Itemized clinician ratings versus global ratings of symptom severity in patients with schizophrenia

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ABSTRACT *This study compares ratings obtained with an itemized clinician-rated symptom severity measure – the 24-item Brief Psychiatric Rating Scale (BPRS₂₄) – with a Physician Global Rating Scale (PhGRS) and a Patient Global Rating Scale (PtGRS) in assessing treatment outcomes in patients with schizophrenia (SCZ). A total of 91 patients (31 inpatients and 60 outpatients) with SCZ were enrolled in a feasibility study of the use of medication algorithms in the treatment of SCZ. Clinicians completed the BPRS₂₄ and the PhGRS; patients completed the PtGRS at each visit. The analyses reported here were conducted using the original BPRS₁₈ and four items from the BPRS₁₈ that rate the positive symptoms of psychosis (the Positive Symptom Rating Scale or PSRS), comparing anchored with global rating scales and with one another. The PtGRS had the lowest effect size (0.8) and was negatively correlated with the other ratings in inpatients. The PhGRS was significantly correlated (0.46) with the BPRS₁₈, but the same person completed both ratings. The effect size of the PhGRS (0.6) was generally lower than with the BPRS₁₈ (1.4) in differentiating responders from non-responders. On average, the PSRS had a slightly lower effect size than the longer itemized BPRS₁₈, but the results support its use as a quantitative rating in circumstances where it is not feasible to routinely use a lengthier scale.*

Key words: schizophrenia, symptom severity, global measures

Introduction

As the demand for accountability in health service delivery increases, a critical element in ascertaining the benefits of pharmacotherapy is to determine whether a clinically significant degree of symptom reduction and/or restoration of function occur. In the clinical practice of psychiatry there has historically been little use of structured interviews or itemized symptom rat-

ings to quantify symptoms and function. Various rating scales are potential candidates to assess symptomatic outcomes in schizophrenia (SCZ) (Drake et al., 1998), but they have mostly been developed and used in research settings. Their clinical utility has not been extensively tested, and their applicability to routine clinical care may be limited by the amount of time it takes to administer them. Thus, decision making with

regard to medication management in SCZ is typically based on physicians' global assessments.

In the work reported here, the 24-item Brief Psychiatric Rating Scale (BPRS) (Lukoff et al., 1986; Ventura et al., 1994) was chosen as the structured clinical assessment, because its use as a uniform outcomes assessment instrument has been mandated in the Texas public mental health system and clinicians participating in the project were familiar with it. Other instruments such as the 18-item BPRS (Overall and Gorham, 1962; Overall, 1988), the Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1987, 1988), the Scale for the Assessment of Positive Symptoms (SAPS) (Andreasen, 1984), and the Scale for the Assessment of Negative Symptoms (SANS) (Andreasen, 1989) have also been widely used for research purposes, but not tested under ordinary clinical conditions.

Multiple domains of psychopathology have been identified as contributing to the impaired functioning typical of patients with chronic SCZ. These include positive symptoms, negative symptoms, and cognitive deficits (Liddle et al., 1989; Green, 1996; Velligan et al., 1997). It is important to assess each of these areas in each patient with SCZ, but positive symptoms are known to be responsive to antipsychotic medications, whereas there is much less agreement that core negative symptoms and cognitive deficits can reliably be improved with medications (see, for example, Buchanan and Gold, 1996; Geddes et al., 2000). Thus, in terms of monitoring medications, changes in positive symptoms are the clearest indicator of a medication effect or lack thereof.

Hedlund and Vieweg (1980) reported several factor analytic studies of the BPRS₁₈ that suggest a general agreement on a positive symptom cluster, usually defined as four items (suspiciousness, unusual thought content, hallucinations, and conceptual disorganization) (Miller et al., 1999). These symptoms are the traditional targets of antipsychotic medications, so there may be heuristic value in focusing specifically on them, rather than overall psychopathology, as a basis for medication adjustments in patients with SCZ.

One impediment to the routine use of rating scales in the clinical management of patients is the amount of time it takes to administer the scales. In systems where physicians have 15 to 20 minutes for medication management visits, for example, it is clearly impractical for them to use rating scales that take 30 minutes or

more to administer. Two approaches to making routine use of rating scales more feasible are: (1) abbreviate them to selected items of greatest clinical interest and (2) train less costly non-physician clinicians to perform the ratings. The four-item Positive Symptom Rating Scale (PSRS) was designed to accommodate the goals of focusing only on positive symptoms (suspiciousness, hallucinations, unusual thought content and conceptual disorganization), thereby abbreviating the BPRS₂₄. This report deals, in part, with the psychometric properties of the PSRS as derived from the BPRS₂₄.

This report incorporates data gathered in a feasibility study of in-patients and outpatients with SCZ treated in the public sector utilizing a medication algorithm (Gilbert et al., 1998; Chiles et al., 1999; Rush et al., 1999a, b; Shon et al., 1999a, b). A description of the development and implementation of the algorithm used in the feasibility project has been published (Chiles et al., 1999). At each patient visit three ratings were obtained: the BPRS₂₄, a physician global rating (PhGRS), and a patient global rating (PtGRS). The BPRS₁₈ and the PSRS were extracted from the BPRS₂₄ in order to characterize their psychometric properties in this patient population. The BPRS₁₈, PSRS, and the two global rating scales were then analysed to determine the relationships of the ratings to one another, as well as their sensitivity to change (effect size).

Methods

Subjects

Patients with SCZ (N = 91) (31 inpatients and 60 outpatients) were drawn from public sector sites participating in the phase two open feasibility trial of the Texas Medication Algorithm Project (TMAP) (Gilbert et al., 1998; Miller et al., 1999; Rush et al., 1999a, b; Shon et al., 1999a, b). Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) (American Psychiatric Association, 1994) diagnoses were made by psychiatrists in the hospital or community mental health centres. Diagnostic subtypes consisted of 47.2% paranoid, 31.9% undifferentiated, 2.2% disorganized, and 1.1% catatonic. In addition, 17.6% of patients had schizoaffective disorder. To check for accuracy of patient diagnoses, a sample of 24 clinical diagnoses was compared to the Structured Clinical Interview for DSM-IV (SCID-I) (First et al., 1996) diagnoses, resulting in 95.8% agreement. Ages

ranged from 18 to 63 (mean = 38.3, SD = 9.7), and 38.5% were female, with 28.9% Caucasian, 23.3% African-American, and 47.8% Hispanic. Only patients needing a medication change were eligible to enter the study. Patients were in active, not maintenance, treatment.

Design

This pilot study was an open feasibility trial without a control group. Neither patients nor clinicians were blind to the treatment. The SCZ algorithm (treatment guideline) was developed by expert consensus during TMAP Phase 1 (Chiles et al., 1999). Physicians were trained in the use of the algorithm and the symptom severity scales. The clinician-rated (PhGRS) and self-reported (PtGRS) symptom severity scales were administered at the same visit in no particular order.

Rating scales

For this study, the BPRS₂₄ (Lukoff et al., 1986; Ventura et al., 1994) and two global rating scales were administered to assess symptom severity for the prior seven days. Given that the original BPRS₁₈ (Overall and Gorham, 1962) had been widely used in studies of SCZ, the original 18 items were pulled from the BPRS₂₄ for comparison purposes. The PSRS was also extracted from the BPRS₂₄ for analytic purposes. These four items are also found within the BPRS₁₈. All BPRS items were rated on a 0 to 7 scale (0 = not assessed (NA), 1 = no symptomatology, and 7 = extremely severe). Both global ratings (PhGRS and PtGRS) consisted of five-item Likert-type scales ranging from 0 (absent) to 4 (very severe). All three scales were completed at each medication visit.

Assessment visits

The median number of inpatient assessment visits was four (range: 1–20) during a median three weeks in the study (range: 0–21 weeks), whereas the median number of outpatient assessment visits was 5.5 (range: 1–20) during a median 17 weeks in the study (range: 0–29 weeks). For inpatients, the mean time between assessment visits one and two was one week (SD = 0.2), one week between visits two and three (SD = 0.3), and 0.9 weeks between visits three and four (SD = 0.2). For outpatients, the mean time between assessment visits one and two was 2.6 weeks (SD = 2.0), 2.9 weeks between visits two and three (SD = 2.2), and 3.8 weeks between visits three and four (SD = 2.4).

Statistical methods

The internal consistency of the BPRS₁₈ and the PSRS was determined by computing Cronbach's alpha (α) for the baseline scores (Cronbach, 1951). Non-parametric Kendall's correlations (Kendall, 1948) between baseline scores for the BPRS₁₈, PSRS, PhGRS, and PtGRS were computed. Intra-class correlation coefficients (ICC) (Shrout and Fleiss, 1979) were also computed for the baseline BPRS₁₈, PSRS, PhGRS, and PtGRS. Change from baseline to exit was determined for the BPRS₁₈, the PSRS, and the two global rating scales. Significant changes were determined by paired t-tests. The normality of the data was checked and confirmed. Results are presented for in-patients and outpatients separately because an examination of site effects revealed significant differences among sites. The relationship between gender and change from baseline was also examined for each measure, but no significant gender effects were found.

Responders were defined in two ways: minimal response was defined as a $\geq 20\%$ reduction in the BPRS₁₈ and PSRS from baseline to exit, and a robust response was defined as a $\geq 40\%$ reduction in these scales from baseline to exit. In computing percentage change for the BPRS₁₈ and PSRS, 18 or 4, respectively, was subtracted from each score before computing the percentage change from baseline. The result of rescaling is that a complete absence of symptoms is set at zero and equal increases and decreases in scores yield the same absolute percentage change. Responders and non-responders were compared for change from baseline to exit for each measure. A two-sample t-test was used to compare the groups.

Linear regression was used to assess the ability of the change scores for the PSRS, PhGRS, and PtGRS to predict change in the BPRS₁₈, both alone and combined. Logistic regression was used to assess the ability of the PSRS, PhGRS, and PtGRS to predict exit response status.

Consistency of results over time was assessed by calculating the change from baseline to specific visits from week one through week five. Significance of change from baseline was determined with a paired t-test using a Bonferroni corrected p value of 0.01 to assess significance. Kappa (κ) statistics were computed to assess the amount of agreement between the BPRS₁₈ and the PSRS. All tests and regressions were done using SUDDAN software (Shah et al., 1996),

which adjusts for dependency among patients with the same clinician.

Results

The original 'gold standard' 18 items and the PSRS were extracted from the BPRS₂₄. Kendall's correlations ($r = 0.88$; $p = 0.0001$) and ICCs (0.98 , $p = 0.0001$) showed the BPRS₁₈ and BPRS₂₄ to be highly correlated. Table 1 shows Kendall's correlations and ICCs between the BPRS₁₈, the PSRS, and the two global measures at baseline. At baseline, utilizing both inpatients and outpatients with SCZ, the Kendall's correlation between the BPRS₁₈ and the PtGRS was $r = 0.05$ ($p = 0.56$) ($N = 88$), and the PSRS and the PtGRS was $r = 0.02$ ($p = 0.83$). Generally, correlations with the PtGRS for outpatients were much higher than for all patients. The correlation between the BPRS₁₈ and the PhGRS was $r = 0.46$ ($p = 0.0001$), and the PSRS and the PhGRS was $r = 0.48$ ($p = 0.0001$). At baseline, Cronbach's α was 0.72 for the BPRS₁₈ and 0.63 for the PSRS, which suggests strong internal consistency.

Table 2 shows the baseline and exit means and baseline-to-exit change scores for inpatients and outpatients, and for the total sample on all four scales. Significant baseline-to-exit changes on all measures were found.

To determine the degree to which the change from baseline to exit in the BPRS₁₈ (the gold standard) could be accounted for by changes in the PSRS, PhGRS, and PtGRS, a multiple regression was conducted using the PSRS, PhGRS, and PtGRS ratings as independent variables and the BPRS₁₈ as the dependent variable. Results revealed that 74% of the variability of the BPRS₁₈ was accounted for by the three alternative measures. Individual analyses showed that the PSRS ($r^2 = 0.74$) accounted for more of the BPRS₁₈ variance than either the PtGRS ($r^2 = 0.10$) or PhGRS ($r^2 = 0.34$).

Tables 3A and 3B show the baseline-to-exit change scores for inpatients and outpatients and the total sample, divided into two types of responders (defined as $\geq 20\%$ decrease in baseline BPRS₁₈ total score or $\geq 40\%$ decrease in baseline BPRS₁₈ total score) and non-responders. To determine whether responders could be distinguished from non-responders by change scores, t -tests were conducted using the PSRS, PhGRS, and PtGRS. Significant differences between responders and non-responders were found on all measures in both patient settings except for inpatient minimal response using the PtGRS ($p = 0.44$).

Tables 4A and 4B show the κ for the BPRS₁₈ versus the PSRS using a $\geq 20\%$ improvement from baseline to exit to define response and a $\geq 40\%$ improvement to define response. A κ between 0.40 and 0.75 is considered to indicate good agreement whereas a κ above 0.75 indicates excellent agreement (Landis and Koch, 1977). Given these definitions, there is excellent agreement between the BPRS₁₈ and the PSRS. The agreement between the BPRS₁₈ and PSRS is also presented in terms of the percentage of patients responding to either instrument (BPRS₁₈ and PSRS), neither instrument, the BPRS₁₈ only, or the PSRS only.

A logistic regression analysis was conducted to determine the degree to which change from baseline to exit in the PSRS, PhGRS, and PtGRS scores discriminated responders from non-responders. The PSRS was a significant independent predictor ($p = 0.0091$), but neither the PtGRS ($p = 0.46$) nor the PhGRS ($p = 0.66$) predicted minimal response status when all three predictors were used together. The PSRS was a significant independent predictor ($p = 0.0002$) of robust response status, whereas the PtGRS ($p = 0.41$) and the PhGRS ($p = 0.07$) were not.

Table 5 compares the change in each measure from baseline to subsequent weeks using both inpatients and outpatients. A total of 52 patients were evaluated using all four ratings at baseline and week 1. The change in the BPRS₁₈ was 10.2 ($SD = 13.0$), and the change in the PSRS was 3.3 ($SD = 5.1$). Table 5 shows that the BPRS₁₈ detected significant change between baseline and all subsequent weeks (up to week 5), as did the PSRS and PhGRS (paired t -tests). Using the Bonferroni corrected significance level of 0.01, the change in PtGRS was not significant at any week except week 2.

Discussion

This preliminary study reveals satisfactory internal consistency as evidenced by Cronbach's α for the BPRS₁₈ and PSRS in this group of inpatients and outpatients with SCZ treated in the public sector. In looking at all four measures at baseline, in general, correlations with the PtGRS for outpatients were much higher than for all patients and for inpatients. The PtGRS was negatively correlated with the BPRS₁₈ and the PhGRS for inpatients. Significant differences between responders and non-responders were found on all measures when all patients were included. For inpatients alone, the PtGRS did not detect significant differences. The PtGRS results with inpatients indicated that inpatients' perceptions of their conditions were different from the clinicians'

Table 1: Correlations between all four assessment instruments at baseline

	Variables	Intraclass correlation coefficient	Kendall's correlation	p-value
Outpatients	BPRS ₁₈ versus PSRS	0.69	0.52	0.0001
	BPRS ₁₈ versus PtGRS	0.38	0.29	0.0040
	BPRS ₁₈ versus PhGRS	0.44	0.38	0.0003
	PSRS versus PtGRS	0.41	0.31	0.0026
	PSRS versus PhGRS	0.45	0.41	0.0001
	PtGRS versus PhGRS	0.58	0.47	0.0001
Inpatients	BPRS ₁₈ versus PSRS	0.84	0.62	0.0001
	BPRS ₁₈ versus PtGRS	-0.12	-0.08	0.5398
	BPRS ₁₈ versus PhGRS	0.49	0.45	0.0026
	PSRS versus PtGRS	-0.24	-0.18	0.1934
	PSRS versus PhGRS	0.44	0.39	0.0102
	PtGRS versus PhGRS	-0.22	-0.23	0.1532
All patients	BPRS ₁₈ versus PSRS	0.78	0.60	0.0001
	BPRS ₁₈ versus PtGRS	0.01	0.05	0.5640
	BPRS ₁₈ versus PhGRS	0.53	0.46	0.0001
	PSRS versus PtGRS	-0.01	0.02	0.8306
	PSRS versus PhGRS	0.54	0.48	0.0001
	PtGRS versus PhGRS	0.13	0.07	0.4602

Table 2: Baseline and exit means and baseline to exit change scores for the complete sample divided by patient status

	n	Baseline Mean	SD	n	Exit Mean	SD	n	Change Mean ^a	SD	Effect Size ^b
Outpatients										
BPRS ₁₈	59	47.7	11.4	58	32.6	12.5	57	15.2	16.4	0.9
PSRS	59	13.9	4.4	58	8.7	4.8	57	5.3	5.7	0.9
PtGRS	58	2.7	1.1	58	1.7	1.3	58	1.0	1.3	0.8
PhGRS	58	2.9	0.8	58	1.6	1.3	58	1.2	1.4	0.8
Median time in study: 17 weeks										
Inpatients										
BPRS ₁₈	31	56.7	11.5	30	36.6	13.8	30	20.4	16.6	1.2
PSRS	31	18.1	5.2	30	10.9	5.7	30	7.3	7.4	1.0
PtGRS	31	1.8	1.1	31	0.6	1.2	31	1.1	1.4	0.8
PhGRS	31	3.6	0.6	31	1.7	1.0	31	1.9	1.3	1.5
Median time in study: 3 weeks										
All patients										
BPRS ₁₈	90	50.8	13.0	88	34.0	12.7	87	17.0	16.0	1.1
PSRS	90	15.4	5.4	88	9.4	5.2	87	6.0	6.0	1.0
PtGRS	89	2.4	1.2	89	1.3	1.4	89	1.0	1.3	0.8
PhGRS	89	3.1	0.9	89	1.7	1.2	89	1.4	1.3	1.1
Median time in study: 13.4 weeks										

^aMean decrease from baseline to exit. All decreases significant at $p < 0.0005$ (paired t-test).

^bEffect size defined as mean difference ÷ SD of difference.

Table 3A: Baseline to exit change scores for the sample divided into responders (minimal response) and non-responders

	Responders ^a			Non-responders			Effect size ^c
	N	Mean ^b	SD	N	Mean ^b	SD	
Outpatients							
BPRS ₁₈	42	22.3	10.9	15	-4.6	8.0	1.5
PSRS	42	7.6	4.1	15	-1.3	2.6	1.3
PtGRS	40	1.3	1.3	17	0.3	1.0	0.4
PhGRS	40	1.6	1.1	17	0.2	1.2	0.6
Median time in study		18.3 weeks			5.4 weeks		
Inpatients							
BPRS ₁₈	25	25.0	14.4	5	-2.2	5.8	1.2
PSRS	25	9.0	6.6	5	-1.2	1.5	1.4
PtGRS	25	1.2	1.4	6	0.8	1.1	0.2
PhGRS	25	2.2	1.0	6	0.7	0.8	0.8
Median time in study		3.6 weeks			1.7 weeks		
All patients							
BPRS ₁₈	67	23.3	11.7	20	-4.0	7.6	1.4
PSRS	67	8.2	5.0	20	-1.2	2.3	1.3
PtGRS	65	1.2	1.3	23	0.4	1.0	0.3
PhGRS	65	1.8	1.1	23	0.3	1.0	0.6
Median time in study		16.3 weeks			4.6 weeks		

^aDefined as $\geq 20\%$ decrease in baseline BPRS₁₈ total score.

^bMean decrease from baseline to exit. All decreases significant at $p < 0.005$ (unpaired t-tests) except for inpatient PtGRS ($p = 0.44$).

^cEffect size defined as mean difference between responders and non-responders $\div$ SD of difference.

observations, whereas this was not the case for outpatients. Inpatients had higher baseline BPRS scores so the severity of their illness may well have prevented them from perceiving the seriousness of their condition.

Significant baseline-to-exit changes on all measures were found. Change in the PSRS was a significant independent predictor of robust and minimal response status at treatment exit.

Both global rating scales were about one-half or less as sensitive to differences between responders and non-responders defined by the BPRS₁₈ as was the PSRS except for inpatients using the PhGRS (effect sizes, Tables 3A and 3B). Linear regression showed that the PSRS accounted for more of the variance in the change in the BPRS₁₈ than either of the global ratings. The effect sizes in Table 2 show similar changes from baseline to exit in the BPRS₁₈ and the PSRS.

The potential value of the PSRS may be viewed in two ways. First, in terms of efficiency, the sum scores for the four items correlate very well with those for the BPRS₁₈, but the PSRS can be completed in about five

minutes, versus 20–30 minutes for the longer scales. Second, the newer medications for SCZ are primarily antipsychotics. Their clinical use is driven largely by the effects on positive symptoms, therefore, a specific measure of the primary target symptoms for which the medication is used may be at least as informative to the clinician for purposes of medication management as an overall measure of psychopathology. However, when other symptoms are also the foci of treatment (for example, anxiety, depression, aggression, or hostility) the full BPRS or other, more specific outcome measures can also be employed.

In summary, the PSRS was quite sensitive to symptom change and may be a useful tool to guide clinical use of antipsychotic medications. The global ratings by physicians and patients were less sensitive to change. An obvious advantage of anchored rating scales versus global ratings is that clinicians can be much more easily trained to a high level of reliability when the basis for the ratings is definable and clearly specified. Additional research with the PSRS in larger patient

Table 3B: Baseline to exit change scores for the sample divided into responders (robust response) and non-responders

	Responders ^a			Non-responders			Effect size ^c
	N	Mean ^b	SD	N	Mean ^b	SD	
Outpatients							
BPRS ₁₈	38	23.6	8.7	19	1.5	10.1	1.3
PSRS	38	7.9	3.9	19	0.0	3.9	0.9
PtGRS	36	1.3	1.3	21	0.5	1.1	0.3
PhGRS	36	1.6	1.0	21	0.5	1.6	0.3
Median time in study		18.1 weeks			5.4 weeks		
Inpatients							
BPRS ₁₈	20	28.6	12.2	10	4.0	8.0	1.2
PSRS	20	10.8	5.6	10	0.3	2.8	1.4
PtGRS	20	1.5	1.5	11	0.4	1.1	0.4
PhGRS	20	2.6	0.8	11	0.7	1.0	1.0
Median time in study		2.9 weeks			3.6 weeks		
All patients							
BPRS ₁₈	58	25.4	9.7	29	-0.4	9.9	1.2
PSRS	58	8.9	4.3	29	0.1	3.5	1.0
PtGRS	56	1.4	1.4	32	0.5	1.1	0.3
PhGRS	56	1.9	1.2	32	0.6	1.4	0.4
Median time in study		16.3 weeks			5.4 weeks		

^aDefined as ≥40% decrease in baseline BPRS₁₈ total score.

^bMean decrease from baseline to exit. All decreases significant at $p < 0.03$ (unpaired t-tests).

^cEffect size defined as mean difference between responders and non-responders ÷ SD of difference.

Table 4A: Kappa (κ) coefficients and degree of overlap in response to the BPRS₁₈ and PSRS for minimal response (≥20% improvement from baseline to exit)

		Percentage responding to				κ
		Both BPRS ₁₈ and PSRS	Neither version	BPRS ₁₈ only	PSRS only	
Outpatients	63.8		25.9	6.9	3.4	0.76
Inpatients	74.2		19.4	6.4	0.0	0.82
All patients	67.4		23.6	6.7	2.2	0.78

Table 4B: Kappa (κ) coefficients and degree of overlap in response to the BPRS₁₈ and PSRS for robust response (≥40% improvement from baseline to exit)

		Percentage responding to				κ
		Both BPRS ₁₈ and PSRS	Neither version	BPRS ₁₈ only	PSRS only	
Outpatients	58.6		31.0	6.9	3.4	0.78
Inpatients	58.1		32.3	6.4	3.2	0.79
All patients	58.4		31.5	6.7	3.4	0.78

Table 5: Change in measures between baseline and subsequent assessment visits

		N	Mean ^a	SD	t	p-value	Effect size ^b
Week 1	BPRS ₁₈	52	10.2	13.0	5.7	0.0001	0.8
	PSRS	52	3.3	5.1	4.6	0.0001	0.6
	PtGRS	52	0.6	2.0	2.4	0.02	0.3
	PhGRS	51	0.8	1.1	5.4	0.0001	0.7
Week 2	BPRS ₁₈	47	11.8	16.5	4.9	0.0001	0.7
	PSRS	47	4.3	6.6	4.4	0.0001	0.6
	PtGRS	48	0.7	1.4	3.7	0.0002	0.5
	PhGRS	49	0.8	1.4	4.0	0.0001	0.6
Week 3	BPRS ₁₈	34	11.8	13.2	5.2	0.0001	0.9
	PSRS	34	4.0	5.4	4.4	0.0001	0.7
	PtGRS	34	0.4	1.6	1.3	0.19	0.2
	PhGRS	33	1.2	1.3	5.6	0.0001	1.0
Week 4	BPRS ₁₈	35	11.8	11.4	6.1	0.0001	1.0
	PSRS	35	3.2	4.2	4.5	0.0001	0.8
	PtGRS	36	0.4	1.3	1.6	0.11	0.3
	PhGRS	36	0.8	1.3	4.0	0.0001	0.6
Week 5	BPRS ₁₈	36	14.2	12.0	7.1	0.0001	1.2
	PSRS	36	4.3	5.3	4.9	0.0001	0.8
	PtGRS	37	0.6	1.6	2.2	0.03	0.4
	PhGRS	37	1.0	1.3	4.8	0.0001	0.8

^aMean decrease from baseline to assessment visit.

^bEffect size defined as mean change ÷ SD of change.

samples in different clinical settings where positive symptoms are the focus of treatment would be useful to further establish the validity of the PSRS.

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