Research report

Appraisal of hypomania-relevant experiences: Development of a questionnaire to assess positive self-dispositional appraisals in bipolar and behavioural high risk samples

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Abstract

Background: This paper reports two studies concerned with the development and validation of the Hypomania Interpretations Questionnaire (HIQ) designed to assess positive self-dispositional appraisals for hypomania-relevant experiences.

Methods: Study 1: 203 late adolescent participants completed the HIQ along with additional measures of general symptom interpretation, dysfunctional attitudes and hypomanic personality.

Study 2: 56 adults with a self-reported diagnosis of bipolar disorder and 39 controls completed a revised HIQ and a measure of current mood symptoms.

Results: Study 1: The final 10 item HIQ had two subscales: a) positive self-dispositional appraisals (HIQ-H); and b) normalising appraisals (HIQ-NE). Internal and test–retest reliability were adequate. Hypomanic personality scores were significantly and uniquely predicted by recent hypomania-relevant experiences and HIQ-H score.

Study 2: HIQ remained internally reliable within this sample. Bipolar participants (BD) reported more subsyndromal mood symptoms than controls (C) and scored significantly higher on HIQ-H even after covarying for these. HIQ-H was the primary predictor of diagnostic group. Its ability to discriminate BD from C was confirmed by ROC analysis.

Limitations: The studies are cross-sectional and did not include non-bipolar psychiatric control groups.

Conclusions: HIQ appears to be a reliable and valid measure for the assessment of positive self-dispositional appraisals which seem to be linked to both hypomanic personality and bipolar disorder. The relevance of such appraisals for symptom exacerbation, relapse and psychological treatment would merit future investigation.
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1. General introduction

Bipolar disorder is often described as a cyclical illness with a typical course of repeated relapse and recurrence. This is supported by recent investigations which have confirmed this pattern with large collaborative study samples (Coryell et al., 2003; Dittmann et al., 2002; Leverich et al., 2003; Post et al., 2003). Diagnostic criteria for both mania and depression highlight the importance of sleep and behavioural disturbances as symptoms in both types of episode (First et al., 1997). In depression, symptoms include insomnia or hypersomnia, withdrawal from activities and agitation or retardation. In mania, symptoms

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include decreased need for sleep and increases in goal directed and pleasurable (but high-risk) activities. Wehr et al. have argued that sleep disturbance is the 'final common pathway' for mania (Wehr et al., 1987). Wehr and other authors have also reported on the antidepressant effects of sleep manipulations, in particular sleep phase advance or deprivation for bipolar depressives (Benedetti et al., 2001; Pflug, 1976; Wehr et al., 1979). Clinical observations of the course of bipolar disorder finding clear evidence for the impact of sleep (a key circadian factor) on both mania and depression have led to interest in identifying the nature of circadian disturbance in the condition.

The effects of circadian rhythm disruption vary depending on the severity of the disruption itself. Thus where disruption is mild, the main effects appear to be fatigue, listlessness and lack of energy, whereas more severe disruption is related to temporarily increased energy, stamina and alertness (Healy and Williams, 1989). Analogue animal studies have demonstrated this phenomenon, which has also been reported in observational studies of humans (Aschoff and Wever, 1976). More severe jet lag is associated with eastward travel across several time zones. It has been argued (US Congress, 1991) that even a 1 h shift in time zone can take a day to adjust to in terms of circadian rhythm entrainment. A larger shift, such as 9 h, can take the individual up to 12 days to adjust to. There is also some circumstantial evidence that more severe jet lag is associated with greater likelihood of manic as opposed to depressive episodes in bipolar patients (Jauhar and Weller, 1982; Young, 1995).

Studies have shown disruptions of circadian functioning in acute and remitted phases of the disorder (Millar et al., 2004; Jones et al., 2005a; Wehr et al., 1983). Additionally Frank and colleagues have explored the relationships between social rhythm disruptions and bipolar symptomatology (Frank et al., 2000; Malkoff-Schwartz et al., 1998, 2000). However, it is not clear how the experience of instability of circadian or social rhythms might translate into the symptoms characteristic of bipolar disorder. A recent multilevel model (Jones, 2001), based on the SPAARS approach (Power and Dalgleish, 1997) and previous work by Healy and Williams (1989), has argued that the experience of circadian disruption in bipolar disorder is analysed in the first instance by an analogical system which processes information in an implicit and modality specific way. At this level, following significant circadian disruption, the analogical effects would be likely to include physiological and proprioceptive indications of increased energy, stamina and alertness. Jones (2001) has proposed that a key feature of this model is then how the individual interprets these changes. Previous research has shown that an internal

focus for common somatic symptoms is associated with increased symptomatology in hypochondriasis (Clark et al., 1998; Robbins and Kirmayer, 1991). Similarly, if the physiological and proprioceptive effects above are attributed to internal characteristics they may lead to a cycle of positive automatic thoughts, positive beliefs about the self and behaviour that exacerbates initial mood changes (Jones, 2001; Mansell and Lam, 2003). For example, imagine an individual who finds she feels alert, active and has a reduced need for sleep. If she were to explain this as being due to her personal characteristics (e.g. "I am back to my intelligent, dynamic self again"), she may decide that this means she could take on new challenges, work harder, achieve more and take less rest. This would in turn increase the effects of the original circadian disturbance and maintain the cycle of increased symptoms. This pattern of behaviour would be consistent with the prodromal signs for mania reported in the literature (Lam and Wong, 1997; Lam et al., 2001).

The purpose of the current studies was therefore to develop a measure which explores how individuals explain common hypomania-relevant experiences to themselves and to evaluate its relationships with state and trait bipolar characteristics.

2. Study 1

2.1. Introduction

There was no measure currently available to explore the interpretation of hypomania-relevant appraisals. The Hypomania Interpretations Questionnaire (HIQ) is described which was developed for this purpose. The sample chosen for this was a group of healthy late adolescents. This group was deemed appropriate as they were in the age range for peak frequency of first onset of bipolar symptoms, based on a case register study of a cohort of 3000 bipolar patients (Kupfer et al., 2002). To explore the specificity of individuals' style of explanation a general measure of interpretations of common somatic symptoms (unrelated to affective symptoms), the Symptom Interpretation Questionnaire (SIQ), was used (Robbins and Kirmayer, 1991). As dysfunctional attitudes have been reported in bipolar disorder as well as unipolar disorder (Scott and Pope, 2003; Scott et al., 2000) these were also assessed in the first study. The following issues were addressed in Study 1: i) Is it possible to reliably assess hypomania-relevant appraisals in a healthy control sample? ii) Are positive self-dispositional appraisals associated with behavioural risk of mania? iii) Is there a general relationship between attributional tendencies across HIQ and SIQ? iv) How does tendency to make

positive self-dispositional appraisals relate to dysfunctional attitudes?

2.2. Methods

2.2.1. Participants and procedure

Two hundred and three participants (157 female) within a target age range of 17–19 (mean 17 years, S.D. 0.71) were assessed. All were students recruited from local sixth form colleges. Participants completed assessment measures in groups at their colleges. A subgroup of 57 participants also completed one measure a second time, 8 weeks after the initial assessment as a reliability check.

2.2.2. Measures

2.2.2.1. Hypomania Interpretations Questionnaire (HIQ).
The initial structure for HIQ was based on that of the Symptoms Interpretation Questionnaire (Robbins and Kirmayer, 1991). The initial version of HIQ measured consisted of 13 common hypomania-relevant experiences each followed by three possible explanations: 1) positive self-dispositional appraisals (H); 2) normalising internal explanations (NI); and 3) normalising external explanations (NE). An example would be:

If my thoughts were coming so thick and fast that other people couldn't keep up, I would probably think it was because:	
(N-I) I am overstimulated at the moment.	A B C D
(H) I am full of good ideas and others are too slow.	A B C D
(N-E) There are too many demands on my time.	A B C D

Items selected were derived from descriptions of hypomanic symptoms presented in DSM-IV (American Psychiatric Association, 1994), the General Behaviour Inventory (Depue et al., 1981) and the Internal States Scale (Bauer et al., 1991). Explanation types were generated by the authors and then checked by three experienced clinicians to ensure plausibility. Clinicians were asked to read each item carefully and to indicate whether, based on their clinical experience, any items were not plausible. No items received an implausible rating. Each explanation for each item is rated on a four point Likert-type scale (A = not at all; score 1: B = somewhat; score 2: C = quite a bit; score 3: D = a great deal; score 4). Participants also indicated using a yes/no scale whether or not they had experienced each situation in the preceding three months (HIQ-Experience).

2.2.2.2. Symptom Interpretation Questionnaire (SIQ).
This consists of 13 common somatic symptoms with 3 possible explanations for each which are either somatic internal (SIQ-S), normalising/environmental (SIQ-N) or psychological/emotional (SIQ-P), each of which are rated on the same type of Likert scale as described above for HIQ. This measure has established internal consistency, reliability and construct validity (Robbins and Kirmayer, 1991).

2.2.2.3. Hypomanic Personality Scale (HPS).
This is a 48 item measure designed to detect individuals at risk of hypomania. High scores on this measure have been reported to have elevated scores on the hypomania section of the SADS-L (Eckblad and Chapman, 1986). High scores were associated with greater likelihood of bipolar disorders over a 10 year follow-up period (Kwapil et al., 2000).

2.2.2.4. Dysfunctional Attitudes Scale (DAS).
This was initially devised as a measure of assumptions underlying depression. The 40 item scale consists of statements intended to reflect depression-relevant dysfunctional beliefs. Each item is rated on a seven point scale from 1 (disagree totally) to 7 (agree totally) (Weissman and Beck, 1978). Recent research has indicated elevated levels of dysfunctional attitudes in both at risk and diagnosed bipolar participants (Scott et al., 2000; Alloy et al., 1999).

2.3. Results

2.3.1. Participant characteristics

Participants' mean scores on DAS, HPS and SIQ measures are presented in Table 1. HIQ scores are also summarised in the same table. For each scale participants sampled scores from across the available ranges (HIQ-H 13–51, HIQ-NI 16–45 and HIQ-NE 15–47). None of the scales deviated significantly from a normal distribution (Kolmogorov–Smirnov test $p > 0.1$). Item endorsement rates (rating higher than 'not at all') ranged from 22% to 84%. In contrast with Robbins' findings for the SIQ there were no items sufficiently skewed so that 80% or more endorsed the 'not at all' option.

2.3.2. Internal consistency of HIQ

To explore internal reliability, Cronbach's α was calculated for each of the three subscales; HIQ-H ($\alpha = 0.82$), HIQ-NE ($\alpha = 0.71$) and HIQ-NI ($\alpha = 0.68$). In no case did deleting an item lead to a significant improvement in internal reliability (change $\alpha > 0.05$).

2.3.3. Factor analysis of HIQ

All items were also subjected to principal components factors analysis with varimax rotation. This

Table 1
Study 1 — Scores on self-report measures

	Mean	S.D.
HPS	19.20	7.26
DAS	126.25	25.11
SIQ-P	21.32	5.39
SIQ-S	29.89	6.82
SIQ-E	34.65	6.49
HIQ-H	26.70	6.92
HIQ-NI	31.03	5.59
HIQ-NE	32.20	6.28
HIQ-H*	19.94	5.79
HIQ-NE*	24.84	5.20

Key: DAS: Dysfunctional Attitudes Scale; HIQ-H: Hypomania Interpretations Questionnaire — Hypomanic internal scale; HIQ-H*: Hypomania Interpretations Questionnaire — 10 Item Hypomanic internal scale; HIQ-NE: Hypomania Interpretations Questionnaire — Normalising External scale; HIQ-NE*: Hypomanic Interpretations Questionnaire — 10 Item Normalising External scale; HIQ-NI: Hypomania Interpretations Questionnaire — Normalising Internal scale; HPS: Hypomanic Personality Scale; SIQ-P: Symptom Interpretations Questionnaire — Psychological subscale; SIQ-N: Symptom Interpretations Questionnaire — Normalising subscale; SIQ-S: Symptom Interpretations Questionnaire — Somatising subscale.

identified 12 factors with an eigen value greater than 1. Inspection of the scree plot indicates a change in gradient after factor 3, all factors having an eigen value >2. These three factors account for 33% of variance. For HIQ-H, 12 of 13 items had highest loading for factor 1. The picture was less clear for HIQ-NI and HIQ-NE. 9/13 HIQ-NE items and 5/13 HIQ-NI items loaded on factor 2, with additional items loading on factor 1 or factor 3. Given that there was also a substantial inter-subscale correlation ($r=0.62$, $p<0.001$) between the two normalising scales it was decided to re-run the factor analysis relying only on the HIQ-NE scale and HIQ-H scale. This identified only 2 factors with an eigen value >2. This two-factor solution accounted for 32% of variance.

A separation of factors was achieved for 10 out of the 13 items (all items scoring >0.35 on one factor only). The scale was therefore revised to consist only of 10 items across the two factors. Mean values for HIQ-H and HIQ-NE for the revised scale are also presented in Table 1. Cronbach's α for the shortened scales were both adequate (H: α=0.83; NE: α=0.73). Fifty-seven participants completed this scale 8 weeks following first assessment. Test–retest correlations were both highly significant (HIQ-H: $r=0.56$; HIQ-NE: $r=0.59$, $p<0.001$ in both cases). Paired t-tests indicated no significant differences in mean subscale scores between test and re-test ($p>0.1$). This shortened scale was then analysed for its relationships with the other measures taken in this study.

2.3.4. HIQ relationships with HPS and other measures

Relationships between HIQ subscale scores and HPS, SIQ and DAS are illustrated in Table 2. Correlations indicated that HIQ-H score correlated significantly with HPS and each of the SIQ subscales but not DAS. HIQ-NE scores were significantly related again to each SIQ scale but not HPS. There was also an unpredicted relationship between HIQ-NE and DAS. Each of the subscales of the SIQ was significantly correlated. HPS was significantly associated with HIQ-H, SIQ-P, SIQ-S and DAS.

To explore more specifically which measures uniquely contributed to the prediction of behavioural risk of hypomania, a multiple regression with stepwise entry was conducted. Each of the variables with a significant bivariate correlation with HPS was entered into this equation. The overall regression equation was significant ($F_{(2, 193)}=17.08$, $p<0.001$). This indicated that only HIQ-H (standardised $B=0.36$, $t=5.40$, $p<0.001$) and DAS total scores (standardised $B=0.154$, $t=2.32$, $p<0.02$) contributed to the variance in HPS score.

Table 2
Study 1 — Correlations between hypomanic interpretations, hypomanic personality, dysfunctional attitudes and somatic interpretations

	HIQ-NE	HPS	DAS	SIQ-Psy	SIQ-N	SIQ-S
HIQ-H	.097	.359(**)	−.023	.150(*)	.363(**)	.368(**)
HIQ-NE		−.015	.191(**)	.514(**)	.354(**)	.296(**)
HPS			.149(*)	.141(*)	.111	.234(**)
DAS				.169(*)	−.035	.137
SIQ-Psy					.294(**)	.273(**)
SIQ-N						.382(**)

Key: HIQ-H: Hypomania Interpretations Questionnaire — 10 Item Hypomanic internal scale; HIQ-NE: Hypomania Interpretations Questionnaire — 10 Item Normalising External scale; HPS: Hypomanic Personality Scale; DAS: Dysfunctional Attitudes Scale; SIQ-P: Symptom Interpretations Questionnaire — Psychological subscale; SIQ-N: Symptom Interpretations Questionnaire — Normalising subscale; SIQ-S: Symptom Interpretations Questionnaire — Somatising subscale.
*$p<0.05$, **$p<0.01$.

HIQ-H contributed 13% to HPS variance, DAS only 2%, total variance explained in HPS by HIQ-H and DAS is 15% indicating no additional variance is explained by the two measures in combination.

Participants also endorsed whether or not they had experienced each of the situations described in the HIQ in the preceding 3 months (HIQ-Experience). Two groups were constructed (Hi-HPS and Low-HPS) on the basis of a median split on HPS scores. Chi-squared analyses were conducted for each HIQ item with respect to the two HPS groups. Hi-HPS endorsed HIQ-Experience for all but one item more frequently than Low-HPS ($p < 0.05$ in all cases). As this indicated an association between elevated HPS and recent experience of hypomania-relevant experiences, the above regression was re-run using total HIQ-Experience as an additional predictor variable. The overall regression equation was significant ($F_{(2, 193)} = 50.61$, $p < 0.001$). This indicated that only HIQ-H (standardised $B = 0.22$, $t = 3.61$, $p < 0.001$) and HIQ-Experience (standardised $B = 0.48$, $t = 7.99$, $p < 0.02$) contributed to the variance in HPS score. HIQ-H contributed 5% to HPS variance, HIQ-Experience 21%. In combination the two variables explained another 8% of variance in HPS, explaining 34% in total.

2.4. Discussion

Study 1 has reported the factor structure of a measure evaluating interpretations of hypomania-relevant experiences. A two-factor solution was obtained which consisted of a positive self-dispositional factor and a normalising external factor. As this solution only accounted for 32% of variance it would be appropriate to replicate and confirm this factor structure in future studies. This measure was shown to be internally consistent and adequately reliable. It was expected and observed that positive self-dispositional appraisals on HIQ might be associated with the psychological explanations factor of the SIQ. However, since all SIQ scales were significantly associated with both HIQ scales any particular association is difficult to interpret. The final two-factor 10 item measure was then assessed with respect to the extent to which it could predict scores on a behavioural risk measure of mania. A regression analysis indicated that the HIQ-H subscale, together with dysfunctional attitudes, predicted scores on the hypomanic personality scale. The interpretative styles that individuals had for common somatic symptoms which were not hypomania-relevant were not uniquely predictive of HPS scores. When this analysis was re-run to include HIQ-Experience it was found that both HIQ-

H and HIQ-Experience contributed uniquely and in combination to variance in HPS scores.

3. Study 2

3.1. Introduction

Although Study 1 demonstrated a clear relationship between tendencies to explain hypomania-relevant experiences in a positive self-dispositional manner and risk of future hypomania, there were limitations to the study. The study sample were in late adolescence so although they were entering the risk period for bipolar onset it might be that some aspects of these relationships may have been influenced by developmental factors. Also, a relationship was observed between HIQ-Experience and HPS which suggested that exposure to hypomania-relevant experiences contributes to self-reported risk of hypomania. Furthermore, although test–retest reliability was significant its numerical value was lower than might be expected for a purely trait measure, suggesting that state factors might also influence HIQ scoring. A further issue is that the primary test of this measure will be the extent to which diagnosed bipolar participants differ from controls. This second stage study therefore concentrated on comparison between bipolar and control participants on the final version of the HIQ, with respect to both diagnosis group and symptomatology.

3.2. Methods

3.2.1. Participants and procedure

Two groups were tested: a sample of 56 individuals (43 female) who were members of the Manic–Depressive Fellowship with a self-reported clinical diagnosis of bipolar disorder and a convenience sample of 39 controls (29 female) recruited from health service staff and an advert in the newsletter of the University of Manchester. Groups did not differ on age (bipolar sample $M = 47.0$ (S.D. 9.97); controls $M = 43.7$ (S.D. 14.22) or gender. Level of education was coded on a five-point scale (0 = 'None', 1 = 'GCSE/CSE/GCE', 2 = 'A-level', 3 = 'Degree', 4 = 'Postgraduate Degree'). A Mann Whitney U-test revealed no difference in level of education (U (38, 55) = 10050.24, $p > 0.1$) between the bipolar group and controls.

3.2.2. Measures

All participants completed two measures:

1. *HIQ* — as described earlier.

2. *Internal States Scale*: This is a self-report questionnaire intended to assess manic and depressive symptoms. It has 15 items which contribute to four subscales: Activation (ISS-A), Well-Being (ISS-WB), Perceived Conflict (ISS-PC) and Depression (ISS-D). The participant rates each item with respect to how they have been for the preceding 24h. Each rating is made by marking a 100 mm visual analogue scale with anchor descriptions of 'Not at all/Rarely' at one extreme and 'Very much so/Much of the time' at the other. This measure is widely used and has good internal reliability and validity (Bauer et al., 1991, 2000).

3.3. Results

3.3.1. Symptom information

ISS scores for the bipolar and control groups are presented in Table 3. According to Bauer et al. a cut-off of ISS-A >200 is indicative of mania, whereas an ISS-WB score <125 is suggestive of depression. Both groups were well below the mania cut-off. The bipolar group average ISS-WB score was at the cut-off rather than below suggesting neither group was significantly depressed. MANOVA indicated significant overall differences between the bipolar and control groups on ISS scores ($F_{(4, 86)} = 4.59$, $p < 0.01$). Follow-up univariate ANOVAs were significant for ISS-WB, ISS-A and ISS-D (ISS-WB: $F = 12.25$, $p < 0.0001$; ISS-A: $F = 5.91$, $p < 0.05$; ISS-D: $F = 7.42$, $p < 0.01$, < 0.05, df 1, 89 in all cases). In all cases results were consistent with lower mood in the bipolar group. The presence of subsyndromal low mood, whilst not meeting clear mood cut-offs, indicates that the bipolar sample is not in a current mood episode.

3.3.2. HIQ: reliability and bipolar control differences

Cronbach's α was adequate for both subscales (HIQ-H $\alpha = 0.87$ and HIQ-E $\alpha = 0.76$) for the sample as a whole. In no case did deleting an item lead to a significant improvement in internal reliability (change $\alpha > 0.05$). HIQ-H correlated modestly but significantly with HIQ-E ($r = 0.26$, $p < 0.01$).

As can be seen in Table 3, mean score for HIQ-H appeared higher in the bipolar group, whilst HIQ-NE seemed similar. MANOVA was conducted to explore differences between bipolar and controls on HIQ-H and HIQ-NE. Groups differed overall ($F_{(2,92)} = 10.08$, $p < 0.001$). Follow-up univariate ANOVAs indicated a significant difference between the groups on HIQ-H ($F_{(1,93)} = 20.20$, $p < 0.001$) but not for HIQ-NE ($p > 0.1$). This difference remained significant following covariation for all four subscales of the ISS ($F_{(1,87)} = 17.86$, $p < 0.001$). Chi-squared analyses were also conducted on HIQ-Experience for each of the 10 situations over the preceding 3 months. There was one item which bipolar participants endorsed more frequently (original item 7; $\chi^2 = 78.27$, $df = 2$, $p < 0.02$) — no other differences were significant.

A binary logistic regression was conducted to assess the predictive value of HIQ-H, ISS and HIQ-Experience scores. The overall regression equation was significant ($\chi^2 = 28.5$, $df = 6$, $p < 0.001$) explaining 76.6% of group membership. As Table 4 indicates, the only significant predictors of group membership were HIQ-H ($p < 0.002$) and ISS-A ($p < 0.05$). The same pattern was confirmed for HIQ-H ($p < 0.001$) using a stepwise approach, although in this case ISS-WB (rather than activation) was the only other predictor ($p < 0.001$).

A ROC curve analysis was conducted to explore the extent to which HIQ-H alone reliably differentiates bipolar and control participants. Area under the curve was 0.76 (S.E. 0.06), $p < 0.001$. Selecting a cut-off score of 25 yielded a sensitivity of 67% (percentage of bipolar participants who test positive) and a specificity (percentage of controls who test negative) of 68%.

3.4. Discussion

This second study compared a group of bipolar participants with a matched group of healthy controls. ISS scores suggested that bipolar participants were not in an acute mood episode, although it is acknowledged that future studies might test this more rigorously with

Table 3
Study 2 — Symptom scores and hypomanic interpretations in bipolar and control participants

	Bipolar	Control
Internal States Scale		
ISS-PC	128.53 (S.D. 110.76)	105.52 (S.D. 68.92)
ISS-WB	124.67 (S.D. 73.43)	171.42 (S.D. 47.99)**
ISS-A	101.68 (S.D. 87.98)	145.13 (S.D. 93.19)*
ISS-D	60.06 (S.D. 56.05)	33.26 (S.D. 32.60)**
Hypomania Interpretations Questionnaire		
HIQ-H	22.82 (S.D. 7.56)	16.69 (S.D. 4.66)***
HIQ-NE	24.71 (S.D. 6.89).	22.87 (S.D. 4.92)

Key: HIQ-H: Hypomania Interpretations Questionnaire — 10 Item Hypomanic internal scale; HIQ-NE: Hypomania Interpretations Questionnaire — 10 Item Normalising external scale; ISS-PC: Internal States Scale, Perceived Conflict; ISS-WB: Internal States Scale, Well Being; ISS-A: Internal States Scale, Activation; ISS-D: Internal States Scale, Depression.
$*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

Table 4
Study 2 — Regression results for prediction of bipolar/control group membership

	B	S.E.	Wald	Exp(B)
HIQ-H	.182	.060	9.246**	1.12
HIQ-Experience	.136	.122	1.229	1.14
ISS-PC	.006	.007	.799	1.00
ISS-WB	−.004	.008	.267	0.99
ISS-A	−.011	.006	3.850*	0.99
ISS-D	.010	.014	.497	1.01
Constant	−3.699	2.037	3.296	

Key: HIQ-Experience: Hypomania Interpretations Questionnaire — Recent experience of hypomania-relevant event; HIQ-H: Hypomania Interpretations Questionnaire — 10 Item Hypomania internal scale; ISS-PC: Internal States Scale, Perceived Conflict; ISS-WB: Internal States Scale, Well Being; ISS-A: Internal States Scale, Activation; ISS-D: Internal States Scale, Depression.
*$p < 0.05$, **$p < 0.01$.

additional observer−rated measures. The HIQ questionnaire continued to have acceptable internal reliability in the mixed sample. Although the bipolar group were if anything lower in mood than controls they made significantly more hypomanic interpretations, consistent with Study 1. The finding that bipolar patients differed on this subscale only suggests a specific explanatory style in this group which is not dependent on current mood state and indeed this difference remained significant after controlling for self-rated mood and symptoms. This was confirmed by a regression analysis which indicated that the primary predictor of group membership was positive self-dispositional style and to a lesser extent ISS activation score. It is important that the HIQ-H score continues to predict BD group in a clinical sample and that this remains significant even though clinical and control groups do not generally differ in the frequency with which they had recently experienced hypomania-relevant symptoms. A ROC analysis confirmed that positive self-dispositional style predicted group membership significantly above chance and that with an appropriate cut-off score is both a sensitive and specific indicator.

4. General discussion

Previous work has identified circadian and social rhythm disruption in bipolar disorder (Jones et al., 2005a; Malkoff-Schwartz et al., 2000). Furthermore it has been proposed that the interpretation of experiences associated with such disruption may be a key factor in the development of bipolar symptoms (Healy and Williams, 1989; Jones, 2001). More generally, negative attributional styles (a tendency to attribute more negative events to the self) have been reported in individuals with bipolar disorder (Reilly-Harrington et al., 1999; Lyon et al.,

1999). Additionally, although manic patients appear to report normal self-serving biases on explicit attributional measures there is some evidence that they continue with a depressogenic style on implicit measures (Lyon et al., 1999). These studies indicate therefore that patterns of attributions are of interest in this group. However, studies to date have not explored the specific issue of how patients explain hypomania-relevant experiences to themselves. The primary aim of the studies reported in this paper was therefore to develop a self-report measure (HIQ) which explores hypomania-relevant appraisals in normal and bipolar participants. In particular this measure is intended to assess positive self-dispositional appraisals which previous work suggested as a feature of individuals either at behavioural risk of mania or with a clinical diagnosis of bipolar disorder (Mansell and Lam, 2003; Jones, 2001). It has been demonstrated that the HIQ is able to reliably assess such appraisals in both groups. Furthermore we have shown that bipolar participants and normal adolescents with elevated HPS scores are both significantly more likely to make these sorts of appraisals than controls. Although in Study 1 there was evidence that occurrence of recent hypomania-relevant experiences was also a significant predictor of HPS score, in Study 2 there was no consistent evidence that such experiences were influencing the differences in appraisals that were observed.

This paper therefore indicates that HIQ has promise as a measure of positive self-dispositional appraisals for hypomania-relevant experiences. This will be a potentially useful research tool for evaluating the extent to which such appraisals are indeed connected with risk of bipolar relapse as has previously been proposed (Mansell and Lam, 2003; Jones, 2001). A further measure, the Hypomanic Attitudes and Positive Predictions Inventory (HAPPI) has been developed recently with a similar aim in mind, and seems to complement the HIQ by representing a wider range of attributions and appraisals (Mansell and Jones, 2005). However, there is further work to be done to validate HIQ. As yet there have been no studies conducted with other psychiatric groups and therefore the specificity of the current findings for bipolar samples is unknown. Additionally, it will be necessary to use this measure longitudinally to test its ability to predict symptom exacerbations and relapse in clinical samples and to explore associations between appraisals and quality of prodromal coping skills (Lam et al., 2001). If such relationships are observed it is likely that the identification of beliefs of this type in individuals with bipolar disorder will form an important element of effective psychological approaches to relapse prevention and symptom management (Jones et al., 2005b).

Appendix A. HIQ-10

Listed below are situations that you may or may not have ever experienced. For each situation, please circle the letter next to each reason that corresponds to how much that might explain the situation for you. Please check every item for each question. Also, answer whether you have experienced the situation in the last 3 months by circling A (yes) or B (no). Please answer all questions.

	A Not at all	B Somewhat	C Quite a bit	D A great deal
1. If I thought my thoughts were going too fast I would probably think it was because:				
I am intelligent and full of good ideas.	A	B	C	D
There are too many competing tasks for me at present.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no
2. If I was on the go so much that other people couldn't keep up with me, I would probably think it was because:				
I am overdoing it and will soon need a rest.	A	B	C	D
I have more stamina than other people.	A	B	C	D
Have you experienced this situation in the last three months?			A_yes	B_no
3. If my thoughts were coming so thick and fast that other people couldn't keep up, I would probably think it was because:				
I am full of good ideas and others are too slow.	A	B	C	D
There are too many demands on my time.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no
4. If I was feeling 'sped up' inside, I would probably think it was because:				
I am under pressure from work or social demands.	A	B	C	D
I am in good spirits and can take on challenges.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no
5. If I felt physically restless and kept moving from one activity to the next, I would probably think it was because:				
I am full of energy and raring to go.	A	B	C	D
There is too much pressure and I need a break.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no
6. If I felt impulsive, I would probably think it was because:				
I could make rapid decisions and good choices.	A	B	C	D
There are lots of external demands.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no
7. If I felt in high spirits and full of energy, I would probably think it was because:				
I am a talented person with lots to offer.	A	B	C	D
Things happen to be going well for me at present.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no
8. If I woke up earlier than normal and felt full of energy, I would probably think it was because:				
I am a happy, positive and energetic person.	A	B	C	D
Something has disrupted my routine.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no
9. If I found my thinking was very quick and clear, I would probably think it was because:				
There are few distractions at present.	A	B	C	D
I am clever and talented.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no
10. If I found that tastes, smells or things I touched seemed more vivid, I would probably think it was because:				
It is just a phase and will pass.	A	B	C	D
I am more sensitive and 'tuned in' than other people.	A	B	C	D
Have you experienced this situation in the last 3 months?			A_yes	B_no

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