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Posttraumatic stress symptomatology following exposure to perceived traumatic perinatal events within the midwifery profession: The impact of trait emotional intelligence

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Nightingale, S, Spiby, H, Sheen, KS and Slade, P (2018) Posttraumatic stress symptomatology following exposure to perceived traumatic perinatal events within the midwifery profession: The impact of trait emotional intelligence. Journal of Advanced Nursing. 74 (9). pp. 2115-2125. ISSN 0309-

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ABSTRACT

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Aims: To explore factors associated with, and predictors of, post-traumatic stress symptoms in midwives. To explore factors associated with, and potential moderating effects of, trait emotional intelligence. Secondary analysis explored predictors of resilience.

Background: Midwives may experience vicarious trauma responses due to exposure to certain perinatal events in their professional lives. This may have adverse psychological outcomes for midwives, and women and children in their care.

Design: A cross-sectional, online and paper survey of midwives in the United Kingdom was conducted.

Methods: Between February-October 2016, 113 midwives who met inclusion criteria provided demographic information, and completed scales measuring post-traumatic stress symptoms, trait emotional intelligence, empathy, resilience, social support, and attitudes towards emotional expression.

Results: Higher resilience and trait emotional intelligence scores were associated with reduced post-traumatic stress symptoms. Higher empathy, perceived social support, and resilience were associated with higher trait emotional intelligence. Lower resilience significantly predicted post-traumatic stress symptoms. Trait emotional intelligence did not moderate relationships between resilience and post-traumatic stress symptoms, but may protect against post-traumatic stress symptoms in midwives with higher empathy. Higher trait emotional intelligence, and lower empathy and need for support, significantly predicted resilience. Notably, when trait emotional intelligence was higher, the negative relationship between empathy and resilience was reduced.

1 Conclusion: Approximately one fifth of midwives were experiencing post-traumatic stress
2 symptoms at clinically significant levels. Trait emotional intelligence may protect against
3 post-traumatic stress symptoms by supporting resilience, whilst enabling midwives to remain
4 empathic. The negative correlation between resilience and empathy needs careful
5 consideration by policy makers.

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1 **SUMMARY STATEMENT**

2 **Why is this research needed?**

- 3 • Midwives who indirectly experience trauma through the provision of care to
4 childbearing women can sometimes develop adverse psychological responses, such as
5 post-traumatic stress symptoms.
- 6 • Higher empathy may be a risk factor for post-traumatic stress symptoms in midwives,
7 yet it remains important that midwives show empathy towards child-bearing women.
- 8 • Adverse experiences at work may impact upon midwives' decisions to remain within
9 the profession, thus, understanding more about the factors that may protect against
10 post-traumatic stress symptoms is important.

11 **What are the key findings?**

- 12 • Higher trait emotional intelligence and resilience were associated with lower post-
13 traumatic stress symptoms in midwives, and higher resilience significantly predicted
14 lower post-traumatic stress symptoms.
- 15 • Trait emotional intelligence may act as a protective factor against post-traumatic
16 stress symptoms when empathy is high.
- 17 • Higher trait emotional intelligence, lower empathy, and less need for support,
18 significantly predicted higher resilience scores. The negative relationship between
19 resilience and empathy has implications for the current focus on developing resilience
20 in midwives.

1 **How should the findings be used to influence policy/ practice/ research/ education?**

- 2 • Attention could be given to increasing emotional intelligence via interventions.
- 3 • Emotional intelligence could be considered when recruiting student midwives.
- 4 • Longitudinal research could enable conclusions about whether higher emotional
- 5 intelligence protects against post-traumatic stress symptoms, and the mechanisms
- 6 underpinning this.

7 *Keywords:* Empathy; midwives; post-traumatic stress; resilience; trait emotional intelligence.

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INTRODUCTION

Background

Midwives are at risk of developing trauma responses, following exposure to perinatal events which they experience as traumatic (Beck, LoGiudice, & Gable, 2015; Leinweber, Creedy, Rowe, & Gamble, 2017; Sheen, Spiby, & Slade, 2015; Wahlberg *et al.*, 2016). Conservative estimates indicate that at least 5% of United Kingdom (UK) midwives are experiencing clinically significant trauma symptoms (Sheen *et al.*, 2015).

Post-traumatic stress disorder (PTSD)

The Diagnostic and Statistical Manual of Mental Disorders (DSM-V; American Psychological Association [APA], 2013) defines PTSD as clinically significant distress or impairment in an individual's social interactions, capacity to work, or other areas of functioning, following exposure to actual or threatened death, serious injury, or sexual violation, to the self or others. PTSD is characterised by symptoms of intrusion (e.g. intrusive thoughts or nightmares); avoidance of trauma-related reminders and thoughts; increased arousal (e.g. hypervigilance or irritability); and negative emotions, beliefs, and feelings (APA, 2013).

The predecessor to the DSM-V (DSM-IV; APA, 2000) stated that the individual's appraisal of the event was a contributing factor, and must involve fear, helplessness or horror. The appraisal of the event has been removed from DSM-V, however, research suggests that it is an important factor in the development of PTSD in relation to childbirth events (Devilley, Gullo, Alcorn, & O'Donovan, 2014). Furthermore, the cognitive model of PTSD (Ehlers & Clark, 2000) states that following exposure to a traumatic event, the subsequent appraisal of the trauma is an instrumental factor in maintaining PTSD, and it is therefore included in this

1 study. However, exposure to trauma does not inevitably lead to post-traumatic stress
2 symptoms (PTSS), or PTSD, and therefore understanding risk factors is important.

3 Personal history of trauma or personal traumatic childbirth may increase risk of work-
4 related PTSS (Collins & Long, 2003; Knight, 2013; Rudolph, Stamm, & Stamm, 1997). More
5 negative attitudes towards emotional expression (AEE) are also linked to increased risk of
6 developing PTSD (Lowery & Stokes, 2005; Nightingale & Williams, 2000), possibly because
7 of reluctance to share feelings.

8 Another identified risk factor for PTSS in health-care professionals is empathy
9 (Leinweber & Rowe, 2010; Sheen *et al.*, 2015). This has been characterised as the ability to
10 correctly identify the emotional state of others, without experiencing that state yourself
11 (Halpern, 2003).

12 There are few studies assessing empathy in midwives, and it is possible some
13 midwives try to reduce empathic responses to protect themselves against psychological
14 distress. However, low empathy in midwives is related to negative psychological outcomes in
15 women who have undergone traumatic births (Bell & Andersson, 2016; Gold, 2007;
16 Leinweber *et al.*, 2017; Priddis, Schmied, & Dahlen, 2014; Thomson & Downe, 2008). In
17 turn, poor maternal postnatal mental health has been linked to adverse consequences for
18 children, including behavioural difficulties (Fihrer, McMahon, & Taylor, 2009), and future
19 mental health problems (Pearson *et al.*, 2013). Thus, understanding more about factors that
20 can protect against PTSS in midwives is crucial.

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1 ***Protection against PTSS - A role for emotional intelligence?***

2 Emotional intelligence (EI) is defined as the ability to understand and regulate one's
3 own emotions, to use this understanding to guide one's thinking and actions, and to manage
4 interpersonal relationships with understanding and empathy (Salovey & Mayer, 1990).

5 EI has since been generally conceptualised in two distinct ways: (1) as an emotion-
6 related cognitive ability (Caruso, 2008), or (2) as a behavioural disposition, referring to the
7 tendency for one to behave in a certain way when experiencing a particular emotion, and self-
8 perceptions of one's ability to recognise and understand emotions (Petrides, Pita, &
9 Kokkinaki, 2007). These two perspectives have been termed ability EI (AEI) and trait EI
10 (TEI) respectively.

11 TEI is considered to be a multifaceted concept consisting of various personality traits,
12 including emotion expression, self-esteem, and stress management. Four overarching factors
13 in TEI have been suggested: well-being, self-control, emotionality, and sociability (Petrides,
14 2009a), which are typically measured using self-report instruments such as the Trait
15 Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009a).

16 An important aspect of TEI is emotional self-efficacy, which refers to beliefs and
17 perceptions around one's own emotional abilities (Petrides *et al.*, 2007). Self-efficacy is an
18 important component of social cognitive theory (Bandura, 1977; 1986), which suggests a
19 person's belief in their ability to behave in a certain way facilitates that behaviour actually
20 occurring. Thus, TEI skills are considered central for the development, implementation, and
21 maintenance of, successful coping strategies (Davis & Humphrey, 2012).

22 Protective coping strategies for PTSS include seeking social support. TEI is related to
23 social support (Montes-Berges & Augusto, 2007), and increased TEI and social support are

1 themselves linked to better psychological outcomes in people exposed to trauma (Kwako,
2 Szanton, Saligan, & Gill, 2011).

3 Social support has been found to increase resilience against stress and adversity in
4 midwives (Hunter & Warren, 2014; Sheen, Spiby, & Slade, 2016; Wallbank & Robertson,
5 2013). Hunter and Warren found that self-efficacy was perceived by midwives as being
6 important for resilience, and links have been found between EI and resilience (e.g. Görgens-
7 Ekermans & Brand, 2012; Schneider, Lyons, & Khazon, 2013). It is therefore plausible that
8 midwives higher in TEI may be protected against PTSS, due to TEI having a moderating
9 effect between other factors and PTSS.

10 TEI can be developed through learning and experience (Nelis, Quoidbach,
11 Mikolajczak, & Hansenne, 2009; Pool & Qualter, 2012). If TEI does act as a protective factor
12 against PTSS in midwives, interventions to develop TEI may result in improved outcomes for
13 midwives, with positive implications for child-bearing women.

14 THE STUDY

15 Aims

16 To explore the relationship between TEI and PTSS in midwives practising in the UK,
17 who have witnessed perinatal events they experienced as traumatic. The study has five
18 specific research questions:

19 1) Which variables are related to PTSS?

20 *Hypothesis 1.* Lower PTSS will be related to higher TEI, perceived social support, need for
21 support, support seeking, resilience, and more positive AEE.

22 *Hypothesis 2.* Higher PTSS will be related to higher empathy.

1 2) Which variables are related to TEI?

2 *Hypothesis 1.* Higher TEI will be related to higher perceived social support, need for support,
3 support seeking, empathy, resilience, and more positive AEE.

4 3) What are the main predictors of PTSS?

5 4) Does TEI moderate relationships between any predictor variables and PTSS?

6 5) Does higher TEI protect against PTSS in midwives with higher empathy?

7 **Design**

8 A cross-sectional design was employed. The study was conducted according to the
9 STROBE guidelines for cross-sectional studies.

10 **Participants**

11 Between February-October 2016, a convenience sample of qualified midwives from
12 four NHS Trusts in England were recruited. Inclusion criteria required that midwives had
13 witnessed a perinatal event they experienced as traumatic within the last 10 years. A
14 traumatic perinatal event was defined using the two elements of criterion A for PTSD of
15 DSM-IV having (i) witnessed a perinatal event that included actual or threatened death or
16 serious injury to the mother and/or child, in which (ii) the midwife her/himself experienced
17 fear, helplessness or horror.

18 Sites were recruited sequentially. Response rates from the primary recruiting site was
19 65 (34%), and two of the additional sites were 28 (8%), and 34 (12%). Four midwives
20 responded from the fourth recruitment site, but the number of midwives from this site was not
21 provided. Recruitment ended approximately one week after the fourth site began recruitment.
22 It should be noted that not all midwives will have met the inclusion criteria relating to the

1 experience of trauma, with feedback from midwives from different Trusts during the
2 development stage of this study indicating that between 50-95% of midwives would meet
3 this. Thus, the actual response rate for midwives who met the inclusion criteria is uncertain.
4 Complete data sets were received from 111 midwives.

5 **Data collection**

6 The study was available on paper, and online using Qualtrics software. The heads of
7 midwifery forwarded an email with the link to the information sheet and consent form,
8 leading to the online survey, which took around 20 minutes to complete. Ten responses were
9 by post and the rest online. All responses were anonymous.

10 **Measures**

11 Demographic and professional information was gathered: age, gender, marital status,
12 number of children, whether they considered any personal experience of giving birth to be
13 traumatic, years qualified, NHS banding, ethnicity, and previous psychological intervention.
14 To ensure that participating midwives met criterion A of DSM-IV, the following questions
15 were asked: 1) During the last 10 years, have you ever witnessed a perinatal event that
16 included actual or threatened death or serious injury to the mother and/or child, in which you
17 experienced fear, helplessness or horror? *If yes* 2) Did you feel that the mother or child's life
18 was threatened during the perinatal event? 3) Did the mother or child experience an actual
19 injury or threat of serious injury during the perinatal event? Additionally, midwives were
20 asked for the total number of such events they had witnessed over the last ten years, and the
21 time since the last event. To consider the professional impact of PTSS, midwives were asked
22 whether they had ever had sick leave, changed their professional allocation on a short or

1 long-term basis, and ever seriously considered leaving the midwifery profession, due to a
2 traumatic perinatal event.

3 PTSS was measured using the Impact of Event Scale-Revised (IES-R; Weiss &
4 Marmar, 1997), which covers symptoms of intrusion, avoidance, and hyperarousal.
5 Cronbach's alpha for the intrusion, avoidance, and hyperarousal subscales in the current study
6 were all high; $\alpha = 0.93$, $\alpha = 0.87$, and $\alpha = 0.88$ respectively. Whilst the IES-R is not a
7 diagnostic measure for PTSD, scores above 33 have been reported to predict clinical
8 diagnosis of PTSD (Creamer, Bell, & Failla, 2003). Scores in excess of 24 indicate clinical
9 concern (Asukai, Kato, *et al.*, 2002). These cut-offs were applied to total scores on the IES-R
10 in this study to infer presence of clinically significant PTSS.

11 TEI was measured using the Trait Emotional Intelligence Questionnaire –Short Form
12 (TEIQue-SF; Petrides, 2009b). This is a 30-item questionnaire designed to measure global
13 TEI. Internal consistency was found to be high in the current study $\alpha = 0.88$.

14 To measure empathy, the seven-item Empathic Concern (EC) subscale from the
15 Interpersonal Reactivity Index (IRI; Davis, 1983) was utilised. This measures an individual's
16 tendency to experience feelings of concern for others. The current study found internal
17 consistency of $\alpha = 0.76$.

18 The Berlin Social Support Scale (BSSS; Schwarzer & Schulz, 2000) measured aspects
19 of social support. There are three factors: perceived social support, need for support, and
20 support seeking. Cronbach's alpha for the three areas of perceived social support, need for
21 support, and support seeking in the current study were $\alpha = 0.91$, $\alpha = 0.55$, and $\alpha = 0.74$
22 respectively.

1 Resilience was assessed using the six-item Brief Resilience Scale (BRS; Smith *et al.*,
2 2008). This assesses the ability to bounce back from stress. Internal consistency was high in
3 the current study $\alpha = 0.87$.

4 To measure AEE, the Attitudes toward Emotional Expression Scale (AEE; Laghai &
5 Joseph, 2000) was utilised. There are four items measuring attitudes and beliefs about
6 emotional expression, derived from the full 20-item measure. Higher scores indicate more
7 negative attitudes toward emotional expression. The current study found internal consistency
8 to be good $\alpha = 0.78$.

9 **Ethical considerations**

10 Ethical approval was obtained from both the lead university and participating NHS
11 sites.

12 **Data analysis**

13 Using SPSS statistical software v23, Pearson's correlation analyses were conducted to
14 explore relationships between variables. Following this, standard multiple regression was
15 employed to further investigate variables associated with PTSS.

16 Total score and all subscales of the IES-R showed a positive skew, which were
17 improved through square root transformation. Comparison of analysis on transformed and
18 untransformed data indicated minimal difference in the significance of analysis or magnitude
19 of associations, suggesting that parametric analysis is robust. As the total sample was
20 adequate ($n = 110$), and parametric tests are considered more robust to violations of normality
21 when conducted on larger sample sizes (Lumley, Diehr, Emerson, & Chen, 2002), analysis is
22 presented using non-transformed data. Collinearity statistics and scatterplot diagrams were
23 inspected for evidence of multicollinearity, and histogram and P-P Plots for standardised

1 residuals were checked for all regression analyses. These indicated that model parameters
2 adequately conformed to the assumptions of multiple regression analysis.

3 To test for moderation effects, Hayes's 2013 PROCESS macro (model 1) was utilised.
4 Whilst some suggest that interactions should be firstly examined for significance in
5 moderation analysis (Aiken & West, 1991), Robinson, Tomek, and Schumacker (2013)
6 suggest that researchers undertaking moderation should begin with exploration of the simple
7 slopes, rather than relying on a significant interaction term. A simple slopes analysis explores
8 whether the slope of the regression line at low (1 SD below the mean), moderate (mean), and
9 high (1 SD above the mean) levels of the moderator is significantly different from zero.
10 Robinson and colleagues argue that testing the simple slopes for a moderation effect may
11 provide a more powerful test of the moderation hypothesis than interpretation of the
12 interaction, resulting in more sensitive detection of the relation between a predictor and an
13 outcome at different values of the moderator. Thus, simple slopes analyses were conducted to
14 investigate any potential moderation effects.

15 **Validity and reliability**

16 Internal-consistency reliability (Cronbach's alpha) for most measurements was
17 acceptable (Pallant, 2016), however, the *need for support* subscale of the BSSS was slightly
18 lower ($\alpha = 0.55$), meaning findings should be interpreted conservatively.

19 **RESULTS**

20 **Sample characteristics**

21 Table 1 shows participant characteristics. All participants were women, and 105
22 (95.5%) were white British. Midwives had been qualified between five months and 37 years
23 ($M = 14.43$, $SD = 10.07$).

1 **Impact of exposure to traumatic perinatal events**

2 Midwives had experienced an average of five traumatic perinatal events ($M = 4.64$,
3 $SD = 3.49$) throughout their career. Number of events experienced ranged from *one to more*
4 *than 10*. Forty seven midwives (42.7%) had consulted their GP (family physician) because of
5 stress or anxiety, and 37 of these midwives (79%), had received intervention for this. Thirty
6 five of the 47 midwives who had seen their GP believed their difficulties were midwifery-
7 related.

8 Forty one midwives had seriously considered leaving the profession following
9 exposure to a traumatic perinatal event (37%). Eighteen (16%) changed their professional
10 allocation after experiencing a traumatic perinatal event, and 26 (24%) had considered doing
11 so. Thirteen midwives had taken sick leave following exposure to a traumatic perinatal event
12 (12%), and 27 had considered doing so (25%).

13 **PTSS**

14 Mean total and factor scores on the IES-R, which measured PTSS, are shown in Table
15 2. Twenty midwives (18%) exceeded a total score of 33. Mean IES-R scores for midwives
16 who had seriously considered leaving the midwifery profession following a traumatic
17 perinatal event ($M = 23.88$, $SD = 17.51$) were significantly higher than those reported by
18 midwives who had not considered leaving the profession ($M = 9.04$, $SD = 11.94$), $t(62.3) =$
19 4.801 , $p < .001$.

20 **Factors associated with PTSS**

21 Bivariate correlations (Pearson's r) were conducted to explore the first research
22 question: to assess whether TEI, empathy, aspects of support, resilience, and AEE were
23 associated with PTSS. Correlations were also undertaken between PTSS and demographic

1 information: age, time qualified, number of traumatic events witnessed, and length of time
2 since last witnessed a traumatic event (see Table 3).

3 The only significant associations were between total IES-R score and TEI ($r = -.176$,
4 $p < .05$), and resilience ($r = -.289$, $p < .001$), which were in accordance with the hypotheses
5 (see Table 3).

6 The correlation matrix was examined to answer the second research question: to
7 determine which variables were associated with TEI. A significant relationship was found
8 between TEI and number of traumatic perinatal events witnessed ($r = .165$, $p < .05$).

9 There were significant associations between TEI score and empathy ($r = .158$, $p <$
10 $.05$), perceived social support ($r = .506$, $p < .001$), resilience ($r = .557$, $p < .001$), and AEE (r
11 $= -.377$, $p < .001$), which were all in accordance with the hypotheses. No other hypotheses
12 were supported.

13 The third research question was to identify predictors of PTSS, and thus, in line with
14 the planned analyses, TEI and resilience, the variables that were significantly associated ($p <$
15 $.05$) with total score on the IES-R at bivariate level, were entered as independent variables
16 into a standard multiple regression (see Table 4).

17 The regression was significant, $F(2, 107) = 4.911$, $p < .01$, but the overall model only
18 explained 7% of the variance, $R^2 = .084$, R^2 adjusted = .067. The analysis showed that whilst
19 TEI did not significantly predict IES-R score, $\beta = -.022$, $p = .843$, resilience was a significant
20 predictor, $\beta = -.277$, $p < .05$.

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1 Moderation analyses

2 The fourth research question was to determine whether TEI moderated any
 3 relationship found between predictor variables and PTSS. As resilience was the only
 4 predictor of PTSS found, moderation analysis was used to examine whether high resilience
 5 linked to lower PTSS only in the context of high TEI. The predictors in the moderation model
 6 explained a significant 8% of the variance in PTSS as measured by total IES-R score, $F(3,$
 7 $106) = 3.054, p < .05$, however, the only significant predictor of IES-R score was resilience,
 8 $B = -.894, SE = .376, t(106) = -2.377, p < .05$. TEI was not significantly related to IES-R
 9 scores, $B = -.014, SE = .077, t(106) = -.179, p = .858$, and neither was the resilience x TEI
 10 interaction, $B = .002, SE = .015, t(106) = .151, p = .880$.

11 The simple slopes analysis revealed that at average levels of TEI, the relationship
 12 between resilience and total IES-R score was significant $B = -.894, SE = .376, t(106) = -$
 13 $2.377, p < .05$. At low and high levels of TEI, no significant effect was found, $B = -.942, SE$
 14 $= .509, t(106) = -1.851, p = .067$; and $B = -.847, SE = .471, t(106) = -1.799, p = .075$
 15 respectively, suggesting no moderation effect.

16 Moderation was employed to investigate the fifth research question; is higher
 17 empathy linked to higher PTSS only in the context of lower TEI. Whilst no significant
 18 correlation was found between empathy and IES-R score in the current study, MacKinnon,
 19 (2011) argued that the strength and nature of a relationship between variables can depend on
 20 a moderator variable, and that the effects of moderation can be found despite no significant
 21 correlation being found between an independent and dependent variable (Taylor, 2011).

22 The predictors in the moderation model explained a significant 8% of the variance in
 23 PTSS as measured by total IES-R score, $F(3, 106) = 2.919, p < .05$, however, the only

1 significant predictor of IES-R score was TEI, $B = -0.153$, $SE = .073$, $t(106) = -2.106$, $p < .05$.
2 Empathy was not significantly related to IES-R scores, $B = .640$, $SE = .399$, $t(106) = 1.602$, p
3 $= .112$, and neither was the empathy x TEI interaction, $B = -.029$, $SE = .018$, $t(106) = -1.660$,
4 $p = .100$.

5 Examination of the simple slopes revealed that at low levels of TEI, the relationship
6 between empathy and IES-R score was significant, $B = 1.258$, $SE = .505$, $t(106) = 2.490$, $p <$
7 $.05$, but not among those with average, $B = .640$, $SE = .399$, $t(106) = 1.602$, $p = .112$, or high
8 levels of TEI, $B = .022$, $SE = .584$, $t(106) = .037$, $p = .971$. This suggests that empathy only
9 increases risk of PTSS where TEI is low. A graphical representation of the simple slopes is
10 presented in Figure 1.

11 **Secondary analysis**

12 As resilience was the only significant predictor of IES-R scores, it was decided that
13 secondary analysis to explore factors associated with resilience was warranted. There was a
14 significant, positive, correlation between resilience and TEI, and between resilience and
15 perceived social support ($r = .347$, $n = 110$, $p < .001$). Significant, negative relationships were
16 found between resilience and empathy ($r = -.209$, $n = 110$, $p < .05$), need for support ($r = -$
17 $.213$, $n = 110$, $p < .05$), and AEE ($r = -.203$, $n = 110$, $p < .05$), indicating that as resilience
18 increased, empathy and need for support decreased. Higher resilience was also associated
19 with more positive AEE (low scores indicated more positive AEE).

20 Due to the strong, significant relationships between TEI and resilience, and resilience
21 and PTSS, a further multiple regression was conducted, exploring predictors of resilience.
22 TEI, empathy, perceived social support, need for support, and AEE were entered as
23 independent variables (see Table 5).

1 The overall regression was significant, $F(5, 104) = 15.729, p < .001$, explaining 40%
2 of the variance, $R^2 = .431, R^2 \text{ adjusted} = .403$. The analysis showed that TEI significantly
3 predicted resilience scores, $\beta = .532, p < .001$, as did empathy, $\beta = -.262, p < .001$, and need
4 for support, $\beta = -.173, p < .05$. Perceived social support was not a significant predictor, $\beta =$
5 $.096, p = .286$, nor was AEE, $\beta = -.047, p = .578$.

6 Resilience seemed important for the mental health of midwives, in that it appeared to
7 be a protective factor against PTSS. Considering that empathy had been found negatively
8 correlated to resilience, whilst TEI was positively correlated to resilience and empathy, a
9 further moderation analysis was conducted to examine whether higher empathy led to lower
10 resilience only in the context of low TEI. The predictors in the moderation model explained a
11 significant 40% of the variance in resilience, $F(3, 106) = 33.043, p < .001$. Both TEI, $B =$
12 $.142, SE = .016, t(106) = 9.123, p < .001$, and empathy, $B = -.367, SE = .091, t(106) = -4.037,$
13 $p < .001$, were significant predictors of resilience, however, the empathy x TEI interaction
14 was not significant, $B = .003, SE = .004, t(106) = .929, p = .355$. This suggests that empathy
15 and TEI impact upon resilience independently.

16 Examination of the simple slopes revealed that at low, average, and high levels of
17 TEI, the relationship between empathy and resilience was significant $B = -.436, SE = .098,$
18 $t(106) = -4.439, p < .001; B = -.367, SE = .091, t(106) = -4.037, p < .001; \text{ and } B = -.297, SE$
19 $= .134, t(106) = -2.215, p < .05$ respectively. Whilst TEI does not act as a moderator, the
20 negative relationship between empathy and resilience reduced as TEI increased.

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DISCUSSION

This study was the first to explore whether TEI may protect against PTSS in qualified midwives who have experienced a traumatic work-related perinatal event. Approximately one fifth of midwives reported potentially clinically significant PTSS.

Higher resilience and TEI were associated with lower PTSS, suggesting that resilience and TEI may be protective factors against PTSS. Higher TEI was also associated with more positive AEE, and higher empathy, perceived social support, and resilience.

When resilience and TEI were considered together, resilience remained the only significant predictor of PTSS. Consideration was given to the fact that midwives higher in resilience may be less likely to view events as traumatic, however, examination of the correlation matrix did not support this; midwives high in resilience experienced similar numbers of traumatic events to those with lower resilience, but appeared protected against PTSS. TEI did not appear to have any effect on relationships between resilience and PTSS, suggesting that resilience is a key factor for PTSS regardless of TEI levels.

Further investigation revealed that higher TEI, lower empathy, and less need for support, all predicted higher resilience. Results suggest that in addition to reducing risk of PTSS, increased resilience may result in reduced empathy. It is possible that the reduced risk of PTSS is linked to reduced empathy, which supports previous research finding that empathy increases risk of developing PTSS in health care professionals (Leinweber & Rowe, 2010; Sheen *et al.*, 2015). This is concerning, as reduced empathy in midwives has been linked to poor psychological outcomes in women (Priddis *et al.*, 2014; Thomson & Downe, 2008).

This finding is meaningful, as there is a current focus on supporting resilience in midwives. The current shortage of midwives is exacerbated by high attrition rates within the

1 first five years of qualification (Hunter & Warren, 2013), thus understanding what enables
2 midwives to remain in the profession seems key. Resilience has been described as the ability
3 to bounce back, or recover from adversity, by being able to adapt quickly, enabling the
4 individual to function as normal under stressful circumstances (Hunter & Warren, 2013;
5 Smith *et al.*, 2008). Whilst there is evidence that resilience can be a stable construct (Werner,
6 1993), some findings show that resilience fluctuates, and is influenced by both internal and
7 external factors (van Kessel, 2013).

8 It has been suggested that resilience is a result of personal attributes, such as
9 hardiness, together with social characteristics, including the organisational context (Hunter &
10 Warren, 2013; Luthar, Cicchetti, & Becker, 2000). Thus, it is important that employers strive
11 to improve working environments to help facilitate resilient midwives. In Hunter and
12 Warren's study, factors including social support, time to reflect, and a good work/life balance
13 were perceived by midwives as contributing to resilience. If these factors are absent,
14 midwives may possibly learn to adapt to adverse circumstances by developing hardiness
15 rather than hardiness, although further longitudinal research is needed to test this hypothesis.
16 Essentially it is possible that increased resilience may come with other associated costs.

17 Whilst protecting midwives against PTSS is important, it is also important that they
18 can retain a caring, empathic approach in their work, and the associations between TEI,
19 empathy, and resilience are interesting. Higher TEI was associated with higher empathy and
20 higher resilience, whilst higher resilience was associated with lower empathy. Investigation
21 of the simple slopes found that as TEI increased, the negative relationship between empathy
22 and resilience reduced. The association between TEI and empathy was small, possibly
23 explaining why a full moderation effect was not found.

1 Furthermore, the relationship between empathy and PTSS was significant only in the
2 context of low TEI. Thus, in line with hypotheses, TEI appears to act as a mechanism for
3 enabling midwives to remain both empathic and resilient against PTSS under stressful
4 circumstances. Indeed, self-awareness and self-efficacy were also identified as factors
5 promoting resilience in Hunter and Warren's (2013) study. In the current study, higher TEI
6 was associated with more positive AEE, and it may be that midwives with higher TEI feel
7 confident expressing their emotions to others, even when these are difficult. Understanding
8 one's emotions may mean certain midwives recognise when they are struggling, and are able
9 to use effective coping strategies to cope with adversity, such as support seeking.

10 **Clinical and service implications**

11 These results confirm midwives are at risk of work related PTSD. The fact that of the
12 47 midwives who had sought help for difficulties with stress or anxiety, 35 believed their
13 problems were midwifery related, is concerning. Forty one midwives had seriously
14 considered leaving the profession as a consequence, and 13 had taken sick leave. The
15 shortage of midwives in the UK is well known (Hunter & Warren, 2013; Royal College of
16 Midwives, 2017). Sick leave impacts on others' workloads, leaving them more vulnerable to
17 stress.

18 These findings reveal novel ways of thinking about supporting well-being for both
19 midwives and women. Increased resilience may protect against PTSS, but this could
20 sometimes be at a cost of reduced empathy. If interventions focus on increasing resilience
21 without considering TEI, this could adversely impact upon the provision of empathic care,
22 which is crucial for women's experience of birth and postpartum mental health (Bell &
23 Andersson, 2016; NHS England, 2016).

1 TEI can be enhanced via interventions (Nelis *et al.*, 2009; Nooryan *et al.*, 2011;
2 Schutte, Malouff, & Thorsteinsson, 2013), and attention could be given to both increasing
3 TEI, and considering it when recruiting students to midwifery. An eleven-week EI
4 intervention for undergraduates found significant increases in emotional self-efficacy, a
5 subcomponent of TEI (Pool & Qualter, 2012). Nooryan and colleagues developed a five-
6 week TEI training programme, and found significant increases in TEI scores for nurses and
7 physicians. Both of these interventions covered approximately 20 hours.

8 Traumatic perinatal events are not the sole cause of distress for midwives, and
9 organisations can support resilience by creating positive working environments. Thirty two
10 midwives in this study who reported visiting their GP because of stress or anxiety provided
11 qualitative information about this, with 13 comments made about lack of support, workplace
12 bullying, and excessive workloads. It will help midwives and childbearing women if
13 midwifery leaders strive to create supportive, caring cultures in their workplaces.

14 A shortage of midwifery staff has been reported worldwide, leading to a range of
15 adverse consequences for both midwives and child-bearing women (Health Workforce
16 Australia, 2012; Shetty, 2013; United Nations Population Fund, 2014). This research has
17 international relevance, as understanding more about factors that promote well-being may
18 lead to midwives feeling confident, supported, and satisfied in their roles, thus reducing
19 attrition.

20 **Future research**

21 Multisite, longitudinal studies would be useful to determine causality. This would
22 enable conclusions to be drawn about whether higher TEI protects against PTSS by
23 increasing resilience, whilst also enabling midwives to stay empathic. The efficacy of EI

1 interventions in reducing PTSS in midwives, thus improving outcomes for midwives and
2 child-bearing women, also needs to be determined.

3 **Limitations**

4 Whilst widely used, the IES-R is not used to formally diagnose PTSD, and has lower
5 specificity (.77) (Rash, Coffey, Baschnagel, Drobles, & Saladin, 2008) than the PSS-SR (.84)
6 (Sin, Abdin, & Lee, 2012). Thus, overestimation of PTSS is possible. The regression model
7 for predictors of IES-R score showed limited predictive capacity, and other factors should be
8 considered.

9 The overall response rate of 15% was relatively low, but in line with other midwifery
10 studies of PTSD (Leinweber, *et al.*, 2017; Sheen *et al.*, 2015). There is potential for selection
11 bias as details of non-responders were not obtained. The study was cross-sectional, meaning
12 that causality cannot be inferred.

13 **CONCLUSION**

14 This study is the first known to explore how TEI may be relevant for the well-being of
15 midwives, and found that a concerning number of midwives may be experiencing clinically
16 significant PTSS. TEI may play an important role in protecting against PTSS, by increasing
17 resilience, whilst also enabling midwives to remain empathic in their care. These findings are
18 important considering the recruitment and retention difficulties faced by the midwifery
19 profession globally.

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1 **Acknowledgements**

2 The authors would like to thank the midwives who provided their time to participate
3 in this study, and to those who aided in the development of the study.

4 **Conflict of interest**

5 No conflict of interest has been declared by the authors.

6 **Funding**

7 This research did not receive any specific grant from funding agencies in the public,
8 commercial, or not-for-profit sectors.

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