

## The Effects of Narrative and Movie Therapy on the Theory of Mind and Social Functioning of Patients with Schizophrenia

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### ABSTRACT

**Introduction:** The objective of this study was to investigate the effects of narrative therapy (NT) in which the patients tell their own life story in a group environment, and the movie therapy (MT), which is an interaction-based, emotion-themed, culturally compatible video screening activity, on chronic schizophrenia patients' theory of mind abilities, psychopathology, and social functioning.

**Method:** Thirty patients with schizophrenia were included in this study. At the beginning of the study, 2 patients dropped out as they started to work in a job. Participants were randomly assigned into two groups: one group received NT, and the other had MT. Dokuz Eylül Theory of Mind Index (DEToMI), Reading the Mind in the Eyes Test (RMET), Social Functioning Assessment Scale (SFAS), the Positive and Negative Symptoms Scale (PANSS), and Montreal Cognitive Assessment Scale (MoCA) were applied to the patients before and after the study. Pre- and post-test results within the group were compared via Wilcoxon test. Mann-Whitney U and mixed-design ANOVA were used for group

comparisons regarding treatment efficiency.

**Results:** In the NT group, PANSS negative and general psychopathology, DEToMI, SFAS, and MoCA scores significantly increased. In the MT group, PANSS negative, DEToMI, SFAS, MoCA, and RMET scores significantly enhanced. Regarding the comparisons for before and after the treatment, it was found that mean RMET scores and DEToMI faux pas sub-scale scores were higher in the MT group comparing to the NT group.

**Conclusion:** This study suggests that NT and MT could be beneficial on different domains of the theory of mind, and may lead to a decrease in psychopathology, and increase in neurocognition and social functioning. MT might be a more effective treatment in the field of perceptual theory of mind.

**Keywords:** Schizophrenia, theory of mind, narrative therapy, movie therapy, social functioning

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### INTRODUCTION

Schizophrenia is a disease that starts at a young age and progresses with impairments in self-care, interpersonal relations, cognitive abilities, perception, affection, thoughts, and behaviors (1). Impairment in social functioning is one of the main features of schizophrenia and may lead to a decrease in the quality of life by imposing a huge burden on patients due to its significant effects on daily functions (physical functions, self-care skills, interpersonal relations, social acceptability, social activities, and occupational functionality) (2).

While social cognition is important for successful social interaction, it allows people to understand others' intentions and mental states, to exhibit appropriate behaviors for social situations, and to participate in cultural activities (3,4). Patients' complaints such as "I don't like watching movies because I can't understand the movie. I don't understand the movie because I don't understand people" are frequently encountered (4). The effect of the considerations related to such daily activities on functioning is ignored, and the patients' avoidance of activities, indifference to social life, problems in interpersonal relations, and impairments in occupational skills can be attributed to negative symptoms and cognitive impairment (2,4,5,6). It should be kept in mind that these symptoms may be associated with impairment in the domain of social cognition (4). Social

cognition may help to explain the heterogeneity of the factors that affect the functional outcome in schizophrenia (6). At a workshop sponsored by the US National Institute of Mental Health in 2008, social cognition was proposed to be studied in 5 domains (6). These domains are as follows: 1. Theory of mind, 2. Emotional processing, 3. Attributional bias, 4. Social perception, and 5. Social knowledge. Each of these domains is related to each other, and it can be said that there is a need for studies aimed at improving only a certain social cognitive domain (5,6). It is expressed in a meta-analysis that 16% of the variance in social functioning is explained by social cognitive domains while 6% is explained by neurocognitive factors, and this variance difference results from the strong relationship between the theory of mind and social functioning (2). In another study, Reading the Mind in the Eyes Test (RMET), which measures perceptual theory of mind, is reported to be the predictor of social functioning (7). This strong relationship between the theory of mind and social functioning, compared to other neurocognitive domains, suggests that it can determine the functioning of patients (2).

Theory of mind is a term used to express the ability to interpret mental states underlying others' intentions, beliefs, and behaviors (6). Although theory of mind is approached as a single skill in many studies (3,8,9),

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some studies consider theory of mind as a two-component structure: perceptual theory of mind, which refers to mental state decoding, and cognitive theory of mind, which is the reasoning of the mental state (10,11). While cognitive theory of mind means the ability to make an inference about the beliefs and intentions of other people, perceptual theory of mind refers to the ability to understand what the other person feels (8,10,12). Perceptual theory of mind enables perceiving mental states by analyzing the mental states of others based on observable information such as facial expressions and motions. This concept is associated with the recognition of basic emotions while also involving the recognition of complex mental states (8, 10, 13). The recognition of complex mental states is different from the recognition of basic emotions because different inferences can be made from the same facial expressions in different situations (8). For example, people may sometimes cry from happiness or smile due to anger. In cognitive theory of mind, the comprehension of behaviors and current situation by people is significant. Reasoning with historical and contextual data, benefitting from experiences and using the existing information are quite important in cognitive theory of mind (8). Both components of the theory of mind are significant in the reasoning on intentions, decoding of mental states, and determination of social clues (7). The co-use of theory of mind abilities positively affects the functioning and enables giving appropriate responses in social interactions (5,7). While perceptual theory of mind can be evaluated with the Reading the Mind in the Eyes Test (RMET), cognitive theory of mind can be evaluated with false belief and hinting tasks (11, 13).

The relationship between the social cognitive domains and functional outcome has enabled interventional studies aimed at social cognition to gain importance (5,9). In a study, improvement in social cognitive domains, cognitive flexibility and social relationships, and a decrease in aggressive attitude scores were demonstrated in patients, who were given "social cognition and interaction training" that aims emotional processing, attributional bias and theory of mind scopes of social cognition (9). Another study intended to improve the emotional recognition and theory of mind with "emotional recognition and imitation training" by using comic strips, drawings and photographs, and the emotions expressed on the face via imitation (3). Studies have shown that improvement can be achieved in theory of mind impairments, and the skills of patients to understand the mental states of others may develop. A part of the studies emphasize that the treatments to be applied need to be simple and ecological (compliance with enriched social context and real life) (4,5,14).

Developed in the early 1990s, the "narrative therapy" method helps people establish connections between the past, present, and future with narratives forming stories considering that a human life is comprised of different outcomes that can be addressed from various perspectives (15,16). To the best of our knowledge, narrative therapy has not been used to improve the theory of mind. This therapeutic approach we used in our study, whose methods were determined by inspiration from practices of narrative therapy, it was aimed to examine what meaning the patients attributed to events, where, when, how, and under which conditions these events occurred, and, if available, what other people might have felt while the life stories of the patients were being asked, to talk about the preparers of the events and to provide different perspectives upon the opinions of the other group members. It was thought that patients might easily identify themselves with the owners of the life stories they listened to during the narrative therapy and their inferences could be more effective in their daily lives as they have similar cultures. It was assumed that there would be improvement in the theory of mind abilities of the patients who associated the causes underlying their thoughts, beliefs, emotions, and behaviors with their life experiences.

There are also studies based on video screening aimed at improving the theory of mind (5, 17). Components such as interaction, observation of

emotions, speech prosody, visual details, colors and music during video screening give meaning to the scenes displayed (14). Kayser et al. (2006) in their study involving two sessions and screening of 12 videos, pointed at the improvement in communication skills and understanding others' intentions (17). Likewise, Bechi et al. (2012) identified improvement in the theory of mind in the preliminary findings of the studies involving movie sections which were suitable for the cultures of patients (14). These studies indicate the significance of using videos to improve social cognitive domains (14). In this study, it was assumed that the movie therapy, which included interaction and video sections prepared from scenes that involved the circumstances we might encounter in our society, would improve the theory of mind abilities.

The purpose of the study is to investigate the effects of the narrative therapy, in which patients with chronic schizophrenia tell their own life stories in a group environment, and the movie therapy, which includes interaction and video sections with an emotional theme and compatible for the culture, on the theory of mind, psychopathology, and social functioning. The hypothesis of the study is that the movie therapy involving video sections will have a positive effect on perceptual theory of mind and the narrative therapy on cognitive theory of mind.

## METHOD

### Sample

The sample of the study was comprised of chronic patients who were followed up in Kocaeli University, Faculty of Medicine, Outpatient Psychiatric Clinic, knew each other via the "Izmit Our Garden Association of Schizophrenia Relatives" had been in a group environment in the past and were diagnosed with schizophrenia or schizoaffective disorder according to the DSM-5 diagnostic criteria (18). Criteria for inclusion in the study consisted of graduating from at least primary school, being between 18 and 65 years of age, taking medicine regularly, and being clinically stable. Exclusion criteria were mental retardation observed clinically in patients, having electroconvulsive therapy (ECT) in the last six months, alcohol-substance dependence, being in an exacerbation period, having a language problem causing understanding difficulties, and having a neurological disease that affect the central nervous system. Thirty patients who met the criteria and agreed to participate in the study were included in the study. Since two patients left the study at the beginning of the evaluation process, the study was completed with 28 people. The study was approved by Kocaeli University Faculty of Medicine Ethics Committee with the research project number KÜ GOKAEK 2018/189.

### Assessment Tools

*The Positive and Negative Symptoms Scale (PANSS):* The scale developed by Kay et al.(1987) is a clinical symptom scale with a total of 30 items; 7 of them refer to the positive symptom subscale, 7 of them to the negative symptom subscale, and 16 of them to the general psychopathology subscale (19). Each symptom is scored between 1 and 7. High scores indicate that symptoms are severe. The Turkish validity and reliability study of the scale was performed by Kostakoğlu et al.(1999) (20).

*Reading the Mind in the Eyes Test (RMET):* It was first published as 25 questions by Baron-Cohen et al. (21). Theory of mind has often been evaluated with scales that do not require visual input, however in the RMET the mental state of the person is expected to be analyzed from his/her facial expressions. The test used in this study, the Turkish validity and reliability study of which was completed by Yıldırım et al., contains 32 questions (13). In the test, it is requested to select the one out of 4 pictures that best explains the mental state of the person, and there are

four options, including one correct and three misguiding options, for each item. It aims to measure the emotional recognition and theory of mind.

*Montreal Cognitive Assessment Scale (MoCA)*: Developed by Nasreddine et al., the scale evaluates different cognitive functions consisting of attention and focus, executive functions, memory, language, visuospatial functions, abstract thinking, calculation, and orientation (22). Its validity and reliability studies were performed by Kaya et al. (23).

*Dokuz Eylül Theory of Mind Index (DEToMI)*: The scale, the validity and reliability study of which was carried out for schizophrenia patients, consisted of four questions assessing the first-order false belief, three questions assessing the second-order false belief, three questions assessing irony, two questions assessing metaphors, one question assessing to make a faux pas, and three questions assessing emphatic understanding (24). High scores show that theory of mind is better. In this study, it was used to assess cognitive theory of mind.

*Social Functioning Assessment Scale (SFAS)*: This scale, which is developed in Turkey, assesses social functioning in 19 items and 4 subdimensions in schizophrenia patients (25). Of the factors, 7 items are related to interpersonal relations and recreation, 7 items to self-care, 4 items to independent life skills, and 1 item is related to occupational life. The score that can be received from the scale ranges between 19 and 57, and a high score means a high level of social functioning.

## Procedure

The patients and their relatives were informed, and their informed consent was obtained before the study. In the two-week course before the initiation of the intervention, the patients were interviewed, their demographic and clinical data were taken, and their pretests were carried out. Thirty patients were randomly distributed into two treatment groups. Group treatments were applied in two 40-minute sessions, once a week and for 14 weeks. Group treatments were carried out by a psychologist and a psychological counselor, and each group was accompanied by an assistant trainer. Trainers were supervised by an academic member specialized in psychiatric rehabilitation therapies in psychotic disorders before and after each session. Clinical scales and neuropsychological tests were implemented by a psychologist and a clinician who were blind to the study and the groups.

## Group Therapies

*Narrative therapy*: Voluntary individuals were given priority, and one individual was asked to write his/her life story and bring it to the group every week. Every week, the life story of a patient was discussed, and the participation of all the patients was ensured. Writings of the patients were reviewed with the group trainer before they were read in the group environment. This was firstly because this activity was like a rehearsal for the patients, and secondly, because it would be ensured to include other life events rather than thoughts about the illness in the writing. It was emphasized that patients did not need to mention only their illness periods in their life stories, and it was also important for them to talk about their experiences and memories here in terms of the therapy. During the therapy, it was aimed to provide the patients with new perspectives by helping them collect information like detectives, research causes, understand other people's thoughts and emotions and by showing them with the thoughts and interpretations of different people in the group environment that situations could be interpreted differently by different people.

*First stage (collecting information)*: The life story of the patients was listened to without interruption. The information about who the people in the life story were, what kind of role they played in the patient's life, where the event had occurred, and why the owner of the story was there

were detailed with the guidance of the trainer or the questions of the group members.

*Second stage (development stages)*: The questions about the previous period and preparers of the events were asked to the patient.

*Third stage (understanding oneself and others)*: The patient was asked about his/her emotions during the event, and his/her thoughts were received regarding what other people in the event thought, what the causes of their behaviors were, and what they might have felt.

*Fourth stage (gaining a perspective)*: How the events were understood from the perspectives of the other patients, how the person who told the life story might have felt in the face of the events, and what the causes of his/her and others' behaviors could have been if he/she had been in the same situation were addressed.

*Movie therapy*: In this therapy method, videos were achieved from internet websites open to public, such as YouTube, from series and movie sections in durations varying between 120 and 180 seconds and reflecting fictionalized scenarios on a certain emotion theme (basic emotions like fear and happiness, and complex emotions like jealousy, pride, precipitousness, and cautiousness). The video segments were watched by 10 healthy people beforehand and it was ensured that a consensus was reached on the emotion to be reflected. Here, video sections showing two or more people in interaction and scenes that include beliefs (thought of a person about a situation) and mental states such as disappointment, jealousy, hostility, and misunderstanding, and which could be understood independently from the whole movie or series were used. Video screening was performed on different topics in 12 of the 14 weeks. The same topics discussed in the seventh and fourteenth weeks for reinforcement by using the same video sections. Before each session, the topic discussed the previous week was revised.

*First stage*: Video sections were watched with patients without interruption. The patients were asked to interpret the scenes. Their interpretations were noted.

*Second stage*: In the second stage, video sections were paused, and the patients were enabled to collect social clues (place, time, condition of people before and after the event, how much information people have, facial motions, and tones of voice) during an event.

*Third stage*: In accordance with social clues, the emotions of the people in the video, the meaning they attributed to the event, and the mental states of the people were discussed. Their interpretations in the first stage were reviewed.

## Statistical Analyses

The statistical analysis of the study was performed using Statistical Package for the Social Sciences (SPSS) version 22 (Armonk, New York, USA). Mean and standard deviation values of the patients' demographic data and clinical conditions were calculated. The Shapiro-Wilk test was used to determine whether the scores received from the scales had a normal distribution. Spearman's test was used for correlation analysis. The Wilcoxon signed-rank test was used in intragroup comparisons, and the Mann-Whitney U test and mixed-design ANOVA were used in intergroup comparisons. The Greenhouse-Geisser value was taken as a reference. The level of statistical significance was determined as  $p < 0.05$ .

## RESULTS

Thirty patients were included in the study. Two patients left the study at the evaluation stage since they started working. Of the 28 patients who

**Table 1.** Patients' sociodemographic and clinical characteristics

Sociodemographic and clinical characteristics		Narrative therapy (n=14)	Movie therapy (n=14)	p
Age (Mean ± SD)		39.07 ± 9.48	42.43 ± 8.19	0.325
Years of education (Mean ± SD)		11.07 ± 3.05	10.64 ± 3.17	0.719
Age of onset (Mean ± SD)		22.00 ± 5.64	21.21 ± 5.92	0.712
Duration of illness (Mean ± SD)		16.14 ± 8.42	20.21 ± 7.74	0.195
Number of hospitalizations (Mean ± SD)		2.07 ± 2.33	2.71 ± 2.23	0.463
Length of stay hospital (Mean ± SD)		59.57 ± 61.61	68.64 ± 74.49	0.728
Sex/Males (n. %)		10 (71.4)	10 (71.4)	1.000
Marital status / Single (n. %)		12 (85.7)	13 (92.9)	0.541
Lifestyle (n. %)	Mother-Father	11 (78.6)	10 (71.4)	0.497
Employment status (n. %)	Unemployed	10 (71.4)	11 (78.4)	0.523

**Table 2.** Pre-test and post-test comparison of scales of psychopathology, cognitive assessment, theory of mind, and social functioning

Assessment tools		Comparison	Narrative therapy	Movie therapy	ANOVA **		Effect size
			(Mean ± SD)	(Mean ± SD)	F	P	$\eta_p^{2***}$
PANSS	Positive	Pre-test	16.85 ± 6.07	15.28 ± 4.00	0.401	0.532	0.015
		Post-test	16.42 ± 5.97	15.28 ± 4.08			
		p*	0.319	1.000			
	Negative	Pre-test	21.35 ± 6.49	19.28 ± 4.04	0.403	0.531	0.015
		Post-test	19.14 ± 5.09	17.64 ± 3.73			
		p*	<b>0.004</b>	<b>0.003</b>			
	General Psychopathology	Pre-test	39.35 ± 10.86	37.4 ± 7.19	1.087	0.307	0.040
		Post-test	37.35 ± 9.62	36.71 ± 8.01			
		p*	<b>0.045</b>	0.475			
	Total	Pre-test	76.92 ± 20.85	71.35 ± 12.56	2.036	0.166	0.073
		Post-test	72.92 ± 19.67	69.57 ± 14.30			
		p*	<b>0.003</b>	0.115			
MoCA	Pre-test	20.42 ± 4.78	22.00 ± 3.63	0.046	0.831	0.002	
	Post-test	22.00 ± 5.37	23.78 ± 4.49				
	p*	<b>0.045</b>	<b>0.042</b>				
SFAS	Pre-test	41.00 ± 6.15	42.21 ± 4.94	0.249	0.622	0.009	
	Post-test	42.85 ± 5.33	43.71 ± 4.44				
	p*	<b>0.004</b>	<b>0.029</b>				
DEToMI	Pre-test	8.07 ± 3.83	10.00 ± 1.79	0.801	0.379	0.030	
	Post-test	9.42 ± 3.91	11.07 ± 2.55				
	p*	<b>0.003</b>	<b>0.017</b>				
RMET	Pre-test	16.07 ± 5.92	18.28 ± 3.66	<b>10.896</b>	<b>0.003</b>	<b>0.295</b>	
	Post-test	16.78 ± 3.98	23.64 ± 4.21				
	p*	0.786	<b>0.001</b>				

PANSS: Positive and Negative Symptoms Scale, MoCA: Montreal Cognitive Assessment Scale, SFAS: Social Functioning Assessment Scale, DEToMI: Dokuz Eylül Theory of Mind Index, RMET: Reading the Mind in the Eyes Test

\* Within group comparison (Wilcoxon test)

\*\* Mixed-design ANOVA

\*\*\* $\eta_p^2$ , Partial eta squared.

completed the study, 71% were male, 89% were single; the mean age was 40.8 ± 8.9, and the education level was 10.9 ± 3.1 years (Table 1). There was no statistical difference between the two groups in terms of demographic characteristics and initial test scores.

Treatment groups were compared in terms of pre-test and post-test results. In the patient group that received narrative therapy, a significant difference was observed between PANSS negative, general psychopathology and total score and mean scores received from the DEToMI, SFAS, and MoCA scales. In the patient group that received movie therapy, a significant difference was found between PANSS negative, DEToMI, SFAS and RMET pre- and post-intervention mean scores. The narrative and movie therapy groups were compared in respect to treatment efficacy by means of the

mixed-design ANOVA test. In the intergroup comparison, the RMET mean scores of the group that received movie therapy were higher than those of the narrative therapy group (Table 2).

The DEToMI subscales were compared for each group as pre-test and post-test. In the narrative therapy group, a significant increase was observed in the first- and second-order false belief (FOFB, SOFB) subscales ( $W = -2.636$ ,  $p = 0.008$ ;  $W = -2.271$ ,  $p = 0.023$ , respectively). In movie therapy, a significant increase was observed in the subscales of FOFB and faux pas ( $W = -2.333$ ,  $p = 0.020$ ;  $W = -2.449$ ,  $p = 0.014$ , respectively). At the end of the treatment, the increase in the score of the subscale of faux pas in the movie therapy group was found to be significantly higher than that of the narrative therapy group ( $F = 5.328$ ,  $p = 0.029$ ,  $\eta_p^2 = 0.17$ ) (Table 3).

**Table 3.** Pre-test and post-test comparison of the sub-scales of DEToMI

Sub-scales of DEToMI	Comparison	Narrative therapy	Movie therapy	ANOVA **		Effect size
		(Mean ± SD)	(Mean ± SD)	F	p	$\eta_p^2$ ***
FOFB	Pre-test	2.07±1.20	2.35±1.27	0.937	0.342	0.035
	Post-test	2.85±1.35	2.85±0.94			
	<i>p</i> *	<b>0.008</b>	<b>0.020</b>			
SOFB	Pre-test	0.64±0.63	1.50±0.75	2.235	0.147	0.079
	Post-test	1.21±0.97	1.57±0.85			
	<i>p</i> *	<b>0.023</b>	0.480			
Metaphor	Pre-test	1.35±0.74	1.57±0.51	0.134	0.717	0.005
	Post-test	1.28±0.72	1.57±0.51			
	<i>p</i> *	0.705	1.000			
Irony	Pre-test	1.28±1.43	1.42±1.15	0.000	1.000	0.000
	Post-test	1.42±1.34	1.57±1.08			
	<i>p</i> *	0.317	0.589			
Faux Pas	Pre-test	0.35±0.49	0.21±0.42	<b>5.328</b>	<b>0.029</b>	<b>0.170</b>
	Post-test	0.42±0.51	0.64±0.49			
	<i>p</i> *	0.317	<b>0.014</b>			
Empathy	Pre-test	2.28±0.99	2.85±0.36	0.634	0.433	0.024
	Post-test	2.21±0.97	2.92±0.26			
	<i>p</i> *	0.655	0.317			

FOFB: First-order false belief, SOFB: Second-order false belief

\*Within group comparison (Wilcoxon test)

\*\*Mixed-design ANOVA

\*\*\* $\eta_p^2$ , Partial eta squared.**Table 4.** Correlation analysis between SFAS and DEToMI subscales score

	RMET	DEToMI	FOFB	SOFB	Metaphor	Irony	Faux Pas	Empathy
RMET	-	0.565**	0.231	0.383*	0.392*	0.225	0.641**	0.454*
SFAS	0.510**	0.428*	0.415	0.277	0.213	0.219	0.556**	0.245

DEToMI: Dokuz Eylül Theory of Mind Index, RMET: Reading the Mind in the Eyes Test, FOFB: First-order false belief, SOFB: Second-order false belief, SFAS: Social Functioning Assessment Scale  
\* $p < 0.05$ , \*\* $p < 0.01$

The correlation between the Eyes test, SFAS and DEToMI subscale post-tests was calculated with Spearman's correlation analysis. The results are presented in Table 4.

## DISCUSSION

In this study, narrative and movie therapies were applied to two groups of schizophrenia outpatients in follow-up. The results showed that both treatment methods could develop some aspects of the theory of mind and improve functioning and psychopathology. This general finding is consistent with the studies revealing that social cognitive interventions may enhance functioning (2,5).

There are studies showing that impairments in social cognition and theory of mind are associated with negative symptoms (8,26). In our study, improvements were observed both in PANSS general psychopathology and negative symptoms in the narrative therapy group, but only in negative symptoms in the movie therapy group. Improvements in negative symptoms could be correlated with the progress in theory of mind in both groups. The data indicating that negative symptoms are associated with social functioning and neurocognition (26) support that the improvement in negative symptoms in both groups might have contributed to enhancing cognitive domain and social functioning. The improvement in the general psychopathology domain in narrative therapy can be explained by the fact that it was attempted to fix the false thoughts of the person with the help of the group and under the

leadership of the therapist when people shared and talked about their concerns, signs of depression, feelings of guilt, and unusual thought content while telling their life stories. The narrative therapy might have contributed to hope and positive emotions and had a healing effect on depression, whereas sharing experiences also possibly contributed to the general psychopathology domain.

In the study, a significant increase in the MoCA scores in both treatment groups showed that the therapies for improving the theory of mind might have useful effects on neurocognition. The fact that the patients used their attention and memory functions while collecting social clues, detailed and evaluated the video sections they watched and the life events they listened to through questions, and observed others' emotions and experiences during the treatment might have played a role in the improvement on the cognitive domain. Our finding supports the study conducted by Mazza et al., reporting that those who observe the actions filled with emotions gain that experience and perceive those emotions by experiencing similar emotions, and observers have improvement, especially in their working memory (3).

In both therapies, similar to the statement of Penn et al. (27), the patients were sometimes encouraged to ask questions so that they could explain the behaviors of people and their situations in a better way, and sometimes their questions were directed by the group trainer. The compliance of the therapies, which were applied so that patients could collect social clues during the treatment and associate them with other life events they

observed and the expected reaction (events related to culture like regretting, being cautious, immodesty, jealousy, etc. may result differently) could be predicted, with the culture and their association with real life might have enhanced the efficacy of the education and contributed to the patients' improvement in theory of mind. Bechi et al. attracted attention to the importance of the compliance between the social cognition intervention studies and patients' cultures and environment (14). In both groups a significant change appeared in the DEToMI, which assesses cognitive theory of mind, and only in the movie therapy group a significant difference was found in the RMET, which assesses perceptual theory of mind. When pre- and post-treatment changes of both groups were compared, the RMET score and the subscale of faux pas score in movie therapy were found to be superior to narrative therapy. The superiority of the RMET scores, which assess perceptual theory of mind, in movie therapy may be related to the fact that video sections were used during the therapy, patients were exposed to these videos repetitively, and importance was attached to the collection of social clues as well as the observable data such as tone of voice and facial expressions together with complex emotions. The comprehension of faux pas examines the ability to understand whether something inappropriate or insulting has been uttered during social interaction between two people (12). While the ability of the person to notice saying something he/she was not supposed to is explained with cognitive theory of mind, his/her comprehension of what the other person felt is explained with perceptual theory of mind. The increase in the subscale of faux pas in the movie therapy group can be associated with the improvement of perceptual theory of mind related to understanding the emotions (7). The presence of a strong connection between the subscale of faux pas of the DEToMI and RMET supports our inference (Table 4). Studies stating that the use of video is more advantageous in materials used to evaluate and improve the theory of mind in patients support the superiority of movie therapy over narrative therapy (4,14,17).

Although emotions were mentioned in narrative therapy, no visual materials were used. When the subscales were reviewed, significant improvements were observed in faux pas and FOFB in movie therapy and FOFB and SOFB assessment in narrative therapy. The improvement of FOFB in both treatment methods can be explained by the examination of social clues in both groups and emphasis on the possibility that another person may have a different belief. In SOFB assessments, the responder needs not only to understand the mental states of the characters but also to visualize the false belief of a character regarding the belief of the other character (12,24). In the fourth stage of narrative therapy, the interpretation of the causes of the events by the patients (Person A is telling his/her life story, person B is the second person who was interacted in the story, and the third person who interprets the possible causes of the interaction of person B with person A in the context of the life story told) might have resulted in the improvement of SOFB. The failure in the observation of an intermediate event in which attention was to be paid to SOFB within a storyline containing scenes totally independent of the movie or series in movie therapy can explain why there was no significant improvement in this domain.

In the empathy, metaphor, and irony subscales shown among the theory of mind abilities, no significant difference was observed between the groups. Many patients comprehended the situation in both pre-test and post-test. However, they could not go beyond the plain meanings of words, which was also observed in the study (12,24). For example, when some patients encountered the story "After checking his transcript which is filled with low marks, Ahmet's mother tells him 'you are a very successful student!', they stated that they knew Ahmet's mother was not telling the truth, but she said so not to make Ahmet upset or to encourage him. They understood that the situation was not appropriate in the stories included in the scale, in the irony and metaphor questions, but they could not go beyond the plain meaning of the word and tended

to interpret the situation in line with the plain meaning. That is why no apparent improvement could be achieved in these domains.

Studies draw attention to the correlation between theory of mind and functioning (9, 28). It has been shown in the studies that poor theory of mind is the predictor of poor social functioning (28), clue tasks that assess cognitive theory of mind and general social skills are correlated (29), and there is a general correlation between theory of mind and social behaviors (30). An increase in the social functioning level in both treatment groups can be explained by the improvement in the theory of mind domains, in accordance with the literature. Its positive correlation with SFAS in both the RMET and DEToMI scales supports this opinion. A decrease in psychopathology and improvement in the cognitive domain in both therapy groups may have contributed to the improvement of social functioning.

The results of our study have revealed that, usage of video sections for improvement of perceptual theory of mind is more effective than narrative therapy, and although there is a progression in cognitive theory of mind in the sessions that visual materials are not used, perceptual theory of mind may not accompany it. The significant difference in the RMET and the subscale of faux pas in the DEToMI, which assesses perceptual theory of mind, in movie therapy when compared to the narrative group supports our hypothesis that methods involving visual materials would improve perceptual theory of mind more effectively. Our prediction about cognitive theory of mind would be improved in narrative therapy group could not be confirmed since even if there was a significant increase in narrative therapy in FOFB and SOFB tasks, there was no superiority between the groups.

The limitations of the study are as follows: The domains other than the theory of mind of social cognition were not assessed in this study, neurocognitive domains were assessed by a general scale (MoCA), and considering the repetition time a learning effect could be observed, cognitive theory of mind was assessed with the subscales of DEToMI (Other scales do not have Turkish validity and reliability studies), no intelligence test was carried out, psychotropic drug use, which was thought to affect theory of mind abilities and social functioning, was not assessed, there was no control group, and the sampling size was small (17), videos screened during movie therapy were not supported by quantitative data, their resolutions were not standard, the scales used in the study were not applied to the healthy people who took part in the determination of the emotions depicted in the videos that screened, and it was not taken into account that the acting abilities of the actors in movie and series sections that screened in video sections, which might influence the improvement of the patients.

In conclusion, we can say that narrative and movie therapies may contribute to different domains of the theory of mind and improve psychopathology and neurocognition domains. It is possible to mention that improvement in these domains may increase social functioning together with the contribution of the therapeutic elements of the group therapy. It is necessary to conduct more studies and to set more specific treatment targets to find out which domain makes more contribution to social functioning when the theory of mind domains are reviewed separately. Considering the improving effects of both therapies on theory of mind, neurocognition, psychopathology, and social functioning, they can be useful in rehabilitation services.

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