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Coping defence and depression in adolescents hearing voices

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Abstract

Background: The level of self-initiated coping defences in the face of auditory hallucinations reflects the degree to which the psychotic experiences are exceeding the person's resources. As it has been suggested that individuals who feel overwhelmed by their psychotic experiences are also more likely to develop depression, greater levels of self-initiated coping defences should predict onset of depression in the context of auditory hallucinations.

Method: Eighty adolescents (mean age 12.9 years, SD=3.1) who reported hearing voices were examined at baseline and followed-up three times over a period of 3 years. Fifty per cent were receiving professional care, but 50% were not in need of care. Baseline measurement of self-initiated coping defences and psychopathology were used as predictors of depression at follow-up.

Results: Baseline level of self-initiated coping was strongly associated with baseline severity of positive psychotic symptoms. Coping at baseline, with the exception of active problem solving, predicted an increase in the level of depression over the follow-up period (OR=3.0, 95% CI: 1.4, 6.4), independent of baseline psychopathology, demographic characteristics, receipt of professional care and appraisals and attributions related to the voices.

Conclusions: The results suggest that individuals who have a tendency to feel overwhelmed by the experience of voices, as evidenced by a more defensive style of response, are more likely to develop depression.

Declaration of interest: Funded by the Dutch Prevention Fund.

Key words: coping, psychosis, adolescence, depression, hallucinations

Introduction

Coping is defined as 'the person's cognitive and behavioural efforts to manage the

internal and external demands of the person-environment transaction that is appraised as taxing or exceeding the person's resources' (Lazarus & Folkman, 1984). Self-initiated

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coping is common in psychosis (Boker *et al.*, 1984; Brenner *et al.*, 1987; Carter *et al.*, 1996; Falloon & Talbot, 1981; Mueser *et al.*, 1997; Romme *et al.*, 1992), indicating that individuals who feel overwhelmed by their psychotic experiences mobilise coping defences. It has been shown that the degree of coping mobilised by the person is associated with severity of the psychotic experience and the level of distress, and is aimed at improving subjective control over the experience (Bak *et al.*, 2003; Bak *et al.*, 2001a, 2001b). The presence of coping, therefore, may be conceived as an indicator of the response by a person who feels overwhelmed by the experience of psychosis.

Individuals with psychotic experiences such as auditory hallucinations commonly experience depressive symptoms (Barnes *et al.*, 1989; Berrios & Bulbena, 1987; Van Os *et al.*, 1999; Van-Os *et al.*, 2000; Verdoux *et al.*, 1999). Key beliefs about the voices' power and omnipotence may lead to feelings of powerlessness and helplessness (Chadwick & Birchwood, 1994) that contribute to the onset of depression, particularly in those who attribute power to and feel overwhelmed by their voices (Birchwood & Chadwick, 1997).

Given the fact that the level of self-initiated coping defences in the face of auditory hallucinations reflects the degree to which the psychotic experiences are exceeding the person's resources, and given the fact that individuals who feel overwhelmed by their psychotic experiences are also more likely to develop depression, greater levels of self-initiated coping defences should predict onset of depression in the context of auditory hallucinations. We hypothesised that in individuals with experience of voices at baseline, greater level of self-initiated coping defence at baseline would predict onset of depression over the follow-up period. We examined this

hypothesis prospectively in a cohort of adolescents who reported hearing voices.

Methods

Sample

In order to recruit adolescents who were hearing voices, we proceeded in two stages. First, two of the research team (MR and SE) made extensive use of media contacts, formed in the course of a prior investigation (Romme *et al.*, 1992) to create awareness about hearing voices and reduce stigmatisation at the national level. They appeared on a popular TV talk show, where the experience of a child hearing voices, as well as the view of its parents, were discussed. At the end of the programme, viewers were invited to attend a special conference on the subject in the Dutch capital. This conference was attended by 40 children and their parents, and received media coverage. In the second stage, the actual recruitment started. Press releases were sent out and several TV and radio appearances were made in which help was asked to get in touch with the target population. The local community paediatric health service in Maastricht, where all children aged 0–14 are periodically screened, was contacted, as well as several child and adolescent psychiatric services in the country. Over a period of approximately one year, 80 children who were hearing voices were thus recruited. The children were seen at baseline, and subsequently at 1-year intervals over a period of 3 years. Each child was thus interviewed four times. Whenever a child had indicated at the first follow-up that the voices had disappeared, no attempts were made to re-interview at the second follow-up, in order to avoid unnecessary focus on a past, and often upsetting, experience. However, an attempt was made to again interview all 80 children at

the third follow-up, regardless of whether they heard voices or not.

Research instruments and procedures

The research team consisted of two field workers who had extensive prior experience in interviewing individuals with hallucinations, using a similar format as the one in the present study. They also had prior experience in administering the other instruments used. Nearly all children were interviewed at home. The baseline interview was conducted in the presence of at least one parent or grandparent (with a few exceptions where adolescents had specifically asked that the parent not be present). All participants and their parents, where appropriate, provided written informed consent to conform to the local ethics committee guidelines. At each interview occasion, the same instruments were used. The main instrument was the Maastricht Voices Interview for Children. This interview was derived from the Maastricht Voices Interview for adults and adapted for children with the aid of a clinical child psychologist. It contains several items in relation to the experience of hearing voices, that were included on the basis of extensive qualitative research involving many individuals, including children, with voices over a period of at least 10 years (Romme, 1996; Romme & Escher, 1996).

The frequency of the voices was coded as 'continuous', 'hourly', 'daily', 'weekly', 'monthly' and 'variable'. The emotional appraisal of the voice was coded as 'friendly', 'hostile', 'neutral', 'variably friendly and hostile' and 'other'. Attributions were assessed by coding a perceived origin of the voices as 'present' if the child had indicated explanations of the voice being caused by a spirit or ghost, by a special gift, by a disease, coming from a different world, or another explanation.

The degree of coping mobilised by the voices was assessed by constructing a total score of 18 possible coping mechanisms that were enquired about in a structured way and could be scored as 'present', (score 1) or 'absent' (score 0). A total score – weighted for different coping domains - was derived by i) calculating, for each coping domain (see below), the sum of the items divided by the number of items, and ii) adding the weighted scores of the six coping domains (maximum =6). The following coping mechanisms were assessed: *passive illness behaviour* (using medication, using alcohol or drugs), *passive problem avoiding* (ignoring voice, listening selectively to voice, doing something), *active problem solving* (making a deal with voice, swearing against voice, seeking distraction, making a drawing of the voice, sending voice away, writing something about the voice), *active problem avoiding* (thinking of something else, running away from the voice, calling someone over the telephone, visiting someone), *symptomatic coping* (listening carefully to the voice, performing a ritual against the voice) and *other coping* (other way of coping).

Receipt of professional help and help-seeking behaviour was assessed by asking whether professional help was being received in relation to the voices. Global level of functioning was assessed using the Children's Global Assessment Scale, administered at baseline (CGAS) (Shaffer *et al.*, 1983).

Psychopathology was assessed using the Extended Brief Psychiatric Rating Scale (BPRS; Lukoff *et al.*, 1986; Overall & Gorham, 1962), yielding continuous scores for the dimensions anxiety/depression (anxiety, depressive mood, guilt feelings, suicidality), positive psychotic symptoms (suspiciousness, unusual thought content, hallucinations) negative psychotic symptoms (motor retardation, blunted affect, emotional

withdrawal, self-neglect), disorganisation (disorientation, conceptual disorganisation, bizarre behaviour), and mania (excitement, euphoria, hyperactivity, distractibility). In addition, the Youth Self Report/11–18 (YSR) was used to measure general problem behaviour expressed as the total score (Verhulst *et al.*, 1996)(Achenbach, 1991). Although the YSR and related CBCL scales allow for the calculation of separate scores corresponding to several behavioural dimensions based on exploratory factor analysis, confirmatory factor analytic studies have shown inadequate empirical support for these syndromes and their differentiation (Hartman, 1999 #2445; Greenbaum, 1998 #2447). Instead, a general problem behaviour factor appears to underlie CBCL and related scales data across different age groups (Hartman, 1999 #2445; Greenbaum, 1998 #2447). We therefore, used the total score as a general measure of problem behaviour.

During the interviews, care was taken to elicit and record the child's experiences, rather than those of the parents. Researchers did not make therapeutic statements or suggestions (although they would, of course, answer any questions to the best of their ability), and did not comment on ongoing mental health care, if present. At the end of each interview, research staff made a report covering all the data collected. This was subsequently discussed with the research team (MR, SE & AB), in order to discuss problems and ambiguities, and to create continuing consensus on how to conduct the interview and rate answers in a standard way.

Analyses

In order to validate self-initiated coping as a response to overwhelming experience of psychosis, correlations between coping level and severity of psychopathology were as-

sessed, in particular with positive symptoms of psychosis. In order to test the specificity of this association, similar correlations were calculated with YSR problem behaviour and CGAF global functioning scale. Follow-up depression was defined dichotomously using the sample 90th percentile cut-off of the continuous BPRS depression score at the three follow-ups. Logistic regression in STATA(StataCorp, 2001), yielding odds ratios with 95% confidence intervals, was performed with follow-up depression as the response variable and baseline coping score and other variables as the exposure variables. Baseline depression was controlled for, using the baseline continuous BPRS depression score to avoid residual confounding. The adjustment for baseline depression means that an odds ratio greater than unity for a given exposure can be interpreted as indicating that the exposure predicts onset of new depression or worsening of depression that already existed at baseline. Other confounders selected *a priori* were age, sex, receipt of professional help, YSR problem behaviour, CGAF global functioning and appraisals and attributions relating to the voices as described in the methods section. These confounders were selected on the *a priori* likelihood that they were associated with both coping and the onset depression (Clayton & Hills, 1993a, 1993b).

In order to assess whether any effect of coping varied as a function of type of coping, we also examined a model in which the weighted scores of the six coping domains were entered simultaneously, so as to examine their independent effects on depression.

As there were three follow-ups with repeated observations per person in the data file, observations were clustered within individuals, compromising statistical independence of the observations. The CLUSTER and

ROBUST options were therefore used in the STATA logistic regression analyses. The CLUSTER option combined with the ROBUST option allows for the use of observations which are not independent within clusters (in this case: within individuals) and obtains the Huber/White/Sandwich estimator of variance instead of the traditional variance estimator. These procedures result in standard errors that are adjusted for clustering within persons. Tests were performed two-tailed with alpha of 0.05.

Results

Sample

The mean age was 12.9 years ($SD=3.1$; range 8–19 years). Around half (53.8%) were female. Respectively 80, 75, 51 and 64 children were seen at baseline, year 1, year 2 and year 3. A total of 21 children met the criteria for dichotomously defined depression as defined above at one of the three follow-ups. The mean BPRS depression sum score at baseline was 8.2 ($SD=4.4$, range 4–23), and the mean BPRS score was somewhat lower at 5.9 ($SD=3.2$, range 4–22) over the three follow-ups.

Coping score and severity of positive psychotic symptoms

The weighted coping score at baseline was 1.4 ($SD=0.8$, range: 0–3.2); the mean number of self-initiated coping defences was 4.4 ($SD=2.5$, range: 0–9). The weighted coping score was correlated with total BPRS score at baseline (Pearson's $r=0.28$, $p=0.013$), in particular with severity of positive psychotic symptoms ($r=0.41$, $p=0.0002$). No significant associations were apparent between coping and YSR problem behaviour ($r=0.19$, $p=0.10$), or between coping and CGAF global functioning ($r=-0.04$, $p=0.73$).

Baseline coping and follow-up depression

Baseline level of coping defences strongly predicted follow-up depression ($OR=3.0$, 95% CI: 1.4, 6.4, $p=0.005$). This association further increased after adjustment for baseline dimensions of psychopathology, including baseline depression, and again after additional adjustment for sex, age, YSR level of problem behaviour, CGAF global functioning and voice characteristics such as frequency, emotional tone and attributions about the origin of the voices (Table 1). Analyses by coping domain suggested that passive and problem avoiding styles were most likely to be associated with depression. The only coping style that was negatively associated with depression, although statistically inconclusive, was active problem solving (Table 2).

Discussion

First, it was found that baseline level of self-initiated coping was strongly and specifically associated with baseline severity of positive symptoms of psychosis, suggesting that coping is indeed a valid measure for the degree to which individuals attempt to 'defend' themselves against the experience of being overwhelmed by their psychotic experiences. Second, it was found that higher levels of coping defences at baseline were strongly predictive of depression at follow-up, and that this association was independent of severity of baseline global functioning, problem behaviour and psychopathology dimensions, including depression, and independent of demographic characteristics, help-seeking and voice characteristics such as frequency, emotional tone and attributions about their origin. The findings therefore suggest that the pathway from coping defence to depression is one related to a charac-

Table 1: Associations between baseline coping and follow-up depression

		Risk follow-up depression (Odds ratio and 95% confidence interval)	p
Baseline coping score (range: 0–3.2)	Unadjusted	3.0 (1.4, 6.4)	0.005
	Adjusted for BPRS baseline psychopathology dimensions*	3.6 (1.2, 10.8)	0.021
	Adjusted for BPRS baseline psychopathology dimensions* as well as age, sex, receipt of professional help, YSR level of problem behaviour, CGAF level of functioning, frequency of voices, emotional appraisal of voices and attributions regarding voices	6.8 (2.1, 22.1)	0.002

* Dimensions of depression, manic, positive, negative and disorganisation symptoms

Table 2: Effect of coping on onset of depression, by coping domain, entered together in the model

Coping domain	OR (95% CI)
Passive illness behaviour	12.9 (1.9, 88.0)
Passive problem avoiding	5.6 (0.6, 55.3)
Active problem solving	0.03 (0.0, 3.9)
Active problem avoiding	30.2 (1.4, 640.1)
Symptomatic coping	3.6 (0.6, 22.4)
Other coping	4.5 (1.3, 16.1)

teristic of the person rather than a characteristic of the psychotic experience itself. It has been proposed that the individual’s underlying schema of social subordination and, by implication, the tendency to feel overwhelmed by the psychotic experiences, fuels feelings of distress associated with the experiences (Birchwood *et al.*, 2000; Romme & Escher, 1989, 2000). The current results therefore agree with these theories. The fact that active problem solving was the only coping style negatively associated with depression, albeit statistically imprecise, whereas passive and avoidant styles had the strongest effect sizes, is also compatible with this line of reasoning. In a previous study, we showed that active problem solving was associated with more experience of control over the psychotic experience than other coping styles (Bak *et al.*, 2002). This suggests that some coping strategies may be more useful than others and that not only quantity, but also quality of coping is important.

Methodological issues

The finding should be viewed in the context of several possible limitations. First, the level of self-initiated coping strategies was used as an indicator of the person’s sense of

being overwhelmed by severity of the psychotic experience. However, it could be argued that our measure was liable to false positive (individuals who feel overwhelmed and do not report coping responses) and false negative (individuals who feel in control over their experience but report a large amount of coping) classification. Although some degree of misclassification cannot be ruled out, the fact that the amount of self-initiated coping was associated with BPRS severity of psychotic experiences in this and previous work (Bak *et al.*, 2002; Bak *et al.*, 2001a, 2001b) strongly suggests that the amount of self-initiated coping increases linearly with appraised severity of symptoms, on which the BPRS rating is based. Since both false positive and false negative results would drive the correlation between self-initiated coping and appraised severity towards the null, it is unlikely that the data contain substantial misclassification. Second, the assessment of coping strategies was not based on a structured interview with clear anchor points. The questions on coping nevertheless had face validity, and although imprecise measurement may have introduced more random error, it is difficult to conceive how onset of depressive symptoms at follow-up could have biased baseline assessment of coping, resulting in spurious associations. Third, data on coping were assessed in a sample of children of varying ages. However, correction for age did not reduce the associations. Fourth, the sample collected was a not community-based and cannot therefore be considered representative for the group of children hearing voices. Similarly, this sample is by definition one in which self-initiated coping was not effective in terms of making the voices disappear altogether. Many individuals may cease to have hallucinatory experiences through self-initiated coping, but these would not

have been included in our sample initially. Fifth, our adjustment for baseline psychopathology may have been incomplete, because the measure of psychopathology was cross-sectional and did not include later fluctuation in symptoms. However, even if the measure was incomplete, adjustment for this possible confounder further increased the association, making it very unlikely that confounding by psychopathology caused spurious results. Sixth, our use of the concept of 'coping' as a response to severity of psychopathology suggests that all self-initiated coping is merely passive and is not successful in reducing symptom burden. This is in part an artificial function of our selection criteria of children who by definition had not been successful to reduce their experiences by self-initiated coping as they had persistent voices. Finally, we did not conduct detailed diagnostic interviews yielding ICD or DSM diagnoses. Instead, we collected dimensional measures of YSR problem behaviour, BPRS psychopathology and CGAF social functioning. This was done for several reasons. First, the variable of interest in this study was experience of voices, and the psychopathological and social functioning context of these experiences is arguably better described by global dimensional measures than diagnostic constructs of uncertain validity. Second, many of our participants would not have met the distress/dysfunction criteria for disorder and therefore remained 'undiagnosable' using traditional measurements.

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