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Exploring the structural relationship between interviewer and self-rated affective symptoms in Huntington's disease.

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ABSTRACT

The current study explores the structural relationship between self-report and interview measures of affect in Huntington's disease. The findings suggest continued use of both to recognize the multidimensionality within a single common consideration of distress.

1410 (Abstract [35] and Manuscript [1360])**INTRODUCTION**

Huntington's disease (HD) is an inherited neurodegenerative disorder involving motor, cognitive and emotional difficulties, for which the prevalence of affective symptoms range from 13-71% for anxiety{1} and 15-69% for depression{2-3}. The high prevalence and variability of these estimates suggests this as an important population to consider whether the assessment of affective symptoms are better undertaken via self-report measures or clinical interview{4}, resonant of discussion within the wider psychiatric literature{5}.

Interviewer-rated measures (involving consultation with both patients and caregivers) of affect are important in HD, as communication impairments and anosognosia may limit the accuracy of reporting difficulties, especially in the advanced stages of the disease{6-7}. Self-report ratings of affective symptoms allow individuals to honestly express how they feel outside the context of an interview. However, from an assessment perspective, the extent to which practitioners and researchers should differentiate between interviewer-rated measures and self-report ratings has not been explored in HD. This is important because the extent to which these assessments represent two separate factors has implications for whether practitioner or researchers should use just one or both forms of assessment.

Additionally, there is a further interpretation to be considered. Bifactor analysis models encompass the idea of a single common construct (e.g. general assessment) while also recognizing multidimensionality of concepts (e.g. self-reported and interviewer ratings). Therefore, consideration of a bifactor model, against other models of self-report and interview-assessed affective symptoms could help elucidate the extent to which HD practitioners need to consider both self-report and interview-based assessment of affect in

HD. The current study therefore examined a bifactor interpretation of self-report and interview based assessments of affective distress in HD.

METHOD

Sample and Measures

This sample comprised 545 participants (52.81% female; Mean age=46.21, sd =14.39, age range 14-86 years) from 12 European countries recruited to the observational REGISTRY 3 study. From a database of 3235 visits, inclusion criteria were for respondents' most recent visit (n =1474) and for whom a self-report measure of affective symptoms, (Hospital Anxiety and Depression Scale [HADS]) {8}, and an interview assessment, the Short Problem Behaviors Assessment (PBA-s) {7}, had been presented (n =577). Further, respondents were only included for whom there was a complete response for the aforementioned measure and a recorded HD expansion (CAG repeat \geq 38), clinical disease progression profile via a total functional capacity score (M =9.53, sd =9.53, range 0-13) and total motor score (M =27.81, sd =23.94, range 0-108) from the United Huntington's Disease Rating Scale (UHDRS) {11} (n =545). The current analysis covers assessments made between 27 June 2011 and 20 February 2014. Participants gave written informed consent according to the full ethical approvals required for the REGISTRY study.

It is noteworthy that the current analysis is for a sample that was not representative of the wider sample (n =1474). Though there was no significant difference for inclusion by gender (χ^2 =.10, p =.747), those not included in the study were significantly older (t =6.10, p <.001), and showed significantly reduced capacity (t =9.12, p <.001) and higher motor impairment (t =8.37, p <.001) as assessed by UHDRS score. Therefore, there is a caveat to the reported findings is of a selection bias, and that interview and self-report affective assessments are less likely to have been administered among those who are older and have increased functioning difficulties.

Measures.

A meta-analysis of the factor structure of the HADS recommended the instrument is best used as a unidimensional measure of general distress {10}. The PBA-s comprises 11-items that, in addition to the affect items, assesses irritability, aggression, apathy, obsessive-compulsive behaviors, perseveration, paranoid thinking/delusions, hallucinations and disorientation. Consistent with previous recommendations {7; 10}, the current study only included the severity and frequency ratings from 3 items (depressed mood, anxiety and suicidal ideation) to measure general affective distress.

Statistical Analysis.

Confirmatory factor analysis was used to consider how well the data fit to a series of models. Initial assessments of the models, reported modification indices of greater than 420 for the frequency and severity pairing of items on the PBA-s. The scoring patterns for the PBA-s items suggested a tendency for the same scores to be obtained for frequency and severity of symptoms when present (66.2%-66.4%).). This pattern of a concurrent increase in frequency and severity of symptoms is theoretically and empirically consistent for thresholds for major depression. Therefore, covarying the error terms and freeing fixed parameters in the models for these 3 item pairs was justified {12}. Therefore, alternative versions (one where error terms for three PBA-s pairings were covaried and one where it was not) of three models was examined; (1) a unidimensional model representing an underlying latent factor of general affective distress, (2) a 2-factor model comprising (i) self-report and (ii) interviewer-rating, and (3) a bifactor model with a proposed single common construct (e.g. general assessment) and two group factors (self-reported and interviewer ratings).

RESULTS

To assess the goodness-of-fit of the data to each of the six models, we used five statistics to determine the goodness-of-fit of the model: the relative chi-square (CMIN/DF;

less than 3 to be acceptable less than 2 to be 'good'), the comparative fit index (CFI), the non-normed fit index (NNFI) (the CFI and NNFI should exceed .95 to be 'good'), the root mean square error of approximation (RMSEA; below .06 is a 'good' fit), and the standardized root mean square residual (SRMR; values less than .05 is a 'good' fit). The statistics for the six models are presented in Table 1.

-Insert Table 1 here-

As expected, the fit statistics for each of the models where the pairs of variables' error terms were covaried are improved. Except for the bifactor model (where error terms were covaried), the majority of the goodness-of-fit statistics across these did not meet all the aforementioned criteria for acceptability and therefore did not present an adequate explanation of the data.

In terms of the variance accounted for, the general assessment factor in this model was 26%, with patient and interviewer-rated group factors explaining 53.3% and 20.7% respectively. In terms of salience of loading on the factors, the mean loadings on the general affective symptoms factor were lower ($m=.31$, ranging from .02 to .55) than on the group factors ($m=.57$, ranging from .41 to .68). The findings suggest a weighting towards a multidimensional assessment of patient and interviewer ratings.

DISCUSSION

The selection of instruments for the assessment of affective symptoms in HD remains challenging for clinicians and researchers. These findings suggest that the best overall conceptualisation of patient and interviewer-rated measures of general affective symptoms (depression and anxiety) in HD may be to recognize a single common construct (e.g. a general assessment of affect) whilst also recognizing the multidimensionality of the concepts (e.g. self-reported and interviewer-ratings), with the recommendation that focus may be on

the latter. This can be achieved by using two relatively short assessments (PBA-s and HADS) of general distress among HD patients.

This commonality, but differentiation, in assessment of affect may come as little surprise to practitioners and researchers (as evidenced by discussion within the psychiatry and HD literatures){4-5}. However, the improved explanation of the data as provided by the bifactor model, in comparison with unidimensional and two-factor models, begins to elucidate the approach that may be adopted, in which consideration of affect can be considered as part of both a general and group factors. This may help clarify or provide a context to explore factors that underpin or moderate (e.g. disease stage, cognitive ability) and the possible relationship between clinician and patient assessment of affect in HD.

Limitations of this study include that there is an initial selection bias (around age and functioning capacity) in terms of the administration of both affect assessments in the REGISTRY study, and that participants participating in the study may not be representative of the general HD population. Both these considerations may reflect that those excluded are potentially experiencing more imperative problems and therefore not receiving as frequent monitoring of affective symptoms. Also, as a Europe-wide study, the precise meanings of questionnaire items may vary across language translations of the instruments. Furthermore, our sample included those in the more advanced stages of the disease and, as a self-report measure, the responses from the HADS may not be reliable among those with severe impairments.

Notwithstanding these limitations, the current study suggests the use of both self-report and interviewer measures to examine affective distress in HD.

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Table 1. Confirmatory Factor Analysis Fit Statistics for the Different Models Proposed for the Self-report and Clinician Assessments.

	χ^2	df	$P \leq$	CMIN/DF	CFI	NNFI	RMSEA	SRMR
Unidimensional	3308.577	170	.000	19.462	.526	.470	.184	.100
Unidimensional*	943.749	167	.000	5.65	.883	.866	.092	.077
Two factor	2724.32	169	.000	16.120	.614	.566	.167	.102
Two factor*	860.599	166	.000	5.184	.895	.880	.088	.072
Bifactor	1687.212	150	.000	11.248	.768	.706	.137	.081
Bifactor*	344.559	147	.000	2.344	.970	.961	.050	.035

* Covaried error terms for three PBA-s pairings.

NB: CFI and NNFI $\geq .95$, RMSEA $< .06$, and SRMR $< .05$ to be a 'good' fit.