Interpersonal interactions of depressives
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CHAPTER TWO

Depression relapse and ethological measures

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ABSTRACT

Within the framework of interactional theories on depression, the question is raised whether depression relapse can be predicted by observable behavior of remitted patients and their interviewer during an interaction (i.e. discharge interview). Thirty-four patients were interviewed at hospital discharge and at a follow-up, 6 months later. Eight patients (23.5%) had relapsed at follow-up. Various behaviors of patients and interviewers were observed during an interview by ethological methods. One of the six patient behavioral factors, and none of the seven interviewer factors were related to relapse. Depression relapse patients displayed significantly less Active Listening (intense body touching and head movements during listening) during the interview at hospital discharge than those with stable remission. Results on Active Listening could not be explained by the degree of retardation (HRSD) and underlined the significance of interpersonal mechanisms in the onset and maintenance of depression.
1. Introduction

Relapse and recurrence of depression following successful treatments are common (Paykel, 1994). An emerging number of studies focus on the role of psychosocial risk factors; low levels of social support (Brown et al., 1994), marital discord (Hautzinger et al., 1982; Hooley, 1986; Hooley and Teasdale, 1989), and interpersonal problems (Boyce et al., 1991) are reported to be related with recurrence and relapse. Several psychological depression theories focus directly on interpersonal relationships; a lack of social skills prevents depressed persons from getting positive feedback from their environment (Lewinsohn, 1974). Coyne et al. (1991) and Coyne (1976) emphasized the role of significant others in the environment of depressed persons. Coyne’s theory supposes that depression-prone persons elicit support behaviors from persons in their general surroundings. Over time these support behaviors become intermixed with rejection attitudes. Coyne contends that the depressed prone person, sensitive to this underlying rejection attitude, increases his or her depression behavior in order to elicit more supportive behaviors from others until they eventually withdraw from the interaction.

Because a considerable part of human communication is nonverbal (Burgoon, 1985; Cahn and Frey, 1992), one may expect that nonverbal behaviors of depressives and of the persons they interact with play a role in the onset and course of depression (Troisi et al., 1989; Bouhuys and Hoofdakker, 1993; Segrin and Abramson, 1994). Several authors have conducted ethological research into emitted behaviors of depressed patients in an interactional context. This research differentiates itself from previous studies of psychosocial functioning in that the actual interpersonal interaction behaviors of patients are directly studied, as opposed to being derived from indirect measures, such as questionnaires. Several ethological studies have concentrated on the predictive quality of observable behavior with respect to depression outcome. The duration and frequency of depressed patients’ observable behaviors during interactions with others have been studied. Additionally, some of these studies have also given attention to the emitted behaviors of the person interacting with the depressed patient.
CHAPTER TWO

In a study by Bouhuys and Albersnagel (1992) of the behavior of both depressed patients and a psychiatrist, during an interview at hospital admission and 10 weeks later, it was shown that persistence of depression over a 10-week period could be predicted by some behavioral displays of the patients: non-improvers showed more ‘Speaking Effort’ (head movements, looking and gesturing during speech) and less ‘Active Listening’ (intensive body touching and head movements during listening) than improvers. The psychiatrist showed less ‘Encouragement’ (yes-nodding and ‘um-hum’-ing during listening) and more ‘Active Listening’ (intense body touching and head movement during listening) to improvers than to non-improvers. In a similar study of depressed out-patients it was found that improvers showed fewer behaviors inviting social interactions (e.g. ‘Speaking Effort’) during a pre-treatment interview than non-improvers. Additionally, Geerts et al. (1995) confirmed the results on Speaking Effort and Encouragement in patients with seasonal affective disorder who received light treatment; the practitioner showed more ‘Encouragement’ to less improving patients and these patients displayed more ‘Speaking Effort’.

These behavioral studies, however, have focused primarily on depression remission and no attention has been given to depression relapse. In the present investigation remitted depressed in-patients were interviewed at their discharge from hospital. The interaction during this interview was investigated. It is examined whether certain observable behaviors of patients and their interviewers are predictive of subsequent relapse.

2. Methods

2.1. Subjects

Thirty-four remitted depressed in-patients participated in this study (major depressive disorder, $n = 28$, and depressed bipolar disorder, $n = 6$; with psychotic features, $n = 13$; DSM-III-R; American Psychiatric Association, 1987). Patients were included in the present study if they were remitted from a depression at hospital discharge and if they participated in a follow-up interview after discharge. In defining depression remission and depression relapse, we have followed the suggestions of Frank et al. (1991).
Remission from depression at hospital discharge was determined by a psychiatric evaluation and a Hamilton Rating Scale for Depression score (21-item version; HRSD; Hamilton, 1967) of 8 or less at hospital discharge. The mean group HRSD score, at hospital discharge, was 4 (S.D. = 2.2; range 0.5 - 7.5). All 34 patients were additionally assessed on the HRSD 6 months after hospital discharge. Those patients whose HRSD scores were a minimum of 12 and increased by a 100% or more, in comparison to their HRSD score at hospital discharge, were defined as depression relapse patients. All HRSD interviews were videotaped for later (ethological) analysis. In addition, the retardation and the agitation items of the HRSD were used to determine psychomotor disturbances.

Of the 37 patients who met the inclusion criteria for remission, three did not participate due to their refusal to be videotaped. Thus, 34 remitted in-patients participated in the study. The 34 depressed patients consisted of seven males and 27 females, with a mean age of 48 years (S.D. = 11.6; range 25 - 68). The average length of hospital stay was 122 days (S.D. = 55, range 57 - 261). Written informed consent was obtained from all participating patients.

In this study no attempt was made to control the patients’ use of medications, and the patients’ prescriptions were noted on the day of hospital discharge. The type of medications that were prescribed to the patients at hospital discharge were antidepressant medication, benzodiazepine medication, neuroleptic medication and lithium. These medications were prescribed singularly and in combined forms; in some cases no medications were prescribed.

Seven trained HRSD interviewers (two males and five females) participated in the study and were randomly distributed over the design. Each HRSD score was assessed by two independent raters (the average score of both raters was used for this study). The interrater reliability was 0.95 and 0.94 for hospital discharge and 6-month follow-up interviews, respectively (Kendall concordance coefficient; Siegel, 1956). All interviews were conducted between 09:00 and 11:00 h.
2.2. Ethological analysis

The various behaviors, emitted by both the patient and the HRSD interviewer during the videotaped interaction, were recorded continuously by means of an event-recording system. Registration from the videotape was carried out in different runs, while preserving the temporal relationships between the behaviors. The rationale underlying the choice of behavioral categories is twofold: first, because (psychomotor) retardation seems an important aspect of depression, all body movements have been registered. Secondly, the need for subjective interpretation of observable behavior was minimized by using descriptive and well-defined behavioral categories.

Specifically, the emitted behaviors measured in this study are: head behaviors (yes-nodding, no-shaking and general head movements other than yes-nodding and no-shaking), eye behaviors (looking at and looking away from one’s discussion partner), leg behaviors (the movement of one’s leg), speech behaviors (talking and verbal back-channel, i.e. ‘um-hum’-ing in response to another person’s speech) and hand behaviors (light touching of one’s own body [only one’s fingers or hands move without wrist movement], intense touching of one’s own body [with wrist movement], touching of an object, gesturing, and general hand movements, i.e. all hand movements unrelated to the aforementioned).

The occurrences of these behaviors were recorded, resulting in frequencies and durations of behaviors. Since the speaking or the listening of a person determines the occurrence of their other behaviors, the various behaviors were analyzed in respect to speaking and listening. Consequently, frequencies and durations during speaking and listening of all behaviors were subjected to further analysis. The behavioral measures of patients and of the interviewer were transformed into behavioral factors. These behavioral factors were first described in a study by Bouhuys et al. (1991) and Bouhuys and Hoofdakker (1991) of depressed inpatients and have been most recently used in research conducted by Geerts et al. (1995) (patients with Seasonal Affective Disorder) and Hale et al. (1997) (depressed outpatients interacting with partners and strangers).
### Table 1

Recorded behavior of patients and interviewers (a) and constituent behavior of factors describing the behavioral organisation of the patients (b) and of the interviewers (c) during a clinical interview

#### a. Summary of the recorded behavioral elements and abbreviations

1. **Vocalisations:**
   - sp = speech
   - bch = verbal backchannel: ‘yes yes’, ‘hm hm’, emitted to show one is listening

2. **Head movements:**
   - yes = yes-nodding
   - no = no-shaking
   - head = head movements, other than yes-nodding and no-shaking

3. **Looking**
   - look = looking in the direction of the other's face

4. **Leg movements:**
   - leg = leg movements

5. **Hand movements:**
   - gest = gesticulating
   - botol = light body touching; when only fingers or hands are manipulating the body
   - botoi = intensive body touching; also when wrist or forearm is moving
   - obto = object touching: hands or fingers are manipulating an object
   - otha = hand movements, other than object- or body touching or gesturing

\[ d= \text{duration}, \ f= \text{frequency}, \ /\text{sp}= \text{during speaking}, \ /\text{li}= \text{during listening} \]
\[ 1, \ldots, 1/4 = \text{weight by which the elements were summed into the behavioral factors} \]

#### b. Patients’ behavior

<table>
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<th>Factor 1</th>
<th>Factor 2 Restlessness-1</th>
<th>Factor 2 Restlessness-2</th>
<th>Factor 3 Speech</th>
<th>Factor 4 Active Listening</th>
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#### c. Interviewers’ behavior

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CHAPTER TWO

The behavioral factors were based on a factor analytic approach. This sort of approach enabled the association of behavioral elements without the use of a priori concepts. The behaviors emitted by patients and by the psychiatrist were analyzed separately, resulting in six patient factors and seven interviewer factors, as presented in Table 1.

The behavioral factors in Table 1 contain factors common to both the patient and interviewer, as well as specific factors only related to either patient or interviewer. The behavioral factors that are common to both the patient and interviewer are: Restlessness-1 (leg movements and light body touching), Restlessness-2 (object touching), Speech and Active Listening (intense body touching and head movements during listening). Behavioral factors related only to the patient are: Eagerness (yes-nodding and no-shaking) and Speaking Effort (head movements, looking and gesturing during speech). Behavioral factors related only to the interviewer are: Turn Taking (leg movements and looking during listening), Encouragement (yes-nodding and ‘um-hum’-ing during listening) and Change Looking (changes between looking at and away from the patient’s face). That the analyses that were performed on either patient or interviewer behavior resulted in some factors that the patient and interviewer share, but also in specific patient and interviewer factors was anticipated because of the situation which was studied: a doctor-patient interaction.

In this study, two trained scorers registered these behaviors first for the patient and then for the interviewer for the first 15 minutes of the hospital discharge HRSD interview. The mean interrater reliability (Cohen, 1968) for all behavior registrations was $\kappa = 0.86$ (range 0.54 - 0.99).

2.3. Data analysis

For determination of differences between the depression relapse and stable depression remission groups, analysis of variance (ANOVA) tests were employed for continuous response variables and Fisher’s exact tests were used for categorical response variables.
CHAPTER TWO

3. Results

3.1. Patient characteristics

Of the 34 persons, eight (23.5%) had relapsed after 6 months and the other 26 (76.5%) showed stable depression remission. This group division was used in subsequent analyses for determination of depression relapse prediction. At hospital discharge, these two groups did not significantly differ in depression severity as measured by the HRSD (relapsed: $M = 5.3$, S.D. = 1.9; stable remission: $M = 3.6$, S.D. = 2.2).

Analysis of the variance of the composition of the depression relapse and stable remission patient groups, when interviewed at hospital discharge, revealed that the groups did not differ in respect to age. Fisher’s exact test analysis additionally revealed that the groups did not differ in respect to sex.

Attention was then given to the types of depression (unipolar or bipolar) and the presence of psychotic features. Fisher’s exact test analysis showed that the two groups did not significantly differ in respect to either type of depression (unipolar or bipolar) or the presence of psychotic features.

When the medication use of the two groups were analyzed by Fisher’s exact test, it was found that there was no difference in the use of antidepressants (use, $n = 28$; no-use, $n = 6$), neuroleptics (use, $n = 23$; no-use, $n = 11$), benzodiazepines (use, $n = 18$; no-use, $n = 16$) and lithium (use, $n = 18$; no-use, $n = 16$).

3.2. Depression relapse prediction as determined by the behavioral factor differences between the groups

Analysis of variance revealed that of the patient behavioral factors, only the patients’ Active Listening behavioral factor ($F_{1,32} = 4.16$, $P = 0.05$) differed between the groups, whereas none of the interviewers’ behavioral factors significantly differed between the two groups. The means of the patient and interviewer behavioral factors are displayed in Fig. 1.
Fig. 1. Patient and interviewer behavioral factors.
CHAPTER TWO

3.3. Additional analyses

The behavioral factor Active Listening is constituted of behaviors related to activation (Bouhuys et al., 1991). One may ask the question as to whether this behavioral factor is related with retardation and agitation as assessed by the HRSD. Variance analysis of the HRSD retardation and agitation scores at hospital discharge showed that the groups only differed significantly in respect to the HRSD retardation score ($F_{1,32} = 6.14, P = 0.019$). The means of these two HRSD scores of the two groups at hospital discharge are: Retardation (relapsed: $M = 0.6$, S.D. = 0.7; stable remission: $M = 0.1$, S.D. = 0.3) and Agitation (relapsed: $M = 0.06$, S.D. = 0.2; stable remission: $M = 0.5$, S.D. = 0.6). The patient Active Listening factor was analyzed in an ANCOVA design to correct for possible effects of the HRSD retardation score at hospital discharge. A significant difference between the two groups remained in respect to the Active Listening factor when the HRSD retardation score was employed as a covariate ($F_{1,31} = 5.52, P = 0.025$).

4. Discussion

In this research it is found that those remitted patients that relapsed back into a depression 6 months later displayed less Active Listening. Additionally, it is found that none of the other behavioral factors of either the patients or the interviewers were significantly different between the two groups. Furthermore, it is found that those patients that relapsed back into a depression displayed significantly more retardation at remission.

Some evidence exists that low levels of psychomotor retardation are related to an unfavorable (long-term) course of depression (Duggan et al., 1991). It should be pointed out that the Active Listening factor consists of behaviors which are reported to be related to activation, i.e. body and object touching, hand and head movements (Burgoon et al., 1989; Harrigan et al., 1991). One may suppose that low degrees of this behavior factor reflects retardation. However, when the relationship between depression relapse and Active Listening was corrected for retardation, the relationship between Active Listening and relapse remained significant. Hence, it would appear
that low degrees of Active Listening, in an interaction, are predictive of depression relapse and not equivalent to retardation.

In similar research, it was also found that those patients that did not improve in a 10-week period displayed less Active Listening during the pretreatment interview than those that did improve (Bouhuys and Albersnagel, 1992). In respect to the findings of this and previous studies, Active Listening deficits may not only contribute to depression maintenance, but also to depression relapse and may constitute a behavioral vulnerability factor.

In previous studies of depression recovery it was found that an interviewer displayed more ‘Encouragement’ (Bouhuys and Hoofdakker, 1993; Geerts et al., 1995) and less ‘Active Listening’ (Bouhuys and Hoofdakker, 1993) to patients who had an unfavorable course of depression. In this study of depression relapse these factors had no predictive quality. However, this study used different interviewers, who were not related to the patient’s treatment, in a post-treatment interview, whereas in the other studies treatment-related interviewers conducted the interviews, in a pre-treatment interview. Both aspects, interviewers’ relatedness with treatment and the moment of interview (pre-post treatment) may have influenced behaviors displayed. In particular status differences and patients’ dependency on caregivers may explain differences in results between prediction of recovery and relapse.

A possible limitation of this study was the small size of the depression relapse group. Future research may profit by using a larger depression relapse group than was available for this research.

In conclusion, the study of observable behaviors of depression relapse patients may underline the significance of interpersonal mechanisms in the initiation and maintenance of depression. Ethology thus may enhance our understanding of such mechanisms by detecting subtle nonverbal communicative features of depressogenic interactions.

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CHAPTER TWO


