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Self Reported Hypomanic and Psychotic Symptoms are Positively Correlated in an International Sample of Undergraduate Students

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Abstract: This study aimed to examine whether self-reported hypomanic and psychotic symptoms are correlated in a non-clinical population. A sample of 303 undergraduates from the UK, Ireland, the US, Australia, New Zealand and Canada (14.7% male, 84.2% female, age 18-65) completed an online battery consisting of the 32-item Hypomania Checklist (HCL-32) and psychosis questions from the Diagnostic Interview Schedule (DIS-P). The HLC-32 total score correlated significantly with the DIS-P total score; rho = 0.16, $p<0.01$, DIS-P Delusional beliefs subscale; rho = 0.15, $p<0.01$ and DIS-P Hallucinatory experiences subscale; rho = 0.11, $p<0.05$. The HCL-32 Risk-Taking or Irritable subscale correlated with the DIS-P total score; rho = 0.26, $p<0.001$, Delusional beliefs subscale; rho = 0.26, $p<0.001$ and Hallucinatory experiences subscale; rho = 0.20, $p<0.001$. In conclusion, hypomanic symptoms appear to be related to psychotic symptoms in non-clinical populations, going against previous research suggesting that this is not the case.

Key words: Hypomania, mania, psychosis, psychotic, bipolar disorder

INTRODUCTION

A hypomanic episode is characterized by symptoms such as flight of ideas, a decreased need for sleep, grandiosity, increased talkativeness and an increase in goal-directed activity (APA, 2000). These symptoms occur within an elevated or irritable mood which lasts for at least 4 days. The American Psychiatric Associations Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR), diagnostic criteria for mania and hypomania are virtually identical, but hypomania is characterized by lesser degrees of intensity. Furthermore, hypomania does not cause occupational or social impairments and does not lead to hospitalization. Multiple episodes of hypomania and depression warrants a diagnosis of bipolar II disorder, whereas multiple episodes of mania and depression warrants a diagnosis of bipolar I disorder (APA, 2000). One important DSM-IV-TR differential diagnosis between hypomania and mania is that psychosis can be present in mania, but not hypomania. For example, the DSM-IV-TR specifies as criterion E for a hypomanic episode that hallucinations and delusions cannot be present and there are no psychotic features (APA, 2000). However, the DSM-IV-TR holds that psychotic symptoms may be present in manic episodes, stating, for example that inflated self-esteem is typically present and can

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reach delusional proportions (APA, 2000). The DSM-IV-TR also holds that grandiose delusions are common in mania and that hallucinations can occasionally occur.

A number of findings suggest psychosis can be present in mania. Cassano *et al.* (2004) found that bipolar I patients endorsed a number of psychotic items, such as 48% reporting being 'surrounded by hostility' and 20.8% reporting hearing voices. Research has also shown greater scores on measures of delusions, grandiosity, lack of insight and suspiciousness/persecution in those with mania (Canuso *et al.*, 2008) and that such symptoms are reduced upon effective treatment of manic symptoms (Swann *et al.*, 2004). Other research has documented a relationship between manic and psychotic symptoms within the general population (Kaymaz *et al.*, 2007; Krabbendam *et al.*, 2004) and a number of factor analysis studies have shown the presence of psychotic factors in the symptom structure of manic episodes (Cassidy *et al.*, 1998; Gonzalez-Pinto *et al.*, 2003; Swann *et al.*, 2001). Estimates of the prevalence of psychotic features during manic episodes vary widely from 18.5% (Soloman *et al.*, 2003) to 61.2% (Parker *et al.*, 2006).

A substantial body of research supports the general consensus that psychosis is not present in hypomania. For example, Benazzi (2001) found that depression with hypomanic features was not associated with any more psychotic symptoms than depression without such hypomanic features. Models have also been developed which can effectively distinguish bipolar I disorder from bipolar II disorder on the basis of the presence of psychotic symptoms, suggesting they are not a common feature of hypomanic episodes (Parker *et al.*, 2006). Parker *et al.* (2006) found that whereas 61.2% of bipolar I patients were psychotic when high, no bipolar II patients were psychotic when high, suggesting that mania, but not hypomania, is related to psychotic symptoms. Similarly, Benazzi and Akiskal (2001) found similar rates of psychotic features in unipolar depression and bipolar II disorder, suggesting that the presence of hypomania does not increase psychotic symptoms.

However, there is a small body of research which suggests that hypomania may occasionally be associated with psychotic symptoms. Dell'Osso *et al.* (1991) found that in patients with depression, the presence of even mild manic symptoms increased the likelihood of psychotic symptoms. Research within the general population has also shown that subclinical manic (i.e., potentially hypomanic) symptoms are related to subclinical psychosis (Kaymaz *et al.*, 2007). There is also evidence to suggest that in individuals who have experienced depression and are potentially bipolar II, the longer self-reported highs go on for, the greater the likelihood of psychotic symptoms (Tully and Parker, 2007). This suggests that increasingly severe hypomania is increasingly psychotic. Similarly, Kwapil *et al.* (2000) found that high scorers on the Hypomanic Personality Scale (Eckblad and Chapman, 1986) scored higher than controls on the Magical Ideation Scale (Eckblad and Chapman, 1983) and the Perceptual Aberration Scale (Chapman *et al.*, 1978). A number of studies have suggested screening for psychotic symptoms when screening for hypomania with measures such as the Mood Disorder Questionnaire, finding that psychotic symptoms are more prevalent in bipolar II compared to unipolar depression (Tafalla *et al.*, 2009).

Previous research has examined subclinical hypomanic symptoms in non-clinical populations, finding that such symptoms are prevalent and continuously distributed within the general population (Regeer *et al.*, 2006). Research has also examined the presence of subclinical psychotic symptoms in non-clinical populations. For example a twenty-year longitudinal study (Rössler *et al.*, 2007) found that psychotic symptoms in the general population were continuously distributed and differed considerably between individuals in terms of severity and persistence over time. There has however been no research examining

whether hypomanic and psychotic symptoms correlate within non-clinical populations. The aim of this study was therefore to examine whether self-reported hypomanic and psychotic symptom histories correlate within an international sample of undergraduate students.

MATERIALS AND METHODS

Participants

Individuals were invited to participate by emails explaining the study being sent to students via psychology departments. An email was sent to all university psychology departments in the UK, Ireland, the US, Australia, New Zealand and Canada. A total of 303 of these individuals completed all questions of the HCL-32 and DIS-P and were included in data analysis. Due to the nature of the recruitment method, a specific response rate cannot be determined. The gender distribution was 14.7% male (n = 44), 84.2% female (n = 255). For 4 subjects the gender could not be established. Ages ranged from 18 to 65, with a mean of 22.3 years (SD = 5.91). Nationalities were 36.3% British (n = 110), 26.4% Irish (n = 80), 16.5% US (n = 50), 9.2% New Zealander (n = 28), 7.6% Australian (n = 23) and 4% Canadian (n = 12).

Measures

The following standardized self-report questionnaires were used:

- 32-item Hypomania Checklist (HCL-32, Angst *et al*., 2005a)- a self-report measure of 32 questions. This measures the severity of previous hypomanic episodes by asking patients to think of a time when you were in a high state. Responses for the 32 potential hypomania symptoms are simply answered as Yes or No. The HCL-32 has two subscales Active or Elevated and Risk-Taking or Irritable. Total scores range from 0-32 and a score of 14 or greater distinguishes between Major Depressive Disorder and Bipolar Disorder with a sensitivity of 80% and a specificity of 51% (Angst *et al*., 2005b)
- Psychosis questions from the Diagnostic Interview Schedule (DIS-P), as modified for self-report by Caspi *et al*. (2005). This measures the severity of previous psychotic symptoms by a self-report of 24 Yes/No questions. Total scores are out of 24 and there are two subscales; Hallucinatory experiences and Delusional beliefs

Procedures

This research was conducted between May 2007 and May 2008 at Trinity College, University of Dublin, Ireland. All work for this research was conduced in the School of Psychology of this institution. No sponsorship or funding was obtained. Ethical approval for this research was gained through the School of Psychology research ethics board, Trinity College, University of Dublin. Consent and debriefing forms in addition to the standardized measures were placed online. Participants were free to terminate the survey at any stage or to skip questions. Administering the battery online gave complete anonymity to participants, with no personal details available to the researcher.

RESULTS

HCL-32 total scores ranged from 4 to 31 and were normally distributed with a mean of 18.03 (SD = 4.902), Kurtosis = -0.135, Skewness = -0.154. DIS-P total scores ranged from 0 to 22 and were not normally distributed with a mean of 2.16 (SD = 3.248), Kurtosis = 9.78, Skewness = 2.70. Due to the non-normal distribution of DIS-P scores, non-parametric

Table 1: One-tailed Spearman's correlations between HCL-32 and DIS-P subscale and total scores

	HCL-32 subscale		
DIS-P subscale	Risk-Taking/Irritable	Active/Elevated	Total
Hallucinatory experiences	0.20***	0.02	0.11*
Delusional beliefs	0.26***	0.05	0.15**
Total	0.25***	0.05	0.16**

*: Significant at p<0.05, **: Significant at p<0.01, ***: Significant at p<0.001

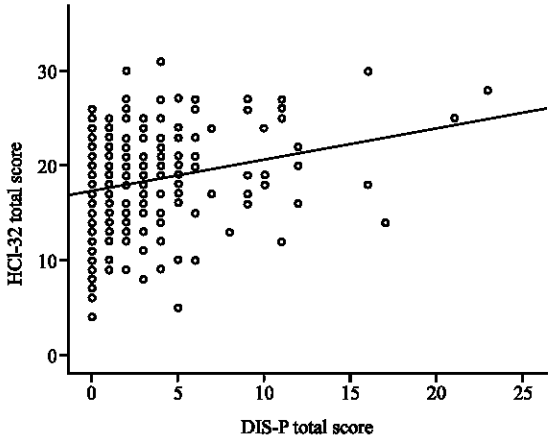

Fig. 1: Correlation between DIS-P and HCL-32 total score

statistics were appropriate. A number of statistically significant non-parametric correlations were observed between the HCL-32 and DIS-P subscale and total scores. Table 1 displays these correlations. As Table 1 demonstrates, the HCL-32 total score was significantly positively correlated with total scores on the DIS-P (rho = 0.16, p<0.01), as well as the Hallucinatory experiences (rho = 0.11, p<0.05) and Delusional beliefs (rho = 0.15, p<0.01) subscales of the DIS-P. Figure 1 demonstrates the correlation between HCL-32 and DIS-P total scores. The HCL-32 Risk-Taking/Irritable subscale was significantly positively correlated with the DIS-P total score (rho = 0.26, p<0.001), as well as the Hallucinatory experiences (rho = 0.20, p<0.001) and Delusional beliefs (rho = 0.25, p<0.001) subscales of the DIS-P. The HCL-32 Active/Elevated subscale was not significantly correlated with the DIS-P total score (rho = 0.05, p>0.05) or the Hallucinatory experiences (rho = 0.02, p>0.05) and Delusional beliefs (rho = 0.05, p>0.05) subscales of the DIS-P.

DISCUSSION

In this study, hypomanic symptoms were significantly positively correlated with psychotic symptoms. It should be noted that both measures used represent histories of such symptoms, not current symptoms. Therefore, this suggests that those who have a history of high levels of hypomanic symptoms also have a history of high levels of psychotic symptoms. The HCL-32 total correlated with the DIS-P total, suggesting that general hypomanic symptoms are related to general psychotic symptoms. The HCL-32 total score also correlated with the DIS-P delusional beliefs subscale, suggesting that hypomanic symptoms may be related to delusions. Correlations with the hallucinatory experiences subscale were less strong, suggesting that hypomanic symptoms are more strongly associated with delusional rather than hallucinatory symptoms. The HCL-32 active or

elevated subscale was not significantly correlated with any of the subscales or total score of the DIS-P, whereas the risk-taking or irritable subscale was significantly correlated with all subscales of the DIS-P. This suggests that risk-taking and irritable hypomanic symptoms may be associated with psychotic symptoms whereas hypomanic symptoms of elation and psychomotor agitation are not. However, it should be noted that this study examined such symptoms in a non-clinical population and it does not necessarily follow that such symptoms are correlated in those with bipolar disorder.

These observed correlations suggest that hypomanic symptoms may be related to psychosis and specifically to both delusions and hallucinations. This relationship appears to be particularly strong for risk-taking and irritable symptoms of hypomania. This suggests that the DSM-IV-TR specified hypomanic symptom of excessive involvement in pleasurable activities that have a high potential for painful consequences (APA, 2000), may occasionally reach delusional or psychotic strength. These results are at odds with criterion E for a hypomanic episode which states that hallucinations and delusions cannot be present (APA, 2000). However, the hypomanic symptoms studied here are likely to be sub-clinical and thus psychotic symptoms may not be present during clinical hypomanic episodes. These results are important, as they go against previous work suggesting that hypomania is not linked to psychosis (Benazzi, 2001; Benazzi and Akiskal, 2001; Parker *et al*., 2006). These findings are in line with a small body of previous research suggesting a link between hypomania and psychosis (Kwapil *et al*., 2000; Kaymaz *et al*., 2007; Tully and Parker, 2007; Tafalla *et al*., 2009).

There are a number of limitations of this study which need to be considered. First, the sample is biased towards female participants. Whilst this may simply represent the higher proportion of females in undergraduate psychology courses, it is important as previous research indicates that hypomania may be more prevalent in women (Angst *et al*., 2005b). A related point is that the current sample consisted of undergraduate students. Whilst this sample is a non-clinical population it is not representative of the general population as a whole. Second, as the standardized measures used in this study rely on self-report, there is a risk of bias or inaccurate reporting. Third, the HCL-32 has been standardized to distinguish unipolar depressive disorder from bipolar II disorder and was not designed for use in the general population. However, the HCL-32 has previously been used with non-clinical populations and has been shown to pick up hypomanic symptoms in this group (Vieta *et al*., 2007). Fourth, as previously mentioned, it is important to note that the correlations found here in all probability represent subclinical hypomanic symptoms and thus it does not necessarily follow that DSM-IV-TR hypomanic episodes are psychotic. A related point is that this study was not longitudinal and thus the course of such symptoms cannot be determined.

Despite these limitations, these results are important as they go against previous research which suggests that hypomania is not related to psychosis. Future research should look at whether DSM-IV-TR hypomanic episodes are associated with psychosis and should use diagnostic interview schedules rather than self report. This would help to determine whether or not the DSM-IV-TR diagnostic criteria for hypomania need to be modified in order to incorporate the possibility of psychosis. Such research may help give valuable insight into the effective diagnosis and treatment of bipolar II disorder.

CONCLUSION

This study examined relationships between hypomanic and psychotic symptoms in a sample of undergraduate students. Such symptoms appear to be positively correlated within

this non-clinical sample with increasingly severe hypomanic symptoms correlating with increasingly severe psychotic symptoms. This goes against previous work suggesting that there is not a relationship between these symptoms and suggests that hypomanic and psychotic symptoms are related at an epidemiological level in those without a diagnosis of bipolar disorder.

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