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Longitudinal sex differences of externalising and internalising depression symptom trajectories: Implications for assessment of depression in men from an online study

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Abstract

Background: Clinical reports indicate that men tend to engage in a range of externalising behaviours in response to negative emotional states. Such externalising behaviours have been theorised to reflect a male sub-type of depression that is inconsistent with current diagnostic criteria, resulting in impeded detection and treatment rates of depressed men.

Aims: In addressing previous study design limitations, this article presents self-report longitudinal data for the multidimensional Male Depression Risk Scale (MDRS-22) against ratings of diagnostic criteria for major depressive disorder as assessed by the Patient Health Questionnaire–Depression Module (PHQ-9). Longitudinal psychometric properties of the MDRS-22 are reported and symptom trajectories described.

Method: A sample of 233 adults (males = 125; 54%) completed measures of externalising and prototypic depression symptoms at Time 1, and again at Time 2 (15 weeks later). Psychometric properties were examined and within-subjects analyses undertaken.

Results: The MDRS-22 demonstrated stable internal consistency and test–retest correlations equivalent to those observed for the PHQ-9. Both prototypic and externalising depression symptoms increased with experiences of recent negative life events. Marked gender differences were observed. Males experiencing ≥ 2 stressful negative life events reported significantly higher MDRS-22 scores at both Time 1 and Time 2 relative to comparable females.

Conclusion: Findings contribute to the validity of the MDRS-22 as a measure of externalising depression symptoms. Results suggest that while both males and females experience externalising depression symptoms, these symptoms may be particularly elevated for men following experiences of negative life events. Findings suggest that externalising symptoms may be a special feature of depression for men. Given the problematic nature of such externalising symptoms (e.g. excessive substance use, aggression, risk-taking), their clinical assessment appears warranted.

Keywords

Depression, externalising symptoms, psychometric, sex differences, men

Depressed men are known to report a range of externalising responses (e.g. aggression, substance abuse, risk-taking) that fall beyond the prototypic symptoms included in diagnostic criteria for major depression (Brownhill, Wilhelm, Barclay, & Schmied, 2005; Heifner, 1997). Such gender variation in depression symptomology has been hypothesised to reflect a male sub-type of depression (for detailed reviews, see Addis, 2008; Brownhill, 2003; Fields & Cochran, 2011; Wilhelm, 2009). Attention to such symptoms may assist to improve depression detection and treatment rates for men (Rutz & Rihmer, 2007; Zierau, Bille, Rutz, & Bech, 2002).

To date, studies examining gender differences in externalising and prototypic depression symptoms (e.g.

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Table 1. Sample demographics for males and female participants.

	Male		Female	
	N	%	*N*	%
Participants	125	53.6	108	46.3
Age[a]	*M* = 38.92, *SD* = 14.56		*M* = 35.11, *SD* = 13.46	
Ethnicity				
Anglo/Caucasian	115	97.5	91	93.8
Asian/Pacific Islander	3	2.5	6	5.7
Relationship status				
In a current romantic relationship	77	61.1	66	61.7
Place of residence				
Metropolitan	83	65.9	69	64.5
Rural/regional	43	34.6	38	34.8
Income (AUD$)				
Up to 50,000	77	62.6	68	63.6
51,000–100,000	35	28.5	32	29.9
101,000+	11	8.9	7	6.5
Previous diagnosis				
Depression	51	40.5	38	35.5

[a]Age difference $p = .041$; not all participants identified their ethnicity.

Table 2. Time 1 and 2 reliability and test–retest correlations for males and females.

	Reliability (α)				Test–retest correlations (*r*)		
	Time 1		Time 2		Male *r*	Female *r*	*p*[a]
	Male	Female	Male	Female			
MDRS-22 subscales							
Emotional suppression	.84	.86	.80	.87	.69**	.70**	.440
Drug use	.87	.90	.89	.82	.80**	.68**	.021
Alcohol use	.90	.88	.90	.89	.72**	.66**	.195
Anger and aggression	.94	.84	.92	.83	.80**	.49**	<.001
Somatic symptoms	.77	.74	.73	.78	.73**	.56**	.013
Risk-taking	.78	.59	.73	.56	.64**	.50**	.058
MDRS-22 total score	.92	.86	.90	.87	.78**	.67**	.078
PHQ-9 total score	.92	.91	.92	.89	.71**	.68**	.659

MDRS-22: Male Depression Risk Scale; PHQ-9: Patient Health Questionnaire–Depression Module.
[a]Significance values determined by Fischer *r* to z transformation.
**$p < .001$

Diagnostic and Statistical Manual of Mental Disorders (*DSM*) congruent symptoms) have neglected to assess longitudinal symptom changes. Such analyses are essential for further establishing the construct of male type depression by examining symptom trajectories of individuals (and men in particular) considered at risk of both low mood and externalising symptoms (Safford, 2008).

This brief report examines longitudinal data for the recently validated Male Depression Risk Scale (MDRS-22; Rice, Fallon, Aucote, & Möller-Leimkühler, 2013). Two main aims were evaluated, namely, to report additional psychometric data for the MDRS-22 (e.g. subscales test–retest correlations) and to examine MDRS-22 symptom trajectories relative to gender, negative life events (a putative risk factor for externalising symptoms in men; Safford, 2008) and prototypic symptoms of depression. Males experiencing more frequent and severe negative life events were hypothesised to report higher rates of externalising depression symptoms relative to comparable females.

Method

Participants and procedure

The full Time 1 (T1) dataset included a community sample of 790 participants, recruited from advertisements displayed to Australian members of the *Facebook* social networking site. Of these, 30.12% ($N = 233$; see Table 1) agreed to provide Time 2 (T2) data subsequent to a follow-up email invitation sent at 12 weeks. The T2 dataset was representative of the larger sample. On average, 15 weeks ($M = 102.81$ days, standard deviation (SD) = 7.12 days) elapsed between the provision of data at T1 and T2. Full details on the larger sample, participant selection and study procedures are presented elsewhere (Rice et al., 2013).

Instruments

MDRS-22 (Rice et al., 2013) assessed six externalising depression symptom domains (See Table 2) via self-report relative to the preceding month, where participants responded from 0 = *not at all* to 7 = *almost always. Patient Health Questionnaire–Depression Module* (PHQ-9; Kroenke, Spitzer, & Williams, 2001) assessed self-report major depressive symptoms relative to the last fortnight where participants responded from 0 = *not at all* to 3 = *almost every day. Stressful Life Events Checklist* (SLEC; Costello & Devins, 1988) assessed the severity of 22 critical negative life events in the preceding 3 months where participants responded from 0 = *not applicable* to 6 = *major stress*.

Results

Psychometric properties of the MDRS-22 were assessed by Cronbach's alpha coefficient and test–retest correlations. For males, all values were acceptable and broadly comparable to those observed for the PHQ-9 (see Table 2). For females, these values were acceptable for the total

Table 3. Descriptive statistics of study measures for the three levels of negative life events and gender.

T1 SLEC category[a]	Male						Female					
	N	SLEC, *M* (*SD*)	PHQ-9, *M* (*SD*)		MDRS-22, *M* (*SD*)		*N*	SLEC, *M* (*SD*)	PHQ-9, *M* (*SD*)		MDRS-22, *M* (*SD*)	
			T1	T2	T1	T2			T1	T2	T1	T2
Low	41	1.43 (1.58)	3.44 (3.41)	4.39 (4.89)	19.13 (17.14)	19.69 (18.87)	36	1.58 (1.61)	2.83 (3.00)	2.92 (3.38)	13.98 (11.93)	13.19 (11.44)
Low–moderate	48	11.04 (3.99)	7.46 (6.01)	6.37 (5.64)	28.24 (21.36)	27.29 (21.04)	46	10.35 (4.24)	6.93 (4.47)	6.89 (5.27)	31.69 (14.64)	28.70 (16.50)
Moderate–high	36	42.72 (21.99)	10.83 (8.21)	9.44 (7.51)	49.01 (33.10)	43.91 (23.37)	26	42.59 (29.74)	10.50 (8.26)	7.19 (5.84)	34.70 (19.14)	27.72 (18.26)

SLEC: Stressful Life Events Checklist; SD: standard deviation; PHQ-9: Patient Health Questionnaire–Depression Module; MDRS-22: Male Depression Risk Scale.
SLEC scores were sex equivalent across category ($p = .983$).
[a]T1 SLEC category: low SLEC score ≤ 5; low–moderate SLEC score = 5–19; moderate–high SLEC scores ≥ 20.

score of the MDRS-22, but were less acceptable for the risk-taking subscale (see Table 2).

Participants were assigned to categories of recent negative life events based on T1 SLEC scores: the low group reported no recent significant negative events, the low–moderate group reported at least one recent negative event causing significant distress, while the moderate–high group reported two or more negative events causing significant distress (see Table 3 for means and *SD*s). Separate repeated measures multivariate analyses of variance (MANOVAs) examined effects of T1 SLEC category and gender on PHQ-9 and MDRS-22 scores. For the PHQ-9, a within-group interaction (time × SLEC category) was observed, $\Lambda = .946$, $F(1, 227) = 6.41$, $p = .002$, $\eta^2 = .054$ (see Figure 1). Higher PHQ-9 scores co-occurred with greater negative life events, and while PHQ-9 scores were temporally stable for the low and low–moderate SLEC categories, for those in the moderate–high category, scores were lower at T2 compared to T1. For the MDRS-22, a between-group interaction (gender × SLEC category) was observed, $F(2, 227) = 4.41$, $p = .013$, $\eta^2 = .037$. This effect indicated gender equivalence for the low and low–moderate SLEC categories; however, males in the moderate–high SLEC category reported higher MDRS-22 scores than did comparable females (see Figure 1). Post hoc analysis of main effects indicated that males in the moderate–high SLEC category reported higher MDRS-22 scores than did comparable females both at T1 ($p = .007$) and at T2 ($p = .001$).

Discussion

Findings indicate that the MDRS-22 provides a stable longitudinal assessment of externalising symptoms, with test–retest correlations comparable to those observed for the PHQ-9. These findings add to the MDRS-22 validity data previously reported (Rice et al., 2013) and provide the first longitudinal data of a male-specific depression rating scale. While the MDRS-22 assesses putative externalising depression symptoms, the direction of the relationship between such symptoms and negative life events is unclear, and it is plausible that higher MDRS-22 item scores (e.g. aggression, substance use, risk-taking) may precipitate negative life events themselves. Given this, it is essential that future studies recruit larger and more diverse cohorts, including clinical samples, and examine gender differences in symptom trajectory onset, latency and recovery.

Males in the moderate–high SLEC category reported both symptomatic levels of depressive symptoms (e.g. PHQ-9 T1 and T2 scores fell in the moderate and upper mild range) and comparably high MDRS-22 scores. These findings suggest that externalising symptoms may be a special feature of depression in at-risk men, who otherwise meet major depressive disorder (MDD) diagnostic criteria

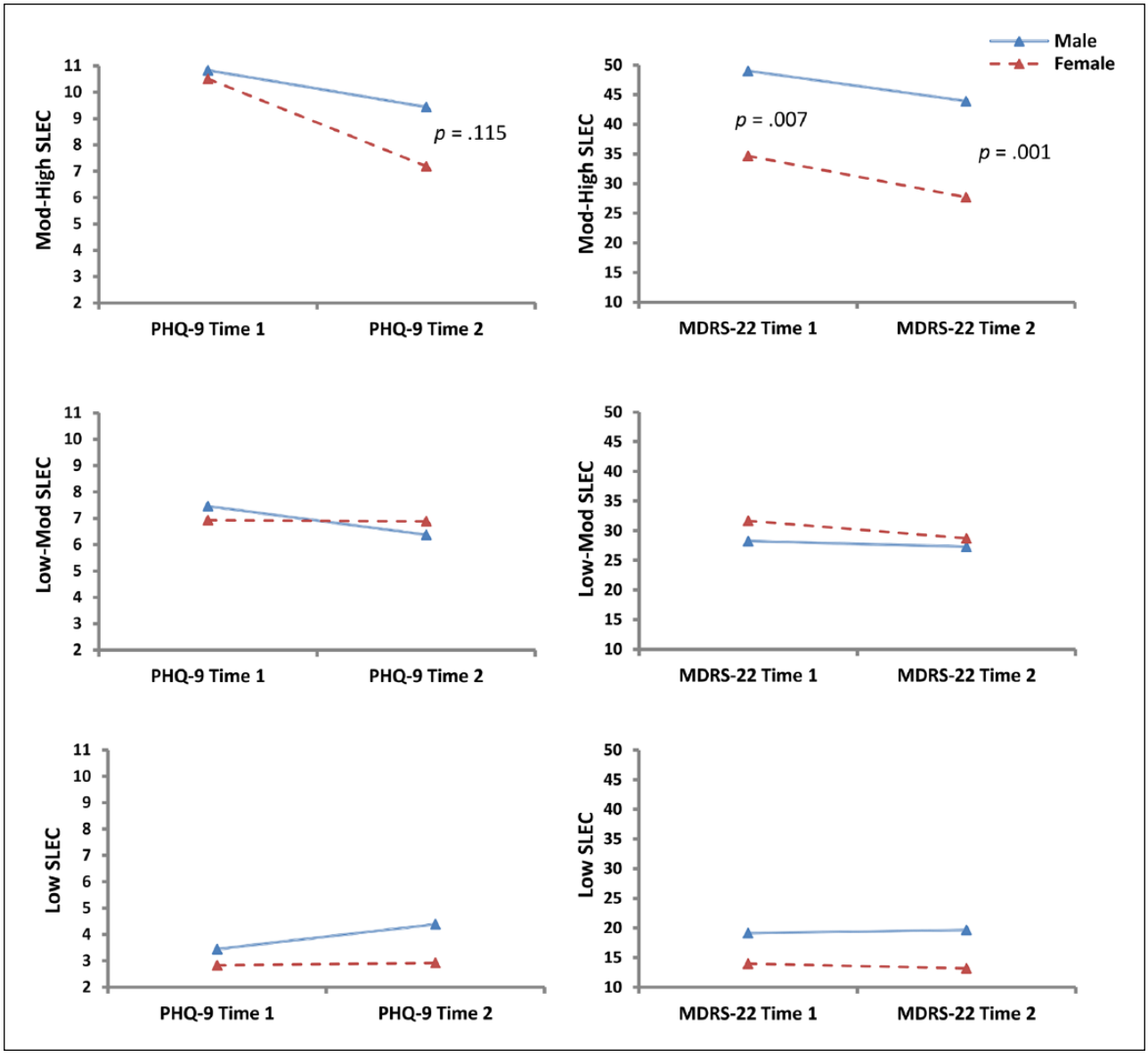

Figure 1. PHQ-9 and MDRS-22 scores at T1 and T2 for the three levels of negative life events and gender. Reported *p*-values refer to main effects (sex difference).
SLEC: Stressful Life Events Checklist; PHQ-9: Patient Health Questionnaire–Depression Module; MDRS-22: Male Depression Risk Scale.

(e.g. Martin, Neighbors, & Griffith, 2013). Hence, as externalising symptoms may co-occur with true depressive symptoms, future research should examine whether past and present clinical depression, and particularly the severity of those symptoms, are related to externalising symptoms.

These present findings have a number of clinical implications. The presence of externalising depression symptoms is likely to hinder recovery from low mood states and exacerbate any co-occurring prototypic depression symptoms. Furthermore, externalising symptoms assessed by the MDRS-22 (e.g. risk-taking, aggression, substance misuse) may interact with underlying impulsivity, escalating suicide risk and conferring other risks relative to health and interpersonal relationships. Given the present findings, and the range of studies highlighting the co-occurrence of externalising symptoms for depressed men (e.g. Brownhill et al., 2005; Heifner, 1997), there is a compelling argument for inclusion of externalising symptoms in clinical assessment of men presenting for psychiatric treatment.

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