Original Contributions

Depressive Symptomatology and Attributional Style in Patients with Schizophrenia

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Abstract

Objectives: The aim of the study was to evaluate the attributional styles and self-serving bias (SSB) in schizophrenic patients with depressive symptoms (schizophrenia and depressive symptoms [SD]) and without depressive symptoms (schizophrenia nondepressed [SND]), and control subjects (C). **Methods:** Forty-four outpatients with schizophrenia (twenty-two SD and twenty-two SND) and fifty gender- and age-matched C subjects completed the Attributional Style Questionnaire (ASQ). Attributional styles for positive and negative events were calculated by separately summing the responses for positive and negative items on the ASQ subscales (internality, stability, and globality). **Results:** For negative events, we found that patients with schizophrenia, independently of levels of depressive symptoms, made more internal, stable, and global attributions than C subjects. For positive events, both C subjects and SND patients made more internal, stable, and global attributions than SD patients. Moreover, C subjects and SND patients scored higher for positive situations than for negative situations. However, there were no differences between attributional styles for positive and negative situations among SD patients. For SSB, C subjects and SND patients had higher scores than SD patients. **Conclusions:** Among patients with schizophrenia, attributional style for positive events may distinguish between those patients with or without depressive symptoms. Our results highlight the importance of assessing depressive symptoms and attributional style in patients with schizophrenia.

Introduction

Attributional style refers to a cognitive process involving explanations that people use to understand the events that happen in their lives. The tendency to explain bad events with internal, stable, and global causes has been labelled negative attributional style (NAS). This style has been widely related to depression and depressive symptoms (1, 2). On the other hand, the tendency to explain good events with internal, stable, and global causes has been labelled enhancing attributional style (EAS).

Recently, several studies have attempted to assess the role of attributional style and self-serving bias (SSB), which is a tendency to make more internal attributions for positive than for negative situations, in the symptomatology of patients with schizophrenia. Although the research on this topic in this group of patients has usually focused on the possible, and still controversial, relationship between persecutory delusions and exaggerated SSB (3-11), attributional style in patients with schizophrenia has been related to social function, independently of severity of symptomatology (12).

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Clinical Implications

Despite limitations, this study provides new data with potential clinical applications. In particular, the results showed that attributional style for positive events distinguishes patients with depressive symptomatology from other subjects (both schizophrenic patients without depressive symptoms and control subjects), while attributional style for negative events discriminates between patients with schizophrenia and control subjects. Thus, these results point out that, in outpatients with schizophrenia, the attributional style for positive events (and also self-serving bias) is dependent on the depressive symptomatology. These findings are of potential interest in clinical practice, mostly since attributional style is potentially open to change through psychotherapy (56, 57), and there is a positive relationship between attributional change and change in depressive symptoms by means of psychotherapy (58). Therefore, patients with schizophrenia with depressive symptomatology would benefit from treatments that focus on shaping the attributional style of positive events. Naturally, further research is needed to confirm this suggestion.

Interestingly, studies have shown no differences between patients with schizophrenia and healthy control subjects (nonpsychiatric medical patients or students) on NAS (3, 13), EAS (13) and SSB (6, 14, 15). Conversely, both groups (patients with schizophrenia and healthy control) scored lower on NAS (3, 11, 13, 16), and higher on EAS (3, 13) and SSB (17) than in patients with a depressive disorder.

These studies have shown that tendencies to explain both good and bad events with internal, stable, and global causes are non-different in patients with schizophrenia and healthy controls, but, conversely, they are markedly different in patients with schizophrenia and patients with depression.

It is known that depressive symptoms are common in patients with schizophrenia (18). Therefore, the presence of non-assessed depressive symptoms might be a confounding factor in the study of the role of the attributional style in patients with schizophrenia, contributing to the differences in attributional styles between patients with schizophrenia and control subjects (11, 13, 14, 19). The findings of a positive correlation between internal attributions of failures and depressive symptoms in samples of individuals with schizophrenia (2, 3), as well as studies reporting more internal attributions for negative situations than for positive events in patients with schizophrenia with depressive symptoms (17), support this suggestion. However, it is necessary to corroborate these findings with the three attributional dimensions that constitute attributional style, and not only the internality dimension, because the research on the attributional style has shown that the stability and globality dimensions are more relevant than the internality dimension to predict depressive symptoms (20, 21). Furthermore, this assessment has necessarily to be controlled for the occurrence of depressive symptomatology.

The first aim of the present study was to evaluate the attributional styles and SSB of outpatients diagnosed with schizophrenia with and without depressive symptoms. In accordance with the previous findings and suggestions, we expected that the group of patients with schizophrenia and depressive symptoms (SD) would score higher on NAS, and lower on EAS and SSB, than the groups containing both patients with schizophrenia without depressive symptoms (SND) and control (C).

Methods

Subjects

The sample was composed of forty-four outpatients diagnosed with schizophrenia and fifty gender- and age-matched healthy control subjects. Patients were recruited from the Puente de Vallecas and Moratalaz mental health centers, both in Madrid, between March and December 2005. Schizophrenia was diagnosed by the patients' treating psychiatrists according to *International Classification of Diseases, 10th Revision (ICD-10)* criteria. All diagnoses were confirmed by a second clinical psychiatrist. Patients gave written informed consent to participate in the study. Out of the forty-four patients with schizophrenia, thirteen were females (29.5%) and thirty-one were males (70.5%), with a mean age of 38.1 years (standard deviation [SD]=9.7, range 18–62). Mean length of illness was 15.1 years (SD=9.2). None of the patients had a psychiatric admission in the previous three months. Only eleven patients (25%) had a psychiatric admission in the past year. Eleven patients (25%) were living independently of the primary family, thirty-six (81.8%) were single, twenty-three (52.3%) had eight or fewer years of education, and twenty-six patients (59.1%) were unemployed. Other characteristics of the sample are described elsewhere (22). Control subjects were recruited from the student body of the School of Psychology of the National Open University of Spain (UNED: Universidad Nacional de Educación a Distancia). Controls were included if they had

Table 1	Attributional Style Scores by Group			
Attributional Style	**Control (C) N=50**	**Schizophrenia without Depressive Symptoms (Nondepressed) (SND) N=22**	**Schizophrenia with Depressive Symptoms (SD) N=22**	**Between-Group Differences ***
For Positive Events, Mean (SD)	29.9 (3.9)	30.7 (5.9)	27.0 (4.95)	ANOVA, F=3.998, df=2,91, P=0.022 Tukey's HSD Post Hoc: C vs. SND: P=0.801; C vs. SD: P=0.045; SND vs. SD: P=0.029
For Negative Events, Mean (SD)	23.0 (4.2)	26.8 (4.7)	27.3 (4.3)	ANOVA, F=10.124, df=2,91, P<0.001 Tukey's HSD Post Hoc: C vs. SND: P=0.003; C vs. SD: P=0.001; SND vs. SD: P=0.922
Within Subject Differences †	ANOVA F=163.43, df=1,49, P<0.000	ANOVA F=8.17, df=1,21, P=0.009	ANOVA F=0.03, df=1,21, P=0.870	

* Between-group differences: comparison among C, SND, and SD
† Within-subject differences: event type comparison (positive vs. negative)
ANOVA=Analysis of Variance between groups;
Tukey's HSD Post Hoc=Tukey's Honestly Significant Differences Post Hoc Test

no past or current history of psychotic symptoms (based on a structured face-to-face interview) and had no current depressive symptoms (score on Beck Depression Inventory, Spanish version, <6) (23, 24).

Attributional Style

Attributional style was assessed using the Attributional Style Questionnaire (25), Spanish version (26). The ASQ is a self-report instrument containing twelve hypothetical events, six negative and six positive. For each situation individuals indicate on three seven-point scales the extent to which they would attribute these events to internal, stable, and global causes. A rating of "1" on the scales indicates an external (totally due to other people or circumstances), unstable (the cause will never again be present), and specific (the cause influences just this particular situation) attribution, while on the other extreme a "7" reflects an internal (totally due to me), stable (the cause will always be present), and global (the cause influences all situations in my life) explanation.

Composite positive and negative style scores (corresponding to attributional styles for positive and negative events, respectively) were calculated by separately summing the responses for positive and negative items. Higher scores on composites reflect greater internal, stable, and global

attributions. Self-serving bias (SSB), which is a tendency to excessively attribute positive events to internal causes and negative events to external causes (27), was obtained by subtracting the mean internality score for negative items from the score for positive items (4). Internal reliability (Cronbach's α) for the positive and negative scores was 0.87 and 0.67, respectively, for schizophrenic patients, and 0.82 and 0.76, respectively, for the control group.

Attributional Style and Depression

Depressive symptomatology in patients with schizophrenia was assessed using the emotional dimension (22, 28, 29) of the Positive and Negative Symptoms Scale (PANSS) (30), Spanish version (31). Evidence from recent factor-analytic studies conducted using the PANSS suggested that a five-dimensional structure (positive syndrome, negative syndrome, cognitive syndrome, excitement, and emotional discomfort) appears to be a better representation of the psychopathology of schizophrenia (28, 29). Emotional discomfort domain has previously been related to depressive syndrome (32). Thus, analysis for depressive symptomatology was based on this emotional PANSS dimension, obtained as the average score of four items of the PANSS: Anxiety (G2), Guilt (G3), Depression (G6), and Active Social Avoidance (G16) (28).

Patients were classified according to degree of depression by categorizing those patients with a PANSS emotional score greater than 2 as schizophrenia with depressive symptoms (SD), and those with a score equal to or lower than 2 as schizophrenia nondepressed (SND). This cutoff procedure (score greater vs. equal or lower than 2) was used following the PANSS criteria of symptom severity (33). Since this dichotomization coincided with the median (2.63), 50% of the patients were assigned to the SND group and 50% to the SD group. These groups were correctly formed, given that the scores on a classification variable (PANSS Emotional) were significantly different between with and without depressive symptoms subjects (1.76 vs. 3.32, $F=89.89$, $df=1,42$, $P<0.001$). This resulted in three groups: control (C), schizophrenia nondepressed (SND), and schizophrenia with depressive symptoms (SD).

Statistical Analysis

In order to assess the relationship between attributional style and diagnostic status, we performed a multivariate analysis of variance (MANOVA) for each of two dependent measures (attributional styles for positive and negative situations), with groups (C, SND, and SD) as a between-subject factor and event type (positive versus negative) as a within-subject factor.

For each variable (attributional styles for positive and negative events and SSB) and group (C, SND, and SD), comparison was done by means of a one-way analysis of variance (ANOVA), with Tukey's Honestly Significantly Different (HSD) post hoc test when needed. For hypothesis testing, we used $P=0.05$ as the probability of a type I error. SPSS for Windows, version 14.0 (Chicago, Illinois, USA) was used to code the statistical analysis algorithms.

All analyses were performed separately for males and females. As there were no significant differences in the pattern of the results, male and female data were analyzed together.

Results

Subjects

Forty-four patients (31 males [71.5%], 13 females [28.5%], age 38.1±9.7 years) and 50 healthy controls (35 males [70%], 15 females [30%], age 35.1±9.6 years) composed the sample. Differences in gender ($\chi2=0.002$, $df=1$, $P=0.962$) and age ($t=-1.446$, $df=92$, $P=0.152$) between patients and controls were not significant. Gender, age and length of illness were unrelated to attributional styles.

Relationship between Attributional Styles and Diagnostic Status

The MANOVA revealed a significance trend for groups ($F=3.02$, $df=2,91$, $P=0.054$), and significant main effects for event type ($F=34.27$, $df=1,91$, $P<0.001$) and for group X event type interaction ($F=13.58$, $df=2,91$, $P<0.001$). Table 1 shows means and standard deviations by groups and post hoc analysis by groups and variables.
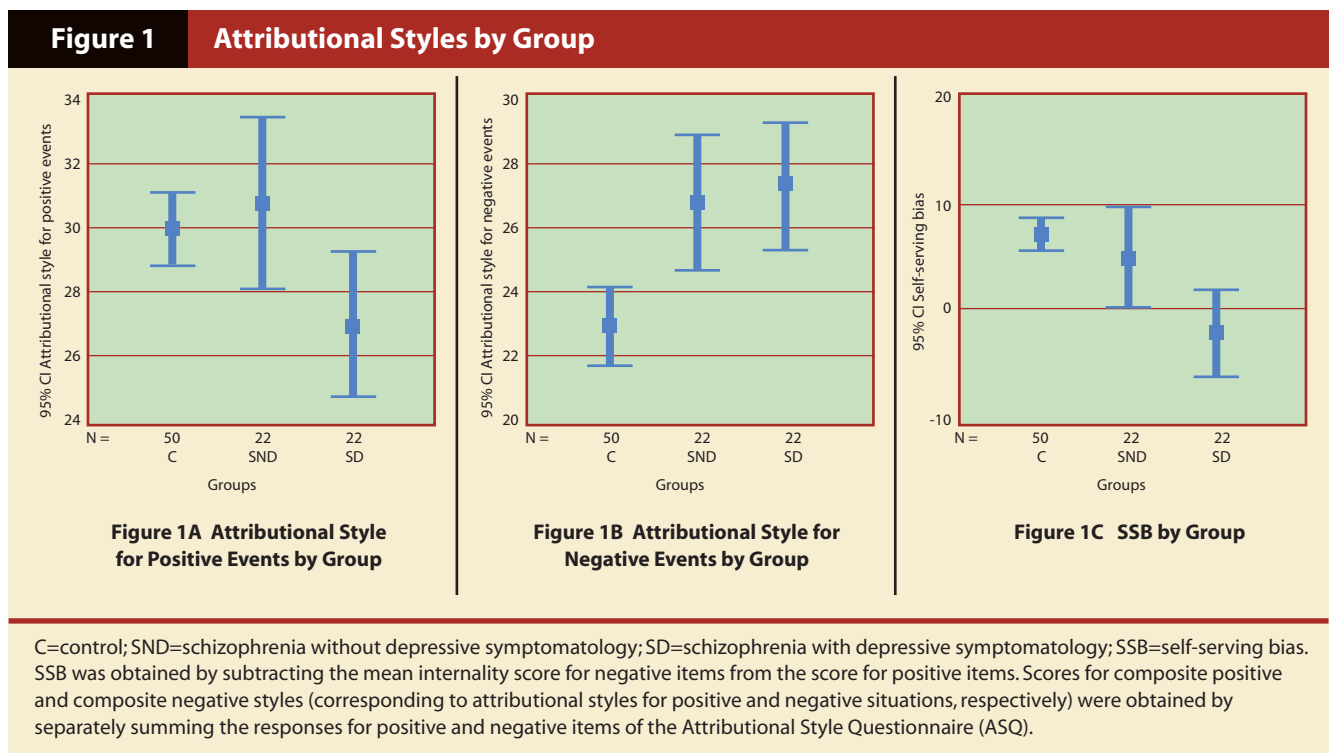

Figure 1   Attributional Styles by Group

Figure 1A Attributional Style for Positive Events by Group

Figure 1B Attributional Style for Negative Events by Group

Figure 1C SSB by Group

C=control; SND=schizophrenia without depressive symptomatology; SD=schizophrenia with depressive symptomatology; SSB=self-serving bias. SSB was obtained by subtracting the mean internality score for negative items from the score for positive items. Scores for composite positive and composite negative styles (corresponding to attributional styles for positive and negative situations, respectively) were obtained by separately summing the responses for positive and negative items of the Attributional Style Questionnaire (ASQ).

Table 2	Self-Serving Bias (SSB) by Group			
	Control (C) N=50	Schizophrenia without Depressive Symptoms (Nondepressed) (SND) N=22	Schizophrenia with Depressive Symptoms (SD) N=22	Between-Group Differences *
SSB, Mean (SD)	7.6 (5.4)	5.5 (10.2)	-1.3 (8.7)	ANOVA, F=10.686, df=2,91, P=0.001 Tukey's HSD Post Hoc: C vs. SND: P=0.506; C vs. SD: P<0.001; SND vs. SD: P=0.001

* Between-group differences: comparison among C, SND, and SD
  ANOVA=Analysis of Variance between groups;
  Tukey's HSD Post Hoc=Tukey's Honestly Significant Differences Post Hoc Test

For positive events (see Table 1 and Figure 1A), comparisons by groups (C, SND, and SD) showed that attributional style was similar in both controls and SND ($P=0.801$), while two groups (C and SND) made more internal, stable, and global attributions than the third group (SD) ($P=0.045$ and $P=0.029$, respectively).

For negative events (see Table 1 and Figure 1B), both SND and SD made more internal, stable, and global attributions than controls ($P=0.003$ and $P=0.001$, respectively), while attributions were similar in SND and SD ($P=0.922$).

Comparison within-subjects showed that both the control and SND groups made more internal, stable, and global attributions for positive situations than for negative events (F=163.43, $df=1,49$, $P<0.001$ and F=8.17, $df=1,21$, $P=0.009$, respectively). However, there were no differences between attributional style for positive situations and for negative events in the SD group (F=0.03, $df=1,21$, $P=0.870$).

The same analyses performed separately for the three dimensions (internality, stability, and globality) resulted in an identical pattern of results. Therefore, we report only the results for two composite scores, corresponding to attributional styles for positive and negative situations. Moreover, the fact that the pattern of results is repeated in each of the three dimensions implies that the results obtained with composite scores are not due solely to a specific dimension.

Self-Serving Bias

As shown in Table 2 and Figure 1C, SSB was not significantly different in controls and SND ($P=0.506$), while both control subjects and SND had higher rates of SSB than SD ($P<0.001$ and $P=0.011$, respectively).

Discussion

The aim of the present study was to evaluate the influence of depressive symptoms on SSB and attributional styles for positive and negative situations in patients with schizophrenia compared with control subjects. Our results showed

that attributional style for positive events in patients with schizophrenia may distinguish between those patients with and without depressive symptomatology. On the contrary, attributional style for negative events may distinguish between control subjects and patients with schizophrenia, independently of the depressive symptomatology.

Interestingly, both subgroups of schizophrenic patients (SND and SD) showed attributional styles for negative situations similar to those found in populations with clinical depression or depressive symptomatology (20, 34-39). This finding, along with previous results regarding an association between the negative attributional style and schizophrenia (15, 19), anxiety (40-45), and personality disorders (36, 37, 46), suggests that negative attributional style might not be specific to depression or schizophrenia, but related to different psychopathological conditions of psychological distress.

With regard to attributional style for positive situations, our results showed that this style distinguished patients with and without depressive symptomatology, supporting the hypothesis defended by some authors that people with depressive symptomatology tend to explain positive situations with external, unstable, and specific causes (40, 41, 47, 48).

Attributional style might affect clinical outcome through its effect on expectations about future controllability of events. In this way, individuals with inadequate attributional styles do not expect they can do things that make bad events less likely. These expectations translate into ineffective coping (49, 50). Thus, the knowledge of the attributional styles of patients with schizophrenia may help in planning appropriate intervention strategies taking into account some of those relevant variables that are related to recovery of mental health.

In keeping with previous studies (6, 17), our findings on SSB show that it is inversely related to levels of depressive symptoms. This fact suggests that SSB may be involved in the protection and/or maintenance of self-esteem, as other stud-

ies have found both in normal populations and in samples of patients with schizophrenia (51, 52).

This article was subject to some limitations that deserve mention. Firstly, the ASQ has been criticized for poor psychometric properties (53). However, composite ASQ scores achieve a satisfactory level of internal consistency (0.76 and 0.85 for negative and positive events, respectively, for the total sample). Secondly, the sample of nondepressed controls was matched for age and gender, but not for other variables, such as socioeconomic status. Furthermore, controls had no past or current history of psychotic symptoms and had no current depressive symptoms (score on Beck Depression Inventory <6). However, they were not assessed by means of a diagnostic inventory. Thirdly, depressive symptoms in the sample of patients with schizophrenia were evaluated by means of a factor founded on PANSS items. Although the PANSS was not specifically developed to assess depressive symptomatology, the Emotional Discomfort Domain (a PANSS dimension) has previously been related to depressive symptomatology as well as to impaired quality of life in patients with schizophrenia (32). Therefore, given that it was assessed in the same clinical context as the global symptomatological evaluation (with the PANSS), thus facilitating the interview, it was used to assess depressive symptomatology in our sample of patients with schizophrenia.

Fourthly, the influence of paranoid symptoms, especially persecutory delusions, on attributional style was not controlled for. The relationship of persecutory delusions and attributional styles in patients with psychosis has been widely assessed, with no unambiguous results (3-11, 54, 55). However, in this study, we focused on the relationship between depressive symptomatology and attributional style in patients with schizophrenia. In this sense, we conducted an exploratory analysis of the relationship between specific psychotic symptoms (in particular, those assessed by items 1 [Delusions] and 6 [Suspiciousness/Persecution] of the PANSS positive scale). This analysis showed that there was not a significant relationship between scores of items 1 and 6 (evaluated as dichotomous variables, using the PANSS clinical severity criteria, that is item higher than 2, as cutoff) and attributional style for positive situations (P=0.280 for item 1 and P=0.724 for item 6), attributional style for negative situations (P=0.897 for item 1 and P=0.669 for item 6), and SSB (P=0.413 for item 1 and P=0.277 for item 6). Fifthly, the control sample was gender- and age-matched with the schizophrenia sample, but it was not matched on socioeconomic status. Sixthly, although control subjects were not currently depressed, we did not assess for the past history of major depressive episodes. Finally, the sample of patients with schizophrenia was composed of chronic patients with a mean duration of illness of 15.1±9.2 years. It would be interesting to evaluate patients with a first episode of schizophrenia, but without a history of antipsychotic treatment.

Conclusions

Despite these limitations, the study provides new data with potential clinical applications. In particular, the results showed that attributional style for positive events distinguishes patients with depressive symptomatology from other subjects (both schizophrenic patients without depressive symptoms and control subjects), while attributional style for negative events discriminates between patients with schizophrenia and control subjects. Thus, these results point out that, in outpatients with schizophrenia, the attributional style for positive events (and also SSB) is dependent on the depressive symptomatology. These findings are of potential interest in clinical practice, mostly since attributional style is potentially open to change through psychotherapy (56, 57), and there is a positive relationship between attributional change and change in depressive symptoms by means of psychotherapy (58). Therefore, patients with schizophrenia with depressive symptomatology would benefit from treatments that focus on shaping the attributional style of positive events. Naturally, further research is needed to confirm this suggestion.

As a corollary, our results highlight the importance of assessing the presence and severity of depressive symptoms in samples of patients with schizophrenia.

Acknowledgments

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