical illness are likely to have a higher level of physical symptomatology by definition. This means that a cancer patient with a BDI score of 20 may be less depressed



**Figure 2.** Estimated marginal means of self/cognitive subscale

than a non-cancer patient with the same BDI score. We have attempted to take account of this by examining the *ratio* of negative self-referent to cognitive-affective items. However, the division of the sample into “depressed” and “non-depressed” subjects on the basis of total BDI score may not be comparing like with like; so the results of this secondary analysis should be treated with caution. Second, the use of a psychological therapies group as a control meant that we had to exclude data on some of the older cancer patients because an age matched control was not available. The use of two groups of patients with psychological disturbance but not necessarily major depressive disorder is also a potential limitation: we can make statements about the relative frequency of depressive *symptoms* but this may not apply to depressive disorder. Finally, the sample size is relatively small.

These results present preliminary evidence that in two samples matched for level of depressive symptomatology, the medically ill patients have proportionally less negative self-referent cognitions than psychiatric controls. There is a very cautious suggestion that this may apply for lower levels of depressive symptoms but not higher levels. Further work is now needed with a larger sample of patients with more formally diagnosed depression (using ICD 10 or DSM IV criteria) to establish whether negative thoughts about the self may indeed be less prominent in some forms of depression in the medically ill.

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