

Hallucination Focused Integrative Treatment: A Randomized Controlled Trial

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Abstract

Improvements in psychopathology, subjective burden, and coping with voices after hallucination focused integrative treatment (HIT) were studied in chronic schizophrenic patients with persistent (> 10 years), drug-refractory auditory hallucinations. In a randomized controlled trial, routine care was compared with HIT pre- and posttreatment at a 9-month interval. Independent raters used semistructured interviews to assess burden, symptoms, and coping. Within-group improvements in both burden and psychopathology were most significant in the experimental group ($p < 0.05$) after treatment. HIT patients showed change in applied coping strategies, but it did not reach statistical significance. Type and (change in) number of coping strategies did not seem related to outcome. The results suggest that HIT is a cost-effective practice that positively affects mental state in general, subjective burden, quality of life, and social functioning.

Keywords: Randomized controlled trial, cognitive behavior therapy, coping, schizophrenia, hallucinations, integrative treatment, family treatment.

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Improvements in antipsychotics have meant that increasing numbers of patients with schizophrenia can be treated in outpatient settings and stay with their families. Because the shift to outpatient treatment has increased the burden on family caregivers (Pitschel-Walz et al. 2001), various family treatment programs (FTP) were developed (Dixon and Lehman 1995). Both psychoeducational and cognitive FTPs reduce relapse and rehospitalization rates (Hogarty et al. 1991; McFarlane et al. 1995a, 1995b; Dyck et al. 2000; Pitschel-Walz et al. 2001; Pilling et al. 2002), but the effects of FTPs in other domains are inconsistent. Dynamic FTP was found to be ineffective, and brief psychoeducation alone appeared inferior to family

interventions using different combinations of FTPs (Dixon and Lehman 1995).

Cognitive behavior therapy (CBT) helps reduce the severity of persisting psychotic symptoms (Dickerson 2000; Gould et al. 2001; Rector and Beck 2001; Pilling et al. 2002). However, literature on the effectiveness of CBT on auditory hallucinations is equivocal; hallucinations seem to improve less than delusions (Haddock et al. 1998a; Chadwick et al. 2000).

Results of rehabilitation training are also equivocal (Marder et al. 1996; Liberman et al. 1998; Bellack et al. 1999; Spaulding et al. 1999; Pilling et al. 2002). Although integration with other forms of treatment improves the effectiveness of rehabilitation training programs (Marder et al. 1996; Liberman et al. 1998), little evidence suggests that schizophrenia patients ever apply the skills taught in training programs to real-life situations (Heinssen et al. 2000).

Despite these therapeutic advances, most patients with schizophrenia have disabling residual symptoms and are handicapped in social functioning (Bustillo et al. 2001). High rates of noncompliance limit the effectiveness of various treatments: About 40 percent of patients do not comply with medication regimens (Young et al. 1986), and adherence to CBT is highly variable (Garety et al. 1994; Drury et al. 1996; Kuipers et al. 1997, 1998; Tarrier et al. 1998, 1999; Jenner et al. 1999; Sensky et al. 2000; Pilling et al. 2002). Furthermore, effects remain largely restricted to the targets of treatment (Bustillo et al. 2001). A growing consensus among researchers is that optimal treatment of schizophrenia requires integrative treatment programs (Brenner et al. 1996). Combinations of medication and psychosocial treatment appear significantly more effective than monotherapies (Mojtabai et al. 1998). Turkington and Kingdon (2000) suggest “an addi-

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tional change in tack for psychiatrists involved in the maelstrom of acute community work" (pp. 104–105).

In 1994, a "voices clinic" was established for patients with residual auditory hallucinations. The clinic's goal was to offer a novel treatment that would result in better adherence, reduction in the burden of voices, and control over voices. To achieve these goals, we have been focusing on persistent auditory hallucinations as the main target of an integrated treatment, including various treatment modules with reported clinical evidence. This resulted in HIT, which integrates psychoeducation, medication, CBT, coping training, family treatment, and rehabilitation. In naturalistic studies, HIT reduced the severity of symptoms (voices, anxiety, and distorted thinking) and (to some extent) social disabilities in patients refractory to chronic therapy (Jenner et al. 1998) as well as adolescents with first psychotic episodes (Jenner and van de Willige 2001). A 4-year followup showed that 69 percent of the patients exhibited the same level of improvement, and 26 percent showed further improvement (Wiersma et al. 2001).

HIT was hypothesized to have a positive effect on the occurrence of voices and their subjective burden but not on psychopathology in general. A randomized controlled trial compared HIT with existing treatments, assessed the quality of life and social functioning of patients receiving HIT, and evaluated HIT's cost effectiveness. This article presents the trial's results concerning patients' psychopathology, subjective burden, and coping behavior. HIT's effects on quality of life and social functioning and its cost effectiveness are reported elsewhere (Stant et al. 2003; Wiersma et al. 2003).

Method

The Interventions. Routine care (RC) was continued in control patients; experimental patients were given HIT for 9 months and RC during the followup period. Although HIT patients did not receive the usual RC during the experimental period, elements of RC, such as outreach, were part of HIT. Continuity of care, however, was implemented according to the HIT model. To compare the treatment conditions, caregivers were advised to offer an equal number of contacts and total contact time to patients in the control and experimental groups and to involve the families of both groups in treatment. In both conditions, medication was prescribed according to the guidelines of the Dutch Psychiatric Association (DPA), which resemble those of the APA.

In The Netherlands, RC for chronic schizophrenia is delivered mainly by regional community mental health centers in a program that closely resembles the one described by Barrowclough et al. (2001). Multidisciplinary teams in these centers provide psychi-

atric, social, and financial management; psychoeducation; supportive and job counseling; home visits; and around-the-clock ambulatory crisis intervention. Case managers offer maintenance medication, monitoring through outpatient and community followup, and access to community-based rehabilitative activities such as day centers and drop-in clinics. The programs offered at individual centers, however, may vary. Optional interventions are supporting relatives and providing assistance with housing, societal involvement, daily activities, finances, and rehabilitation. Because such diversity best reflects everyday reality, we did not seek uniformity in RC.

The HIT program uses multiple modalities to maximize control of persistent hallucinations. The treatment focuses on "regaining control" and "command of my head" and is given according to a protocol delineated in a manual (Jenner et al. 1996). The approach is a directive style of single-family therapy that integrates motivational interventions, training in coping skills, CBT, and operant conditioning with medication, psychoeducation, and rehabilitation (Jenner 2001, 2002; Jenner and van de Willige 2001). Proactive outreach crisis intervention is available around the clock. The program comprises approximately 20 one-hour sessions over 9 to 12 months. The number of sessions may vary depending on need and progress.

The motivational module includes several components. First, a focus on consumer needs and demands replaces one on disease and medical institutions. Hallucinations are accepted as a reality for which patients are held responsible. The therapist accepts the reality of the voices for the patient but does not share it (the two-realities principle). Symptoms and behavior of both patient and relevant others are relabeled. Positive labeling appears applicable at almost any time, in any person, regardless of psychiatric state, trait, or phase of illness awareness. Resistance is viewed not as a psychiatric construct but as a consumer complaint for which proper adjustments should be made. Motivational interviewing (Miller and Rollnick 1991) helps accommodate interventions to the patient's degree of illness awareness. Prochaska et al. (1982) have described a series of stages through which people pass in the course of changing a problem, with each stage requiring its own specific motivational interventions. The stages include precontemplation (the patient does not yet consider the need for or possibility of change), contemplation (some awareness of the problem exists), determination (the patient is aware of the need for change), action proneness (the patient engages in action), maintenance, and relapse. According to this model, patients are incapable of change until they have entered into the action-proneness stage. Prescribing medication or behavioral change prematurely risks intensifying patients' resistance and negative behavior. Because illness awareness may vary by issue (e.g., one may have

entered the action-proneness stage for coping training but not for accepting antipsychotics), continuous illness-awareness assessment is necessary to adjust motivational strategies as needed.

The therapeutic modules are offered according to protocol, but their implementation is adjusted to patients' demands (Jenner et al. 1996). Tasks such as monitoring and trying out a coping strategy are clearly explained and extensively discussed. Patients are always checked to confirm that the task given and the reason behind it are sufficiently understood. After agreement has been reached, the task is divided into steps small enough to prevent failure and guarantee the best opportunity to reinforce self-confidence and ego strength. Contacting the therapist for advice is mandatory when implementation is thwarted. Compliance with tasks is reinforced by adjusting the interval between sessions according to principles of operant conditioning; the interval is increased when the patient or relative repeatedly fails in the implementation without contacting us. (Exceptions to this rule include incoherent or elusive patients who avoid contact.)

Coping training teaches patients and relatives how to manage their anxiety, distract their attention from voices, and selectively focusing on voices. Stepwise exercises emphasizing the need for consistent implementation are followed by practice. Daily monitoring of the characteristics of the voices and contextual aspects as well as of coping strategies and their effect is pivotal in constructing an optimal coping strategy.

Interventions focus on triggering events; emotional, cognitive, and behavioral (re)actions; and contingent and subsequent reactions of others. Patients and relatives are encouraged to come up with new ideas and solutions. False beliefs are challenged through Socratic reasoning, a mixture of discussion and empirical testing (Beck et al. 1979). This procedure requires an interviewing style that provides patients with limited direct advice, seeking instead to elicit suggestions and the solutions in them. This method allows patients to build on their own capacity for problem solving (Chadwick et al. 1996). The therapist helps the client "draw on his own doubt and experience in order to realize that there are other ways in which he is able to make sense of his experience" (Chadwick et al. 1996, p. 42). The more direct and paradoxical "Detective Colombo approach" is preferred for patients who are insufficiently susceptible to Socratic reasoning. The therapist provides paradoxical messages and drops ideas in a way that suggests that they are important (Jenner 1991). He stirs the patient's interest in an idea (e.g., by referring to other patients who have successfully applied the idea) as well as downplays its importance (e.g., by suggesting that perhaps the patient "had better forget about it.")

Psychoeducation focuses on symptoms and problem solving. In family treatment, social support is pivotal; ideas about voices are simultaneously shared and challenged. Relatives are given credit for their endurance as well as sympathy for their unsuccessful attempts to work with the patient. Feelings of guilt are neutralized. Relatives monitor their feelings, thoughts, and behavior toward the patient, and patients in turn monitor their relatives' reactions. Data from these sessions are used to train relatives in positive labeling and selective reinforcement of the patient's behavior. Data from continuous monitoring help participants evaluate the effectiveness of their behavior.

The usual rehabilitation domains are covered, but tasks are relabeled as coping strategies meant to beat the voices. Tasks may concern daily activities, self-care and household, social relationships, and relationships with relevant others (e.g., the family or partner). In accordance with the rules of operant conditioning, complex target behaviors and tasks are divided into smaller steps. The constituent elements are consensually organized (by the patient and therapist) into a hierarchy of responses from easier to more complex and trained accordingly. Learning happens in real-life situations and is active, slow, and repetitive, with the use of reviews and positive reinforcement. The feasibility of each step and the support necessary to accomplish it is determined. Possible failures are anticipated and countered with coping strategies. Relatives are instructed in selective reinforcement. For each task, participants monitor their activities and the time invested in them as well as the effect of, and their satisfaction with, the activities.

Treatment Fidelity. In neither condition were standard measures for treatment fidelity used. However, RC teams met on a regular basis. Psychiatrists on the teams monitored RC fidelity in weekly case reviews.

HIT was performed according to protocol (Jenner et al. 1996). One author (J.A.J.) controlled for fidelity to protocol. The first three sessions of all HIT patients were monitored for treatment fidelity through a one-way mirror. Fidelity to the HIT protocol was also assessed in weekly case reviews and biweekly group supervision with additional consultations when therapists had difficulty adhering to the protocol.

Study Design

This randomized controlled trial applied a minimization procedure (Altman 1995) to gender, duration of illness (more or less than 5 years), severity of symptoms (two or more Positive and Negative Syndrome Scale, Positive Symptom Subscale [PANSS-P] item scores of 5 or higher

versus lower scores), and treatment center. The independent medical technology unit of the university hospital randomized patients. Independent researchers administered the research instruments.

Inclusion criteria for the study were (1) suffering from auditory hallucinations for more than 2 years after adequate treatment; (2) a diagnosis of nonaffective psychosis, including schizophrenia, schizoaffective, or psychotic disorder not otherwise specified (NOS); (3) former use of at least two antipsychotic drugs in adequate doses for an adequate period of time according to the DPA's guidelines; (4) no previous CBT treatment for auditory hallucinations; (5) no current abuse of psychoactive drugs or alcohol (moderate use of cannabis and alcohol was allowed); (6) estimated IQ > 80.

Mental health care institutions and case-managers of community care teams in the region were asked to check their caseload for eligible patients. They were also asked to inform these patients about the study and to seek their permission for further contact by a researcher. The researcher subsequently contacted the patient and gave full information about the study and the consequences of participation. Between November 1998 and May 2000, 100 patients were approached for a screening with the SCAN-interview (World Health Organization 1992). Twenty-two subjects were excluded because of primary substance abuse, absence of hallucinations, no history of antipsychotic medication, incorrect diagnosis, low intelligence, or incoherence. All eligible patients gave their written informed consent. Recruitment and treatment occurred in different mental health centers across the Dutch provinces of Groningen, Friesland, and Overijssel.

To have sufficient statistical power, we sought 80 patients, 40 in each group; 78 were included. After randomization, two subjects were removed. One concealed his primary substance abuse in the first interview; the other, who was assigned to the control condition, erroneously received the experimental treatment. The final sample size was 76 patients (37 in the experimental group).

Seven patients (9%) were lost at the 9-month followup (T9). These seven did not differ significantly on any of the relevant variables at baseline (sociodemography, psychopathology, and functioning). Two of them were in the experimental group; one died of natural causes, and one conceded to cooperate, but after followup assessment. The other five subjects (7%) actively refused to participate in the second assessment wave.

In both groups, psychiatrists, registrars in psychiatry, psychologists, and social psychiatric nurses participated in this study. All had experience in both hospital and community psychiatry. Practitioners in both groups were equally qualified in terms of their required board certifica-

tions under Dutch law, special courses, and years of experience treating patients with schizophrenia. Patients in the control group continued treatment with their regular therapists, while therapists in the experimental group took a 5-day course in HIT followed by biweekly live-supervision for about 5 months before the randomized control trial (RCT) (see Falloon 1999). Therapists used either RC or HIT.

Patient Population

Subjects were diagnosed as having paranoid schizophrenia (78%), schizoaffective disorder (15%), or psychosis NOS (7%). Mean duration of hallucinations at onset (T0) was almost 12 years (standard deviation [SD] = 10.4), mean age was 36 years (SD = 11.2). Fifty-four percent were male; 42 percent lived alone, 33 percent lived with others (such as a parent or partner), and 24 percent lived in sheltered accommodations under mental health care supervision. Only three subjects (4%) had a paid job; 84 percent received welfare, unemployment assistance, or disability benefits. The lifetime average number of admissions was three. No significant difference existed between treatment groups on any relevant sociodemographic, diagnostic, medication, or medical history variables (table 1).

Instruments

A comprehensive number of instruments was administered at onset and followup for measuring the burden of hallucinations (Psychotic Symptom Rating Scales [PSYRATS]; Haddock et al. 1999), psychopathology (PANSS; Kay et al. 1987), social disabilities (Groningen Social Disabilities Schedule; Wiersma et al. 1988, 1990), quality of life (EuroQol Group 1990; WHOQOL Group 1998; Brooks 1996), coping strategies (Auditory Hallucination Coping List [AHCL]; Jenner and Geelhoed-Jenner, 1998), adherence, and cost effectiveness. For this article, only the Auditory Hallucination Rating Scale (AHRS), PANSS, AHCL, and adherence are relevant. Both assessors (F.J.N. and G.v.d.W.), who were not involved in treatment, received formal training in the instruments and had extensive experience with these instruments in ongoing investigations in schizophrenia during the past two decades (e.g., Wiersma et al. 1995; Holthausen et al. 1999). Their interrater reliability for these instruments is tested regularly. Because their reliability scores in these sessions were found satisfactory, no additional reliability testing was carried out.

Characteristics of voices were measured with the AHRS, the voices section of the PSYRATS. The AHRS is an 11-item questionnaire that is administered as an inter-

Table 1. Study population per condition

	Experimental group (<i>n</i> = 37)	Control group (<i>n</i> = 39)	Significance (<i>p</i>) ¹
Male (%)	54	54	0.99
Age in yrs (%)			
18–24	18	12	0.34
25–44	54	69	
45–65	26	15	
> 65	0	3	
Mean (SD)	36.7 (11.4)	36.0 (11.6)	0.95
Have children (%)	30	20	0.35
Marital status (%)			
Unmarried	65	72	0.29
Married	19	5	
Divorced	8	18	
Widowed	3	3	
Other	5	3	
Education level (%)			
Low (< 6 yrs)	57	62	0.45
Middle (7–10 yrs)	30	33	
High (> 10 yrs)	14	5	
Source of income			
Self-supporting/partner/spouse	16	0	0.14
Unemployment/sick pay	8	3	
Social Security	30	28	
Disability	46	69	
Household (%)			
Living alone	46	39	0.55
Living with partner/children	19	13	
Living with parent(s)	11	15	
With other relations	3	5	
Sheltered accommodations/boarding house	22	26	
Homeless	0	3	
Duration of hallucinations (yrs [SD])	13.4 (12.3)	10.3 (8.1)	0.20
Hospital admissions (<i>n</i> [SD])	2.7 (2.5)	4.1 (4.8)	0.10
Duration admission (mths) [SD]	54.5 (164.1)	74.1 (220.4)	0.66

Note.—SD = standard deviation.

¹Chi-square or *t* test.

view. Using a 5-point scale, it assesses the frequency and duration of voices; the amount and threat of their negative content; and the degree and seriousness of suffering, interference with daily functioning, and control over voices. We applied principal components analysis with Varimax rotation and Kaiser normalization to the AHRS data at T0 (before treatment). Four indices were used in the analyses that emerged from factor analyses: (1) frequency and duration, (2) amount and threat of negative content, (3) distress from hearing voices (the amount and intensity of distress and interference with daily functioning), and (4) control over voices.

Psychopathology was measured with the PANSS, a 30-item, semistructured interview on psychiatric symptoms during the preceding 4 weeks, which are rated by investigators on a 7-point scale (Kay et al. 1987). In the analyses, five dimensions derived from a factor analytic study by Lindenmayer et al. (1995)—positive symptoms, negative symptoms, disorganization, depression, and excitement—were used. Total and general psychopathology scores (Kay et al. 1987) were used as measures of mental health.

We recorded the use and dosage of classical and atypical antipsychotics, benzodiazepines, and antidepressants.

The antipsychotic dosages were converted to haloperidol equivalents.

We assessed the coping strategies applied by patients when hearing voices with the AHCL, a structured interview of 49 yes-or-no items divided into 9 subgroups: talking to or with voices; other vocalizations; dealing with command hallucinations; and cognitive, motor, physical, physiological, social, and spiritual coping strategies (Jenner and Geelhoed-Jenner 1998). Patients in the experimental group were trained in two additional coping strategies: empowerment and neutralization. Therapists monitored the patients' acceptance of and compliance with coping strategies.

We assessed adherence in terms of failure to consent, failure to engage in treatment (fewer than four contacts), and compliance with the study (i.e., followup assessment).

Analysis

An intent-to-treat analysis was done of all patients who had given informed consent regardless of the treatment actually delivered. The analysis focused on differences in subjective ratings of (consequences of) auditory hallucinations and in the objective ratings of psychopathology by the investigators between treatment conditions. Differences between conditions at both assessments were tested by means of parametric (independent samples *t*-) and nonparametric (chi-square) tests. Analyses were carried out with SPSS for Windows (version 9.0). All significance test results involved 2-tailed probabilities with alpha set at 0.05. Applying the hypothesis of equivalent treatment conditions, effect sizes were calculated as Cohen's *d* (subtracting mean differential scores [controls – experimentals], divided by pooled within-group SD of controls posttreatment; Cohen 1977). Walter's (2000) computation ($1/[\text{event rate controls} - \text{event rate experimentals}]$) provided numbers needed to treat (NNT).

Results

At baseline, treatment groups did not differ significantly on psychopathology and coping measures. Separate subjective ratings (AHRS scores), as well as the total and dimension scores of PANSS, were similar for both groups. However, after constructing the AHRS indices, significantly higher distress was found in the experimental group.

At followup, both groups showed reduced severity of AHRS indices, but mean difference scores (table 2) had changed significantly more in the experimental condition for distress and total burden ($p < 0.05$). Both the frequency/duration and control indices almost reached significance by a conservative 2-tailed *t* test ($p < 0.10$); they would have reached statistical significance with a justifiable 1-tailed test.

Experimental patients also improved significantly more (table 3) on the PANSS-P ($p < 0.001$), disorganization ($p < 0.05$), and general psychopathology ($p < 0.01$) dimensions, as well as on total score ($p < 0.01$). Improvement on depression reached near significance ($p = 0.057$). Effect sizes for the dimensions mentioned varied from 0.47 (depression) to 0.71 (positive symptoms), and NNT varied from 2 to 4–5 (table 4). Five patients in each group lost their hallucinations. No patient committed suicide. One experimental patient was admitted and did not receive HIT.

We computed Pearson's correlation coefficients (*r*) of intensity of treatment on outcome. No statistically significant relationship between the number of HIT-contacts and any of the main outcome measures could be found.

At neither assessment could significant differences between groups be found in medication dosages. At followup, mean medication scores were not statistically different for neuroleptic drugs ($p = 0.79$), benzodiazepines ($p = 0.56$), or antidepressants ($p = 0.37$). The average amount of haloperidol equivalents was not significantly

Table 2. Characteristic of hearing voices (PSYRATS-AHRS), mean difference scores of indices (SD) between 9-month followup and baseline

Indices	HIT Group (<i>n</i> = 35)		Control Group (<i>n</i> = 34)		<i>t</i>	<i>p</i> ¹
	Mean (SD)		Mean (SD)			
Frequency/duration	−1.58	(2.2)	−0.65	(2.5)	1.76	< 0.10
Distress	−3.17	(3.6)	−0.92	(3.8)	2.55	< 0.05
Control	−1.33	(1.6)	−0.73	(1.5)	1.77	< 0.10
Total burden	−7.97	(8.5)	−3.43	(9.2)	2.25	< 0.05

Note.—AHRS = Auditory Hallucination Rating Scale; PSYRATS = Psychotic Symptom Rating Scales.

¹2-tailed *t* test, with *p* values > 0.10 omitted.

Table 3. PANNS: mean scores of 5 dimension, general psychopathology and total score at baseline (T0) and followup after 9 months (T9) and difference score between T0 and T9

Dimensions	HIT (<i>n</i> = 35)		Routine Care (<i>n</i> = 34)		<i>t</i>	<i>p</i> ¹
	Mean (SD)		Mean (SD)			
Positive symptoms						
T0	15.7	(4.2)	16.4	(4.4)	—	—
T9	11.9	(3.9)	15.9	(5.9)	−3.36	< 0.001
T0–T9	−3.8	(4.8)	−0.5	(4.6)	−2.96	< 0.005
Negative symptoms						
T0	11.5	(6.6)	12.0	(6.0)	—	—
T9	11.8	(6.9)	12.6	(7.2)	—	—
T0–T9	0.3	(4.3)	0.6	(4.4)	—	—
Disorganized						
T0	7.5	(2.4)	7.2	(2.5)	—	—
T9	6.8	(2.0)	8.5	(4.0)	−2.18	< 0.05
T0–T9	−0.7	(2.3)	1.3	(3.9)	−2.54	< 0.05
Depression						
T0	10.4	(4.6)	9.2	(2.8)	—	—
T9	7.9	(3.4)	8.1	(1.5)	—	—
T0–T9	−2.5	(3.4)	−1.1	(2.7)	−1.94	< 0.10
Excitement						
T0	3.9	(1.5)	4.2	(1.9)	—	—
T9	4.0	(1.7)	4.5	(2.6)	—	—
T0–T9	0.1	(1.9)	0.4	(2.9)	—	—
General psychopathology						
T0	29.3	(7.9)	28.3	(5.9)	—	—
T9	24.9	(6.8)	29.0	(8.8)	−2.20	< 0.05
T0–T9	−4.4	(8.0)	0.7	(7.5)	−2.71	< 0.01
Total score						
T0	60.0	(15.6)	60.4	(12.5)	—	—
T9	52.5	(15.3)	62.4	(18.9)	−2.39	< 0.05
T0–T9	−7.5	(14.7)	1.9	(14.4)	−2.69	< 0.01

¹Tested 2-tailed *t*, with *p* values > 0.10 omitted.

Note.—HIT = Hallucination Focused Integrative Treatment.

Table 4. Effect size and number needed to treat for PANSS-scores after HIT

PANSS - dimensions	Effect size (Cohen's <i>d</i>)	Number needed to treat
Positive symptoms	0.71	2
Disorganization	0.63	4 to 5
Depression	0.47	4
Total score	0.65	3 to 4

Note.—HIT = Hallucination Focused Integrative Treatment.

different between groups. The median dosages in both groups remained equal over the 9 months.

At baseline, the two groups did not differ significantly in applied coping strategies. About 15 percent of patients reported self-mutilation as coping behavior. Most patients used various coping strategies, although inconsistently. Most tried several strategies; more than 50 percent

applied more than one strategy per subgroup in eight of the distinct subgroups, and 40 percent applied several spiritual strategies. About 90 percent of all patients, equally divided between the treatment groups, applied more than 10 different strategies, and more than 20 percent applied more than 20 strategies. At followup, only 15 percent still applied more than 20 strategies, whereas 65

percent used more than 10 strategies. The average reduction in number of strategies was greater within the experimental group but did not reach significance. In both groups, preferred strategies included talking to oneself, ignoring the voices, conversing with the voices and abusing them, changing the focus of thought, listening to music, dealing with command hallucinations, and social withdrawal. At first, hardly any patients applied empowerment or normalization as coping strategies. On followup, a substantially greater percentage of patients in the experimental group were using the latter two strategies (70% and 57%, respectively). Compared with baseline, a smaller number of controls applied riding by bicycle ($p = 0.004$), and experimental patients used less talking to self ($p = 0.04$) and social withdrawal ($p = 0.006$). Most patients in both treatment groups continued their irregular and inconsequent style of coping behavior.

Adherence to this study was quite good, with a 9-percent dropout rate. Treatment nonadherence with HIT was 14 percent; four experimental patients failed to engage, and one was discharged early. Treatment nonadherence could not be measured in patients in the control group because a hallmark of RC is that it is not interrupted. Because control patients remained under the care of their therapists, failure to engage was not an issue in the RC condition.

Discussion

This study included patients with long psychiatric histories and psychotic symptoms refractory to drugs, of whom a substantial proportion (24%) needed sheltered accommodation. At the onset of the study, sociodemographics, illness history, psychopathology, medication, social functioning (except for self-care), subjective quality of life, and applied coping strategies were not significantly different between patients in both treatment groups. This similarity between groups supports the study's internal validity. Patients resembled our earlier naturalistic study, although they had a somewhat longer mean duration of hallucinations (Jenner et al. 1998). Our population is comparable with that of most CBT studies (Kingdon et al. 1994; Kuipers et al. 1997, 1998; Tarrier et al. 1998, 1999, 2000; Sensky 2000). However, it differs from that of Drury et al. (1996) and Kemp et al. (1996, 1998) because the present study did not include patients with acute first episodes or affective psychosis.

This study has both strengths and limitations. The study is novel in that it combines medication with different nondrug treatments and focuses solely on psychotic patients experiencing auditory hallucinations. This aspect differentiates it from many of the CBT studies, with the exception of Bentall et al. (1994) and Haddock et al.

(1998a). Randomized treatment allocation through an independent medical technology unit, intent-to-treat analysis, a manual-based experimental program, representative routine care with monitoring of prescribed medication, and independent raters who were not involved in the therapy might be considered strengths of this design. The implementation of the study in everyday practice of community-based facilities could also be positively evaluated. The dropout rate, including one natural death, was quite low (9%). This low rate may be because of the extensive experience (> 15 years) of the researchers in recruiting and adequately screening schizophrenic patients and handling the logistics associated with them.

As in our former studies (Jenner et al. 1998; Jenner and van de Willige 2001; Wiersma et al. 2001), patients spontaneously, despite being instructed otherwise, reported crucial information about therapists, coping with hallucinations, and treatment utilization and satisfaction. This is a major limitation, and the drawbacks of not being blind to the treatment condition at followup lie in potentially overestimating the effectiveness of the experimental treatment compared with routine care. Although the researchers were not involved in any treatment, they may still have been slightly biased toward either of the treatment groups. The study also involved instruments about the care received by the subjects, which also may have interfered with staying blind to treatment condition. We recommend an additional study under blinded conditions. Even with independent raters and separate assessors for the various instruments, it would only take a hint to disclose the treatment condition. Furthermore, more than one assessor per subject could increase the burden for the subjects (who would receive two different interviewers, mostly in their private home), creating new problems with their own possible biases. Other possible limitations of the study include the rather usual exclusion criteria of primary substance abuse and low IQ, which may have selected patients who were willing to cooperate.

Comparability of treatment conditions (experimental therapy as well as routine care) with other RCTs is somewhat limited because of their great variations in content, duration, and organization (Dickerson 2000; Gould et al. 2001). Flexibility of HIT most closely resembles the London-East Anglia (1997), the Sensky (2000), and the Turkington and Kingdon (2000) programs. Turkington and Kingdon (2000) and Kemp et al. (1996, 1998) applied shorter programs (< 10 sessions), whereas family treatment (FT) programs (Barrowclough and Tarrier 1992; McFarlane et al. 1995a, 1995b; Dyck et al. 2000) are considerably longer. Our coping module most closely resembles Tarrier's (1992) description, and our motivational strategies come close to Kemp's motivational therapy (1996). Regular involvement of family members, spouses,

or relevant others differentiates our program from the individual CBT programs.

The experimental group improved significantly more on subjective burden of voices and psychopathology than the control group did. Elsewhere we report that the experimental group also improved significantly more in quality of life and social functioning (Wiersma et al. 2004). These differences could not be related to number of sessions, time per session, or type and dosage of medication.

Mean within-group difference scores of total burden and distress were significantly better ($p < 0.05$) than those of control patients. Improvement in frequency/duration, control, and negative content of the voices was significant only at a 10-percent level. Reduction of distress and interference and increased control can be explained by both learning and general systems theories. We assume that "evoking voices" might have been pivotal in improving the effect and consequences of hearing voices. This intervention may be interpreted as exposure, an intervention known for its effectiveness in reducing anxiety. It is also known as paradoxical intervention, for which significant reduction of psychotic symptoms has been reported.

Literature on the effectiveness of CBT for hallucinations is equivocal. A number of case studies have indicated that CBT may have a therapeutic impact on hallucinations. However, Haddock et al. (1998a) concluded that "the results...confirm previous observations of the difficulty of treating hallucinations with CBT." In their study, reduction in distress and disruption was greatest in the control group, whereas in our study experimental patients improved significantly more. Chadwick et al. (2000) reported that patients in their noncontrolled study significantly changed their beliefs about omnipotence; controlling voices also significantly improved after CBT, but no decrease occurred in anxiety or depression scores. Because both HIT and CBT involve cognitive interventions, one might assume these to be pivotal in helping patients to regain control over their voices. One might also argue that changes, which occur selectively after HIT, are related to the noncognitive modules of this program. Further research is warranted for possible HIT-specific effects on subjective burden, psychopathology, and social functioning. Effect size (Cohen's d) and NNT might help clarify how much clinically relevant improvement was achieved compared with other medical or psychological treatment. According to Mojtabai et al. (1998), the Cohen's d for psychological and behavioral treatments is about 0.47, and according to Gould et al. (2001), it is 0.65 for CBT programs for schizophrenic patients. Effect sizes of HIT were 0.47 for the PANSS depression dimension and ranged from 0.63 to 0.71 for the scores on the disorganization and positive symptoms dimensions and total score. Improvement in disorganization is clinically rele-

vant because disorganization is related to severely negative prognosis in schizophrenia (Norman et al. 1999). Similarly, a decrease in depressed mood lowers the risk of suicidal death (Addington and Addington 1992). NNT was 2 for positive symptoms and 4 for depressive symptoms; in other words, for every 100 treated patients, 50 percent of those with positive symptoms and 25 percent of those with depressive symptoms actually improved with the experimental treatment.

An intriguing but vexing issue concerns the question of specificity. It is unknown which components of treatment are most effective at which moment, for what problem, and for whom (see also Haddock et al. 1998b; Dickerson 2000).

The anxiety and depression scores of voice-hearers do not seem to improve after CBT (Haddock et al. 1998b; Chadwick et al. 2000), whereas near-significant reduction occurred after HIT. This finding suggests a relatively weak relationship between emotional improvements and cognitive interventions in voice-hearers, which is surprising considering the effectiveness of CBT in depression and anxiety disorders and which certainly warrants further research.

One might assume that a comprehensive, flexible program that adjusts to patients' needs would be essential to HIT, in which number of sessions depends on patients' demands and progress. Support for this approach may be found in the fact that the number of sessions appeared to be unrelated to its outcome. HIT seems more tailored to the individual patient than some CBT protocols. Treatment has been individualized to create optimal flexibility. The other, more flexible individualized CBT protocols (Kingdon et al. 1994; Kuipers et al. 1997, 1998; Sensky et al. 2000; Turkington and Kingdon 2000) also report good compliance with research (i.e., high rates of informed consent and cooperation at followup) and good treatment adherence.

Evaluating the effect of coping is rather confusing. So far, studies on coping strategies lack objective assessment and evidence that gains are maintained over time (Dickerson 2000). The relationship between ways of coping and hearing voices was quite varied. Our patients' inconsistent use of coping strategies was in accordance with the literature (Cohen and Berk 1985; Bak et al. 2001). The fairly high number of patients that applied more than 20 strategies or used self-mutilation as a coping strategy warrants further study. Nayani and David (1996) reported a relationship between number of coping strategies and distress that could not be confirmed in our patients.

Learning theory suggests that better results are obtained when coping is consistently applied contingent to hearing voices. Treatment of experimental patients

focused on reducing the number of applied coping strategies and on consistent usage contingent to hearing voices. However, groups did not significantly differ in the number of strategies each patient applied at followup. The number of patients who used 10 or more coping strategies had decreased in both conditions. Change was greatest in HIT patients, without reaching significance. The relevance of the few significant changes in coping that were found remains unclear. Significant improvements in distress, burden, control, and social functioning could possibly be related to the use of empowerment and normalization strategies and to a decrease in social withdrawal of HIT patients. Further study of the relative effect of coping strategies is complicated by the lack of a shared theoretical model and adequate assessment instruments.

The study and the experimental treatment were conducted in various mental health service settings, such as community mental health centers and the outpatient departments of both psychiatric hospitals and a university clinic in three northern provinces of The Netherlands. This variety may be seen as a strength of our study and supportive for its external validity. One might assume that this aspect would lend support to the feasibility of implementing HIT in routine care. Generalized improvements in subjective burden and psychiatric symptoms might be seen as a recommendation for its implementation as a regular treatment for chronic psychotic patients with auditory hallucinations. Support for this recommendation could be found in the results of HIT on quality of life and social functioning (Wiersma et al. 2004) and its cost effectiveness (Stant et al. 2003).

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