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Factor structure of the French version of the Hypomanic Personality Scale (HPS) in non-clinical young adults

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Abstract:

Hypomanic Personality Scale (HPS) is a self-report questionnaire designed to identify vulnerable individuals at high risk of bipolar disorders in non-clinical samples. Our aim was to identify the factorial structure of HPS in a French non-clinical sample and to compare this with different factor solutions described in the literature. We carried out a survey in a French population using a French version of HPS. A total of 698 participants were included in the study. They completed the HPS, the Schizotypal Personality Questionnaire-Brief (SPQ-B), the Positive And Negative Affect Schedule (PANAS), and the Beck Depression Inventory (BDI-II). We tested the 1, 3 and 4-factor solutions with a Confirmatory Factor Analysis to compare this with the factor solutions suggested by Rawling et al. and Schalet et al. Goodness-of-fit indices showed that Schalet et al.'s solution "fits" our data better than Rawling et al.'s factorial solutions. HPS scores correlated with the PANAS Positive score and the SPQ-B Total score. We confirmed the 3-factor structure of the HPS in a large non-clinical population of young adults and found consistent correlations with BDI, affectivity and schizotypal traits.

Keywords: hypomanic personality, HPS, general population, vulnerability, bipolar disorders

1. Introduction

Several clinical scales have been developed to detect and identify mental disorders [1, 2]. The development of these scales is also essential in order to detect high-risk individuals as soon as possible so that intervention is not delayed and the likelihood of patients receiving appropriate treatment and therapeutic care is increased [3, 4]. This perspective is particularly relevant in the case of Bipolar Disorder (BD I and II) which is a cause of premature death and leads to a significant impairment of both social and cognitive functioning [5].

Indeed, Waugh et al., advocate that it is necessary to increase the level of screening in populations at high risk of developing bipolar disorders [6]. This view is corroborated by Angst et al.'s study which showed that many young adults (about 9% of the young adult population) seem to belong to a minor BD group who could be erroneously treated for depression due to the rigidity of the categorical diagnostic system used to identify BD [7].

This problem is due to the fact that, while a scale for the identification of hypomanic components in unipolar depressive disorders exists [8], there has been a lack of validated tools capable of identifying individuals with hypomanic personality in the general population. Indeed, the lack of detection of hypomanic states in depression could explain the heterogeneity of the clinical forms of unipolar depressive disorders [9].

Whereas some individuals with high levels of hypomanic personality trait and unipolar depression are erroneously treated as a classical unipolar depressive patient whereas they would need a specific clinical supervision, others are not treated at all. However, several studies have also shown that individuals with high levels of hypomania are at higher risk of developing bipolar disorder [10], including both BD I and II [11], and are at the highest risk of hospitalization due to various forms of psychosis [4], manic symptoms [12] or internalizing symptomatology [13].

In line with this finding, researchers have long proposed that normal mood states and bipolar disorder are situated on the same continuum [14, 15] and this interpretation is still relevant today. According to Walsh et al., the bipolar spectrum model is more relevant for the treatment of BD than the current classification system [16]. Moreover, Judd and Akiskal state that "The structure of bipolar disorder in the population appears to be dimensional in nature" [17] and therefore consider hypomanic personality to be possibly a sub-syndromal state of bipolarity [18].

The risk of developing BD among individuals presenting high levels of hypomania is so great that it prompted Eckblad and Chapman to propose the Hypomanic Personality Scale (HPS) in order to assess the risk of healthy people developing BD [19]. This scale has been developed in the field of the personality trait conception and not in the field of temperament conception. Indeed, this 48 true-false items self-report scale which reflecting the features of hypomanic personality have been constructed with the Jackson's recommendations (1970) for the construction of personality scale. This scale explores the usual features conventionally associated with hypomanic personality: being cheerful, optimistic, extraverted, self-confident, energetic, irritability, rude, reckless, irresponsible (e.g. [10, 19-22]). The HPS has been shown to exhibit good internal consistency ($\alpha = .87$) and good test-retest stability over a period of 15 weeks as well as over a period of 7 months ($r = .81$ and $r = .77$, respectively) [19, 23]. Moreover, Meyer et al. have shown cross-cultural validity for a German version of the HPS [23]. Beyond good indices of validity, the HPS have a good clinical sensibility. Indeed, seventy-eight percent of people scoring more than two standard deviations present criteria for mood disorders whereas none people presenting low score meet mood disorders criteria (Eckblad & Chapman, 1986). A more recent study shows that high scores on the HPS are correlated with current mania symptoms (Klein, Lewinsohn, & Seeley, 1996). Finally, a 13-year follow-up study have shown that HPS scores predict the risk for developing bipolar

disorders (Kwappil et al., 2000) HPS seems to be also a good tool to conduct cognitive study on hypomanic personality. Indeed, scores on this scale were associated to cognitive facets of mania (Eisner, Johnson, & Carver, 2008; Trevisani, Johnson, & Carver, 2008).

From a theoretical perspective, Walsh et al. suggest that hypomanic personality is characterized by dysregulations in mood, cognition and behavior [16]. Dysregulation in mood refers to euphoria, dysphoria, irritability and lability of affect. Dysregulation in cognition refers to racing thoughts, fullness of thought, grandiosity and unrealistic plans. Dysregulation in behavior refers to increased energy and sociability, behavioral disinhibition, impulsivity, and decreased need for sleep.

Interestingly, while Walsh et al. consider that bipolar spectrum consists of three components, they only used the total HPS score in their analyses [16]. This choice could be due to the fact that the items of the HPS can belong to different components and it is not possible to assign them to one component only. For instance, the item “I often have moods where I feel so energetic and optimistic that I feel I could” could be considered as referring to a behavioral dysregulation or a mood dysregulation. This approach is consistent with Eckblad and Chapman’s initial theoretical view, which considered hypomanic personality as an homogenous construct. This view might find support in the high internal consistency of the HPS [19, 23].

However, according to Schalet et al., the HPS must also be analyzed separately on its different subscales and not only on the total score. In line with this view, two studies have proposed a multifactor structure for the HPS [24].

Rawlings et al. suggested a four-factor solution for the HPS: Affective component, cognitive component, hypersociability component and normality component [25]. The affective component explores moodiness in the form of the irritability and restlessness of hypomanic personality. The cognitive component explores the cognitive elements of hypomania such as

creativity, productivity and "grandiosity". The hypersociability component explores aspects such as the need for attention. Finally, the normality component explores one's ability to see oneself as normal.

Subsequently, Schalet et al. proposed a 3-factor model of the HPS which included the factors Social Vitality, Mood Volatility and Excitement [24]. According to Schalet et al., Mood Volatility explores negative, unpredictable mood states and hypomanic cognition; the Excitement dimension explores the energetic, extremely cheerful mood exhibited by such individuals; and Social Vitality explores social potency and vivaciousness [24].

Nevertheless, up to now, the different studies (i.e., [19, 24, 25]) which have analyzed the factor structure of the HPS have only performed exploratory factor analyses. The problem with an exploratory factor structure (or cluster) analysis lies in the fact that these analyses are guided by the data [26]. This problem explains why there are discrepancies in the factor structure of the HPS between the different studies.

The aim of the present study is to compare the different factor structures proposed in the literature in order to determine which is the optimal theoretical approach for the use of the HPS.

2. Method

2.1. Participants and procedure

XXXX students were included in our study with XXX responding on paper-and-pencil test and XXX responding in online study

Altogether, 698 participants were included (79% women; mean age in years = 22.1 ± 8.2 ; education level in years = 13.1 ± 1.8). They all received self-rated questionnaires, including questions on socio-demographic variables, and self-administered scales. There was no financial or course credit compensation for the participants. The study was anonymous and all

participants gave written or electronic informed consent using methods approved by the Ethics Committee of the Cognition, Health and Socialization Laboratory of Reims Champagne-Ardenne University. The study was designed in accordance with the Declaration of Helsinki.

2.2. Measures

2.2.1. Hypomanic Personality Scale (HPS)

Eckblad and Chapman developed this scale to assess the risk of developing BD among healthy populations [19]. It is a self-report scale which contains 48 true-false items reflecting the features of hypomanic personality. The distribution of the items to the different factors is presented separately in Table 1 for both the three- and four-factor models. The translation of the HPS's items was carried out as follows: we translated the items from English to French. After this first stage, a bilingual English-French speaker back translated the translated items into English. Discrepancies emerging between the back translated and the original English versions were discussed, and translation adjustments were consensually made.

Please Insert Table 1

2.2.2. Beck Depression Inventory (BDI-II)

The BDI-II [27] is a 21-item self-report measure administered to determine the presence and severity of depressive symptoms.

2.2.3. Schizotypal Personality Questionnaire- Brief (SPQ-B)

The SPQ-B [28] is a self-report scale which contains 22 true-false items relating to the features of schizotypal personality. This scale is subdivided into three subscales: cognitive

perceptual deficits (magical thinking, paranoid ideation, unusual perceptual experiences and reference ideas), interpersonal deficits (anxiety, emotional blunting and difficulty in having close friends) and disorganization (odd behavior and odd language).

2.3.4 Positive and Negative Affect Schedule (PANAS)

The PANAS is a self-report scale which contains 20 adjectives that measure general dimensions of negative or positive affectivity [29]. Participants rate how they have felt up to the present moment using a five-point rating scale, ranging from 1 ("very slightly or not at all") to 5 ("extremely"). There are 10 items in the negative affect scale (e.g., "nervous", "guilty") and 10 items in the positive affect scale (e.g., "alert", "proud").

2.3. Statistical analyses

Descriptive statistics, internal consistency reliability (Cronbach's α) coefficients, and Bravais-Pearson correlations between HPS, SPQ-B, BDI and PANAS scores were computed using Statistica 7.1. R (package Lavaan and psych) was then used for a Confirmatory Factor Analysis (CFA) and to compute the internal consistency of the HPS. This CFA was conducted on the whole sample (n=698). The level of significance was fixed at 0.05 and the indices used to assess the fit of the measurement model to the data were similar to those used by Compton [30], i.e. $\chi^2/df < 5$, RMSEA $< .08$, GFI and AGFI $> .90$. We also conducted correlation analyses on a partial sample (n = 590) to evaluate the construct validity of the HPS. Test-retest analyses were conducted on a sample of 58 participants.

3. Results

3.1 Factor validity

In the analyses, we first used a confirmatory factor analysis to try to replicate either Schalet et al.'s [24] or Rawlings et al.'s [25] exploratory factor structure or the one-factor model resulting from the theoretical point of view proposed by Eckblad and Chapman [19].

We explored both these models using confirmatory factor analyses. The confirmatory factor analysis was performed on the tetrachoric correlations using the Means and variance Adjusted Weighted Least Squares (WLSMV) parameter estimation method in order to assess the factor structure of the HPS in the French-speaking adult population. When performing the analyses, we first treated residual errors as uncorrelated. In the light of Schalet et al.'s factorial structure, we excluded items 12, 14 and 24 because they did not load well on any factor in the three-factor solution [24]. This analysis revealed that the data were fitted to the model. These different indices revealed a reasonably good fit between the data and the model since the χ^2 value was not greater than five times the degree of freedom, the *RMSEA* was close to .05, and both the *GFI* and the *AGFI* were greater than 0.95. The different fit indices are summarized in Table .

Please insert Table 2

Rawlings et al.'s (2000) model does not suggest which items should be assigned to the four factors. On the basis of Rawling et al.'s results, we assigned each item to the factor on which it had the highest loading [25]. Two items (items 30 and 39) were excluded from the model because their loadings were very low on all four factors (less than .20). Moreover, item 7 was also excluded because the highest loading was low (.21) and was identical on Factor 2 and on Factor 3. This analysis revealed that the data fitted the model slightly less well. As with the 3-factor structure, these different indices revealed a reasonably good fit between the data and the model but were marginally lower than those provided by the three-factor structure. χ^2 was lower in the three-factor model, while there were more degrees of freedom (see Table 2). Finally, an analysis on the one-factor structure, which corresponds to the theoretical point of

view proposed by Eckblad and Chapman [19], revealed that the data also fitted the model reasonably well. Even though there was a reasonably good fit between the data and the model, the statistical indices were marginally lower than those provided by the three and the four-factor structures. χ^2 was higher in the one-factor model than in the three and the four-factor models (see Table 2).

Overall, it appears that the three-factor structure provides a slightly better or equivalent fit compared to the four-factor structure. However, the three-factor structure might be preferable because it is more parsimonious and contains more items with a loading lower than .30.

3.2 Internal consistency

In order to determine the internal consistency of the HPS, we computed Cronbach's alpha for 45 items. Cronbach's α was 0.90 for the overall scale, .85 for the Social Vitality factor .83 for the Mood Volatility factor and .80 for the Excitement factor (see Table 3).

Please Insert Table 3

3.3 Construct validity

Finally, we looked at the construct validity of the HPS by analyzing the correlation between HPS scores and scores for measures of variables linked to hypomania, such as depression in the BDI, the affective state dimension of participants in the PANAS, and the level of schizotypy in the SPQ-B (see Table 4).

Please Insert Table 4

The total HPS score revealed a significant positive correlation with the PANAS Positive score and the SPQ-B Total score. Concerning the HPS subscale scores, we found a significant positive correlation between the HPS Social Vitality score and the PANAS Positive score; and

a negative correlation with the BDI Total score. For the HPS Mood Volatility subscale, we observed a positive correlation with the PANAS Positive score, the SPQ-B Total score and the BDI Total score; and a negative correlation with the PANAS Negative score. Finally, we found a positive correlation between the HPS Excitement score and the PANAS Positive score and SPQ-B Total score.

In order to better characterize whether the size of the correlations between each subscale of the HPS and the different other questionnaires, we performed pairwise correlation comparisons. This analysis allows to determine whether, when several subscales are correlated to another questionnaire, the size of the correlation could be considered as similar. Bonferroni's correction has been applied to the p values in order to avoid multiplication of Type I error. The results of these comparisons are provided in Table 5.

Please Insert Table 5.

Table 5 suggests that PANAS positive score is significantly less related to mood volatility subscale than to the other subscales. Conversely, the correlations between the different subscales of the HPS and the PANAS negative score appear quite similar. The SPQ is significantly more correlated to the mood volatility than to the other subscales. Finally, it appears that the absence of correlation between the BDI and the HPS total score is due to the fact that the BDI is negatively correlated to the social vitality subscale while it is positively related to the mood volatility and the difference between both these correlations is significant. Conversely, Excitement is not related to the BDI, and this absence of correlation is significantly different from both correlations between the social vitality and the mood volatility subscales with the BDI.

3.4 Test-retest validity

After three weeks, the HPS was again administered to 56 participants. The test-retest reliability was assessed by Bravais-Pearson correlation and, for this sample, was .86 for both

the Social Vitality factor and the Mood Volatility factor, .88 for the Excitement factor and .82 for the Total scale.

Moreover, given that Meyer and Hautzinger (2001) showed that older individuals would present lower scores to the HPS than younger, we also tested the stability of the mean by computing ICC (Shrout & Fleiss, 1979). The ICCs are 0.92 for the total scale, 0.86 for the Social Volatility subscale, 0.84 for Mood Volatility, and 0.87 for Excitement.

4. Discussion

The goal of this study was to compare the different factor model structures presented in different studies in order to ascertain the optimum theoretical approach by using the HPS in a large non-clinical sample of young adults in France. To answer this question, we conducted three separate exploratory factor analyses on: the four factor model proposed by Rawling et al., the three factor model proposed by Schalet et al. and the one-factor model which corresponds to the theoretical viewpoint advocated by Eckblad and Chapman [19, 24, 25]. The indices revealed a reasonably good fit between our data and Rawling et al.'s model (2000) and the one-factor model, but were lower than those provided by Schalet et al.'s (2011) three-factor structure. Schalet et al.'s (2011) structure therefore seems to provide a better fit for a sample taken from the French population. The three factors are: Social Vitality, Mood Volatility and Excitement. Regarding the items included in the Mood Volatility factor, we found that the name of this factor does not accurately reflect the variables measured as part of this factor. Indeed, it seems that only two items (out of 16) actually explored the lability of participant's mood. Furthermore, these two items were moderately correlated with the factor: namely item 21. "My moods do not seem to fluctuate any more than most people's do" (-.115); and 37. "I seem to be a person whose mood goes up and down easily" (.286). Thus, we suggest that the name "Hypomanic mood" might be more appropriate for items such as: "I frequently get into moods where I feel very speeded-up and irritable" (.442), "There have

often been times when I had such an excess of energy that..." (.522); "I very frequently get into moods where I wish I could be everywhere and do everything . . ." (.479). This proposal is consistent with the result of Parker et al.'s study even though this was not conducted in a healthy population but in a group of bipolar and unipolar patients [18]. Indeed, these latter authors named the first factor in their analysis "Hypomanic Mood" and this factor consisted of 14 items, eight of which are also present in our Mood Volatility factor.

The fact that the three-factor model [24] fits our data better than the one-factor structure shows that, when studying the HPS, it is necessary to analyze the results in the light of the different factors involved in the scale and not on the basis of the total score alone. Furthermore, recent studies have shown that the "Mood Volatility" factor is the factor which best predicts the risk of developing BD [24] and that this score is the only one that is linked to cognitive ToM performances in a general male population [31]. Thus, it appears that is necessary to take into account the different factors of the HPS, and especially the Mood Volatility factor, if we are to study the functioning of individuals evaluated using this scale.

Concerning the internal consistency of the HPS with the three-factor model, only one Cronbach's α value was just below 0.70, thus complying with the usual rule of thumb for good reliability. This can be attributed to the fact that this factor has more reversed items. The alphas for the overall scale and the other two factors can be considered as good. The results also show a very good test-retest stability and therefore indicate the good internal validity of the HPS.

An examination of the correlations between the HPS scores and measures of variables that could be linked to hypomania showed that the total HPS score and all the HPS subscales are positively related to the positive affective state dimension of the PANAS. These correlations seem to be consistent with the nature of the dimension we wish to measure. Indeed, positive affectivity is described as a high-energy, pleasurable engagement that can be found in

hypomania. Concerning the positive correlation between the Mood Volatility and the BDI, Mood Volatility is the subscale of the HPS that should best predict the risk of developing bipolar disorder [24]. It is therefore no surprise to find a positive correlation between the subscale which best predicts the risk of developing bipolar disorder and a depression scale. Indeed, the HPS predicts not only the risk of developing BD but also the risk of experiencing major depressive episodes [10]. Observation of an inverse correlation between the negative dimension of the PANAS and the HPS Mood Volatility subscale could be surprising “au regard de la corrélation précédente”. However, this negative correlation makes sense because negative affectivity is described in terms of distress, pleasureless energy and aversive mood states [29], which were opposites terms of hypomania and positive dimension of PANAS. Furthermore, the PANAS was originally constructed to determine the different types of affectivity in individuals and not to predict the risk of developing bipolar depression. Indeed, individuals who scored high on Mood volatility subscale could were not presented negative affectivity but depression traits. Concerning the negative relationship between the BDI and Social Vitality, this is consistent with Schalet et al.’s results which showed that people who scored high on the Social Volatility subscale might be less likely to develop depression [24]. Furthermore, the Social Volatility factor corresponds to the second factor in Parkers et al.’s study, which is named “grandiosity” [18]. The concept of “grandiosity” is opposed to some BDI items like: “I feel I am a complete failure as a person”, “I hate myself”. HPS total score and two subscales out of three (Excitement and Mood Volatility) are linked with another measure of personality referred to as schizotypal personality. Schizotypal traits are frequently found in the general population [32-35] and are viewed as the subclinical expression of the ‘schizophrenia spectrum’ [36, 37]. Indeed, this result is consistent with a newly emerging area of research that defends the idea of a continuum between the bipolar and schizophrenia spectra [38-41].

Most of studies dealing with cognitive and emotional abilities in general population who presented risk to develop bipolar disorders have used the HPS. Deldulca et al. (2010) have shown that people who scored high on HPS seems to have particularities in autobiographical memory: they recalled more frequently and more faster specific autobiographical memories in response to unpleasant cues than individuals who scored low on HPS. Trevisani et al. (2008) demonstrated that individuals who scored high on HPS have facilities to detect subtly positive facial expressions. Fulford et al. (2009) have shown that during positive mood, people who scored high on HPS were associated present an enhancement of cognitive flexibility. Gruber et al.'s (2009) study indicated that high HPS score were associated to enhancement of positive affect and irritability. All of these authors dealing with cognition and hypomanic personality in their conclusion associated an high score on HPS to a risk to develop mania, which could be reinforced the idea "selon laquelle" the HPS measures a stable trait.

Nevertheless, our study has several limitations. First, the analysis was carried out in a large sample of students, with a high proportion of women (79%). The nature of the French education system, where there are no selection criteria for the first year of university, means that first-year students can be considered to be fairly representative of the general population [42] and therefore suitable for the study of psychiatric symptoms as exhibited by college students. Second, we did not assess for the presence of hypomanic/manic symptoms, for example with the Young Mania Rating scale which is commonly used in bipolar disorders, because our sample was not clinical. However, Parker et al. have recently pointed out that the "hypomanic mood" factor of the HPS could be similar to the hypomanic/manic mood states that occur during bipolar disorders [18]. The binary answers to the HPS did not make it easy to discriminate between hypomanic traits and symptoms and did not allow us to evaluate the intensity of the traits. Furthermore, the observation of an overlap between certain items of the HPS and manic symptoms does not necessarily contradict the idea of a "hypomanic traits

personality". Indeed, the idea of a continuum between normal mood states and bipolar disorder has been around for more than 50 years [14, 15]. Furthermore, a recent study has placed this continuum at center stage by asking the question of whether the "bipolar spectrum model" might be more relevant for the treatment of bipolar disorder than the current category-based classification [16]. Last, and as a consequence of the results of Parker et al.'s study, it was necessary to use a standard tool, such as the MINI [43], in order to eliminate past or current diagnoses of bipolar disorder or major depression from our sample. However, as suggested by Parker et al., it will also be necessary in the future to fine-tune the instructions used for the HPS in order to center on the identification of personality traits.

5. Conclusion

The confirmatory factor analysis in a non-clinical sample supported Schalet et al.'s model and confirmed the three-factor structure of the HPS consisting of the factors: Social Vitality, Mood Volatility and Excitement. We suggest changing the name of the second factor to "Hypomanic Mood" in order to illustrate the content of this factor more clearly. The results also suggest that it might be better to examine the three factors of this scale separately. The correlation between the HPS score and the BDI supports the idea of a continuum between hypomanic personality and depressive disorder. In addition, the correlation between the HPS score and the SPQ score supports the hypothesis according to which there is a continuum, and possible overlap, between the bipolar and schizophrenia spectra. Overall, we have provided further confirmation of the validity of the HPS in its French translation and this should constitute a valuable tool for studies that wish to identify hypomanic endophenotypes in non-clinical samples.

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Contributors

ST wrote the manuscript, collected data and contributed to the elaboration of this research.

NS realized statistical analysis.

YM contributed to the elaboration of this research as a data manager.

CBR supervised data collection and took the lead role in the preparation and the writing of the manuscript.

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Table 1

Factor	Items
	Rawlings et al. (2000)
1	8, 10, 11, 15, 17, 18, 20, 21, 22, 24, 31, 33, 35, 37, 38, 44, 45, 46
2	5, 9, 12, 13, 19, 23, 26, 28, 34, 36, 41, 42, 43, 47, 48
3	2, 3, 4, 6, 25, 29, 32, 40
4	1, 14, 16, 27
	Schalet et al. (2011)
Social vitality	1, 2, 4, 6, 7, 13, 16, 18, 23, 25, 26, 27, 29, 30, 34, 36, 39, 40, 42, 47, 48
Mood volatility	5, 8, 9, 10, 19, 20, 21, 22, 28, 31, 35, 37, 38, 41, 43, 44, 45
Excitement	3, 11, 15, 17, 32, 33, 46

Table 2. Results of the confirmatory factor analyses conducted with the 1, 3 and 4-factor models.

Fit indices	1-factorstructure	3-factor structure	4-factor structure
χ^2 (<i>df</i>)	3745.57 (1080)	3153.96 (942)	3271.71 (939)
<i>p value</i>	<.001	<.001	<.001
<i>RMSEA (C.I.)</i>	0.06 (0.57-0.062)	.058 (.056-.060)	.060 (.057-.062)
<i>GFI</i>	0.993	.994	.994
<i>AGFI</i>	0.992	.993	.993
χ^2 df	3.47	3.34	3.48

Table 3. Loading for items split on the 3-factor structure.

Item	Social Vitality	Mood Volatility	Excitement
1. I consider myself to be pretty much an average kind of person	-0.237		
2. It would make me nervous to play the clown in front of other people	-0.289		
4. I think I would make a good nightclub comedian	0.401		
6. When with groups of people, I usually prefer to let someone else be the center	-0.282		
7. In unfamiliar surroundings, I am often so assertive and sociable that I surprise myself	0.362		
13. People often come to me when they need a clever idea	0.289		
16. I can't imagine that anyone would ever write a book about my life	-0.333		
18. I often have moods where I feel so energetic and optimistic that I feel I could ...	0.423		
23. I expect that someday I will succeed in several different professions	0.38		
25. When I go to a gathering where I don't know anyone, it usually takes me a while ...	-0.311		
26. I think I would make a good actor, because I can play many roles convincingly	0.427		
27. I like to have others think of me as a normal kind of person	-0.286		
29. I have often persuaded groups of friends to do something really adventurous or crazy	0.531		
30. I would really enjoy being a politician and hitting the campaign trail	0.246		
34. There are so many fields I could succeed in that it seems a shame to have to pick	0.314		
36. I find it easy to get others to become sexually interested in me	0.312		
39. I am so good at controlling others that it sometimes scares me	0.339		
40. At social gatherings, I am usually the "life of the party"	0.386		
42. I seem to have an uncommon ability to persuade and inspire others	0.467		
47. I would rather be an ordinary success in life than a spectacular failure	-0.263		
48. A hundred years after I'm dead, my achievements will probably have been forgotten	-0.301		
5. Sometimes ideas and insights come to me so fast that I cannot express them all		0.453	
8. There are often times when I am so restless that it is impossible for me to sit still		0.461	
9. Many people consider me to be amusing but kind		0.452	

of eccentric

10. When I feel an emotion, I usually feel it with extreme intensity	0.284
19. I have such a wide range of interests that I often don't know what to do next	0.406
20. There have often been times when I had such an excess of energy that I felt little ...	0.522
21. My moods do not seem to fluctuate any more than most people's do	-0.115
22. I very frequently get into moods where I wish I could be everywhere and do everything	0.479
28. I frequently write down the thoughts and insights that come to me when I am thinking	0.33
31. I can usually slow myself down when I want to	-0.165
35. I often get into moods where I feel like many of the rules of life don't apply to me	0.407
37. I seem to be a person whose mood goes up and down easily	0.286
38. I frequently find that my thoughts are racing	0.44
41. I do most of my best work during brief periods of intense inspiration	0.314
43. I have often been so excited about an involving project that I didn't care about eating	0.389
44. I frequently get into moods where I feel very speeded-up and irritable	0.442
45. I have often felt happy and irritable at the same time	0.381
3. I am frequently so "hyper" that my friends kiddingly ask me what drug I'm taking	0.559
11. I am frequently in such high spirits that I can't concentrate on any one thing for too ...	0.401
15. I often feel excited and happy for no apparent reason	0.469
17. I am usually in an average sort of mood, not too high and not too low	-0.243
32. I am considered to be kind of a "hyper" person	0.641
33. I often get so happy and energetic that I am almost giddy	0.383
46. I often get into excited moods where it's almost impossible for me to stop talking	0.526

Table 4. Two-tailed correlations between total and sub-scores for HPS and Affectivity, Schizotypy and Depression (n = 589).

	HPS Total score	HPS Social Vitality	HPS Mood Volatility	HPS Excitement
PANAS Positive	.340**	.371**	.161**	.295**
PANAS Negative	.009	.017	-.102*	-.036
SPQ22 Total score	.185**	.080	.411**	.093*
BDI Total score	.019	-.173**	.229**	-.028

* p < .05.

** p < .01.

Table 5. Two-tailed pairwise comparison of the correlation between each test and HPS subscale. Bonferroni's correction has been applied to the p values provided.

		HPS Total score	HPS Social Vitality	HPS Mood Volatility	HPS Excitement
PANAS Positive	HPS Total score	1	1	0.024	1
	HPS Social Vitality		1	0.002	1
	HPS Mood Volatility			1	0.36
	HPS Excitement				1
PANAS Negative	HPS Total score	1	1	1	1
	HPS Social Vitality		1	0.984	1
	HPS Mood Volatility			1	1
	HPS Excitement				1
SPQ22 Total score	HPS Total score	1	1	<0.001	1
	HPS Social Vitality		1	<0.001	1
	HPS Mood Volatility			1	<0.001
	HPS Excitement				1
BDI Total score	HPS Total score	1	0.022	0.006	1
	HPS Social Vitality		1	<0.001	0.288
	HPS Mood Volatility			1	<0.001
	HPS Excitement				1