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The Ability of Schizophrenics to Perceive and Cope with Negative Affect

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Thirty-four schizophrenic patients in an acute in-patient hospital were compared with 24 in-patients with major affective disorder and 19 non-patient controls on a role-play test of social skills and a test of affect perception. The role-play test consisted of 12 simulated conversations in which the subject was confronted by parents and friends expressing high-EE criticism or non-critical dissatisfaction. Schizophrenic patients lacked assertiveness and social skills in all conditions, but they did not show any differential impairment when presented with high EE. They consistently lied and denied errors rather than responding assertively or apologising, whether confronted with high-EE or benign criticisms. On the affect perception test, schizophrenic patients consistently underestimated the intensity or negativeness of negative emotions, but they were not deficient in perception of positive emotional displays. The data do not support the hypothesis that schizophrenic patients are poor at dealing with high-EE behaviours, but do indicate that their ability to cope with even mild negative affect is impaired. Possible explanations for this impairment include limited attentional capacity, a neurologically based perceptual deficit, and a self-protective mechanism to reduce or avoid stress.

The relationship between familial expressed emotion (EE) and symptom relapse for schizophrenic patients has been well established (Vaughn & Leff, 1976*a*, 1981; Hooley, 1985). While it is clear that ongoing contact with high-EE relatives is associated with heightened risk of relapse, the basis for this relationship is uncertain. The most common assumption is based on the model of generic vulnerability to stress (Zubin & Spring, 1977). EE is a measure of family attitudes about the patient, which is presumed to be reflected in the affective climate within the home. Where EE is high, this climate is hypothesised to be highly stressful and have a pernicious effect on the patient. From this perspective, the patient's role is more or less as a passive recipient of stress-provoking parental behaviour.

The literature has begun to move away from this causal model, and suggest that high EE may be a reaction to patient behaviour or reflect an interactive process (Miklowitz *et al*, 1989; Goldstein, 1990; Randolph *et al*, 1992). Several studies have found that patients from high-EE households behave differently in interactions with their relatives than do patients from low-EE households (Hahlweg *et al*, 1989; Strachan *et al*, 1989). Patients with high-EE relatives also exhibit higher tonic levels of autonomic arousal, whether in the presence or absence of high-EE relatives (Sturgeon *et al*, 1981; Tarrier *et al*, 1988). Parental EE is, at best, only one of an innumerable number of life stresses confronting the schizophrenic patient (Rabkin, 1980; Leff *et al*, 1983). It is not clear why high-EE communications should be disproportionately stress provoking, or why they have such a pernicious impact on relapse. It is also difficult to reconcile the effects of parental overinvolvement with a stress model (why should overinvolvement provoke stress?). One hypothesis which might explain some of the EE findings is that schizophrenics have difficulty coping with intense affect, especially negative affect (Rabin *et al*, 1979). They may be particularly vulnerable to such input as they do not perceive it accurately or lack the social skills to deflect or reduce it, or both.

Schizophrenics appear to have marked impairments in social perception, especially in the ability to identify negative affect displayed by others (Morrison *et al*, 1988*b*). They have difficulty detecting facial cues of negative affect (Pilkowski & Bassett, 1980), and underestimate its intensity (Morrison *et al*, 1988*a*). There are also ample data documenting that schizophrenics lack assertiveness and are unable to resist unfair treatment or to persist in the face of resistance by others (Morrison & Bellack, 1978; Bellack *et al*, 1990). When confronted with interpersonal problems they are unable to generate appropriate verbal responses, and exhibit poor paralinguistic and non-verbal behaviour. These deficits are persistent, relatively independent of other symptoms of the illness, and are associated with poor functioning in the community (Mueser *et al*, 1990). The interconnected deficits in the ability to perceive a relative's distress or annoyance accurately and to

respond appropriately may elicit increasing frustration in both the patient and relative; this in turn may result in an escalating cycle of stress and hostility. Hahlweg *et al* (1989) conducted a sequential analysis of patient and relative verbalisations during a problem-solving discussion, and found precisely such a pattern. Moreover, they also found significant differences in the way patients responded to their high-EE overinvolved or low-EE relatives, despite finding little difference in the behaviour of the two groups of relatives. One possible explanation for this finding is that patients perceive heightened parental concern and intrusiveness as critical or threatening.

The literature provides some support for this skills-based model of the effects of EE, but has not specifically examined the ability of patients to cope with high levels of negative affect, including criticism and hostility. The purpose of this study was to test this hypothesis by comparing patients' behaviour in response to hostile/critical and benign disagreements with others, as well as their ability to perceive different levels of negative affect. While the EE literature has focused almost exclusively on family interactions, schizophrenics might fare no better in high-EE interchanges with non-relatives if the critical issue is a skill deficit. Consequently, we examined their performance in response to both relatives and other significant people in their environment. It was hypothesised that: (a) schizophrenics would exhibit poorer social skill and social perception than matched groups of patients with affective disorder or non-patient controls; (b) there would be no differences in the response to relatives and non-relatives; and (c) schizophrenics would be more impaired in response to high-EE criticism than in response to benign disagreements.

Method

Subjects included 34 patients who met DSM-III-R criteria (American Psychiatric Association, 1987) for schizophrenia, 24 patients meeting DSM-III-R criteria for major affective disorder, and 19 non-patient controls. The psychiatric subjects were all in-patients at Eastern Pennsylvania Psychiatric Institute, an acute-care psychiatric hospital. Eligibility criteria for inclusion in the study included an age of 18–55 years, and no evidence (in the medical record) of organic brain syndrome, significant mental retardation, or alcohol or drug dependence. Patients with affective disorder had to have at least a six-month history of illness, so as to be comparable with the schizophrenics on chronicity. Diagnosis was determined on the basis of the Structured Clinical Interview for DSM-III (SCID; Spitzer & Williams, 1985). Seventeen of the 58 patients were independently diagnosed by a second clinician to check reliability; there was 94% agreement between the two diagnosticians. Non-patient controls were recruited from the non-professional staff at the hospital and the surrounding community. Volunteers were excluded if they had a history of psychiatric treatment, or were suspected of having a significant psychiatric disorder or current alcohol or drug dependence based on a screening interview. All subjects were paid $35 for their participation.

A role-play test (RPT) was used to compare the performance of subjects in hostile/critical and benign interactions with relatives and non-relatives, as it would be impossible to assess behaviour systematically across these dimensions in real life. Each hypothetical situation was first described to the subject, and she/he then enacted the interaction with a staff member who portrayed the patient's mother or a friend/room-mate. In each conversation the subject was required to respond to three comments by the staff member. Six hypothetical situations were identified which reflected common sources of disagreement or conflict and presented moderate difficulty for this population. A script was written for the partner in each situation which reflected either high-EE behaviour (responses which would be scored as hostile or critical on the Camberwell Family Interview (Vaughn & Leff, 1976*b*)) or benign expressions of disappointment or disagreement. For example:

> You have broken a vase belonging to your room-mate. It was an accident, but you are blamed for breaking it.
> *Lead-in:* Did you break my vase?
> *Subject:*
> *Hostile/critical*
> 1. How can you be so clumsy?
> *Subject:*
> 2. You can't be trusted around any of my things.
> *Subject:*
> *Benign*
> 1. How did it (could that) happen?
> *Subject:*
> 2. Please try to be more careful.
> *Subject:*

> You haven't done laundry for a while, and dirty clothes are piled up in your room. Your mother comments on the mess.
> *Lead-in:* Haven't you done laundry for a while?
> *Subject:*
> *Hostile/critical*
> 1. How can you live in this filthy mess?
> *Subject:*
> 2. Boy are you lazy (to have let them pile up like this in the first place).
> *Subject:*
> *Benign*
> 1. Does it bother you to have them piled up like this?
> *Subject:*
> 2. I guess you just don't like doing them (so they've really piled up).
> *Subject:*

Subjects role-played each of the six situations twice: once with the staff member portraying the mother and once playing the friend/room-mate, in a critical/hostile manner in half of the scenes in each role and in a benign manner

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in the other half. Thus, each subject engaged in three interactions with a critical relative, three with a benign relative, three with a critical friend, and three with a benign friend.

The staff members were carefully trained to portray the designated affect style appropriately and consistently. Periodic checks were made by independent raters to ensure that performances were consistent throughout the study. In addition, 23% of the staff members' role-plays were evaluated on a number of affective dimensions by two independent raters. A multivariate analysis of variance (MANOVA) across dimensions indicated that, as expected, there was a significant difference in the affective tone portrayed in the high-EE and benign role-plays ($F(4,12) = 117.72$, $P < 0.001$), but the difference between staff members and the staff member × affect interaction were not significant.

The RPT was videotaped and subsequently rated on a variety of response domains (definitions are available from the authors on request). Five content categories were scored on an occurrence/non-occurrence basis for each interaction: demands/commands, solutions, apologies, submission, and non-constructive criticism. In addition, it became apparent during the rating process that many subjects defended themselves by lying. Hence, we developed a behavioural definition for 'lie' and coded that as well. Each interaction was also rated on five-point Likert scales for: gaze, negativeness, overall assertiveness (OA) and overall social skill (OSS). Finally, latency of subject's response to each partner response was timed in seconds and a count was made of number of words spoken.

Ratings were made by research staff who were blind to diagnostic group. All ratings were conducted independently, and the two 'overall' categories (OSS and OA) were rated by two staff who did not rate any of the component categories. Tapes from 20% of the subjects (drawn proportionately across groups and across the duration of the study) were independently rated by a second rater to provide a check on reliability and agreement. Agreement for behaviour scored by occurrence/non-occurrence was assessed by kappa, and ranged from 0.66 to 1.00, with the exception of non-constructive criticism (0.49). The remaining categories were evaluated by intraclass correlation coefficients, which ranged from 0.76 to 0.99.

The social perception test (SPT) was developed to assess subjects' ability to interpret affective cues in social interactions. It consisted of a videotape paralleling the 12 interactions on the RPT. A written description of an interpersonal problem was first shown on the screen and narrated by an off-screen voice. An individual enacting the role of the mother or room-mate/friend then appeared on screen and engaged in a brief conversation with an individual in the subject role, who was heard but not seen. As in the RPT, the mother/friend exhibited either high-EE or benign disagreement. After the interchange was completed, the tape was stopped and the subject asked to rate the mother/friend on a series of five-point semantic differentials: pleasant–unpleasant, passive–intense, friendly–unfriendly, pleased–displeased, calm–angry, and understanding–critical.

Actors in the videotape were three female research staff who were similar in age and appearance to staff employed for the RPT. Affect, role, scene content, and actor were counterbalanced to avoid any confounds of these dimensions. Actors were trained and supervised by staff members who had been certified to administer and rate the Camberwell Family Interview. In order to ensure that the two types of enactments (high EE and benign) could be discriminated according to the desired dimensions and were equivalent within categories, eight non-clinical hospital staff rated each interaction for affective tone. Mean ratings (on five-point Likert scales in which high scores reflected increased hostility) ranged from 1.43 to 2.43 for benign scenes, and from 4.43 to 5.00 for high-EE scenes.

Complete details on the development of the RPT and SPT and their administration are available from the authors on request. The SPT is available at cost.

The Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962) and the Scale for Assessing Negative Symptoms (SANS; Andreasen, 1981) were administered to assess symptom status of patients. The BPRS was completed in a semistructured interview by a trained clinician within one day of the RPT. A second rater

Table 1
Characteristics of sample

	Patients with schizophrenia ($n = 34$)	Patients with affective disorder ($n = 24$)	Non-patient controls ($n = 19$)
Mean (s.d.) age: years	30.3 (7.3)	29.4 (6.2)	25.9 (7.6)
Mean (s.d.) no. of years in education	11.7 (1.9)	12.1 (1.3)	13.1 (1.8)
Sex			
No. of men	25	11	8
No. of women	9	13	11
Race			
white	16	17	8
black	17	7	11
other	1	0	0
Age of onset: years	22.0 (6.6)	22.3 (5.8)	
Mean (s.d.) no. of previous admissions	4.4 (4.1)	5.2 (4.9)	
Mean (s.d.) length of current admission: days	32.7 (14.0)	31.6 (11.3)	

independently rated audiotapes of 22% of the interviews. Intraclass correlation coefficients for overall scores and the five factor scores ranged from 0.74 to 0.90, indicating good agreement. The SANS was rated by the diagnostic interviewer after completing the SCID. Reliability for the SANS ratings was established in the context of a treatment study which included a subset of the subjects in this project along with a much larger sample of schizophrenia patients.

Eligible patients were invited to participate by a research staff member who secured informed consent and scheduled a diagnostic interview. The RPT and SPT were administered at a later point during admission, when research staff and attending psychiatrist concurred that the patient was sufficiently well to leave the ward and participate in the tasks. Subjects were escorted to a video studio arranged in a living-room format, and introduced to their RPT partner. The procedure was then explained. Before each interaction, the staff member directing the procedure gave the subject an index card which described the interaction and specified who their partner would be portraying. Subjects were then asked whether they understood the test. An audiotaped description of the situation was then played, and the staff member initiated the interaction. There were two practices to acclimatise the subject to the procedure and allow the staff member to provide any needed information. The first six experimental situations were then administered, the subject was given a brief rest if he/she seemed uncomfortable (which rarely was necessary), after which the remaining scenarios were enacted. The SPT was administered the next day.

Results

Table 1 provides a summary of demographic and clinical characteristics. There were no differences between the groups in terms of age, race, or (for the patient groups) history of illness. The non-patient controls had significantly higher educational attainment ($F(2,73) = 4.23$, $P < 0.02$), and the difference between the groups in proportion of males and females was also significant ($\chi^2 = 6.73$, $P < 0.05$).

Role-play test

The basic design of the role-play component of the study was a group × affect × mother/friend factorial with repeated measures on the second and third factors. Sex was included as a fourth factor in all of the role-play analyses, yielding a $3 \times 2 \times 2 \times 2$ design. We adopted several guidelines to protect the α level and minimise the possibility of type 1 errors from this complex set of analyses. Firstly, we grouped the social skill variables into three homogeneous categories (overall ratings, verbal components, non-verbal components) and conducted MANOVAs on each category and an ANOVA on negativeness (which reflected both verbal and non-verbal response elements). We then conducted univariate analyses and paired comparisons only in those cases in which the initial MANOVA was significant. In addition, we maintained two conservative levels of α for these secondary tests: 0.01 for comparisons involving direct tests of our hypotheses, and 0.001 for comparisons generated

Table 2
ANOVAs of RPT variables

Variable	Group		Affect		Role		Group × affect		Group × role		Affect × role	
	F(d.f.)	P	F(d.f.)	P	F(d.f.)	P	F(d.f.)	P	F(d.f.)	P	F(d.f.)	P
Overall social skills	7.21 (2,70)	0.001	15.92 (1,70)	0.0001	1.20 (1,70)	0.28	1.02 (2,70)	0.37	0.26 (2,70)	0.77	0.27 (1,70)	0.61
Overall assertiveness	5.60 (2,70)	0.006	22.24 (1,70)	0.0001	8.82 (1,70)	0.004	0.58 (2,70)	0.56	0.78 (2,70)	0.46	0.01 (1,70)	0.94
Demand	4.69 (2,71)	0.01	19.01 (1,71)	0.0001	1.45 (1,71)	0.23	8.30 (2,71)	0.001	1.27 (2,71)	0.29	1.11 (1,71)	0.29
Solution	3.62 (2,71)	0.03	0.71 (1,71)	0.40	0.58 (1,71)	0.45	0.27 (2,71)	0.77	1.80 (2,71)	0.17	1.10 (1,71)	0.30
Submission	3.26 (2,71)	0.04	0.00 (1,71)	0.99	2.92 (1,71)	0.09	1.15 (2,71)	0.32	1.06 (2,71)	0.35	7.96 (1,71)	0.006
Apology	5.14 (2,71)	0.008	2.59 (1,71)	0.11	0.12 (1,71)	0.73	0.55 (2,71)	0.58	0.43 (2,71)	0.65	5.40 (1,71)	0.02
Lie	9.90 (2,71)	0.000	0.23 (1,71)	0.63	0.18 (1,71)	0.67	0.02 (2,71)	0.98	0.22 (2,71)	0.80	0.71 (1,71)	0.40
Non-constructive criticism	0.25 (2,71)	0.78	3.70 (1,71)	0.05	0.51 (1,71)	0.48	3.48 (2,71)	0.04	0.61 (2,71)	0.54	3.88 (1,71)	0.05

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post hoc after inspection of the data. No comparisons were made between the subjects with affective disorder and the controls.

The MANOVA for overall ratings (OSS and OA) was significant for group ($F(4,136)=4.85$, $P<0.001$), affect ($F(2,69)=25.62$, $P<0.0001$), role ($F(2,69)=4.45$, $P<0.015$), and for the sex × affect interaction ($F(2,69)=3.98$, $P<0.023$). The subsequent univariate ANOVAs are summarised in Table 2. The analysis on OSS was significant for group and affect. As predicted, schizophrenics were less skilful than either of the other two groups, although only the differences between schizophrenics and non-patient controls reached significance ($P<0.0001$) on planned contrasts. The significant effect for affect reflects the increased difficulty experienced by all subjects when confronted by a highly critical partner. This finding, which was replicated on almost every variable, reflects the validity of the manipulation. The results for OA were similar. Schizophrenics were less assertive than either of the other groups, and again only the planned contrast with non-patients reached significance ($P<0.01$). The main effect for affect and the sex × affect interaction were both significant. All three groups were more assertive when confronted by highly critical affect, and this effect was most pronounced for women. There was also a significant effect for role: subjects were somewhat more assertive with friends than with relatives.

A MANOVA was conducted on the verbal content categories: demand, solution, submission, apology, lie, and non-constructive criticism. In each case, the dependent variable was frequency of occurrence. The results were significant for group ($F(12,134)=3.75$, $P<0.0001$), affect ($F(6,66)=5.00$, $P<0.0001$), and the group × affect ($F(12,134)=2.25$, $P<0.013$) and affect × role ($F(6,66)=2.37$, $P<0.039$) interactions. The results of the univariate analyses for group, affect, role, and their interactions are summarised in Table 3. As reflected in the analysis on OA, schizophrenics tended to be less assertive than subjects in either of the other groups. They proposed fewer solutions ($P<0.032$), made fewer demands ($P<0.012$), and were more submissive ($P<0.044$). They were more likely to lie ($P<0.0001$) and less likely to apologise ($P<0.008$). The group × affect interaction was accounted for in two ways: (a) in contrast to the other groups, schizophrenics made few demands in response to either high-EE or benign communications; and (b) patients with affective disorder made proportionately more non-constructive criticisms in response to benign communications than either of the other groups. The affect × role interaction was reflected primarily in submission (subjects were more likely to be submissive to a relative than to a friend in response to benign disagreements) and apology (subjects were more likely to apologise to a highly critical relative than to a benign relative).

The data for 'lie' yielded a distinct pattern. Fully 67.6% of schizophrenics lied at least once, compared with 25% of patients with affective disorder and 21.1% of controls; 47.05% lied on two or more role-plays. Lies were distributed across scenes, identity of partner, and the type of affect displayed. They were frequently simple denials of innocuous errors. For example in one scene the subject has accidentally broken a vase belonging to the partner, and the interaction begins with the partner asking (in a non-hostile manner) if the subject broke it. Thirteen of the schizophrenics responded 'No' to this question, despite the fact that they had just demonstrated that they understood the situation. This tendency to deny errors seems to have been an alternative to being assertive or making appropriate apologies.

A MANOVA was next conducted on the three non-verbal response components: gaze, number of words spoken (words), and response latency (latency). This test was significant for affect ($F(3,68)=7.45$, $P<0.0001$) and the affect × role interaction ($F(3,68)=2.80$, $P<0.047$). The main effect for group approached significance ($F(6,136)=1.98$, $P<0.073$). The univariate ANOVA of negativeness was also significant for affect ($F(1,70)=52.81$, $P<0.0001$) and the affect × role interaction ($F(1,70)=4.12$, $P<0.046$). Highly critical partners elicited more negative affect, more words, and longer response latency. It was apparently easier for subjects to express negative feelings towards friends than relatives. There were no consistent differences across groups, affect, or partner in the appropriateness of gaze.

Social perception test

A MANOVA was conducted across the six affective dimensions rated on the SPT. As expected there was a significant main effect for affect ($F(6,61)=45.26$, $P<0.0001$) and a significant group × affect interaction ($F(12,120)=1.84$, $P<0.049$). Univariate ANOVAs on each rating dimension for group, affect, and the group × affect interaction are summarised in Table 3.

The main effects for affect were significant for all six categories, indicating that subjects perceived the highly critical partner to be more negative and unpleasant than

Table 3
ANOVAs of SPT variables

Variable	Group		Affect		Group × affect	
	F(d.f.)	P	F(d.f.)	P	F(d.f.)	P
Pleasant-unpleasant	3.24 (2,70)	0.045	220.04 (1,70)	0.0001	1.32 (2,70)	0.273
Passive-intense	0.21 (2,69)	0.815	76.73 (1,69)	0.0001	6.23 (2,69)	0.003
Friendly-unfriendly	2.09 (2,70)	0.131	249.04 (1,70)	0.0001	4.09 (2,70)	0.021
Pleased-displeased	1.56 (2,69)	0.217	122.43 (1,69)	0.0001	2.38 (2,69)	0.100
Calm-angry	0.10 (2,69)	0.905	252.95 (1,69)	0.0001	4.20 (2,69)	0.019
Understanding-critical	0.14 (2,68)	0.886	131.65 (1,68)	0.0001	6.45 (2,68)	0.003

the benign partner. The group × affect interaction was significant on four of the six dimensions: passive–intense, friendly–unfriendly, calm–angry, and understanding–critical. There were no differences between groups in ratings of the benign scenes, but the schizophrenics rated the highly critical partner as *less* intense, unfriendly, angry, or critical than subjects in the other two groups. Difference scores were calculated between ratings on the high-EE and benign presentations of the same scenes and planned contrasts were conducted between the schizophrenics and the other two groups on the four dimensions which yielded significant interactions. The contrasts were highly significant in each case, indicating that schizophrenics rated the two presentations as more similar than subjects in either of the other groups.

Relationship between measures

A series of Pearson correlations was calculated between role-play measures and the SPT, and between the SPT and symptom measures (SANS and BPRS) for schizophrenic subjects. In order to limit the chances of a type 1 error given the large number of correlations: (a) α level for significance was protected at $P<0.01$, and (b) correlations with the SPT were conducted on a composite score derived from the summed ratings of the four dimensions which yielded significant group × affect interactions.

Social perception (defined as mean rating for negative affect scenes) was significantly correlated with OSS on high negative-affect scenes ($r=0.41$, $P<0.008$) and approached significance on benign scenes ($r=0.39$, $P<0.013$). It was also highly (negatively) correlated with 'lie' on high negative scenes ($r=-0.45$, $P<0.004$). Subjects with accurate social perception (i.e. those who perceived the high-EE partner to be highly negative) were more socially skilled and less likely to lie. Social perception scores were negatively correlated with attention on the SANS ($r=-0.41$, $P<0.012$) and thought disorder on the BPRS ($r=-0.42$, $P<0.008$), indicating that poor social perception was associated with greater thought disturbance and attentional impairment. The correlation between social perception and asociality on the SANS ($r=0.39$, $P<0.014$) was positive and approached significance. This unpredicted result suggests that more accurate social perception may be associated with decreased social interest. Finally, lie was significantly correlated with attention on the SANS ($r=0.49$, $P<0.002$) and hostility on the BPRS ($r=0.52$, $P<0.001$). The correlations with the other BPRS and SANS subscales were uniformly low and non-significant.

Discussion

As in previous studies, schizophrenics exhibited pervasive deficits in social skills. The overall quality of their presentation was poor, and they were less assertive than subjects in the other two groups. When questioned or challenged they tended to be submissive, and failed to suggest solutions to problems or request the partner to change his/her behaviour. Previous research on social skills in schizophrenia has focused on the ability to initiate conversations and to avoid mistreatment. To our knowledge, this is the first study which has examined patients' ability to respond in the face of their own errors and failings, a circumstance which probably is common in their lives. Not surprisingly, they were not very effective at defending themselves. However, their difficulty was not passivity so much as inability or unwillingness to admit mistakes. Rather than offer appropriate apologies or explanations, they tended to deny making errors and made up child-like lies. As our findings are based on simulated interactions in the laboratory rather than real-life encounters, caution is required in drawing inferences about behaviour in the community. However, subjects clearly understood what they were expected to do and, if anything, role-play would be less threatening than a real-life confrontation. Thus, the tendency to lie does not seem to be an artefact of the task.

As predicted, there were few differences between performance with relatives and friends. All three groups of subjects found it somewhat easier to be assertive with friends, but there was no consistent pattern of group × role interactions. These findings suggest that the deficits that prevent schizophrenics from admitting their mistakes and effectively dealing with criticism from others are as germane to peer relationships as to interactions with relatives. By implication, these limitations are probably just as evident in interactions with mental health workers, social service agencies, landlords, police, and other significant individuals with whom patients interact on a daily basis.

In contrast to expectations, schizophrenics did not have a differential deficit in the ability to cope with critical/hostile communications. Their performance was equally impaired in the face of benign questioning by the partner. Notably, they were just as likely to lie and unlikely to apologise to a benign partner as to a high-EE partner. This finding suggests that the pattern of denial is less a function of the partner's behaviour than of a pre-existing response style. It appears to be a relatively reflexive, self-protective response which serves to avoid further discussion of unpleasant issues. This type of strategy could evolve over time from a history of frequent mistakes and criticism from others. Alternatively, lies and denial could be a way to terminate discussions which tax the individual's cognitive resources. This latter possibility is supported by the finding that 'lie' was highly correlated with attentional impairment on the SANS. Debate is strenuous; patients with limited attentional resources may not be able to sustain a strenuous,

problem-orientated discussion and may opt instead for a quick and easy solution.

Schizophrenics exhibited marked impairments in social perception as well as in performance capability. They were fairly accurate in their perceptions of benign or neutral affect, but consistently underestimated the intensity of negative affect. The differential pattern for the two affect types suggests that the results are not simply a consequence of response bias or lack of effort. Schizophrenics seem unable to detect or decode cues which are essential for identifying the intensity of anger and distress. The basis of this deficit is unknown, but there are three general hypotheses: (a) a neurological impairment in some area(s) of the brain required for affect recognition, (b) general attentional impairment, or (c) the functional avoidance of cues for aversive negative affect. Data from the current study suggest that attentional impairment plays at least a contributing role. Subjects were required to scan multichannel affect displays involving dyadic interactions rather than static single-channel stimuli (e.g. pictures of faces). This type of stimulus places a heavy load on attentional capacity, especially for detection of negative affect which characteristically entails a more complex stimulus array (Ekman *et al*, 1972). Poor social perception was also (inversely) correlated with lie. This finding is consistent with the hypothesis that lying might be a coping response to control for overwhelming or confusing input. Rather than simply misinterpreting or being unaware of relevant social cues, schizophrenics might be overwhelmed by them and defensively shut down.

Our findings are partially consistent with the hypothesis that the effects of EE are mediated by social skills deficits. The data suggest two interlocking processes. Schizophrenics lack the social skills to defend themselves and be appropriately assertive, and they lack the attentional capacity to effectively process cues for negative affect. Consequently, they may deny any errors or personal failings and lie to escape conflict, even in the face of a benign interpersonal partner. Moreover, the data indicate that patients who employ this obstinate avoidance strategy tend to be rated as hostile and uncooperative. This response style is likely to be highly frustrating for concerned relatives, especially when they attempt to discuss problems in a non-hostile, non-accusatory manner (as per overinvolvement). The effect on the relative is likely to be increasing anger, and an escalating pattern of criticism and hostility. Lacking the social skills to cope with even mild criticism and unable to effectively decode parental affect, the patient is likely to be trapped in an increasingly stressful situation and reciprocate hostility. As previously indicated, Hahlweg *et al* (1990) found precisely this pattern in interactions between patients and high-EE critical parents. They engaged in long strings of negative interchanges involving attack–counterattack and attack–self-justification. Overinvolved relatives might not respond to lying with hostility, but they could cause increased stress simply by keeping the patient focused on his/her mistakes and incapacities. This hypothesis is consistent with the finding by Hahlweg *et al* that overinvolved parents elicited more disagreements by patients than did low-EE parents. In addition, Strachan *et al* (1986) found that high-EE parents (overinvolved and critical) spoke more and more rapidly than low-EE parents, which would increase the demands on the patient's already taxed information-processing capacity. This issue warrants further study.

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