

## Correspondence

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### Letter to the Editor

#### **Incorrect citations of Edinburgh Postnatal Depression Scale cut-off scores and the use of the State-Trait Anxiety Inventory**

In a recent publication by Alcorn *et al.* (2010) in *Psychological Medicine* there are important errors that need to be corrected. These errors concern cited cut-off scores on the Edinburgh Postnatal Depression Scale (EPDS; Cox *et al.* 1987), as well as stating that in a paper of mine (Matthey *et al.* 2003) we used the State-Trait Anxiety Inventory (Spielberger *et al.* 1970), which we did not.

Alcorn *et al.* (2010) state that in Matthey (2004) I recommend postpartum scores on the EPDS of 9 or more (i.e.  $\geq 9$ ) for possible depression and 12 or more (i.e.  $\geq 12$ ) for probable depression. This is incorrect. In my paper I refer to scores of 10 or more (written as 9/10, which means 9 or less is 'low', 10 or more is 'high') and 13 or more (12/13). It is these scores, not the ones stated by Alcorn *et al.* (2010), which are validated for the postpartum period for English-speaking women.

This error by Alcorn *et al.* (2010) is further compounded when they state that Murray & Cox (1990) showed that the antenatal cut-off scores on the EPDS were 12 or more (i.e.  $\geq 12$ ) for possible depression and 14 or more (i.e.  $\geq 14$ ) for probable depression. This again is incorrect. They recommended scores of 13 or more (12/13) and 15 or more (14/15) for the antenatal period (thus the validated cut-off scores are higher in pregnancy than postpartum).

The various validated cut-off scores on this scale, as well as the impact of such errors and ways to prevent them, have been discussed by myself and colleagues (Matthey *et al.* 2006).

### Declaration of Interest

None.

### References

- Alcorn KL, O'Donovan A, Patrick JC, Creedy D, Devilly GJ (2010). A prospective longitudinal study of the prevalence of post-traumatic stress disorder resulting from childbirth events. *Psychological Medicine* 40, 1849–1859.
- Cox J, Holden J, Sagovsky R (1987). Detection of postnatal depression: development of the 10-item Edinburgh

Postnatal Depression Scale. *British Journal of Psychiatry* 150, 782–786.

Matthey S (2004). Calculating clinically significant change in postnatal depression studies using the Edinburgh Postnatal Depression Scale. *Journal of Affective Disorders* 78, 269–272.

Matthey S, Barnett BEW, Howie P, Kavanagh DJ (2003). Diagnosing postpartum depression in mothers and fathers: whatever happened to anxiety? *Journal of Affective Disorders* 74, 139–147.

Matthey S, Henshaw C, Elliott S, Barnett B (2006). Variability in use of cut-off scores and formats on the Edinburgh Postnatal Depression Scale – implications for clinical and research practice. *Archives of Women's Mental Health* 9, 309–315.

Murray D, Cox JL (1990). Screening for depression during pregnancy with the Edinburgh Depression Scale (EPDS). *Journal of Reproductive and Infant Psychology* 8, 99–107.

Spielberger CD, Gorsuch RL, Lushene RE (1970). *Manual for the State-Trait Anxiety Inventory (Self-Evaluation Questionnaire)*. Consulting Psychologists Press: Palo Alto, CA.

STEPHEN MATTHEY<sup>1,2,3</sup>

<sup>1</sup> South Western Sydney Local Health Network, NSW, Australia

<sup>2</sup> School of Psychology, University of Sydney, Sydney, NSW, Australia

<sup>3</sup> School of Psychiatry, UNSW, Sydney, NSW, Australia

Address for correspondence:

Adj. Associate Professor S. Matthey  
Liverpool Hospital, Mental Health Centre (L1),  
Locked Bag 7103, Liverpool BC, NSW 1871, Australia.  
(Email: stephen.matthey@sswahs.nsw.gov.au)

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### The authors reply

#### **PTSD due to childbirth stands at between 3.1% (adjusted) and 5.8% (unadjusted)**

Alcorn *et al.* (2010) was a prospective longitudinal study of the prevalence of post-traumatic Stress Disorder (PTSD) resulting from childbirth events. One of the features of this work was not only to estimate the absolute prevalence of PTSD, but to adjust these estimates for pre-existing PTSD symptomatology and other more common postnatal symptomatology, such as depression and anxiety. It is of course possible if not probable, that these affective expressions are comorbid or predominantly represent the same underlying post-traumatic sequelae.

**Alternative Table 3.** Adjusted prevalence of post-traumatic stress disorder (PTSD), partial PTSD, and PTSD-like symptoms postpartum after controlling for prior PTSD phenomenology and clinically significant depression and anxiety during pregnancy

Postpartum	4–6 weeks	3 months	6 months
<b>PTSD</b>			
Full PTSD	7 (1.4%)	16 (3.4%)	14 (3.1%)
Partial PTSD Group 1	6 (1.2%)	9 (1.9%)	6 (1.3%)
Partial PTSD Group 2	2 (0.4%)	2 (0.4%)	0 (0.0%)
Partial PTSD Group 3	3 (0.6%)	3 (0.6%)	0 (0.0%)
<b>PTSD-Like symptoms</b>			
Full PTSD-like symptoms	3 (0.6%)	8 (1.7%)	8 (1.8%)
Partial PTSD-like symptoms Group 1	4 (0.8%)	10 (2.1%)	2 (0.4%)
Partial PTSD-like symptoms Group 2	0 (0.0%)	0 (0.0%)	0 (0.0%)
Partial PTSD-like symptoms Group 3	0 (0.0%)	1 (0.2%)	0 (0.0%)
No classification	475 (95.0%)	428 (89.7%)	423 (93.4%)
Total no. (%)	500 (100%)	477 (100%)	453 (100%)

Group 1, Group 2, and Group 3 Partial PTSD Group 1 met all PTSD criteria except for one or two of the necessary three criterion C symptoms. Group 2 met all PTSD criteria except for one of the necessary two criterion D symptoms. Group 3 met all PTSD criteria except for one or two of the necessary three criterion C symptoms, and one of the necessary two criterion D symptoms. Partial PTSD-like symptom groups met the same criteria as partial PTSD except the criteria for a traumatic birth event were not met (i.e. a non-criterion A event).

**Alternative Table 4.** Rates of clinically significant symptoms of depression and anxiety postpartum following a traumatic birth event with and without post-traumatic stress disorder (PTSD) and partial PTSD

Postpartum	4–6 weeks	3 months	6 months
<b>Possible depression</b>			
With full PTSD	9 (20.0%)	7 (15.6%)	12 (30.8%)
With partial PTSD Group 1	3 (6.7%)	5 (11.1%)	3 (7.7%)
With partial PTSD Group 2	0 (0.0%)	1 (2.2%)	0 (0.0%)
With partial PTSD Group 3	0 (0.0%)	0 (0.0%)	0 (0.0%)
No PTSD classification	33 (73.3%)	32 (71.1%)	24 (61.5%)
Total no. (%)	45 (100%)	45 (100%)	39 (100%)
<b>Probable depression</b>			
With full PTSD	17 (29.8%)	32 (51.6%)	27 (43.5%)
With partial PTSD Group 1	1 (1.8%)	3 (4.8%)	1 (1.6%)
With partial PTSD Group 2	1 (1.8%)	0 (0.0%)	0 (0.0%)
With partial PTSD Group 3	0 (0.0%)	0 (0.0%)	0 (0.0%)
No PTSD classification	38 (66.7%)	27 (43.5%)	34 (54.8%)
Total no. (%)	57 (100%)	62 (100%)	62 (100%)

Partial PTSD Group 1 met all PTSD criteria except for one or two of the necessary three criterion C symptoms. Group 2 met all PTSD criteria except for one of the necessary two criterion D symptoms. Group 3 met all PTSD criteria except for one or two of the necessary three criterion C symptoms, and one of the necessary two criterion D symptoms.

We are grateful to Matthey's (2011) Letter for the opportunity to further demonstrate how robust our findings are in relation to post-traumatic stress

following childbirth. Using an Edinburgh Postnatal Depression Scale (EPDS) cut-off of 14 or more we obtained PTSD rates, uncompromised by antenatal

**Alternative Table 5.** Rates of clinically significant symptoms of depression postpartum following a non-traumatic birth event with and without post-traumatic stress disorder (PTSD)-like symptoms

Postpartum	4–6 weeks	3 months	6 months
<b>Possible depression</b>			
With full PTSD-like symptoms	0 (0.0%)	6 (13.3%)	7 (15.6%)
With partial PTSD-like symptoms (Group 1)	1 (3.6%)	1 (2.2%)	2 (4.4%)
No PTSD-like classification	27 (96.4%)	38 (84.4%)	36 (80.0%)
Total no. (%)	28 (100%)	45 (100%)	45 (100%)
<b>Probable depression</b>			
With Full PTSD-like symptoms	3 (12.0%)	9 (25.0%)	12 (34.3%)
With Partial PTSD-like symptoms Group 1	0 (0.0%)	1 (2.8%)	0 (0.0%)
No PTSD-like symptoms classification	22 (88.0%)	26 (72.2%)	23 (65.7%)
Total no. (%)	25 (100%)	36 (100%)	35 (100%)

Partial PTSD-like symptoms Group 1 met all PTSD criteria except for criteria A and one or two of the necessary three criterion C symptoms. Partial PTSD-like symptoms Group 2 met all PTSD criteria except for criteria A and one of the necessary two criterion D symptoms. Partial PTSD-like symptoms Group 3 met all PTSD criteria except for criteria A and one or two of the necessary three criterion C symptoms, and one of the necessary two criterion D symptoms.

depressive symptomatology, of 3.1% at 6 months postpartum. We interpreted Matthey (2004) and Murray & Cox's (1990) terminology in the same fashion. To be precise, as we were excluding those women with elevated depressive symptomatology, the lower cut-offs we used were more conservative in deriving adjusted PTSD rates. We did indeed use the more conservative cut-offs of 9 (*possible*; instead of 10) and 12 (*probable*; instead of 13) for postpartum depression, and 12 (*possible*; instead of 13) and 14 (*probable*; instead of 15) for antenatal depression. In fact, this interpretation of their terminology (Murray & Cox, 1990; Matthey, 2004) is so widespread that Matthey and his colleagues (2006) published a clarification, admitting that in previous publications even they had 'been remiss in this respect' (p. 309). On closer examination of Matthey's (2004) paper, we do take issue with the derivation of these cut-offs [i.e. Jacobson & Truax's (1991) method was advocated, yet Matthey used unusual test–retest reliability scores and departed from their method for the clinical cut-offs]. Nonetheless, we see value in Matthey's (2011) desire to apply the more conservative cut-offs for depression, which naturally make for a less conservative adjustment for PTSD.

As can be seen in Alternate Table 3, adjusting to Matthey's recommendation does not change the 3.1% figure at 6 months follow-up. It also makes only minimal difference at earlier intervals (i.e. increasing the instances of PTSD by only one person in earlier periods). PTSD at 6 months postpartum, unadjusted

for antenatal anxiety and depression symptomatology, naturally stays at 5.8% as per our original Table 1 (Alcorn *et al.* 2010).

Adjusting to the higher cut-offs for postpartum depression symptomatology, we present Alternate Tables 4 and 5 here, although we only present the relevant depression sections. From Alternate Table 4 it can be seen that the new cut-offs increase the incidence of possible depression, and decrease the incidence of probable depression at 6 months postpartum. This leads to an overall difference of a decrease of possible and probable depression of only 1.8%. From Alternate Table 5, at 6 months postpartum, the new cut-offs create a small decrease of possible depression and a small decrease of probable depression. This leads to a total decrease in possible and probable depression of only 2.06%.

In light of these marginal differences, our growing doubts concerning the EPDS cut-offs at a more general level, and the strong evidence in favour of PTSD following childbirth being a valid disorder; our conclusions have not changed. Indeed, on further reflection, we can find no cause to amend any of our original interpretations or recommendations.

## References

- Alcorn KL, O'Donovan A, Patrick JC, Creedy D, Devilly GJ (2010). A prospective longitudinal study of the prevalence of post-traumatic stress disorder resulting from childbirth events. *Psychological Medicine* **40**, 1849–1859.

- Jacobson NS, Truax P** (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology* **59**, 12–19.
- Matthey S** (2004). Calculating clinical significant change in postnatal depression studies using the Edinburgh Postnatal depression Scale. *Journal of Affective Disorders* **78**, 269–272.
- Matthey S** (2011). Incorrect citations of Edinburgh Postnatal Depression Scale cut-off scores and the use of the State-Trait Anxiety Inventory [Letter]. *Psychological Medicine*. doi:10.1017/S0033291711001796.
- Matthey S, Henshaw C, Elliot S, Barnett B** (2006). Variability in use of cut-off scores and formats on the Edinburgh Postnatal Depression Scale – implications for clinical and research practice. *Archives of Women's Mental Health* **9**, 309–315.
- Murray D, Cox JL** (1990). Screening for depression during pregnancy with the Edinburgh Postnatal Depression

Scale (EPDS). *Journal of Reproductive and Infant Psychology* **8**, 99–107.

J. C. PATRICK<sup>1</sup>, G. J. DEVILLY<sup>2</sup>, A. O'DONOVAN<sup>2</sup>,  
K. L. ALCORN<sup>2</sup>, D. CREEDY<sup>3</sup>

<sup>1</sup> Health Service Management, Faculty of Business,  
University of Tasmania

<sup>2</sup> School of Psychology & Griffith Health Institute,  
Griffith University

<sup>3</sup> Queensland Centre for Mothers & Babies, University  
of Queensland

Address for correspondence:

Associate Professors A. O'Donovan or G. J. Devilly  
Psychology Department, Griffith University, Mt Gravatt  
Campus, Messines Ridge Road, Mt Gravatt, Brisbane,  
Queensland 4122, Australia.

(Email: a.odonovan@griffith.edu.au or grant@devilly.org)