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Technical Note

Application of the Time Perspective Test for Depressed Patients

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Abstract : Depressed patients often feel anxiety and have suicidal ideations. Such feelings are closely related to the concept of time perspective. The aims of the present study were to clarify time perspective in depressed patients using the Time Perspective Test (TPT) and to verify the effectiveness of the TPT as an assessment tool. In the present study, depressed patients (n=15) and healthy volunteers (n=40) were administered the TPT, and their responses regarding time perspective were compared. Depressed patients had negative present and past time perspectives, and no future time perspective. In addition to poor responses to the TPT, the test revealed dichotomous thinking and poor interpersonal relationships in depressed patients. These findings suggest that the TPT is useful for gaining an understanding of the condition of depressed patients, and is an effective assessment tool that can be used by physicians, nurses, and other health professionals to obtain important information about depressed patients.

Key words : depressed patients, time perspective test (TPT), psychological assessment

Introduction

In a clinical setting, depressed patients sometimes use temporal phrases such as, “I have been feeling anxiety for a long time”, “I have been feeling terrible for a long time. So, I want to die”, and “There is nothing ahead”. From these statements, it can be ascertained that depression may be closely related to the patients’ perceptions of time. The time factor is extremely important to depressed patients.

Time perspective was originally explained by Frank¹⁾ as “the process relating the psychological future and the past to present situations”. Frank defined time perspective of the future as “a cognitive-dynamic orientation to future goals”¹⁾. Later, studies were conducted on time perspective²⁻⁶⁾. In Japan, Shirai⁷⁾ and Tsuzuki⁸⁾ investigated the concept of time perspective. Studies of time perspective in the field of psychology have been primarily conducted from the viewpoint of social and developmental psychology. Katsumata^{9,10)} and Ueda¹⁰⁾ developed the Time Perspective Test (TPT) from a clinical point of view. The TPT was designed to measure what participants were interested in. The present study investigated the time perspective in depressed patients using TPT of Katsumata and Ueda.

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Past time perspective can be thought of as the extent to which one looks back to the past; future time perspective can be thought of as an amalgam of the extent to which one looks forward, how far one looks to the future, and the number of possibilities one sees in the future. Present time perspective relates to the extent to which one lives in the present and the scope of possibilities one perceives in the present. Further, present time perspective can be divided into four categories: genuine present (Pr); present drawn from the negative past (aPr); present related to the future (Pr-f); and present drawn from the negative past and related to the future (aPr-f).

The aim of the present study was to investigate the time perspectives of depressed patients, including the past, present, and future, to obtain new insight regarding time perspective that could be used by physicians, nurses, and other health professionals.

In the medical field, a useful discharge support program for depressed patients is desired^{11,12}). Assessment tools that can be used during the course of treatment, recovery, and social rehabilitation are needed. If such tools can be incorporated into hospital support programs, doctors, nurses, and other health professionals will be able to provide more concrete support for patients. The present study investigated whether the TPT could be one such suitable tool.

This study was approved by the Ethics Review Board of Showa University Karasuyama Hospital, Tokyo.

Methods

Participants

In the present study, the TPT was administered to depressed patients and healthy volunteers. In all, 55 participants were recruited to the study. The 15 depressed patients who took part in the study were selected by a psychiatrist from inpatients in a ward of a mental hospital in Japan. The healthy volunteers were graduate students and members of society.

Measures

Center for Epidemiologic Studies Depression Scale (CES-D)

Participants were asked to complete the Center for Epidemiologic Studies Depression Scale (CES-D; 1977)¹³), developed by the National Institute of Mental Health (NIMH). The CES-D was designed to identify people suffering from "depression". The scores on the CES-D range from 0 to 60; anyone scoring >16 points is suspected of suffering from depression. In the present study, the CES-D was used to confirm depression in depressed patients and healthy volunteers.

Time Perspective Test

The TPT was implemented across the following five stages.

1. Instruction to respond stage: The examiner gave the following instruction to the participants, "Please list up to 25 items that you thought and/or talked to others about in the past 2 weeks. There will be no evaluation of the topics as "good" or "bad", so please raise items as they are".

2. Inquiry stage: The examiner gave the following instructions to the participants, "Please explain the topics you have just listed in more detail".
3. Conditions surrounding communication of the topics of interest (reaction content): The responses provided at the inquiry stage were classified based on subjects' thoughts about the topics, how they were communicated, when the communication took place, and the communication partner.
4. Time orientation classification stage (classification of the past, present, and future): Each response item was clarified in terms of time orientation: past, present, or future. Responses orientated to the present were also classified into four categories, as noted above: Pr, aPr, Pr-f, and aPr-f.
5. Assessment stage (affective tone, importance, future possibilities): Participants were asked to rate their responses in terms of the degree of affective tone and importance (I) to themselves using a five-point scale (-2, -1, 0, +1, +2). If patients listed a topic concerned with the future, they were asked to rate the possibility that it would be achieved.

Responses were recorded on the TPT scoring sheet (Figure 1). In addition, the following information was calculated and recorded on the TPT scoring sheet: the number of responses, the percentage of communications (i.e. "what was talked about" in the responses), the percentage of time orientations (i.e. past, present, future), the percentage of each of the subcategories in the present orientation (i.e. Pr, aPr, Pr-f, aPr-f), and the distribution and mean scores of affective tone and importance.

Name _____		Male / Female _____		Date _____		Data No. _____														
				Age _____		Intaker _____														
Response	Title of Topics	Thinking Topic	Talking Topic	Time Orientation					Affective tone (Pleasant)					Importance					Memo (Detail of the topic, etc.)	
				Past	Present				Future	-2	-1	0	+1	+2	-2	-1	0	+1		+2
Sample	My toothache	レ			レ														Should I go to the dentist's office?	
1																				
2																				
3																				
4																				
5																				
6																				
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Count																				
Total number of responses =		Talking % =		Past	Sum of Present =				Future	Distribution %					Distribution %					Healthy · Attend hospital · In hospital
< Instruction >		Please list your 25 topics, which were thought in your mind or talked to others, in these two weeks or half a month.		Past %	Present %				Future %	Mean of Af =					Mean of Im =					
Note: aPr = Present continued from the past; Pr = Present only; Pr-f = Present leads to the future; aPr-f = Present continued from the past and leads to the future				aPr %	Pr %	Pr-f %	aPr-f %													

Fig. 1. Time Perspective Test scoring sheet

Data analysis

Data were analyzed using IBM SPSS Statistics 22. Descriptive statistics and the mean \pm SD are reported. Fisher's exact probability test was used to compare the gender of depressed patients with that of the healthy volunteer group. Student's *t*-test was used to compare the age of the two groups, followed by analysis of covariance (ANCOVA). The level of significance was set at $P < 0.05$.

Results

The group of depressed patients consisted of 12 women (age 40–89 years) and three men (age 55–80 years). The healthy volunteer group consisted of 28 women (age 22–85 years) and 12 men (age 21–81 years). The mean (\pm SD) age of the depressed female and male patients was 70.3 ± 12.4 and 66.3 ± 12.7 years, respectively, compared with 48.0 ± 19.6 and 49.3 ± 19.7 years for healthy female and male volunteers, respectively. Comparisons of the two groups according to sex and age indicated that the mean age of depressed patients was significantly higher than that of the healthy volunteers, and that the discrepancy between the mean ages of the two groups was large (Tables 1, 2). Therefore, ANCOVA was used to determine the significance of differences between the depressed patients and healthy volunteers in relation to the items under investigation after controlling for age. Depressed patients' group had an SD of 0 for the percentage of future orientations, and the percentage of aPr-f. Therefore, ANCOVA was not conducted for these outcomes, and only descriptive statistics are reported.

Descriptive statistics for CES-D and TPT

Mean values for the items investigated are given in Table 3, whereas mean values of the time dimensions (i.e. past, present, future) regarding affective tone and importance are given in Table 4.

Table 1. Results of Fisher's exact probability test comparing the gender of participants

Patients	No. depressed patients	No. Healthy volunteers	<i>P</i> -value
Male	3	12	0.521
Female	12	28	

Table 2. Results of Student's *t*-test comparing age of participants

	Depressed patients (<i>n</i> = 15)	Healthy volunteers (<i>n</i> = 40)	<i>P</i> -value
Age (years)	69.5 ± 12.1	48.5 ± 19.4	0.0003

Data are given as the mean \pm SD ;

Table 3. Mean (\pm SD) scores for items investigated in depressed patients and healthy volunteers

Item	Depressed patients (n = 15)	Healthy volunteers (n = 40)
Past orientation	1.9 \pm 2.5	4.5 \pm 3.9
Present orientation	12.1 \pm 3.9	170 \pm 4.5
Future orientation	0.0 \pm 0.0	3.6 \pm 3.2
Present orientation		
Pr	3.5 \pm 2.3	5.8 \pm 3.8
aPr	8.2 \pm 4.3	2.6 \pm 2.9
Pr-f	0.4 \pm 0.7	5.3 \pm 3.6
aPr-f	0.0 \pm 0.0	3.3 \pm 3.3
Affective tone	-1.2 \pm 1.0	0.2 \pm 0.5
Importance	1.9 \pm 0.1	0.9 \pm 0.4

CES-D, Center for Epidemiologic Studies Depression Scale; Pr, genuine present; aPr, present dragged from the negative past; Pr-f, present related to the future; aPr-f, present dragged from the negative past and related to the future. Data are given as the mean \pm SD.

Table 4. Mean (\pm SD) scores of affective tone and importance by time dimension in depressed patients and healthy volunteers

Item	Depressed patients		Healthy volunteers	
	Case (n)	M \pm SD	Case (n)	M \pm SD
Breakdown of time dimensions of the affective tone				
Past	8	-1.6 \pm 0.4	33	-0.2 \pm 0.9
Present	15	-1.5 \pm 0.3	40	-0.2 \pm 0.5
Future	0	- -	29	0.0 \pm 0.9
Breakdown of time dimensions of the importance				
Past	8	2.0 \pm 0.0	33	1.0 \pm 0.7
Present	15	1.9 \pm 0.3	40	0.9 \pm 0.4
Future	0	- -	29	1.0 \pm 0.7

CES-D scores

The CES-D scores of the 15 depressed patients ranged from 18 to 46 (mean 28.5 ± 10.2). In comparison, the CES-D scores for the 40 healthy volunteers ranged from 0 to 15 (mean 6.8 ± 3.4). As noted above, anyone scoring >16 on the CES-D is suspected of having depression; in the present study, no healthy volunteers scored ≥ 16 points on the CES-D (Figure 2).

Number of topics

In response to the first instruction, "Please list up to 25 items that you thought and/or talked to others about in the past 2 weeks", the group of depressed patients had difficulty listing 25

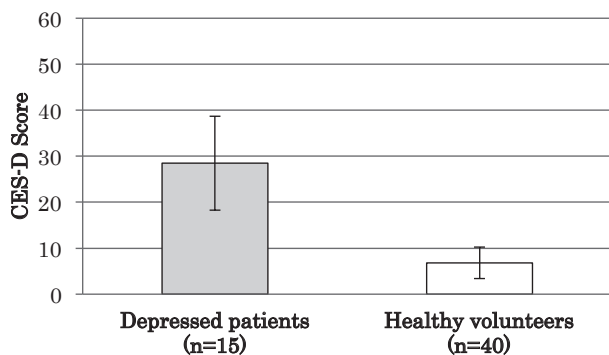


Fig. 2. Mean (\pm SD) Center for Epidemiologic Studies Depression Scale (CES-D) scores in depressed patients and healthy volunteers

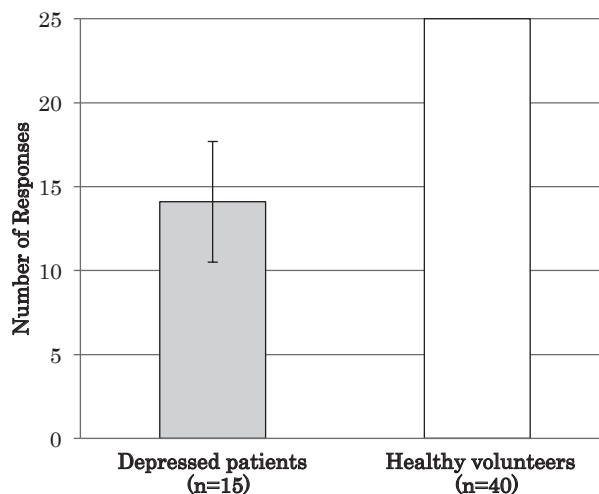


Fig. 3. Percentage of responses or topics in depressed patients and healthy volunteers

topics. The mean number of responses in the depressed group was 14.1 ± 3.6 topics, with only one person listing 25 topics. In comparison, all participants in the healthy volunteer group listed 25 topics (Figure 3).

Topics verbalized or thought about

Although there were significant differences in the number of topics listed between the depressed and healthy volunteer groups, the percentage of “topics that I talked about to others” and “topics that I thought about” did not differ between the two groups (Figure 4). Moreover, in the case of the topics that depressed patients “talked about to others”, these communications were primarily restricted to hospital officials.

Temporal dimension

Topics reported by participants were classified into temporal dimensions (i.e. past, present, and future). As shown in Figure 5, of the topics listed by the depressed patients, 12.7% were related to the past, 85.9% were related to the present, and 0% were related to the future; thus, the topics listed by depressed patients were limited to the past and the present. Conversely, all three temporal dimensions were represented by the topics listed by the healthy volunteers, with 17.7%, 68.0%, and 14.5% relating to the past, present, and future, respectively.

Present perspective categories

The present time perspective was divided into four categories: aPr (the present perspective including the past time perspective), Pr (the present time perspective), Pr-f (the present time perspective including the future time perspective), and aPr-f (the present time perspective integrating the past and the future).

In the case of depressed patients, 65.5%, 30.9%, 3.6%, and 0% of topics were categorized as

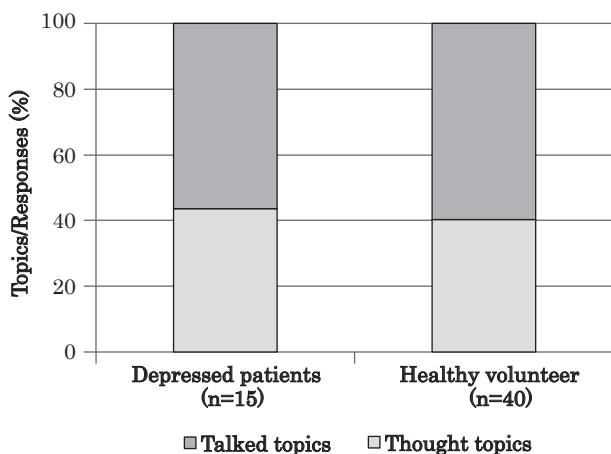


Fig. 4. Percentage of responses or topics relating to each of the present time perspective dimensions in depressed patients and healthy volunteers. aPr, the present drawn from the negative past; Pr, the present; Pr-f, the present related to the future; aPr-f, the present drawn from the negative past and related to the future.

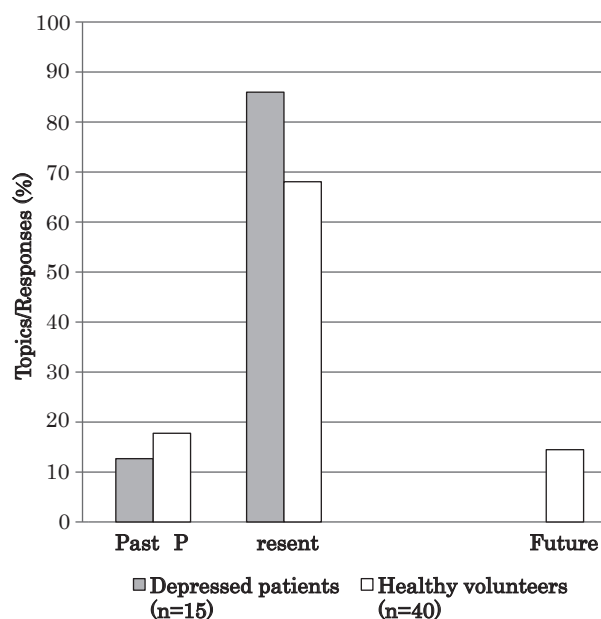


Fig. 5. The percentage of each time perspective in depressed patients and healthy volunteers

belonging to the aPr, Pr, Pr-f, and aPr-f categories, respectively. In comparison, 13.9%, 34.9%, 30.1%, and 19.7% of topics listed by healthy volunteers were categorized as belonging to the aPr, Pr, Pr-f, and aPr-f categories, respectively. In the depressed patient group, only 3.6% of topics were related to future dimensions in the present time perspective (Pr-f), compared with 49.8% of topics (Pr-f and aPr-f) in the healthy volunteer group.

Affective tone

Participants were asked to rate the affective tone (i.e. pleasant or unpleasant) of the topics they listed using a five-point scale (−2, very unpleasant; −1, unpleasant; 0, neutral; +1, pleasant; +2, very pleasant). As shown in Figure 6, depressed patients rated the affective tone of 71.6% of their responses as very unpleasant (−2), 70% as unpleasant (−1), 5.6% as neutral (0), 5.1% as pleasant (+1), and 10.7% as very pleasant (+2). In comparison, healthy volunteers rated 11.4% of their responses as very unpleasant (−2), 18.6% as unpleasant (−1), 30.2% as neutral (0), 21.4% as pleasant (+1), and 18.4% as very pleasant (+2). It is clear that depressed patients viewed most of their topics as “very unpleasant”.

Importance

Participants were asked to rate the level of importance the topics they listed using a five-point scale (−2, very unimportant; −1, unimportant; 0, neutral; +1, important; +2, very important). As shown in Figure 7, depressed patients rated none of their topics as very unimportant or unimportant, 2.3% of topics as neutral, and 3.7% and 94.0% of topics as important and very important, respectively. In contrast, healthy volunteers rated 4.2% and 6.2% of topics as very

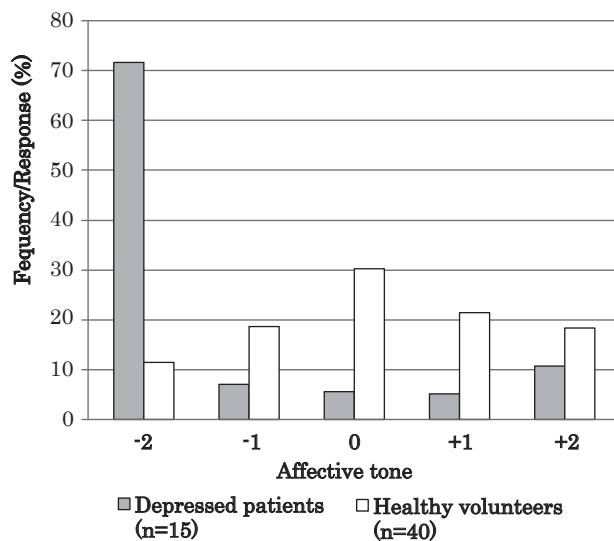


Fig. 6. Degree of affective tone for topics listed by depressed patients and healthy volunteers. -2, very unpleasant; -1, unpleasant; 0, neutral; +1, pleasant; +2, very pleasant.

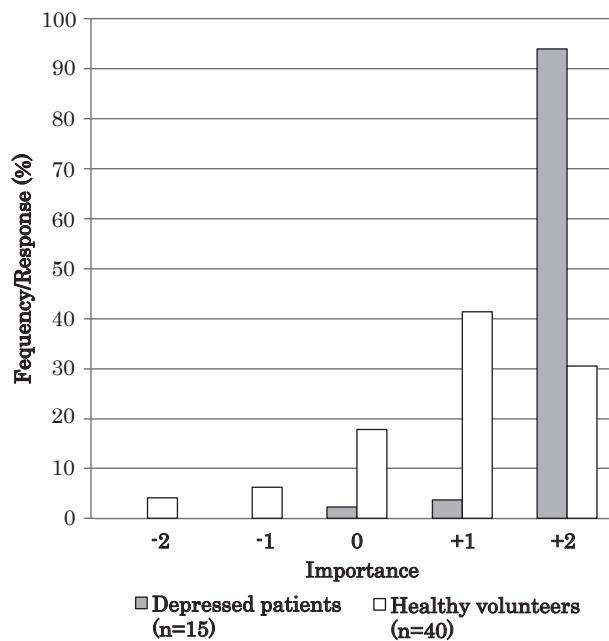


Fig. 7. Degree of importance of topics listed by depressed patients and healthy volunteers. -2, very unimportant; -1, unimportant; 0, neutral; +1, important; +2, very important.

Table 5. Results of analysis of covariance (ANCOVA), with age as the covariate

	Depressed patients			Healthy volunteers			P-value
	Adjusted mean	LL	UL	Adjusted mean	LL	UL	
CES-D	29.96	26.6	33.3	6.27	4.3	8.2	.000
Conversation (%)	55.37	43.3	67.4	59.95	53.0	66.9	.530
The past orientation (%)	14.29	5.0	23.5	17.23	11.9	22.6	.599
The present orientation (%)	85.53	75.4	95.7	68.39	62.5	74.3	.007
aPr	67.42	56.7	78.1	13.19	7.0	19.4	.000
Pr	33.87	20.1	47.6	33.80	25.8	41.8	.993
Pr-f	-0.57	-11.0	9.9	33.04	27.0	39.1	.000
Mean of affective tone	-1.30	-1.7	-0.9	0.19	0.0	0.4	.000
Mean of importance	1.88	1.7	2.1	0.90	0.8	1.0	.000

The adjusted mean was calculated using a mean age of 54.2 years.

CES-D, Center for Epidemiologic Studies Depression Scale; Pr, genuine present; aPr, present dragged from the negative past; Pr-f, present related to the future; LL, lower limit; UL, upper limit.

unimportant or unimportant, respectively, 17.8% as neutral, and 41.3% and 30.5% as important and very important, respectively. Clearly, depressed patients considered most of the topics they listed as “very important”.

Analysis of covariance

ANCOVA (Table 5) revealed significant differences between the two groups in CES-D scores, the present orientation (%), aPr, Pr-f, mean affective tone, and mean level of importance ($P < 0.05$). Depressed patients had significantly higher adjusted mean scores for the CES-D, the present orientation (%), aPr, and mean level of importance, whereas healthy volunteers had significantly higher adjusted mean scores for Pr-f and affective tone.

Discussion

Based on the results of the TPT for the depressed patients and healthy volunteers, seven general tendencies were identified, as detailed below.

Poor responses to the TPT

All healthy volunteers were able to list 25 topics, as instructed, whereas the depressed patients could only list approximately half the number of responses required (mean 14.1 topics). These poor responses to the TPT could indicate impaired language expression skills and poor cognitive function.

Present time perspective drawn from the negative past

Many participants in both the depressed patient and healthy volunteer groups exhibited a present-oriented time perspective. However, there were significant differences between the two groups in that many depressed patients had a negative present time perspective (aPr) drawn from the negative past, and had no future time perspective. Conversely, only a small number of healthy volunteers had negative present time perspective drawn from the negative past (aPr), and most had a future time perspective (Tables 3). Even if healthy volunteers had negative experiences in the past, they were able to accept the experiences positively and develop goals for the future. This time perspective of healthy volunteers differed significantly from that of depressed patients.

Cognitive style related to life events

Depressed patients experienced extremely negative feelings regarding events in their lives (Figure 6). For example, when a family member became sick, healthy people were likely to “worry about the sick family member”, whereas depressed patients were likely to “feel terrible and distressed themselves”. This tendency indicates the negative characteristics of depressed people, such as being easily hurt and being vulnerable to changes or events around them¹⁴). According to Nishizono¹⁵), depressed patients have a tendency to “be greedy and hang on to a goal” and “have tendencies to be egocentric, thoroughly depend, and attempt to get accepted”. The contents of the responses from depressed patients in the present study were consistent with these characteristics of depressed patients described by Nishizono¹⁵).

Dichotomous thinking

The healthy volunteers tended to hold moderate views, such as perceiving their responses as being neither unpleasant nor pleasant, or neither unimportant nor important (i.e. “neutral”), whereas depressed patients tended to exhibit extremely dichotomous thinking, as revealed by their ratings of their topics as important (+2) and very unpleasant (-2; see Figures 6, 7). This may be attributed to an inflexible thinking style in depressed patients.

Poor interpersonal relationships

Although the depressed patients indicated that half of the topics they listed were discussed with others, these communications were limited to healthcare professionals in the hospital, including medical doctors and nurses. This indication of poor interpersonal relationships may suggest that the depressed patients had dysfunctional social interactions. Based on this finding, facilitating the interactions between depressed patients and other patients and family members is an important task for healthcare professionals who are caring for such patients.

Usefulness of the TPT as an assessment tool for depressed patients

There were significant differences between depressed patients and healthy volunteers in the number of responses to the TPT, the percentage of responses orientated towards the present, the presence of a future orientation, the percentage of responses classified as aPr and Pr-f, and in scores of affective tone and importance. These differences suggest the potential usefulness of the TPT as an assessment tool for depressed patients.

Counseling effect of the TPT in depressed patients and healthy volunteers

The TPT was conducted using a semistructured interview style in which the interviewer listened to a participant's story. During the interview, immediately after the administration of the TPT, depressed patients reported that “it was good for me that I could talk”. Similarly, many healthy volunteers reported, “I felt refreshed by my talking”. This positive effect of the TPT may mean that it can be used as both a psychological assessment tool and to provide a form of counseling.

Based on the results of the TPT for depressed patients and healthy volunteers, it seems likely that TPT assessment during the course of treatment, recovery, and social rehabilitation will be able to detect changes in the state of depression. At the same time, it is expected that greater support will be provided to patients if it is possible to deliberately provide them with topics about their vision of the present and/or future prospects during communications between the doctor, nurse, other health professionals and the patient.

The TPT can be used as part of a discharge support program for depressed patients.

Conclusion

The findings of the present study make it clear that depressed patients have a negative present time perspective, as well as a negative past time perspective, and do not have any future

time perspective. In addition, the findings demonstrate that depressed patients have a narrow range of interests (few responses to the TPT), dichotomous thinking, and poor interpersonal relationships. These results suggest that the TPT may be an effective assessment tool providing useful information for medical staff, including doctors, nurses, and other health professionals.

Acknowledgments

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Conflicts of interest disclosure

The authors declare no potential conflicts of interest with respect to the research.

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