

# Social Cognition and Interaction Training: Preliminary Results of an RCT in a Community Setting in Israel

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**Objective:** Social cognition and interaction training (SCIT) has shown promise in improving consumers' social cognition and functioning, in both inpatient and outpatient settings. This randomized controlled trial examined the effectiveness of SCIT among persons with serious mental illness living in community settings in Israel. **Methods:** Fifty-five participants in social-mentoring services were assigned randomly to SCIT with social mentoring or to social mentoring only. Emotion recognition, theory of mind, attributional bias, and social functioning were assessed at baseline (February 2010) and about six months later, upon completion of the intervention. **Results:** Interactions between time of measurement and group were significant for theory of mind and social engagement. Emotion recognition by the SCIT group improved significantly, but the time  $\times$  group interaction for this variable was not significant.

**Conclusions:** This study provides preliminary evidence that SCIT plus social mentoring improves social cognition and functioning among persons with severe mental illness who are living in the community. (*Psychiatric Services* 65:555–558, 2014; doi: 10.1176/appi.ps.201300146)

Persons with serious mental illness experience decreased social quality of life and functioning compared with control groups (1). This lower social quality of life and functioning are attributed partially to deficits in social cognition that include emotion recognition, attributional bias, and theory of mind (2). These deficits are manifested, respectively, in difficulties recognizing the emotions of others, overly attributing the causes of negative events to the hostile intentions of others, and difficulties inferring others' thoughts and intentions (2). In addition, these deficits are relatively nonresponsive to antipsychotic medications (3) and have been described by consumers as their greatest unmet need (4).

Social cognition and interaction training (SCIT) is a manualized, group-based intervention that targets impairments in social cognition that are associated with schizophrenia (5). Although SCIT was initially created and tested among persons with schizophrenia (6), recent research suggests that it may be beneficial for persons coping with

other types of mental illnesses and problems, such as affective disorders (7) and schizotypal personality characteristics (8). These studies provide evidence for the suitability of SCIT for persons with a range of mental illnesses. Because different serious mental illnesses share similar difficulties that involve deficits in social functioning (9), findings regarding the effectiveness of SCIT among persons with various serious mental illnesses are important. In addition, findings from a recent study support the potential of environmental involvement, such as assistance from family members, in enhancing social-cognition training (10).

This study was a randomized controlled trial of the effectiveness of SCIT among persons with serious mental illness in a community setting in Israel. All participants, from both the SCIT and the control groups, received social mentoring at their treatment center. The study investigated whether participating in SCIT, versus social mentoring alone, improved social functioning, attributional biases, theory of mind, and emotion recognition.

## Methods

The study was conducted at three psychiatric rehabilitation agencies and the University Community Clinic of Bar-Ilan University during February–August 2010. Participants received various forms and varying degrees of social, leisure, support, and employment services, and all received the same social-mentoring service. This

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social-mentoring service includes three weekly meetings with a mentor to support in vivo efforts by consumers to take practical steps toward achieving personally meaningful goals, for example, organizing their finances, obtaining needed information, filling in forms, and registering for a course. The social mentors were staff of the agencies. All participants were informed about the opportunity to participate in the study through local presentations at routine group meetings or by their primary caretaker.

Participants were randomly assigned to either an experimental group that received SCIT and social mentoring or a control group that received social mentoring alone. At certain sites where the number of potential participants was relatively small, the randomization process was modified so that each participant had the same higher probability to be selected for the SCIT group (for example, at a site with eight participants, the probability to be in the experimental group was five, not four, of eight). This modification ensured a sufficiently large intervention group even at these sites. After receiving a detailed explanation of the study, all research participants provided written informed consent.

To be eligible, participants were required to have a diagnosis in their case record of serious mental illness (schizophrenia, schizoaffective disorder, depression, and bipolar disorder) which yielded at least a 40% disability recognized by a medical committee. Inclusion criteria were fluency in Hebrew and having provided informed consent. Exclusion criteria were substance use disorder, developmental disability, dementia, and age older than 65 years.

Institutional review board approval was provided by the ethics committee of the Department of Psychology at Bar-Ilan University.

Social functioning was assessed with the Social Functioning Scale (SFS), a 79-item questionnaire that was developed for persons with schizophrenia and that has excellent psychometric properties (11). For this study, we used the social-engagement and interpersonal-communication subscales because they are the most applicable for assessing short-term interpersonal change. The

social-engagement subscale measures how much time each day a person spends in the presence of others and the tendency to engage others, including strangers, in conversation. Possible scores range from 0 to 15. The interpersonal-communication subscale measures the size of each participant's social network and the ability to effectively interact with others. Possible scores range from 0 to 9. Higher scores indicate better engagement and interpersonal communication. For this study, the scale was back-translated into Hebrew (Cronbach's  $\alpha = .86$ ).

Emotion recognition was assessed by the face emotion identification task (FEIT), a widely used measure of emotion perception and performance that involves viewing 19 pictured faces and correctly identifying the emotion on each face (12). Emotions include happiness, anger, sadness, fear, surprise, and shame. Possible scores range from 0 to 19, with higher scores indicating better emotion recognition. The measure has demonstrated good reliability in previous studies of schizophrenia. Cronbach's alpha for this study was .61.

Theory of mind was assessed by the faux pas task (13) in its Hebrew version (14). We used a short version consisting of six stories containing a faux pas and four control stories. A faux pas occurs when a character in the story says something without considering whether it might hurt the listener or whether the listener would prefer not to hear it. Each story is followed by six questions regarding the recognition of a faux pas and an additional control question. The six questions test the understanding of the mental state of the character and the listener and of the emotional state of the listener. The task assesses emotional and cognitive attributions. Possible scores for each story range from 0 to 6, and possible scores for the test range from 0 to 36. Cronbach's alpha for this study was .91.

Attributional style was assessed by the Ambiguous Intentions Hostility Questionnaire (AIHQ)—Ambiguous Situations (15), which measures attributional style in social situations with negative outcomes and ambiguous causality. The questionnaire contains five vignettes describing a social situation, such as walking past a group of

teenagers at a mall and hearing them start to laugh. The individual is asked to imagine experiencing the same scenario and to provide a written explanation of the reasons for the behaviors described in the vignette. Two independent raters subsequently coded this written response on a 5-point Likert scale, and the scores were averaged to form a "hostility bias" score. Possible scores range from 5 to 25, with higher scores indicating greater hostility bias. The scale has been shown to have very good levels of reliability and interrater agreement (intraclass correlation coefficient  $\geq .80$ ) and to be correlated with other measures of paranoia and hostility. The AIHQ was back-translated into Hebrew with high reliability ( $\alpha = .87$ ).

SCIT group intervention sessions were led by two clinicians who had received training and ongoing supervision in the use of SCIT and who followed the SCIT treatment manual. Sessions lasted approximately an hour and were held weekly. For the intervention, educational handouts, videos, and slides were translated into Hebrew.

For SCIT participants, one of the three weekly meetings with a social mentor was dedicated to the SCIT session. Social mentors accompanied participants to SCIT sessions and were encouraged to help them complete the home assignments during their additional two weekly meetings. Eight clinicians provided SCIT across four SCIT cohorts. All clinicians had experience providing psychiatric rehabilitation services and had completed a two-day workshop on SCIT training. The workshop was provided by the first and last authors of this report, who consulted with the SCIT developers in the process of translating and adapting the intervention materials for use in Israel. Both of them are Ph.D.-level psychologists with experience in providing and teaching psychosocial interventions for persons with serious mental illness. All SCIT group leaders attended monthly two-hour group supervision sessions during the six months they carried out the intervention. All of the participants received the standard services provided at participating rehabilitation centers.

Analyses were conducted by using the Predictive Analytics SoftWare, version

**Table 1**

Repeated-measures analyses of social-cognition variables among participants in Social Cognition and Interaction Training (SCIT) and a control group

Variable	SCIT (N=34)				Control (N=21)				Time			Group			Time × group			$\eta_p^{2a}$
	Time 1		Time 2		Time 1		Time 2		F	df	p	F	df	p	F	df	p	
	M	SD	M	SD	M	SD	M	SD										
Social engagement <sup>b</sup>	10.1	2.3	14.3	2.5	10.9	2.1	10.8	2.2	26.4	1, 53	<.001	6.7	1, 53	.013	28.9	1, 53	<.001	.35
Interpersonal communication <sup>c</sup>	6.8	1.8	7.0	1.8	7.1	1.4	7.1	1.3	.24	1, 53	.626	.25	1, 53	.618	.55	1, 53	.464	.01
Emotion recognition <sup>d</sup>	10.9	3.2	12.6	3.4	11.2	2.4	11.7	3.8	4.9	1, 53	.031	.18	1, 53	.670	1.8	1, 53	.188	.03
Theory of mind <sup>e</sup>	22.2	7.3	23.4	6.0	21.8	6.7	18.8	7.7	.83	1, 53	.367	2.4	1, 53	.127	4.6	1, 53	.037	.08
Hostility bias <sup>f</sup>	9.1	2.6	8.8	2.5	7.4	2.2	8.7	1.8	.63	1, 29	.435	1.6	1, 29	.219	2.1	1, 29	.159	.07

<sup>a</sup> Effect size for the interaction effect for time × group

<sup>b</sup> Possible scores range from 0 to 15, with higher scores indicating better engagement.

<sup>c</sup> Possible scores range from 0 to 9, with higher scores indicating better interpersonal communication.

<sup>d</sup> Possible scores range from 0 to 19, with higher scores indicating better emotion recognition.

<sup>e</sup> Possible scores range from 0 to 36, with higher scores indicating better theory of mind.

<sup>f</sup> Possible scores range from 5 to 25, with higher scores indicating greater hostility bias.

18.0. To test whether the groups differed in their baseline scores on the scales, *t* tests were performed. Mixed repeated-measures analyses of variance (ANOVAs) were used to compare improvement in the outcomes of each group. These analyses allowed us to examine the extent to which participants improved over time independent of group as well as whether one group improved significantly more than the other (group × time interaction). Effect sizes for the interaction effect between time and group were computed.

## Results

Of the 57 eligible participants, 55 consented to participate (96% response rate). The mean ± SD percentage of sessions attended was 71% ± 24% (mean = 17 of 24 sessions). A majority of participants were men (N = 31, 56%) who had never been married (N = 39, 69%); the mean age was 38.5 ± 11.3 (range 21–62 years). Most participants had at least completed high school (N = 46, 83%). The SCIT group included 34 participants, and the control group included 21 participants. The *t* tests revealed no significant differences between the groups in any of the baseline assessments.

Results of the social-engagement subscale indicated significant main effects for both group and time and a statistically significant time × group interaction (Table 1). The time ×

group interaction exhibited a large effect size ( $\eta_p^2 = .35$ ). This indicates that participants who completed SCIT showed significant improvement between baseline and postassessment in mean scores for social engagement (10.1 ± 2.3 and 14.3 ± 2.5, respectively), compared with participants in the control group, whose scores decreased (10.9 ± 2.1 and 10.8 ± 2.2, respectively).

On the faux pas task, the analyses revealed a statistically significant time × group interaction, which exhibited a medium effect size ( $\eta_p^2 = .08$ ). This indicates that faux pas task scores improved significantly between baseline and postassessment among participants who completed SCIT (22.2 ± 7.3 and 23.4 ± 6.0, respectively), compared with scores for the control group, which decreased (21.8 ± 6.7 and 18.8 ± 7.7, respectively).

FEIT scores improved significantly from time 1 to time 2 in the SCIT group (*t* = -2.57, *df* = 33, *p* < .05; *d* = .44) but not in the control group, but the time × group interaction effect was not statistically significant.

## Discussion and conclusions

The results suggest that participation in the SCIT intervention was beneficial in terms of increasing engagement in social interactions and possibly in terms of improving theory-of-mind abilities among persons with severe mental illness. These results are consistent with previous research that

supported the efficacy of SCIT in improving social cognition and social functioning among persons with schizophrenia spectrum disorders (6), bipolar disorders (7), and schizotypal personality characteristics (8). This study extends these findings by demonstrating the potential effectiveness of SCIT in a heterogeneous group of persons with a diversity of serious mental illnesses in an Israeli community setting.

This study also differed from previous studies of SCIT because of the participation of social mentors in both study groups. In the experimental condition, a social mentor accompanied participants to the SCIT interventions to better help them apply what they had learned from SCIT in everyday life. These mentors also met with SCIT participants during two additional occasions every week. These meetings provided opportunities to practice what had been learned at the SCIT meeting and to do homework assignments together. In addition to providing practice opportunities, mentor participation may have contributed to the unusually high compliance with the intervention. Unfortunately, without a control group that participated in SCIT without the help of social mentors, the study does not allow us to draw conclusions regarding the additional beneficial role of the mentors.

The results of this study did not support the benefit of SCIT in improving attributional bias. This finding

is largely consistent with most previous SCIT studies, which did not reveal improvement in attributional bias among persons who completed SCIT (6). The null findings for attributional bias may be due in part to the fact that study participants' baseline bias scores were in the normative range (15). It might be that the intervention, or the training required to provide it, should place more emphasis on attributional bias. In addition, changes in attributional bias may take longer, and thus studies of SCIT should consider incorporating longer follow-up periods. An alternative explanation is that the AIHQ is not sensitive enough to detect changes in attributional bias that are due to participation in SCIT.

Several limitations should be taken into account while considering the study results. The heterogeneous nature of the sample and its relatively small size likely reduced the ability to detect additional effects. For example, a significant main effect for FEIT scores was found for time, irrespective of group, even though FEIT scores increased significantly only in the SCIT group. In addition, given the diagnostic heterogeneity of the sample and the lack of symptom assessment, it is challenging to pinpoint a population for whom it would be appropriate to generalize the current results. In addition, there were no follow-up assessments and fidelity ratings. Future studies that employ larger, more clearly

characterized samples; follow-up assessment; and fidelity ratings are needed to further establish the efficacy and effectiveness of SCIT.

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