

## Group Cognitive-Behavioral Therapy for Auditory Hallucinations: A Pilot Study

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*In this article, we describe a pilot study that investigated the effectiveness of group cognitive behavioral therapy (CBT) for auditory hallucinations. Eleven inpatients with either chronic schizophrenia or schizoaffective disorder participated in 2 CBT groups of differing treatment duration (i.e., 7 versus 20 sessions). The results showed that participation in both groups was associated with significant positive changes in the participants' beliefs about their voices and with a trend for reduced negative reactions to the voices. These changes were not a function of premorbid cognitive functioning. Finally, duration of treatment did not affect participants' beliefs or distress associated with the voices. Implications for future clinical research in this area are discussed.*

**A**UDITORY HALLUCINATIONS occur frequently among individuals who have been diagnosed with schizophrenia and are a defining feature of the disorder. In fact, 16 studies, reviewed by Slade and Bentall (1988), indicate that, on average, 60% of individuals who are diagnosed with schizophrenia experience auditory hallucinations. These hallucinations vary widely in the number of voices an individual hears, the physical characteristics of the voices, and the content of what the voices say; however, individuals who hear hallucinations often describe the experience as distressing, which is consistent with evidence that abusive language is the most common form of auditory hallucination (Nyani & David, 1996). Additionally, some researchers postulate that auditory hallucinations may contribute to and maintain depression and low self-esteem in individuals with schizophrenia (Wykes, Parr, & Landau, 1999).

The first line of treatment for auditory hallucinations is antipsychotic medication; however, estimates indicate that as many as 25% to 50% of individuals with schizophrenia experience residual positive symptoms of psychosis, despite proper levels of medication (Kane & Marder, 1993; Pantelis & Barnes, 1996; Wiersma, Nienhuis, & Sloof, 1998). Given the periodic medication resistance of auditory hallucinations, several psychological interventions have been explored. These interventions have employed thought stopping, exposure with anxiety reduction, self-monitoring, and distraction techniques such as listening to music, subvocal counting, or wearing earplugs (see Haddock et al., 1998; Shergill, Murray, & McGuire, 1998, for reviews). Recently, several new approaches have been adapted from cognitive behavior

therapy (CBT) that appear to be beneficial. Controlled trials of individual CBT for psychosis indicate that this approach has been successful in reducing overall symptoms (see Bustillo, Lauriello, Horan, & Keith, 2001; Gould, Mueser, Bolton, Mays, & Goff, 2001; Norman & Townsend, 1999, for reviews). Further, randomized controlled trials of individual CBT have demonstrated that individuals who receive CBT are more likely to maintain improvement during follow-up than individuals who receive other forms of treatment. Sensky et al. (2000) compared individual CBT to a nonspecific befriending intervention and found that at the end of treatment, both interventions led to significant clinical improvements in which both positive and negative symptoms were reduced; however, only the CBT group maintained these gains at a 9-month follow-up (see Tarrier et al., 1999, 2000, for exceptions). Similarly, a study comparing individual CBT with standard care demonstrated that for the CBT group, a reduction in the frequency of auditory hallucinations as well as the intensity of and distress associated with these hallucinations was evident at a 9-month follow-up (Kuipers et al., 1998). These findings indicate that individual CBT for residual symptoms is especially effective for reducing auditory hallucinations (Tarrier et al., 2001).

The success of individual CBT has prompted researchers to examine more efficient means of administering CBT for residual psychotic symptoms. One such way is to present the intervention in a group format, and the few studies that have examined group CBT have reported positive findings. Gledhill, Lobban, and Sellwood (1998) found that a group CBT intervention was associated with participants being better able to cope with symptoms, and having lower depression, higher self-esteem, and greater knowledge about schizophrenia. Wykes et al. (1999) utilized a wait-list control design and reported that following group CBT, participants reported a reduction in the experience of auditory hallucinations and an

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increased perception of control over the voices. Likewise, six of nine individuals who participated in a CBT-based self-control skills group reported that their voices were less distressing and less distracting at the end of treatment (Perlman & Hubbard, 2000). Finally, Chadwick, Sambrooke, Rasch, and Davies (2000) reported that individuals who participated in their group CBT for auditory hallucinations had less conviction in beliefs that the voices were omnipotent and that they had no control over the voices following treatment. These results provide encouragement that group CBT may decrease the severity of psychotic symptoms, although, at this time, only one controlled trial has been completed (i.e., Wykes et al., 1999). Thus, group CBT has promise for reducing the negative effects of hearing voices and may aid participants in their efforts to cope with auditory hallucinations.

The above group CBT studies for auditory hallucinations were conducted either with groups comprised solely of outpatients or a combination of outpatient and inpatient participants. Little is known, therefore, about whether group CBT is effective for inpatients with chronic schizophrenia. Since inpatients are likely to have more severe pathology than outpatients, as well as greater treatment refractory symptoms, a trial of group treatment with chronically ill inpatients represents a more rigorous test of the effectiveness of CBT for hallucinations than has hitherto been conducted.

The purpose of this study was to conduct an initial evaluation of group CBT for auditory hallucinations on an inpatient sample of individuals with chronic psychotic symptoms. To our knowledge, there are no published studies on group CBT for auditory hallucinations among inpatients. Furthermore, with the exception of Perlman and Hubbard (2000), which focused on self-control skills, none of the above group CBT studies were conducted in the United States. Therefore, this study represents an initial attempt to apply important clinical techniques developed in the United Kingdom, particularly those that focus on reduction of auditory hallucinations, to work with inpatients in the United States. A final purpose of this study was to examine whether the duration of group CBT has an effect on auditory hallucinations. Specifically, we compare the original Wykes et al. (1999) protocol, comprised of 7 sessions, to an expanded protocol of 20 sessions in which topics were explored in greater depth. Duration of treatment was investigated because of the possibility that inpatients with chronic schizophrenia may require treatment conducted over a greater time period than outpatients in order for clinical gains to accrue. It was hypothesized that (a) a CBT group intervention for voices would have a significant effect on participants' beliefs about their voices, and (b) the longer, more extended protocol would result in greater treatment gains than the shorter treatment protocol.

## Method

### Participants

Individuals were recruited via treatment teams that had been notified about the proposed study, and potential participants were referred for group CBT by these individual treatment teams, which included a psychiatrist, psychologist, social worker, nurse, and two health technicians. Eligible individuals were those who experienced medication-resistant auditory hallucinations and reported that these experiences were distressing. Medication resistance was defined as persistent auditory hallucinations despite being on a stable dose of neuroleptics (i.e., being on the medication for at least 3 months), and all individuals were currently taking atypical antipsychotics. Individuals who denied hearing voices and those who experienced no distress due to their voices were excluded from the sample. Eleven inpatients that met *DSM-IV* criteria for either schizophrenia ( $n = 5$ ) or schizoaffective disorder ( $n = 6$ ) participated in the study. Diagnoses were determined based on chart review, and the sample comprised 8 males and 3 females, of whom 63.6% were Caucasian. The average age of participants was 39.6 years and they had been hospitalized for an average of 44.6 months (minimum = 3 months, maximum = 228 months, mode = 20 months) prior to participating in the groups.

### Measures

*Auditory Hallucinations Rating Scale (PSYRATS; Haddock, McCarron, Tarrier, & Faragher, 1999)*. The PSYRATS is an 11-item, interview-based measure that assesses the emotional content, physical characteristics, and cognitive interpretation of auditory hallucinations. Reported reliability for each item ranges from 1.0 to .788 (Haddock et al., 1999). In the current study, we administered the PSYRATS as a self-report measure (Wykes et al. 1999). Cronbach's alpha was .56 at the initial assessment and .63 at the post-intervention assessment, indicating moderate internal reliability.<sup>1</sup>

*Beliefs About Voices Questionnaire-Revised (BAVQ-R; Chadwick, Lees, & Birchwood, 2000)*. The BAVQ is a self-report measure that assesses the individual's beliefs, emotions, and behavior about auditory hallucinations. Sample items include statements such as, "My voice is punishing me for something I have done" and "My voice makes me feel down," and the participant is asked to state to what degree they agree with each statement. Although the BAVQ-R has five subscales, only the total score was used in this study as it is considered to be a more comprehensive

<sup>1</sup> Because no significant differences were found between the groups, all reliability calculations were computed by combining Groups 1 and 2. Additionally, in order to achieve acceptable reliability for this study, Item 5 of the PSYRATS was omitted from the analyses. Omission of this item did not alter any substantive results.

representation of an individual's reaction to auditory hallucinations. The reported mean Cronbach's alpha for the measure's five subscales was .86, and each subscale had adequate reliability ranging between .74 and .88. Similarly, the total score reliability for this study was acceptable with Cronbach's alpha of .85 at pretreatment assessment and .84 at posttreatment assessment.

*Positive and Negative Syndrome Scale (PANSS; Kay, Opler, & Fiszbein, 1992).* The PANSS is a structured clinical interview designed to assess the severity of positive and negative symptoms. For the purposes of this study, only the hallucinatory behavior item was used, which consists of a series of questions concerning the frequency and quality of auditory hallucinations as well as the degree to which they affect thinking and behavior. This measure has adequate internal reliability (.73 to .83 for each of the scales) and high test-retest reliability (.89 and .82 for the positive and negative scales, respectively). Raters had been previously trained to adequate reliability (ICC > .80 with a criterion rater).

*Wide Range Achievement Test—III (WRAT3; Wilkinson, 1993).* The WRAT3 was used to assess the reading ability of each participant to obtain an estimate of premorbid general intelligence.

### Procedure

Two groups were conducted in this study. The first group followed the manual developed by Wykes et al. (1999; discussed below). The second group, conducted 4 months after completion of the first group, followed an expanded version of the Wykes et al. manual. One individual who was in the first group was also referred for and included in the second group. Formal attendance records were not kept for either group; however, both sets of group leaders reported that attendance was high.

The PSYRATS and BAVQ-R were administered to each participant in both groups at the time of referral and at the end of the group. The PANSS was added to the assessment battery after completion of Group 1 and thus was administered pre- and postintervention for Group 2 only. These measures were administered either by hospital staff or by the group CBT leaders.<sup>2</sup> The WRAT3 was added to the battery at the end of Group 2 to address the post-hoc question of whether cognitive functioning could affect the participants' ability to benefit from the intervention. Thus, the WRAT3 was administered postintervention for Group 2.<sup>3</sup>

<sup>2</sup> Although it could be argued that allowing the assessments to be administered by the group leaders may have introduced demand characteristics that could have influenced the data for Group 2, this is unlikely because many of the measures were self-report and no group significant differences existed between Group 1, in which hospital staff conducted the assessments, and Group 2.

<sup>3</sup> Raters were not blind to treatment condition.

### Intervention

Group 1 followed the Wykes et al. manual and met for seven 1-hour weekly sessions. Each session addressed a particular topic:

- Session 1: sharing of information about the voices
- Session 2: models of psychosis
- Session 3: models of hallucination
- Session 4: effective coping strategies
- Session 5: stigma and the role of medication
- Session 6: improving self-esteem
- Session 7: overall model of coping with the voices

Group 2 followed an expanded version of the Wykes et al. manual that was revised by one of us (DLP) to better meet the clinical needs of an inpatient population. This revised manual extended the group to 20 sessions and met for 1 hour twice weekly. Only minor alterations were made to the content of the original manual; the main changes were that more time was spent on difficult topics and additional homework was assigned. The intervention was as follows:

- Sessions 1–3: sharing of experiences and information about voices and normalization
- Session 4: psychoeducation and models of psychosis
- Session 5: theme and content of experiences
- Sessions 6–10: behavioral analysis of voices with particular emphasis on the Antecedents–Beliefs–Consequences (ABC) model
- Sessions 11–13: establishing control over the voices within the context of the ABC model (increasing and decreasing strategies)
- Sessions 14–17: coping with the voices
- Session 18: stigma
- Sessions 19–20: overall model of coping with voices and termination

Thus, the overall goal of the intervention is to apply cognitive-behavioral techniques to auditory hallucinations. The initial sessions focus on building rapport among the group members and the therapists and on pointing out to participants that many other individuals have experiences similar to their own. Some time is spent teaching current theories of psychosis and explaining commonly used treatments. CBT techniques, such as self-monitoring and coping strategies, are at the heart of the intervention. Self-monitoring is employed by asking participants to monitor their thoughts and actions prior to, during, and after hearing voices. This allows for the identification of any patterns that may be present and encourages a functional analytic approach to their experiences. After completing these exercises, individuals begin to utilize coping strategies when they hear voices and are asked to monitor the effectiveness of these coping strategies. Over the course of treatment, multiple coping strategies are tried, and participants

**Table 1**  
Demographic Information for the Final Sample

	Group 1	Group 2
Age	40.6 (11.67)	37.8 (4.66)
Gender		
Males	4	4
Females	1	1
Qualifying diagnosis		
Schizophrenia	4	1
Schizoaffective	1	4

*Note.* All diagnoses were derived from chart reviews.

are encouraged to continue using the strategies that allow them to feel more control over their voices and that reduce the amount of distress they experience.<sup>4</sup>

### Results

All participants in each group successfully completed treatment, with the exception of one individual who was discharged prior to group completion. This individual's data were excluded from the analyses. Additionally, for the participant who completed both groups, only data collected from Group 1 were included in the analysis. These modifications brought the number of participants in each group to five.<sup>5</sup> Table 1 summarizes the demographic characteristics of the two groups of final participants in the study.

#### Preliminary Analyses

Prior to addressing the hypotheses, we conducted preliminary analyses to examine whether the two groups differed on any of the demographic or baseline clinical variables. Chi-square tests revealed that the groups did not significantly differ on gender,  $\chi^2(1, N = 10) = .000$ , *ns*, diagnosis,  $\chi^2(1, N = 10) = 3.600$ , *ns*, or ethnicity,  $\chi^2(1, N = 10) = .476$ , *ns*. Additionally, a MANOVA was conducted to examine whether the two groups differed in age or length of current hospitalization. The MANOVA was not significant, Wilks's  $\lambda = .791$ ,  $F(2, 7) = .927$ , *ns*, thus indicating that the groups did not significantly differ on the combined variables of age or length of hospitalization. A second MANOVA was conducted on the baseline clinical variables (i.e., BAVQ-R and PSYRATS). This analysis was not significant, Wilks's  $\lambda = .846$ ,  $F(2, 7) = .637$ , *ns*,

<sup>4</sup>A revised manual is available upon request.

<sup>5</sup>Full regression diagnostics did indicate potential outliers on each measure; however, given that no one individual was deviant on all measures and the extremely small size of this sample, the decision was made to leave the data set intact, and results should be interpreted cautiously.

**Table 2**  
Pre- and Posttreatment Mean Scores on the Clinical Measures  
as a Function of CBT Group

	Group 1		Group 2	
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment
BAVQ-R	52.6 (22.69)	40.8 (21.78)	61.8 (10.62)	55.6 (9.66)
PSYRATS	25.4 (6.31)	21.8 (4.15)	27.4 (5.98)	22.4 (8.56)
PANSS	N/A	N/A	5.4 (.89)	4.6 (.55)

*Note.* Standard deviations are in parentheses. BAVQ-R = Beliefs About Voices Questionnaire-Revised; PSYRATS = Auditory Hallucinations Rating Scale; PANSS = Positive and Negative Syndrome Scale.

indicating that the groups did not differ on the combined baseline clinical measures.

#### Primary Analyses

To test the hypothesis that the longer protocol would lead to greater treatment gains than the shorter protocol, we conducted a MANOVA on the raw change scores on the BAVQ-R and PSYRATS (see Table 2 for mean scores for each group). The omnibus test revealed that group was not a significant predictor of the combined outcome measures; the magnitude of the change between pre- and posttreatment did not differ as a function of group, Wilks's  $\lambda = .9088$ ,  $F(2, 7) = .35$ , *ns*. Additionally, no significant univariate effects were found; group was not significantly related to change over time in either the BAVQ-R,  $F(1, 8) = .80$ , *ns*, or in the PSYRATS,  $F(1, 8) = .10$ , *ns*. Thus, contrary to our hypothesis, the longer protocol did not result in greater treatment gains than the shorter protocol.

Given these findings, the two groups were combined to test our other hypothesis that group CBT would have an effect on beliefs and reactions to auditory hallucinations. Simple *t* tests were computed to determine if the amount of change seen on each measure after treatment significantly differed from zero. Results demonstrated that a significant improvement was evident between the pre- and posttreatment scores on the BAVQ-R,  $t(9) = 2.91$ ,  $p < .05$ , effect size = .51. The amount of improvement between pre- and posttreatment scores on the PSYRATS approached statistical significance,  $t(9) = 2.07$ ,  $p = .0689$ , effect size = .7213, and for the individuals in Group 2 only, the amount of change on the PANSS did not significantly differ from zero,  $t(4) = 2.14$ ,  $p = .0993$ , effect size = 1.1188.<sup>6</sup>

<sup>6</sup>Significance values were not corrected for alpha inflation due to the small sample size and the obvious loss of power associated with such a correction.

**Table 3**  
Pre- and Posttreatment Mean Scores on the Clinical Measures

	Pretreatment	Posttreatment
BAVQ-R	57.2 (17.39)	48.2 (17.69)
PSYRATS	26.5 (5.85)	22.1 (6.35)
PANSS	5.4 (.89)	4.6 (.54)

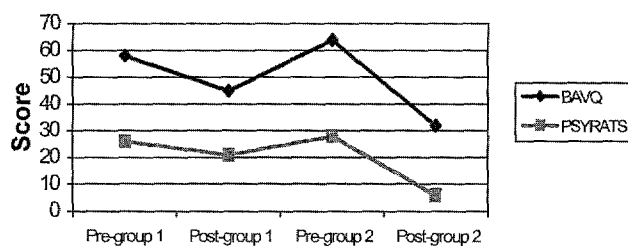
*Note.* Standard deviations are in parentheses, and scores for the PANSS are for Group 2 only. BAVQ-R = Beliefs About Voices Questionnaire-Revised; PSYRATS = Auditory Hallucinations Rating Scale; PANSS = Positive and Negative Syndrome Scale.

It is interesting to note that although the results for the PSYRATS and PANSS did not reach conventional statistical significance, the mean scores for the PSYRATS and PANSS did decrease following treatment. Scores on the PSYRATS decreased from a mean of 26.5 to 22.1 after treatment, and scores on the PANSS decreased from an average of 5.4 to 4.6, indicating some improvement (see Table 3 for complete pre- and posttreatment scores for the combined groups). Thus, the marginally significant results, despite large effect sizes for both tests, appear to be due to the low statistical power of the study rather than an absence of a treatment effect (Cohen, 1988).

#### Supplementary Analyses

To address the post-hoc hypothesis that intellectual functioning may influence a participant's ability to benefit from the group, multivariate regression was used to examine the predictive ability of premorbid intellectual ability. The omnibus test revealed that reading ability was not predictive of the combined clinical outcome measures, Wilks's  $\lambda = .1174$ ,  $F(1, 3) = 2.51$ , *ns*, or for each measure individually (BAVQ-R:  $F[1, 3] = 2.32$ , *ns*; PSYRATS:  $F[1, 3] = 1.45$ , *ns*; PANSS:  $F[1, 3] = .03$ , *ns*). Thus, premorbid intellectual functioning was not related to treatment response in this sample.

Finally, recall that one individual participated in both groups. As a post-hoc analysis, we examined this participant's pre- and posttreatment BAVQ-R and PSYRATS scores for each group (Figure 1). The participant showed improvement in his or her beliefs regarding auditory hal-



**Figure 1.** Scores on the clinical measures for the individual who participated in both groups.

lucinations following the first group and then experienced an increase in negative beliefs prior to beginning the second group. What is most interesting, however, is the decline in distress associated with his or her voices after completion of the second group. This single case design suggests a specific treatment effect and indicates that individuals may receive greater benefits from repeated exposure to the principles and techniques taught in the group.

#### Discussion

This study evaluated the effects of a group cognitive-behavioral therapy for inpatients with persistent auditory hallucinations. The results revealed that distress associated with symptoms was reduced at the end of the treatment and that this improvement did not differ as a function of protocol length. That is, the two treatment groups that differed in protocol length both showed significant reductions in multiple dimensions of auditory hallucinations such as distressing beliefs about the voices and frequency of auditory hallucinations.

Perhaps the most important extension of this study to previous work in this area is that it was conducted only with inpatients. Individuals who are hospitalized often experience more severe symptoms than outpatients, and the fact that improvement was seen even in this symptomatic and chronically ill population suggests that the treatment has good potential. Further, the clinical utility of this treatment appears to be quite good. In other words, this study shows that group CBT is a clinically feasible intervention for auditory hallucinations and has promising direct clinical benefits. A self-report measure was administered to the participants of the second group at the conclusion of treatment, and all participants reported feelings of greater control over their voices, less distress associated with their voices, and greater knowledge about their voices. All of these improvements were attributed to participation in the group.

It is unclear what accounted for the lack of treatment duration effects. One possibility is that the clinical effects are somewhat rapid. The finding that intellectual functioning did not limit participants' abilities to benefit from the group indirectly supports this hypothesis, as one might expect persons with cognitive impairments to benefit from greater frequency of treatment. Therefore, the effectiveness of the briefer group CBT suggests that this intervention may be a cost- and time-efficient method for delivering psychosocial treatments.

There are a few limitations to this study, such as the lack of a control group, random assignment to groups, follow-up assessments, and blinding of raters. Although lack of a control group may appear to be the most important limitation, it should be noted that almost all of the

participants were long-term, chronic patients who showed little to no improvement in their auditory hallucinations over the course of their stay at the hospital. Thus, it is likely that the improvements seen here can be attributed to the intervention rather than treatment as usual.<sup>7</sup> However, given the other limitations mentioned above, these results should be interpreted with caution, and additional trials should be conducted to rule out possible confounds that threaten internal validity. Nonetheless, the heuristic and clinical value of this study should not be ignored. On average, individuals reported significantly less distress associated with their voices following treatment, and all measures indicated favorable results. Additionally, the effect sizes for the tests of the amount of change on each measure from pre- to posttreatment were all large. This is particularly promising given the naturalistic setting of this study and small sample size. In all, it appears that group cognitive-behavioral treatment for voices is a promising and potentially economical treatment for individuals with medication-resistant auditory hallucinations.

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