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Development and Pilot Investigation of Behavioral Activation for Negative Symptoms

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Abstract

Negative symptoms cause functional impairment and impede recovery from psychosis, not least, because of limited developments in empirically validated treatments. This article details a pilot evaluation of a behavioral activation (BA) treatment with eight people presenting with psychosis and marked negative symptoms. The rationale for this development was that BA is effective in treating depression, a condition that shares overlapping features with negative symptoms. Results provide preliminary support for feasibility and effectiveness of BA for negative symptoms in terms of treatment adherence, retention, and initial outcomes. However, additional advantages may accrue from revisions to the BA treatment.

Keywords

negative symptoms, psychosis, schizophrenia, psychosocial treatment

Negative symptoms are characterized by the diminished expression of thoughts (alogia), feelings (affective flattening), and a reduction in goal-directed activity (Foussias, Mann, Zakzanis, van Reekum, & Remington, 2009). Approximately

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15% to 20% of people with a schizophrenia diagnosis are thought to have enduring negative symptoms, whereas for many others, these symptoms follow a fluctuating course (Möller, 2007). When present, negative symptoms cause distress and demoralization for those who experience them (Selten, Wiersma, & van den Bosch, 2000), their relatives (Winograd-Gurvich, Fitzgerald, Georgiou-Karistianis, Bradshaw, & White, 2006), and mental health staff (Berry, Barrowclough, & Wearden, 2009). At the same time, they are implicated in delayed recovery from psychosis and long-term functional impairment (Foussias et al., 2009). Evidence for optimal treatments is scant, and development of new interventions for this symptom cluster is widely recognized as an area of substantial unmet need (Stahl & Buckley, 2007).

This article considers the potential of behavioral activation (BA) to address this need and reports on a pilot evaluation of BA for the negative symptoms associated with psychosis. Its premise is that BA has been established as an effective treatment for depression (Cuijpers, van Straten, & Warmerdam, 2007; Ekers, Richards, & Gilbody, 2008; Mazzucchelli, Kane, & Rees, 2009), which, like negative symptoms, is often marked by inactivity. An extension of the contextual theory underpinning BA approaches for depression suggests that the behaviors associated with negative symptoms can be seen as a positive attempt to cope with the environmental changes that frequently accompany the onset of psychosis (e.g., psychotic symptoms, psychiatric treatment, and stigmatizing societal responses). At one end of the continuum, people may become completely inactive in behavior (amotivation), thoughts (alogia), and feelings (blunted affect), whereas others may experience a diminished ability to think, feel, and/or perform certain daily activities. In the short term, as in depression, avoidance is negatively reinforced, but such responses reduce access to positive reinforcement contingencies, prevent development of coping strategies to manage changes associated with onset of psychosis, and in some cases, prompt erosion of skills in social interaction and daily living.

Observation of an overlap between depression and negative symptoms has prompted others (e.g., Hogg, 1996) to propose that such approaches may be effective in reducing negative symptoms. Although this hypothesis has limited extant theoretical or empirical support, benefits of broader-based cognitive-behavioral treatments for other dimensions of psychosis are now well documented (Wykes, Steel, Everitt, & Tarrier, 2008).

Origins of BA date back to the early activity scheduling approaches devised to treat depression through increasing pleasant activities and access to positive reinforcement (Lewinsohn, Biglan, & Zeiss, 1976). Findings for these treatments as stand-alone therapies were mixed (Santiago-Rivera et al., 2008), and they were later integrated into broader cognitive behaviorally based treatments

(Beck, Rush, Shaw, & Emery, 1979; Lewinsohn, Steinmetz, Antonuccio, Breckenridge, & Teri, 1984). Interest in BA as a stand-alone intervention was revived with publication of a component analysis study, which found BA to be as effective as full cognitive therapy (CT) in reducing depression at treatment end (Jacobson et al., 1996) and 2-year follow-up (Gortner, Gollan, Dobson, & Jacobson, 1998).

More recent empirical developments converge on two parallel but independent expansions of the original BA condition tested in the Jacobson et al. (1996) study. In the first development, Martell, Addis, and Jacobson (2001) outline the flexible application of a series of BA techniques, informed by idiosyncratic functional analysis, rather than prescription of interventions in a structured session by session format (Martell et al., 2001; Martell, Dimidjian, Herman-Dunn, & Lewinsohn, 2010). BA techniques include activity monitoring and scheduling, which were featured in earlier approaches to promote not only access to positive reinforcement but also attention to negatively reinforcing activities, such as avoidance and rumination (Veale, 2008). Other components, such as skills training, mindfulness, and contingency management are included. Empirical support for this model has been confirmed in a large randomized trial (Dimidjian et al., 2006), which found BA to be equal to antidepressant medication and CT in mildly depressed participants and superior to CT in moderate to severely depressed clients. Further positive findings have been found in a comparison of a group-based BA against a waiting-list control (Porter, Spates, & Smitham, 2004) and uncontrolled trials of BA for posttraumatic stress disorder (Jakupcak et al., 2006), depressed, obese clients (Pagoto, Bodenlos, Schneider, Olemdzki, & Spates, 2008), and depressed Latinas (Kanter, Santiago-Rivera, Rusch, Busch, & West, 2010).

The second variant of the model is described as a brief BA treatment for depression (BATD; Lejuez, Hopko, Acierno, Daughters, & Sherry, 2011; Lejuez, Hopko, & Hopko, 2001). In contrast to the flexible application of BA, this approach outlines a 12-session protocol focusing on structured activity monitoring and scheduling applied within a framework of matching law (Herrnstein, 1970) and individual goals/values. Evaluations, including a randomized trial in an inpatient setting (Hopko, Lejuez, LePage, Hopko, & McNeil, 2003), a randomized trial of BATD and smoking cessation techniques for smokers with depression (MacPherson et al., 2010), and a trial of BATD with depressed inner-city illicit drug users (Daughters et al., 2008), suggest that BATD is also an effective intervention. In addition, a number of successful case studies supports application of BATD in depressed and anxious cancer patients (Armento & Hopko, 2009; Hopko, Bell, Armento, Hunt, & Lejuez, 2005), community mental health patients (Lejuez, Hopko, LePage, Hopko, &

McNeil, 2001), patients with comorbid anxiety and depression (Hopko, Lejuez, & Hopko, 2004), a suicidal and depressed client with borderline personality disorder (Hopko, Sanchez, Hopko, Dvir, & Lejuez, 2003) as well as a depressed adolescent (Ruggiero, Morris, Hopko, & Lejuez, 2007).

In spite of claims that a key advantage of BA lies with its simplicity (Cuijpers et al., 2007), recent developments reported on above suggest a more complex intervention than the parsimonious scheduling of pleasant activities initially proposed by Lewinsohn et al. (1984). In recognition of this, we adopted strategies recommended by the U.K. Medical Research Council (MRC, 2000) to guide researchers through a series of stages from development, to feasibility and piloting, main evaluation, and implementation of complex health care interventions. The crucial role of thorough piloting in the early stages of evaluating complex interventions to address key clinical or methodological uncertainties, which arise during development, is endorsed regularly throughout the guidance. Clinical uncertainties may include whether the intervention can be delivered as intended in the specified context or whether it is acceptable to service providers and recipients. Methodological uncertainties may relate to choice of primary outcome measure or potential to recruit an adequate sample. Failure to address such uncertainties can result in premature progression to controlled testing of a poorly designed intervention that is especially difficult to evaluate and implement outside of research settings (MRC, 2008). The key uncertainties explored in this study related to whether the BA treatment we had modified from existing depression-based approaches was potentially effective, feasible, and acceptable for people with psychosis and marked negative symptoms. To this end in this article, we describe development of the BA treatment for negative symptoms (which we refer to as BANS) and a case series to address these questions of effectiveness, feasibility, and acceptability.

Method

Setting and Participants

The study was conducted in a Mental Health Trust in the North West of England. The protocol was approved by a Local Research Ethics Committee and the relevant Research Governance Committee. Clinician-led access to, and consenting of, potential participants was imposed as a condition of ethical approval so the research team contacted clinicians working in hospital and community settings via email, made presentations at team meetings to inform them of the study, and requested that they discuss this with people on their caseload who met the criteria below.

Table 1. Demographic Data of Participants

Demographic characteristics	Sample
Gender: female/male	2/6
Age in years, *M* (*SD*)	33 (9.2)
Duration of illness in years, *M* (*SD*)	6.1 (5.1)
Ethnicity	
White British	6
Mixed race	1
Black African	1
Age at leaving full-time education in years, *M* (*SD*)	16.3 (0.71)
Marital status	
Single	7
Divorced	1
Current employment	
Unemployed	8
Accommodation	
Alone	1
Parent/carer	5
Supported/hostel accommodation	2

Participants referred to the study (see Table 1) were seen by the principal investigator who explained the study in detail and obtained informed consent. Inclusion criteria consisted of an existing case note diagnosis of schizophrenia (confirmed by the care co-ordinator responsible for the service user) and negative symptoms as measured by a minimum score of 25 on the Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1989). Participants were excluded from the study if detained under the Mental Health Act (1983), presented with a level of risk requiring multiple agency involvement, or were already involved in another research study.

We had hoped to recruit a sample of 45 participants. However, only 12 potential participants were referred to the study. Only 9 of those referred were eligible as 3 were currently subject to detention under the Mental Health Act (1983). The remaining 9 participants consented to participate in the study and 8 of these commenced and completed treatment.

Therapists and Treatment

The BANS treatment is based on the behavioral theory underpinning BA for depression (Martell et al., 2001), although this is simplified for participants. The rationale shared with participants acknowledged motivation difficulties

experienced by people with psychosis and importance of increasing activities to establish a weekly routine that facilitated their doing tasks they enjoyed and also those necessary things that we all have to accomplish.

Procedures follow those detailed by Lejuez, Hopko, and Hopko (2001) and Richards et al., (2008), principally because of the parsimonious nature of these models. In brief, the treatment is distilled in four steps. The first is an assessment of current activity levels via an activity diary or schedule. The second step is to identify activities (pleasurable, necessary, and routine) that offer the potential to access optimal contingencies of reinforcement. In the third step, these activities are listed and graded in an activity hierarchy. In the fourth step, goals are set in relation to systematic movement through the hierarchy to introduce chosen activities in a graded way. Modifications to the original procedures include simplifying the treatment rationale, increasing length of the treatment to 6 months, and negotiating duration of each meeting on an individual basis to enhance engagement reflecting other psychological approaches used in psychosis (See Morrison, Renton, Dunn, Williams, & Bentall, 2004). The BANS manual was reviewed by a service user, who had experienced negative symptoms, two practitioners, and a researcher in the field.

Although five clinicians attended the 2-day BANS training workshop, only two therapists facilitated BANS in the study. One (a mental health nurse) had completed an undergraduate course in psychosocial interventions for psychosis; the other (an occupational therapist) had a master's level qualification in cognitive-behavioral therapy (CBT) for psychosis. Supervision facilitated by the first author (H.M.) was held on a fortnightly basis for the duration of the study.

Measures

The study included a number of outcome measures reflecting the multidimensional nature of the investigation of BANS.

Treatment adherence was assessed via a session recording log completed by therapists at the end of each session. Therapists were asked to indicate whether the session had followed the procedures outlined in the BANS manual and also to list any in-session interventions that did not feature in the manual.

Treatment progress and retention consisted of monitoring retention in treatment and number of sessions attended. Therapists recorded rates of homework compliance in the recording log identified above.

Treatment outcome was measured by two related negative symptom assessment schedules to reflect possible discrepancies between the individual account

of and clinician observation of the phenomena. The clinician rated SANS (Andreasen, 1989) is a widely used and well-validated 30-item rating scale, which comprises five subgroups of negative symptoms: affective flattening, alogia, avolition-apathy, anhedonia-asociality, and attention. The Subjective Experience of Negative Symptoms Scale (SENS; Selten, Sijben, van den Bosch, Omloo-Visser, & Warmerdam, 1993) is a self-report rating scale based on the SANS, which elicits the individual perspective of whether they have experienced the five items outlined in the latter assessment. Although the SENS has been subject to some testing of psychometric properties, little is known regarding its sensitivity to detect change unlike the SANS, which has been widely used in clinical trials (Perkins, Stroup, & Lieberman, 2001). Consequently, the SANS was adopted as the primary outcome measure.

Norman, Malla, and Cortese (1996) compared the interrater reliability of the SANS with the Positive and Negative Syndrome Scale (PANSS; Kay, Opler, & LindenMayer, 1989) in a sample of 85 individuals with a diagnosis of schizophrenia. Raters were random pairs of four experienced clinicians trained in all instruments. Interrater reliability was fair for the SANS summary (Cohen's κ of .60). Intraclass correlation coefficients (ICC) were mainly fair for the SANS (affective flattening and blunting = .35, alogia = .57, avolition-apathy = .53, anhedonia-asociality = .64, and attentional impairment = .46). However, in a smaller cohort (15 interviews), Malla, Norman, and Williamson (1993) reported an ICC of .84 for the SANS summary score. In the same study, the global ratings of each SANS and Scale for the Assessment of Positive Symptoms (SAPS) domain range between .61 and .98. Authors of the scale report ICCs for individual items on the SANS between .70 and .92 (Andreasen, Rezai, Alliger, & Swayze, 1992). Studies using the SANS and SAPS as outcome measures also report good to excellent levels of interrater reliability (Perkins et al., 2001), suggesting that sound psychometric properties extend beyond the setting in which the scales were designed. Only moderate levels of test–retest reliability of the SANS has been demonstrated with an ICC of .45 (Malla et al., 1993), when the instruments were used at a 1-year interval. Perkins et al. (2001) suggest that this may reflect the usual fluctuations in symptoms observed in this population as much as variability in the instruments themselves. Studies report high internal consistency of the SANS (Perkins et al., 2001). For example, Cronbach's alpha values for each domain ranged from .63 to .83 in a sample of 117 participants with a diagnosis of schizophrenia. Concurrent ratings of individuals with a diagnosis of schizophrenia with the SANS and other commonly used scales have shown consistently high correlations between scales, indicating that they measure similar constructs. For

example, Norman et al. cite a correlation of .88 between the SANS and the PANSS negative symptom subscale.

Other secondary outcomes were measured. The SAPS (Andreasen, 1984) was included to monitor any potential adverse side effects. The Calgary Depression Scale for Schizophrenia (CDSS; Addington, Addington & Maticka-Tyndale, 1993) was used to assess the impact of BA on depression. Finally, the Work and Social Adjustment Scale (WSAS; Mundt, Marks, Shear, & Griest, 2002) was incorporated to measure the effect of BA on functioning.

All outcomes were measured before and after treatment and at 6-month follow-up by the first author after a period of training and after a satisfactory level of interrater reliability had been achieved.

Treatment acceptability was assessed by semistructured interviews conducted at the end of treatment. The interview was based on a topic guide, which included a closed question asking participants whether they would recommend the treatment to other people with similar problems and a series of open questions regarding their experiences of the treatment and any recommendations for improving the intervention. Interviews were conducted by the first author in a mutually convenient location and recorded (when consent to record was given).

Analysis

Data for treatment adherence, progress, and retention are presented descriptively. Treatment outcome data were analyzed descriptively at a group and individual level using SPSS (2007) for Windows release 15. In light of the pilot nature of the investigation and the small sample size, analysis concentrated on confidence intervals and effect sizes rather than the statistical significance of findings. Paired *t* tests and Wilcoxon matched-pairs tests were applied in line with the distribution of data to estimate effect sizes. Pearson's correlation coefficient *r* was computed to assess the strength of an experimental effect, using $r = \sqrt{\{t^2 / (t^2 + df)\}}$ for a paired *t* test with test statistic *t* and degrees of freedom *df*, and $r_W = z / \sqrt{N}$ for a Wilcoxon matched-pairs test with test statistic *z* and sample size *N* (Field, 2009). Advantages of this method include its being constrained to lie between 0 = *no effect* and 1 = *perfect effect* and its appropriateness for computing effect sizes from the output of nonparametric tests (Field, 2009). It is widely accepted that an *r* value of .10 indicates a small effect, .30 a medium effect, and .50 a large effect (Field, 2009). However, Cohen's *d* is often reported in the CBT for psychosis literature, therefore both *r* and *d* will be estimated and interpreted. Individual response to BA was analyzed at a descriptive level.

Acceptability interview data were transcribed and subjected to thematic analysis (Braun & Clarke, 2006). Transcripts were read a number of times to capture an overall impression of the data. Responses were examined using a constant comparative analysis approach, so each piece of data (in this instance a statement or phrase) was taken and compared with all others for similarities and/or differences (Miles & Huberman, 1994). Observations about the whole data set were recorded to begin to generate a list of potential codes, which were ultimately grouped into themes. The themes were then applied to the full interview transcripts to ensure they fully captured the entire data set. Analysis was completed by the first author, but composition of codes and themes was agreed on in discussion with other members of the team.

Results

Demographic details of the eight participants who completed treatment are presented in Table 1. Although all participants had a case note diagnosis of schizophrenia and marked negative symptoms, their experiences of mental health were variable. However, there was some consistency in the environmental stressors experienced. For example, most of the sample had only narrow social networks, limited access to mainstream activities and occupations, restricted incomes, and pessimistic views from others regarding potential to recover from psychosis. Only one of the participants from the sample lived independently in rented accommodation, whereas all others were supported by familial or staff caregivers.

Treatment Adherence

A total of 118 treatment sessions was logged by therapists. BA featured in 103 (87%) of the 118 sessions recorded. All of the participants were able to progress through the four key steps of the treatment, although progression was rarely conducted in a straightforward linear way. Activity hierarchies were often constructed incrementally with a small number of activities selected in the first instance, and it was often necessary to revisit the rationale for treatment and explore the ambivalence that some participants experienced in relation to working toward the goals set. For example, one participant (a woman in her early 20s) was able to identify only a couple of activities she would like to increase/introduce mainly in relation to her interest in gardening in early sessions. However, once we isolated a previous goal to gain employment as a veterinary nurse, we were able to draft a more comprehensive hierarchy of activities in line with this aspiration, this included more complex activities,

Table 2. Pre- and Posttreatment Negative Symptoms, Positive Symptoms, Depression, and Functioning ($n = 8$)

	Pretreatment	Posttreatment	Change score	95% confidence intervals for the difference		Posttreatment
Measure	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	Lower	Upper	Effect size
SANS	38.5 (5.7)	28.6 (10.4)	−9.9 (9.0)	−17.4	2.4	$r = .76$ $d = -1.14$
SENS	53.9 (10.3)	59.8 (5.7)	5.9 (9.1)	−1.2	13.5	$r = .58$ $d = 2.51$
SAPS	8.3 (10.5)	3.8 (7.1)	−4.5 (8.5)	−11.6	2.6	$r_w = .46$ $d = 0.76$
CDSS	3.9 (3.9)	2.0 (1.9)	−1.9 (3.0)	−4.4	0.7	$r = .55$ $d = 0.98$
WSAS	18.1 (8.3)	12.9 (6.9)	−5.3 (9.0)	−12.8	2.3	$r = .53$ $d = 2.81$

Note: SANS = Scale for the Assessment of Negative Symptoms; SENS = Subjective Experience of Negative Symptoms; SAPS = Scale for the Assessment of Positive Symptoms; CDSS = Calgary Depression Scale for Schizophrenia; WSAS = Work and Social Adjustment Scale; r = effect size from paired t test and r_W = effect size from Wilcoxon matched-pairs test.

such as finding and gaining a place on a local college course, starting to make independent bus journeys, and learning to drive.

Other interventions that were also included in treatment (number of times featured across sample presented in brackets) included informal/formal contact with familial and staff caregivers (30), motivation work regarding the value of increasing activity (20), and problem solving (3).

Treatment Progress and Retention

The eight participants attended a minimum of 10 sessions, which were usually held in participants' homes. The mean number of sessions attended was 14.8 ($SD = 4.4$, range = 10-23), and 41 of 92 homework tasks set were completed by participants, although rates of compliance varied between individual participants from 20% to 75%. The overall adherence according to the Hopko et al. (2005) formula for establishing homework compliance was 44%.

Table 3. Pretreatment and Follow-Up Negative Symptoms, Positive Symptoms, Depression, and Functioning ($n = 6$)

	Pretreatment	Follow-up	Change score	95% confidence intervals for the difference		Follow-up
Measure	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	Lower	Upper	Effect size
SENS	55.0 (9.5)	64.5 (9.3)	9.5 (11.5)	–2.6	21.6	$r = .45$ $d = –1.36$
SANS	38.3 (6.7)	29.7 (16.5)	–8.7 (15.0)	–24.5	7.1	$r = .53$ $d = 1.08$
SAPS	11.0 (10.9)	13.0 (13.4)	2.0 (9.9)	–8.4	12.4	$r = .22$ $d = –0.19$
CDSS	4.8 (4.1)	4.0 (4.3)	–0.8 (3.4)	–4.4	2.7	$r = .26$ $d = 0.22$
WSAS	21.1 (7.2)	17.7 (11.7)	–3.5 (12.6)	–16.7	9.7	$r = .29$ $d = 0.43$

Note: SENS = Subjective Experience of Negative Symptoms; *r* = effect size from paired *t* test; SANS = Scale for the Assessment of Negative Symptoms; SAPS = Scale for the Assessment of Positive Symptoms; CDSS = Calgary Depression Scale for Schizophrenia; WSAS = Work and Social Adjustment Scale.

Treatment Outcomes

Negative symptoms scores improved from pretreatment to posttreatment (Table 2). Estimation of effect size from the output of paired *t* tests suggest large effect sizes for both clinician rated ($r = .76$) and self-report ($r = .58$) negative symptoms. Treatment was not associated with an increase in positive symptoms, indeed analysis suggested a moderate positive effect ($r = .46$) at the end of treatment. Large effects for both depression ($r = .55$) and functioning were also observed ($r = .53$).

Estimation of effect sizes (Table 3) at follow-up ($n = 6$) suggests a reduction in negative symptoms effect sizes 6 months after the termination of treatment ($r = .53$ and $r = .45$ for clinician rated [SANS] and self-report [SENS], respectively). Effects for depression and functioning are reduced to small effects ($r = .26$ and $r = .29$, respectively). A small increase in positive symptoms was observed at follow-up.

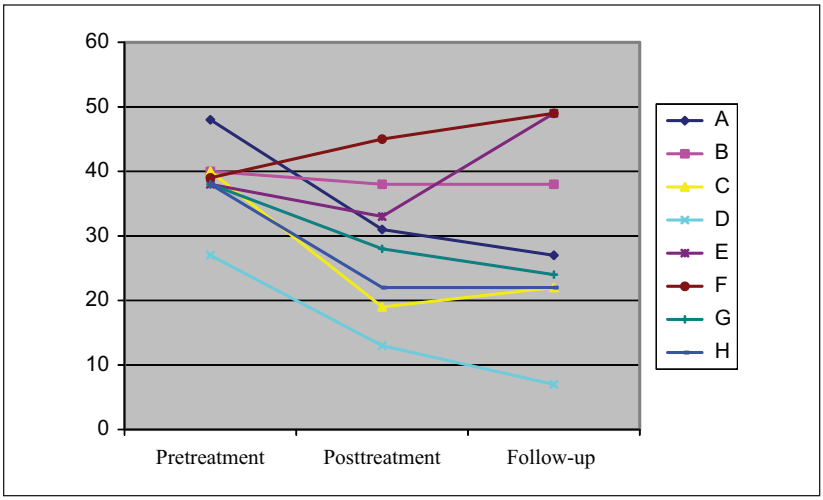

Figure 1. Scale for the Assessment of Negative Symptoms (SANS) scores at pretreatment, posttreatment, and follow-up
Note: A reduction in score indicates a reduction in negative symptoms; last observation carried forward used for Participants B and H who were not available at follow-up assessment.

Individual participant scores for primary outcome measures at each time point are presented in Figures 1 and 2.

A reduction in SANS score (indicating a reduction in negative symptoms) was observed in seven of the eight cases. Of the six participants seen at follow-up, three experienced a further reduction in negative symptoms. For the other three participants, improvements at posttreatment were not maintained and indeed for two of these participants, negative symptoms measured at follow-up were more marked than at pretreatment assessment. An increase in SENS score (indicating improvement) is observed in six of the eight cases. At follow-up, two of the six participants assessed at this time showed continued resolution of negative symptoms, whereas negative symptoms for the other four participants appeared to increase in the period from posttreatment to follow-up.

Treatment Acceptability

Semistructured interviews were conducted with seven participants. Generally, participants reported high levels of satisfaction with the treatment. Six of the seven participants stated that they would recommend the treatment to other

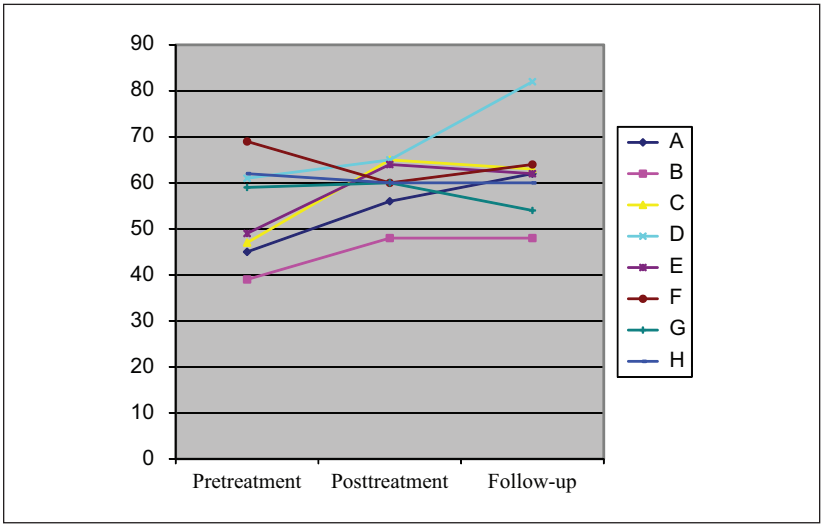

Figure 2. Subjective Experience of Negative Symptoms (SENS) scores at pretreatment, posttreatment, and follow-up
Note: An increase in score indicates a reduction in negative symptoms; last observation carried forward used for Participants B and H who were not available at follow-up assessment.

people. The other participant was uncertain and stated that other people should be allowed to decide this for themselves. Participants valued the focus on activation and accepted the positive relationship between goal achievement and well-being.

> As the weeks went by I found myself, you know, doing a bit more. And I'd a sense of achievement, you know, accomplishment, I'd done something and I'd feel, you know, I'd feel it was worthwhile, and that, keep meself healthy. (Participant 07)

At the same time, participants talked about the struggle they experienced in relation to increasing activity levels, even for what they perceived to be the most mundane of tasks. One participant stated that "I have to make this superhuman effort to get and go to the ASDA" (Participant 01). Another participant also discussed the difficulty in going out to the shops "Even when I go out shopping . . . , I still feel a bit sketchy, you know. . . . I'm maybe making it into a bit of an event rather than something you just get on with" (Participant 10).

Another theme to emerge from the analysis was that participants particularly appreciated the relaxed and nonjudgemental atmosphere of sessions. A number of participants referred to previous occasions when they had not felt understood or experienced what they perceived to be unhelpful interventions.

> That's what went wrong for me before I met [my BA therapist]. Other people were trying to get me to do everything at once. Me family as well. They didn't understand that it wasn't helping. (Participant 01)

A final theme that arose related to practical aspects of the treatment: Participants appreciated that sessions were scheduled at their convenience and usually from late morning onward. Duration of individual sessions was judged to be "just right, you know, wasn't too long and it wasn't too short" (Participant 07). There was a general consensus that meeting in participants' own homes was appreciated although one participant suggested that in the latter stages of treatment, it might have been helpful to meet in other locations to encourage activation outside of the home setting.

Discussion

The current study provides preliminary support for the feasibility of BA for negative symptoms.

At a group level, large effect sizes for negative symptoms were found posttreatment. Participation in treatment was not associated with an adverse increase in positive symptoms. Treatment was also associated with a reduction in depression and enhanced levels of functioning. Follow-up data suggest that effects for negative symptoms are reduced but remain moderate to large. Ninety-five percent confidence intervals for the difference in means for all outcome measures suggest that the effect sizes should be interpreted with caution. At an individual level, seven out of eight participants experienced improvements in SANS-rated negative symptoms at the end of treatment. However, at follow-up, only three out of six participants had continued to experience further resolution in SANS-rated negative symptoms.

Therapists implemented that the intervention as intended with only minor deviations from protocol, commonly to involve significant others in the treatment approach and adopt motivational enhancement strategies. Although most participants (eight of the nine who consented and met inclusion criteria) were retained in treatment for the minimum number of sessions (i.e., 10), rates of homework completion were below 50%. Retention of participants in treatment and qualitative data collected during interviews indicate that it is an

acceptable intervention for service users, although there may be room for improvement to increase participation in homework activities.

The phased approach to the development and evaluation of the intervention (MRC, 2000, 2008) has generated a theory-driven protocol, which has been subject to preliminary testing of effect. Monitoring of feasibility suggests advantages may accrue from revisions to protocol to enhance adherence with homework tasks. One proposal is to supplement the "talking-based" component of treatment with community-based support to complete homework exercises. Of course, this suggestion requires further empirical exposition, for example, to ascertain appropriate personnel to undertake this addition task. Follow-up data suggest that for some participants, positive effects diminish over time. It is possible that attention to maintaining gains achieved in treatment and relapse prevention strategies need to be enhanced within the treatment protocol.

A primary limitation of the current study is the small uncontrolled sample recruited that limits the conclusions that can be drawn from the findings. At the same time, it is difficult to assess the effects of the intervention versus regression to the mean, maturation, and so on. The uncontrolled effect sizes estimated should be treated with caution, given that they are susceptible to these threats to internal validity. There are also other competing explanations for reduction in negative symptoms that should be acknowledged. For example, it is possible that the nonspecifics of therapy and changes in other aspects of treatment, including medication, explain the effect observed rather than the focus on activation strategies.

A further limitation is that the assessments were not completed by an independent third party. Allegiance to the treatment approach may have led to exaggerated rating improvements. However, results generated by the inclusion of two measures of self-report, including the SENS as a measure of negative symptoms were not subject to this bias. There were some anomalies between the ratings between the SANS and the SENS. In such a small sample, it is difficult to interpret these, but it is important to note that the reliability of the SENS to measure change has not yet been established. Further testing of this property in the SENS is required if the measure is to be used in future research.

In spite of these limitations, this pilot evaluation is the first evaluation of BA for negative symptoms to be published. Results suggest that BA holds promise as a treatment for negative symptoms. This study shows that the intervention is feasible and associated with high levels of satisfaction. Of course, we can only speculate as to why the treatment was more effective for some participants than others. Anecdotally, therapist reports suggested that some participants

seemed to be more engaged in the process and ready to increase activity levels and work toward treatment goals. Wright, Turkington, Kingdon, and Basco (2009) have highlighted the importance of allowing people with psychosis and negative symptoms time to recuperate after a psychotic episode, and it may be that for some, the treatment coincided with a period of convalescence. Assessing readiness to take part in behavioral treatments in further studies would illuminate this hypothesis further. The death of his father for one participant is likely to have impacted his ability to engage with treatment and offer some insight into his limited progress, although he continued to meet with his BA therapist for the duration of the study.

There are other uncertainties that require attention before treatment is evaluated in a more rigorously controlled setting. For example, it would be fruitful to consult with a wider range of stakeholders, including clinicians and caregivers of people with negative symptoms to elicit their views of the potential of the treatment approach, the value of augmenting the talking part of the treatment with community-based support and who might be best placed to realize this role. At the same time, the study has raised a further uncertainty with regard to viability of recruiting an adequate sample to allow further evaluation of the treatment with this population. To explore potential barriers to this, we have recently conducted a survey of clinician views of referring people with marked negative symptoms to clinical trials.

In conclusion, findings from this early pilot work support the MRC (2008) focus on adequate piloting in the early stages of development and evaluation of complex interventions to address key uncertainties before evaluation to definitive evaluations of such treatments. Our results suggest that the BA approaches originally devised for depression may hold some utility in the treatment of negative symptoms and that further evaluation is warranted.

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