Beliefs About Voices and Aggressive Behavior in Inpatients in an Acute Psychiatric Setting

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Objective: To examine the relationship between the personal beliefs that patients with auditory hallucinations have concerning their voices and the incidence of aggression toward self, others, and objects on the inpatient ward.

Method: Forty actively hallucinating adults were recruited from the psychiatric inpatient service at Bellevue Hospital Center in New York. The beliefs that subjects had about their voices were measured using the revised Beliefs About Voices Questionnaire, and symptom severity was measured using the Positive and Negative Syndrome Scale. Frequency and severity of aggressive acts were measured retroactively over a 2-week period using the retroactive Overt Aggression Scale-Modified. The study was conducted from August 2007 to December 2007.

Results: Analyses revealed that hallucinators' beliefs that their voices are omnipotent, malevolent, and unable to be resisted accounted for 34% of the variance in predicting aggression on the psychiatric inpatient service. Subsequent stepwise regression analysis determined that hallucinators' belief in the omnipotence of their voices accounted for 21% of variance in predicting aggressive episodes on the inpatient service. Additionally, hallucinators with the strongest conviction in the omnipotence of their voices engaged in almost 10 times more aggressive acts on the inpatient service compared to voice hearers without these convictions.

Conclusions: Individuals who believe their hallucinated voices to be all-powerful, malevolent, and irresistible are significantly more likely to engage in aggressive acts on the inpatient service. Examining the beliefs that an individual has about his/her voices may be a useful addition to current aggression risk batteries utilized on acute psychiatric inpatients.

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Acts of aggression committed by psychiatric patients pose a significant problem for other patients, treating clinicians, staff morale, and the therapeutic milieu of the treatment setting. The prediction of aggression also has considerable utility because it has been estimated that approximately 43% of all aggressive episodes occurring within the hospital environment (at least in the United States) are committed by patients in the psychiatry service.[1] Over the years, clinicians have still been unable to reliably predict and prevent aggressive behavior in patients with schizophrenia.[2–5] As a result, assessment of patients' aggression risk represents a standard level of contemporary care that is seldom realized in clinical practice. Examination of patients' severity of symptoms has yielded inconsistent results. A high incidence of physical aggression, for example, has been found in institutionalized patients with severe negative symptoms.[6–8] Also, some studies have found that the presence of prominent positive symptoms was a predictor of aggression in schizophrenia and bipolar disorder.[9–14] Nolan et al,[10] for example, found that within 3 days before aggressive incidents, significant elevations in positive symptoms distinguished aggressive inpatients from their nonaggressive peers.

Others, however, have failed to find an association between severity of psychopathology and aggression committed by psychiatric patients.[15–18] Kay et al,[15] for example, reported that increased aggression on the inpatient service was unrelated to the severity of patients' positive or negative symptom presentation. Applebaum et al[16] also found no relationship between patients' severity of positive symptoms and incidences of aggression in recently discharged patients living in community settings.

Some past investigators have hypothesized that patients presenting specifically with command hallucinations instructing them to act violently are at heightened risk to commit aggressive acts. Past investigations, however, do not fully support this notion.[19] The relationship between command hallucinations and subsequent acts of aggression is complex.[20] Some investigators, for example, have found no association between violent command hallucinations and acts of aggression.[21–24] Cheung et al,[21] for example, in a well-controlled study, found no differences in violent behavior in people with or without command hallucinations. Others, in contrast, have reported that voice hearers are frequently compliant with commands and are at increased risk to act in an aggressive manner.[25–28]

Further examination of the hallucinatory experience may help elucidate its role in contributing to violent behavior in psychotic patients. Hallucinators construct meaning from their voices and develop a belief system that is based upon their experience of hearing voices that may be relevant for aggression risk. That is, hallucinators may develop a framework with beliefs about the content and purpose of their voices and subsequent behavioral consequents along various dimensions, including omnipotence, malevolence, benevolence, engagement, and resistance.[29]

Voices believed to be malevolent and omnipotent by the hallucinator are hypothesized to incite negative emotions, feelings of powerlessness, and subordination, while those believed to be benevolent arouse positive affect and are behaviorally engaged. Along these lines, one study found that voice hearers were more likely to follow through on command hallucinations if they perceive the voices to be omnipotent and uncontrollable.[30]

While past investigations have examined the relationship between violent themes related to command hallucinations, no study to date has examined the relationship between the attributions patients ascribe to their auditory hallucinations and subsequent aggressive action. In the present study, we examined the utility of examining voice hearers' beliefs about their voices as predictors of aggression on the inpatient service.

We hypothesized that voice hearers prone to act aggressively would perceive their voices as omnipotent, malevolent, and difficult to resist. Recent evidence suggests that attributions patients make about their hallucinatory experiences are also reflected in the interpersonal attributions toward others, and this was hypothesized, in part, to mediate aggressive behavior.

METHOD

Participants

Psychiatric inpatients experiencing hallucinations (N = 40) were recruited from consecutive admissions to the acute inpatient psychiatric service at Bellevue Hospital Center in New York, an urban psychiatric inpatient facility. All participants were diagnosed with schizophrenia, schizoaffective disorder, or a mood disorder with psychotic features. All subjects gave written informed consent for their participation, and their demographic information is presented in Table 1.

There were 34 male participants and 8 female participants ranging in age from 18 to 62 years old (mean = 35.5; SD = 11.5). There were significantly more men (85%) than women participants ($\chi^2 = 19.6$, $P < .001$), and a significant majority of participants (85%) were unemployed ($\chi^2 = 19.6$, $P < .001$) and unmarried ($\chi^2 = 65.4$, $P < .001$) at the time of the study.

Patients were identified upon arrival and recruited within 72 hours of psychiatric admission. To be enrolled in the study, subjects needed to experience active auditory hallucinations as determined by the following criteria[31]:

1. Positive mental status examination (MSE) documentation for the presence of auditory hallucinations at hospital admission
2. Positive MSE for the occurrence of auditory hallucinations for the week that testing occurred
3. Medical chart documentation indicating that the patient experienced auditory hallucinations during the week before testing
4. Positive verbal report of auditory hallucinations from patients' psychiatric nurse during the week of testing
5. Positive and Negative Syndrome Scale (PANSS)[32] hallucinatory behavior item score > 2

Patients were excluded from the study if any of the above criteria were not met, if they denied having hallucinations, or if their hallucinations were drug induced or due to disorders of the central nervous system. The study was conducted from August 2007 to December 2007.

Table 1. Sociodemographic Characteristics of Subjects Experiencing Auditory Hallucinations

Characteristic	n	%
Gender*		
Male	34	85
Female	6	15
Race		
Black	14	35
Hispanic	12	30
White	10	25
Asian	2	5
Mixed/other	2	5
Marital status*		
Single	32	80
Married	2	5
Divorced	1	2.5
Separated	5	12.5
Age, y		
18–24	8	20
25–35	14	35
36–50	12	30
> 50	6	15
Employment*		
Employed	6	15
Unemployed	34	85

*$P < .01$.

Measures

Positive and Negative Syndrome Scale. All patients were assessed with the PANSS.[32] The PANSS is a 30-item rating scale that assesses the severity of negative, positive, and general symptoms of psychopathology. The PANSS was conducted by graduate student research assistants trained by the PANSS Institute in New York, New York. Interrater agreement on the 3 PANSS subscales was high (intraclass correlation coefficients [ICCs] > 0.8) when 20% of the sample was overlapped for reliability.

Revised Beliefs About Voices Questionnaire. The revised Beliefs about Voices Questionnaire (BAVQ-R) is a 35-item instrument devised to assess hallucinators' beliefs about their voices.[29] There are 3 primary scales in the instrument—malevolence (eg, "My voice wants me to do bad things to myself"), benevolence (eg, "My voice wants to protect me"), and omnipotence (eg, "My voice is very powerful")—and 2 subscales—resistance (eg, "I refuse to do what my voices say") and engagement (eg, "I try to make contact with my voices")—that measure the emotional and behavioral responses to the held beliefs. Subjects rate these scales in a Likert-type manner ranging from 1 to 7.

Overt Aggression Scale-modified. The Overt Aggression Scale-Modified (OAS-M)[33] was used to record aggressive and violent behaviors of subjects. The OAS-M is an adaptation of the Overt Aggression Scale (OAS)[34] used to record the frequency and severity of aggressive/violent behaviors occurring over the previous week. The OAS-M was completed by gathering information from patients' medical charts, which included nursing notes and progress notes, as well as medication and administration notes. Four OAS-M categories of behavior are rated—verbal aggression, physical aggression against self, physical aggression against others, and physical aggression against objects—and each category contains 4 behaviors differing in level of severity for a total of 16 separate behaviors on the full scale. Weights for each individual behavior within each category are provided to reflect the severity of the behavior. The weights are as follows: verbal aggression (items 1–4), 1–4; physical aggression against objects (items 5–8), 2–5; physical aggression against self (items 9–12), 3–6; and physical aggression against others (items 13–16), 3–6. Additionally, the frequency of the behavior is documented on a 5-point Likert scale (never = 0, sometimes 1–2 times] = 1, often [3–4 times] = 2, usually [5–10 times] = 3, always [> 10 times] = 4), referred to as interval scores. To obtain scores for the past week for individual behaviors, the interval score was multiplied by the weight for that behavior. All individual behavior scores within a category were summed to yield a subscale score for each category. Twenty percent of these OAS-M ratings were overlapped for reliability using ICCs. The raters yielded acceptable reliabilities on all scales (ICCs > 0.78).

Procedure

After obtaining informed consent, study participants completed the BAVQ-R and PANSS. After administration of these scales, the subject's medical chart was reviewed and collateral PANSS information was collected to help determine if subject inclusion criteria were fully met and to collect OAS-M data.

RESULTS

To analyze the predictive relationship between patients' beliefs about their voices and subsequent aggression, we performed simultaneous multiple regression analyses using patients' BAVQ-R and PANSS scales as the predictor variables and OAS-M total aggression score as the dependent variable. Significant predictors from the simultaneous regression analysis were then entered into a follow-up stepwise multiple regression analysis to determine the relative contribution of each variable to the prediction of aggression. Simultaneous multiple regression analyses revealed patients' BAVQ-R factor scores on omnipotence, malevolence, and lack of resistance to voices entered into the equation as significant predictors of aggression ($F = 7.70$, $P < .001$, $R^2_{adjusted} = 0.34$). These results are presented in Table 2.

Table 2. Regression Analyses of Patients' Beliefs About Voices Predicting OAS-M Total Aggression

Variable	β	$R^2_{adjusted}$	*F*	*P*
BAVQ-R scale				
Omnipotence	.50	0.20	11.3	.01**
Malevolence	.68	0.07	4.1	.04*
Resistance	.70	0.01	2.9	.58
Model	R	$R^2_{adjusted}$	*F*	*P*
Stepwise, overall	0.23	0.20	11.3	.01**
Simultaneous, overall	0.63	0.34	7.7	.001***

*$P < .05$, **$P < .005$, ***$P < .001$.
Abbreviations: BAVQ-R = revised Beliefs About Voices Questionnaire, OAS-M = Overt Aggression Scale-Modified.

The statistically significant predictors were then entered into a follow-up stepwise regression equation to ascertain the relative contribution of each predictor to patients' aggression total scores. The stepwise multiple regression was also significant ($F = 11.30$, $P < .005$), with omnipotence being the only variable to be retained, accounting for 21% of the variance in OAS-M aggression scores.

To further explore the role of omnipotent attributions to hallucinated voices, a 1-way analysis of variance was computed comparing OAS-M total aggression scores in patients who scored in the upper versus the lower quartile on the BAVQ-R omnipotence factor. Results revealed that hallucinators who scored in the upper quartile (n = 13) on omnipotence convictions about their voices were almost 10 times more aggressive than patients who attributed low omnipotence to their hallucinated voices (n = 8), which trended toward statistical significance ($F_{1,19} = 4.04$, $P = .06$).

DISCUSSION

We found that omnipotent and malevolent beliefs about hallucinated voices along with beliefs about their inability to resist commands predicted patients' aggressive behavior on the psychiatric inpatient service. These results indicate that hallucinators who believe that their voices are all-powerful and pernicious and that they are powerless to resist them represent robust risk factors for the commission of aggressive behavior on the psychiatric inpatient service.

Recent evidence suggests that attributions patients make about their hallucinatory experiences are also reflected in the interpersonal attributions toward others.[35,36] Levine et al,[36] for example, found that hallucinatory-prone individuals externalize their beliefs about their perceptual aberrations to social interpersonal events. Similarly, attributions of powerlessness and inadequacy hallucinators have about their voices may be reflected interpersonally in their social relationships. A sense of being powerless and controlled by others may lead hallucinators to harbor shame, hostility, and resentment in interpersonal situations.[30] If conclusions from past studies can be generalized to the present findings, it may be the case that hallucinators' social sense of thoughts of powerlessness and inferiority may increase their level of hostility and result in acts of aggression toward others who they see as controlling or manipulating them.

A recent study, moreover, has found that patients' beliefs about their voices remain stable over time, even when hallucinations and other symptoms of psychosis and psychopathology abate.[37] This suggests that hallucinators' sense of malevolence, powerlessness, and inferiority-type attributional styles remain stable interepisodically. It may be the case, consequently, that psychotherapy aimed at challenging the omnipotence and malevolence of hallucinated voices and, by extension, feelings of inferiority and subordination in social relationships may also help patients decrease their aggression potential and develop coping strategies to resist psychotic or aggressive action.

Cognitive therapy aimed at refuting patients' beliefs about the power of their voices, increasing their ability to resist demands made by voices along with challenging feelings of interpersonal inferiority and subordination to others, may also hold the promise to reduce occurrences of aggressive behavior. Future investigators may wish to prospectively examine the clinical utility of hallucinators' beliefs about their voices in predicting subsequent aggressive acts during acute episodes as well as interepisodically in community settings. Prospective studies that employ concomitant use of assessing patients' beliefs about their voices along with a specifically tailored version of the OAS,[38] which delineates information describing antecedents and consequences of aggression, may help bridge interpersonal factors with immediate antecedents or triggers associated with aggression. Interventions can then be expanded to include both patients' long-standing beliefs and feelings about themselves and others with environmental triggers and reinforcers.

The current study's aggression prediction is limited by the presence of hallucinations and patients' willingness to talk about their voices. But since hallucinations present as a hallmark or significant feature of acute schizophrenia and mood disorders, ascertaining patients' belief about their voices may have wide clinical utility in identifying, treating, and preventing aggressive behavior.[14,20,39,40]

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