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Research report

Does age impact on rating melancholic and non-melancholic depressive symptoms?

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ABSTRACT

Background: Melancholic depression has long evaded attempts at accurate definition. A range of factors may influence symptom reporting and so compromise definitional attempts. One possible factor is age, and its possible influence led to the current study examining the impact of age on the reporting of melancholic and non-melancholic depressive symptoms.
Methods: A set of 32 self-rated depression items from the SDS depression measure and weighted to both melancholic and non-melancholic depressions were analysed for any impact of age in clinically diagnosed melancholic and non-melancholic depressed patients.
Results: Melancholic and non-melancholic patients did not differ by gender, severity of depression or duration of current episode. None of the melancholic items from the SDS showed a linear increase with age. Analyses of factor analytic derived constructs identified one factor as evidencing a linear decrease (rather than increase) in scores with age in the melancholic patients. Differential item functioning was only found for melancholic patients' scores on the 'non-melancholic scale', with a decrease across age. Simulated data revealed, for the same scale, a decrease in both melancholic and non-melancholic patients.
Limitations: Our assessment strategies effectively excluded those with severe melancholia and who were unable to complete self-report measures, and may have contributed to study findings. As we had few patients over the age of 70, age effects in elderly patients may have missed identification.
Conclusions: We found no evidence for melancholic symptoms to increase in severity with age. To the contrary, some items decreased in severity with age in both melancholic and non-melancholic patients. Overall study results are reassuring in indicating that age is unlikely to distort analyses seeking to differentiate those with melancholic and non-melancholic depressive conditions.

1. Introduction

Our research team has long sought to define melancholic (qua endogenous, autonomous, vital, Type A) depression with greater precision, recognising that while it has long been viewed as a distinct depressive sub-type having principal biological determinants and as having a more selective response to physical treatments, definitive clinical definition has resisted multiple analytic approaches since the 60s.

Our initial approach (see Parker and Hadzi-Pavlovic, 1996) to defining and delineating melancholia from residual non-melancholic depressions was consistent with earlier multivariate statistical analytic approaches and involved examining the discriminating capacity of numerous so-called 'endogeneity' or melancholic symptoms. While we identified a refined set number of over-represented clinical symptoms, none showed absolute or even distinctive differentiation across clinically diagnosed melancholic and non-melancholic depressed patients. We judged this as partially reflecting imprecision in best operationalising symptom constructs (e.g. mood non-reactivity, anhedonia) and the limitations to judging whether any particular symptom is 'present' or 'absent' as well as to dimensional approaches (whether in judging the level of severity dimension or its persistence). For self-rated symptoms, subjective factors can contribute to 'over-reporting' (e.g. plaintive set) or 'under-rating' (e.g. denial, stigma), while observer-based ratings also risk raters operating to their own reference base in judging symptom severity. Any imprecision in symptom measurement (contributed to by such exemplar or other factors) leads to predictable imprecision in any final measure or index whereby a cut-off score is used to distinguish melancholic and non-melancholic depressions.

Age is another factor theoretically impacting on assessment and differentiation of depressive sub-types, and especially of

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melancholia. We have undertaken two previous studies considering any impact of age. The first (Parker et al., 2001) examined the impact of age on (i) a set of melancholic and non-melancholic depressive symptoms and (ii) CORE scores, with the CORE measure assessing observer-rated signs of psychomotor disturbance viewed as integral to melancholia and, from clinical observation, seemingly more severe in older melancholic patients. Analyses failed to identify any impact of age on symptoms (in both the melancholic and non-melancholic depressive sub-sets). While age did not impact on CORE scores in the non-melancholic sub-set, CORE scores did show a 'trend break' in the melancholic sub-set by increasing distinctly in those older than 60. In a second study (Hyett et al., 2008), we examined the impact of age on a number of putative melancholic symptoms (including mood non-reactivity, anhedonia, psychomotor disturbance, diurnal variation, appetite and weight loss, and early morning wakening) in younger (i.e. less than 34 years) and older (35 years or older) melancholic and non-melancholic patients. For the non-melancholic patients there was no relation between age and 'melancholic' symptom severity (apart from terminal insomnia). By contrast, the older melancholic patients returned higher anhedonia, mood non-reactivity and diurnal variation scores—and tended to return higher psychomotor disturbance scores. In essence, these two studies variably showed no impact and some impact respectively on 'melancholic' symptoms. As a consequence of such variable findings, we undertook the present and far more comprehensive study to examine any effect of age on a wide set of depressive symptoms (weighted to both melancholic and non-melancholic depressions) and employing far more sophisticated analyses than those employed in the earlier reports.

2. Methods

2.1. Subjects and diagnosis

Subjects were recruited from patients attending the Black Dog Institute Depression Clinic, a state-wide facility whereby referred patients are assessed to clarify diagnosis and to provide management recommendations. Current data were collected by self-report inventories, by screening instruments administered by research assistants and from clinical assessments by psychiatrists as part of a broader study approved by the University of New South Wales Ethics Committee. As part of the assessment, patients self-rated the presence and severity of 32 symptoms on the SDS measure (Parker et al., 2009), which comprises representative melancholic and non-melancholic depressive items. Rating options allowed quantification of the severity of each symptom, with rating options being 'severe', 'moderate', 'mild' and 'not at all' (3, 2, 1, and 0 respectively). Current depression severity was quantified by the DMI-10 measure (Parker et al., 2002).

The assessing psychiatrist was required to judge whether the patient had a primary mood disorder and, if so, whether it was unipolar or bipolar, and melancholic or non-melancholic in nature. Clinical diagnostic assignment to 'melancholia' weighted features such as a non-reactive and anhedonic mood, distinct anergia (as against fatigue), depressed mood and energy showing diurnal variation in being worse in the morning, impaired concentration (with the individual acknowledging that their brain was 'foggy' or thoughts slowed rather than distracted) and some level of psychomotor disturbance. In addition, assignment to melancholia was more likely if there was a family history of a mood disorder and/or of a completed suicide, the patient reporting the severity and/or the duration of the depression to be disproportionate to any trigger, and if there was no clear-cut alternative distal or proximal stressor that might account for the depression. Approximately one-half of the patients assessed had the clinical diagnosis reviewed by an independent psychiatrist who was also required to make judgements about depressive subtype, and the study diagnosis in such patients was then based on consensus discussion and resolution.

2.2. Statistical methods

We employed differential item functioning (DIF) as our analytic approach. An item of a scale is said to show DIF if individuals who are equal on the dimension being measured are found to give different responses on the item due to some factor (here age) as against simply on a random basis. Thus, if a young and an old patient have an equally severe melancholic depression (or more generally are equally severe on a measure of melancholic depression), but the older patient is likely – as a result of their age – to be rated higher (or lower) on an agitation item, then that item shows DIF.

A number of different approaches to examine for DIF have been reported in the literature. The multiple-indicator multiple cause (MIMIC) model is a latent model approach which is quite flexible with multidimensional data, and has been applied in studies for an extended period (e.g. Gallo et al., 1994; Grayson et al., 2000; Teresi, 2006). A MIMIC model consists of three components. First, a factor-analytic measurement model for the items, with the factors defining the underlying dimensions (here '*severity*'). Second, a regression model to examine for the effect of one or more covariates on the *level of severity*. Third, a regression model for the effect of one or more covariates on the *items*. Thus, in such a MIMIC model, the response on an item is determined directly by the underlying factor (via the factor loadings), indirectly by the effect of the covariate on the factor, and directly by the effect of the covariate on the item. If this last effect is significant it indicates that a covariate (such as age) has an effect on item response over and above the effects of severity on the item and age on the level of severity.

In application, we first undertook an exploratory factor analyses (EFA) of the SDS depression measure [using the EFA option in Mplus (Muthén and Muthén, 2010), with items treated as categorical]. As the SDS was strongly multi-dimensional (see Results section), we examined for DIF simultaneously for a set of SDS factors.

While a large number of variables could be considered as covariates producing or contributing to DIF, the over-inclusion of covariates can make interpretation difficult. We therefore confined analyses to two covariates – age and mood type (melancholic or non-melancholic) – but with only the factors regressed on mood type, and not the items. Additionally, we included interactions between the factors and age in our analyses. In applying a MIMIC model it is standard practice to initially carry out a series of simpler analyses to identify a set of candidate DIF items. Thus, once the item sets had been identified from the EFA, the following steps were carried out for each set to identify candidate items for inclusion in a final model assessing DIF. First, for each item in turn a MIMIC model was fitted in which (i) all the items loaded on those factors for which they had a substantial loading, (ii) the factor was regressed on age and mood (melancholic or non-melancholic) category, and (iii) the item under investigation was regressed on age, with all the other items treated as anchor items (i.e., their regression were fixed at zero thus assuming no DIF). This series of models defined a smaller subset of items comprising those with a significant regression on age. Second, the previous step was repeated on this smaller subset of items, with two modifications: the Mplus XWITH command was used to create interactions between age and the