

# Perceptions of the impact a military career has on children

S. L. Rowe<sup>1,\*</sup>, M. Keeling<sup>2,\*</sup>, S. Wessely<sup>2,3</sup> and N. T. Fear<sup>2,3</sup>

<sup>1</sup>Health Service and Population Research, King's College London, David Goldberg Centre, De Crespigny Park, London SE5 8AF, UK, <sup>2</sup>King's Centre for Military Health Research, King's College London, London SE5 9RJ, UK, <sup>3</sup>Academic Centre for Defence Mental Health, King's College London, London SE5 9RJ, UK.

\*Joint first authors.

Correspondence to: S. L. Rowe, Health Service and Population Research, King's College London, David Goldberg Building, De Crespigny Park, London SE5 8AF, UK. Tel: +44 (0)20 3228 0669; fax: +44 (0)27 277 1462; e-mail: sarah.rowe@kcl.ac.uk

<b>Background</b>	The perceived effects of a military career on service personnel's children have been largely overlooked.
<b>Aims</b>	To examine the views of military personnel about the impact their career has on their children in relation to socio-demographic variables, military characteristics and mental health symptoms.
<b>Methods</b>	Service personnel (regular and reserve) with one or more children (<18 years) were included. Data were taken from a large UK military cohort study completed between 2007 and 2009. Participants were asked to report whether they viewed their military career as having a positive, negative or no impact on their children.
<b>Results</b>	There were 3198 participants. Just over half (51%) of service personnel perceived their military career as having a negative impact on their children. Not being in a relationship (multinomial odds ratio 2.65, 95% CI 1.81–3.88), deployment for 13 months or more within a 3 year period (1.85, 1.31–2.62), symptoms of common mental health disorder (2.21, 1.65–2.96) and probable post-traumatic stress disorder (3.26, 1.39–7.66) were associated with perceiving military career as affecting children negatively. Reserves were less likely than regulars (0.37, 0.27–0.51) and other ranks were less likely than non-commissioned officers (0.67, 0.46–0.98) to report negative effects of their military career on their children.
<b>Conclusions</b>	Contrary to previous research findings, regulars were more likely to report a negative impact, reflecting this study's focus on the wider military context, rather than just deployment. These findings are consistent with existing research showing links between deployment length and negative impact.
<b>Key words</b>	Career; children; impact; military; service personnel.

## Introduction

The health and well-being of military families has become of interest in recent years as the frequency and intensity of conflicts, such as those in Iraq and Afghanistan, has increased. A military career in which 'one person joins but the whole family serves' [1], creates unique challenges and stressors for children of military personnel, such as recurrent separations, frequent relocations, the threat of injury or death of a parent and disruptions to schooling, social networks and activities [1]. Parental views on the impact of these stressors on their children have been largely overlooked.

The literature examining the perceived impact of military stressors on children suggests service personnel tend to believe there is a negative effect [2,3]. Approximately a third of soldiers rated their adolescent children as having higher levels of stress during a current deployment

if they had experienced several previous deployments [2]. Service personnel's opinions of their children's well-being were related to their own experience of their current deployment [3]. Therefore, if deployed personnel believed their family was coping well at home, they were more likely to report their deployment was going well.

Psychosocial, emotional and behavioural problems may occur in children of a deployed parent [4]. Three family characteristics have been identified as predisposing children to negative outcomes as a result of parental deployment: families of reserve personnel, young and inexperienced families and families with multiple stressors, for example, turbulent family relationships, pregnancy and illness [5]. However, a military career can have a positive impact on the functioning and well-being

of children of military personnel. Such children have similar or lower rates of psychopathology, less juvenile delinquency, less risky behaviour, better grades, greater self-control and higher median IQs than children of civilians [1]. Childhood resilience may be the result of positive factors associated with having a parent in the military such as financial security, health care, subsidized education, quality of living and enhanced social networks [6].

Parental deployment has been identified as a factor that may potentially affect the well-being and functioning of children in military families. However, little research has examined parental attitudes associated with the impact of a military career on children. This study had the following three aims: (i) to describe the level of impact military personnel expect their careers to have on their children; (ii) to examine socio-demographic and military characteristics associated with this impact and (iii) to examine the role of military personnel's mental health in their perceptions of the impact a military career has on children.

## Methods

The King's Centre for Military Health Research (KCMHR) has completed a cohort study of a representative sample of the UK Armed Forces comprising two phases [7,8]. The study received full ethical approval from both the MoD Research Ethics Committee and the King's College Hospital Research Ethics Committee. Phase 1 compared UK Armed Forces personnel deployed to Iraq between 18 January and 28 April 2003 with serving personnel who were not deployed to Iraq at this time. Sampling was stratified by service (Naval services [Royal Navy and Royal Marines], Army or Royal Air Force [RAF]) and engagement type (regular or reserve, i.e. voluntary part time personnel who [may] also have civilian jobs) to ensure a representative sample of the UK Armed Forces. Reservists were over-sampled by 2:1. Data for this phase were collected between June 2004 and March 2006. The overall response rate was 59% [8], with non-response mainly due to difficulties contacting military personnel, who form a highly mobile occupational group, often moving around for training and deployments or as a result of being posted to new locations [9]. There was no evidence of response bias in terms of health outcomes or fitness for deployment [10].

Participants from phase 1 were asked to participate in phase 2, which included two additional samples: an Afghanistan sample, recruited to represent the UK's expanding involvement in Afghanistan and a 'replenishment sample' to represent those joining the military since phase 1. Phase 2 data were collected between November 2007 and September 2009. Data were collected via self-completion questionnaires sent to potential participants. The response rate for phase 2 was 56% [7]. We compared the characteristics of our overall sample with the composition of the UK military at April 2007 to ensure

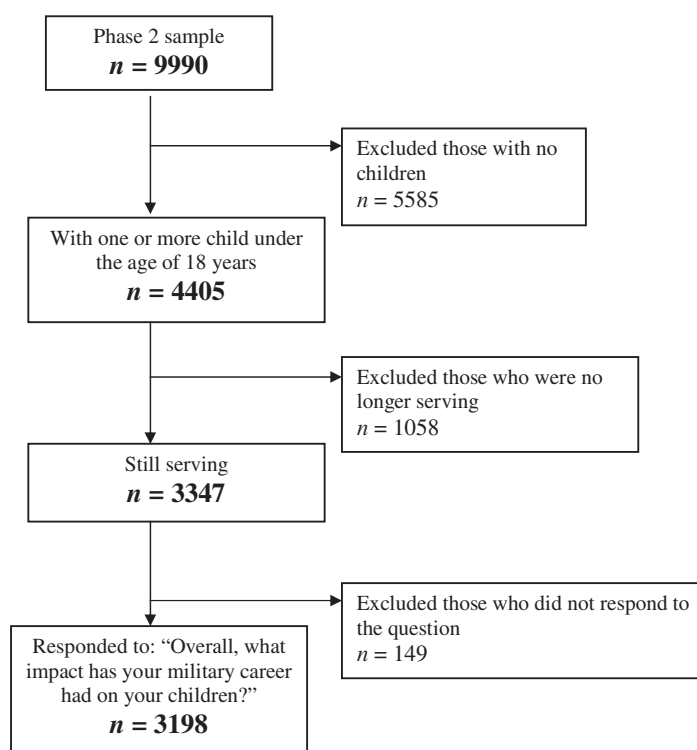
that the demographic characteristics of our cohort were representative. The distribution of age, sex, rank and engagement type was similar, the only exception being service (data not shown). Our sample had proportionally more army personnel (67%) than did the UK military in 2007 (56%), possibly because it included those most likely to be deployed on operations.

The main outcome measure was the perceived impact of a military career on children. This was measured on a three-point scale (positive, negative or no impact, plus a not applicable option).

Childhood adversity was assessed by two measures [11], both adapted from the Adverse Childhood Experience study scale [12]. The first assessed childhood family relationship adversity, comprising four positive items, which were reverse scored (e.g. 'I came from a close family') and four negative items (e.g. 'I used to be hit/hurt by a parent or caregiver regularly' [11]). These eight items were summed to form a cumulative measure and analysed as 0, 1 and 2+ adversities. The second measure assessed childhood antisocial behaviour. Items were scored positively if participants answered 'true' to 'I used to get into physical fights at school' plus one of the following; 'I often used to play truant at school', 'I was suspended or expelled from school' or 'I did things that should have got me (or did get me) into trouble with the police' [13].

Other explanatory variables included service (Naval services, Army, RAF), rank (officer, non-commissioned officer [NCO], other rank), engagement type (regular or reserve), deployment (deployed or not deployed to Iraq and/or Afghanistan), length of deployment within the last 3 years (<13 months or >13 months, a cut-off that was used with reference to the Harmony Guidelines) [14], relationship status (in a relationship; not in a relationship [including those who were divorced, separated or widowed]) and total number of children (under 18 years of age; 1, 2 or 3+). The 12-item General Health Questionnaire (GHQ-12) [15] was used as a measure of common mental health symptoms. This tool assesses aspects of anxiety and depression, social dysfunction and loss of confidence. Responses to the 12 items were scored 0 or 1 and then summed, giving a total score ranging from 0 to 12. Individuals with a score of four or more were classified as reporting symptoms of common mental disorder [15]. Probable post-traumatic stress disorder (PTSD) was assessed using the 17-item PTSD Checklist-Civilian version (PCL-C) [16]. Responses to the 17 items result in a score from 17 to 85, with probable PTSD defined as a score of 50 or more [16].

Only participants from phase 2 of the cohort study who had children and were still serving at the time of questionnaire completion were included (Figure 1). Those who had left service were excluded as it was not possible to confirm if they had their children whilst serving or since they had left service, so the reported impact of their military career on their children may not have been a result of their military service.



**Figure 1.** Summary of sample included in these analyses.

Sample weights were created to account for the sampling strategies used at both phases. The weights reflected the inverse probability of a participant from a specific subpopulation and specific engagement type (either regular or reserve status) being sampled. Response weights were also created to account for non-response. Based on the assumption that the data are missing at random and that the observed variables modelled to drive non-response were correctly identified, the weighted analyses provided valid results. A combined weight was generated by multiplying the sample and response weights.

Unadjusted multinomial regression analyses were conducted to calculate unadjusted multinomial odds ratios (MORs) for the associations between perceived impact of military career on children and all explanatory variables. The factors shown to be significantly associated with perceived impact of military career on children from the unadjusted MORs were put into a multivariable multinomial regression model. Variables that were not significantly associated with the outcome variable were tested, using a Wald test [17], for their contribution to the full multivariable model. Those variables that did not contribute to the model were removed.

Mental health outcomes and perceived impact of military career on children were assessed after the full multivariable model had been built. Symptoms of common mental disorders (GHQ-12) and probable PTSD (PCL-C) were investigated separately.

Analyses were conducted in STATA 11.0 [18]. All the analyses presented here used the survey command and

weighted means. Percentages and MORs are presented with unweighted cell counts.

## Results

The majority of the sample ( $n = 3198$ ) were male (95%), married or in a long-term relationship or cohabiting with their partner (90%), regulars (93%) and NCOs (68%). Two-thirds of participants were serving in the Army (66%), with 18% in the RAF and the remaining 16% in the Naval services. The mean age of this sample was 37 (SD 7.0) and the mean number of children was 1.7 (SD 0.71). The characteristics of this sample are comparable to those of the full sample ( $N = 9990$ ) [7]. Half (51%) of those with children reported perceiving their military career as having a negative impact on them, whereas 20% reported a positive impact and 29% reported no impact (Table 1). Unadjusted (MORs) showed that age, service, childhood family relationship adversity, rank, engagement type, deployment, being deployed for >13 months in 3 years, relationship status and number of children were significantly associated with a perceived impact of a military career on children (Table 1).

A significant predictive model of perceived impact on children was found to include age, childhood family relationship adversity, rank, engagement type, deploying for >13 months in 3 years, relationship status and number of children (Table 2).

The perception that a military career had a negative impact on their children was associated with having experienced childhood family relationship adversity,

**Table 1.** Response distribution (*n* and %) and MORs (with 95% confidence intervals [CIs]) for socio-demographic and military characteristics associated with perceptions of the impact of a military on children (*n* = 3198)

Demographics	Impact of military career on children				
	No impact	Positive impact		Negative impact	
	<i>n</i> (%)	<i>n</i> (%)	MOR (95% CI)	<i>n</i> (%)	MOR (95% CI)
Total	944 (29)	651 (20)	–	1603 (51)	
Age at questionnaire completion (years) <sup>a</sup>	36.6 (36.1–37.0)	38.1 (37.5–38.7)	1.03 (1.00–1.05)**	36.3 (35.9–36.6)	0.99 (0.98–1.01)
Gender					
Male	889 (29)	611 (20)		1515 (52)	
Female	55 (30)	40 (19)	0.92 (0.56–1.52)	88 (51)	0.95 (0.63–1.41)
Education					
No qualifications	71 (35)	43 (19)	0.81 (0.51–1.30)	99 (46)	0.72 (0.49–1.05)
GCSEs/A-levels	643 (28)	435 (19)		1104 (52)	
Degree or higher	186 (28)	138 (21)	1.11 (0.83–1.49)	333 (52)	1.01 (0.79–1.21)
Childhood family relationship adversity					
0	424 (30)	290 (22)		636 (48)	
1	191 (30)	122 (21)	0.97 (0.70–1.33)	300 (49)	1.02 (0.79–1.32)
2+	303 (26)	219 (17)	0.92 (0.70–1.21)	623 (57)	1.35 (1.09–1.68)**
Childhood antisocial behaviour					
No	788 (30)	535 (20)		1266 (51)	
Yes	148 (25)	111 (20)	1.17 (0.86–1.61)	321 (54)	1.25 (0.97–1.60)
Service					
Naval services	125 (26)	70 (15)	0.83 (0.58–1.20)	277 (59)	1.33 (1.02–1.74)*
Army	631 (29)	462 (21)		1023 (50)	
RAF	188 (29)	119 (20)	0.94 (0.69–1.28)	303 (51)	1.03 (0.81–1.31)
Rank					
Officer	220 (28)	186 (22)	1.17 (0.89–1.54)	397 (50)	0.97 (0.77–1.19)
NCO	605 (28)	391 (19)		1060 (53)	
Other rank	119 (34)	74 (22)	0.98 (0.67–1.44)	146 (44)	0.68 (0.50–0.94)*
Engagement type					
Regular	771 (27)	549 (20)		1475 (53)	
Reserve	173 (47)	102 (22)	0.65 (0.47–0.89)**	128 (31)	0.34 (0.25–0.46)***
Deployment					
Not deployed	444 (30)	297 (21)		637 (49)	
Deployed	500 (27)	354 (19)	1.03 (0.81–1.30)	966 (53)	1.21 (1.00–1.46)*
Time deployed in last 3 years					
<13 months	837 (29)	588 (21)		1341 (49)	
13+ months	71 (21)	37 (11)	0.75 (0.46–1.22)	198 (68)	1.91 (1.37–2.67)***
Relationship status					
In relationship	881 (29)	594 (20)		1410 (50)	
Not in a relationship	63 (18)	57 (16)	1.32 (0.84–2.09)	193 (66)	2.19 (1.54–3.14)***
Total number of children					
1	470 (34)	250 (19)		605 (47)	
2	349 (25)	288 (21)	1.47 (1.13–1.89)**	718 (54)	1.56 (1.27–1.91)***
3+	125 (24)	113 (19)	1.41 (0.99–2.11)	280 (57)	1.71 (1.28–2.68)***
Number of children (linear)	–	–	1.25 (1.06–1.48)**	–	1.63 (1.19–1.56)***

No impact is used as reference category for all MOR analyses; percentages and MORs are weighted.

<sup>a</sup>Mean and 95% CIs.

\**P* < 0.05; \*\**P* < 0.01; \*\*\**P* < 0.001.

being an NCO rather than other ranks, deploying for >13 months in 3 years, not being in a relationship, having two or more children compared to having one and being a regular. Having two or more children was associated with reporting both positive and negative impacts

of a military career on children, whereas the association with positive impact for those with three or more children was not significant. A linear trend for total number of children was investigated with evidence of a linear trend for associations with both positive (*P* < 0.05) and

**Table 2.** Adjusted<sup>a</sup> MOR and 95% confidence intervals for socio-demographic and military characteristics associated with perceived impact of military careers on children

Demographics	Impact of military career on children	
	Positive impact	Negative impact
Age (at questionnaire completion)	1.03 (1.01–1.06)**	0.99 (0.97–1.01)
Childhood family relationship adversity		
0		
1	0.97 (0.70–1.35)	1.01 (0.77–1.32)
2+	0.94 (0.71–1.25)	1.30 (1.04–1.63)*
Rank		
Officer	0.95 (0.70–1.28)	1.15 (0.90–1.49)
NCO		
Other ranks	1.34 (0.84–2.13)	0.67 (0.46–0.98)*
Engagement type		
Regular		
Reserve	0.51 (0.35–0.74)***	0.37 (0.27–0.51)***
Time deployed in last 3 years		
<13 months		
13+ months	0.80 (0.48–1.33)	1.85 (1.31–2.62)***
Relationship status		
In a relationship		
Not in a relationship	1.48 (0.91–2.40)	2.65 (1.81–3.88)***
Total number of children*		
1		
2	1.41 (1.08–1.85)*	1.63 (1.31–2.03)***
3+	1.44 (0.99–2.09)	1.92 (1.41–2.63)***
Number of children (linear)	1.25 (1.05–1.49)*	1.44 (1.24–1.67)***

No impact is used as reference category for all analyses; MORs are weighted: A total of 2991 cases were analysed and the full model was significantly reliable ( $F(20,2971) = 7.31$ ,  $df = 2990$ ,  $P = <0.0001$ ).

<sup>a</sup>MOR adjusted for all variables in the table (total number of children used in the model). In building an appropriately adjusted regression model, deployment did not significantly contribute to the model and was not included in the final model.

\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

negative ( $P < 0.001$ ) impacts. Subjects' perception that a military career had a negative impact on their children was associated with them also reporting symptoms of common mental disorder and probable PTSD (Table 3).

## Discussion

In this study of UK service personnel, around half of the subjects perceived their military career to have a negative impact on their children. Experiencing symptoms of common mental health disorders, probable PTSD, not being in a relationship, being a regular and being an NCO, were associated with a more negative view of the impact of a military career on children. Subjects with two or more children perceived both positive and negative effects on military children. Deploying for 13 months or more in a 3 year period, rather than deployment itself,

was associated with a perceived negative impact on military children.

This study had a good sample size and was representative of the UK Armed Forces, making the results more widely applicable. As it was cross-sectional, the direction of causality is unknown and data were from self-report questionnaires. Our main question asked about the overall impact of a military career on children rather than the specific impact on each child. It may be that the degree of impact varies for individual children based on age or gender. Finally, these results concern the perspective of the military personnel only, not those of spouses or children. Previous research [2,3] suggests service personnel's views differ from those of mothers and children and consequently gathering data from all of these sources would permit a more extensive and accurate assessment.

Our finding that personnel with two or more children perceived both positive and negative impacts on their children is consistent with the literature in civilian populations [19]. Greater family size may affect children's educational performance adversely [19] and increase the risk of child abuse or neglect [20]. However, siblings may influence child development positively by encouraging language, psychosocial behaviour and cognitive development [21].

Childhood family adversity did not remain significant in our results once general mental health symptoms had been put into the model. It may be that the experience of childhood adversity has resulted in poorer general mental health in service personnel. Childhood adversity has been associated with poorer psychological health and alcohol misuse in both the general population [22] and military populations [11]. Previous research has shown that parents with poorer mental health report increased child behavioural problems [5,23].

Regulars perceived a negative impact on their children, a different finding from some studies suggesting reserve families may be more at risk of negative outcomes [5]. Many regular families become highly adaptable to change and adopt active coping strategies and have strong support networks that may buffer the stress of deployment on families [24]. In contrast, reserve families may be less embedded in military culture and they may not have ready access to military services or support, thus feeling greater social isolation [5]. These findings are largely obtained within a deployment period, whereas our study asks about overall military career. Our findings may be the result of cumulative separations and the constant impingement of a military career on family life.

Literature examining the effect of deployment on children's health and well-being has largely investigated deployment as a whole rather than deployment length [4]. Extended deployments may adversely affect physical and psychological health, family and marital stability and retention [14,25,26]. Long deployments may result in challenges in child care, financial stress, increased mental health problems and a lack of support for spouses of

**Table 3.** Response distribution (% and *n*) and adjusted MORs (with 95% confidence intervals [CIs]) for mental health caseness (GHQ-12 and PCL) associations with perceived impact of military career on children (*n* = 3198)

Demographics	Impact of military career on children				
	No impact		Positive impact		Negative impact
	<i>n</i> (%)	<i>n</i> (%)	MOR <sup>a</sup> (95% CI)	<i>n</i> (%)	MOR <sup>a</sup> (95% CI)
Symptoms of common mental disorder					
No	826 (31)	550 (21)		1208 (48)	
Yes	110 (18)	95 (15)	1.35 (0.93–1.95)	380 (66)	2.21 (1.65–2.96)***
Probable PTSD					
No	925 (29)	630 (20)		1529 (51)	
Yes	14 (14)	16 (17)	2.42 (0.87–6.68)	64 (69)	3.26 (1.39–7.66)**

No impact is used as reference category for all analyses; MORs and percentages are weighted: the ‘symptoms of common mental disorder’ model includes 2967 cases and the full model was significantly reliable ( $F(22,2945) = 7.48, df = 2966, P < 0.001$ ); the ‘probable PTSD’ model includes 2976 cases and the full model was significantly reliable ( $F(22, 2954) = 6.93, df = 2975, P < 0.001$ ).

<sup>a</sup>MOR adjusted for age, childhood family relationship adversity, rank, engagement type, deploying for >13 months in 3 years, relationship status and number of children.

\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

military personnel [25]. In 2005 the tri-service Harmony Guidelines were issued, stating that within the UK Army deployment should last, on average, for 6 months followed by a period of 24 months without deployment. Hence personnel should not be deployed for >13 months in every 36 month period [14]. A review by Buckman *et al.* [25] suggests that longer deployment length can be detrimental for the health and well-being both of service personnel and of their families. These findings are supported by the views of service personnel in our study; of the small group that deployed for 13 months or more in a 36 month period, longer deployment length was associated with perceiving military service as having a negative impact on children.

Our research indicates that NCOs are more likely than other ranks to perceive their military career as having a negative impact on their children. Previous studies show NCOs have an intermediate to high risk of experiencing psychological symptoms compared with commissioned officers [27] and are more likely to find aspects of service unrewarding [28]. As stated previously, research suggests parents with poorer mental health report increased child behavioural problems [5,23].

The findings of this study support a growing literature [25,26] that suggests longer deployments may result in a perceived negative impact on military children. Ensuring personnel do not deploy for longer than 13 months cumulatively within a 36 month period may reduce the number of psychological issues and risk of alcohol misuse experienced by service personnel [26]. As a result, this may lessen problems experienced within the family post-deployment.

A final implication of this study is the changing face of the UK military, in which reserves are having a bigger role in day-to-day life [29]. Although this study suggests regulars and NCOs have a more pessimistic view of the impact of their military career on their children, reserves are generally considered at greater risk of psychological issues [29], which may later affect the family unit.

The results of this study suggest that just over half of this sample of UK service personnel perceived their military career as having a negative impact on their children. Personnel who reported a negative impact were more likely to have experienced common mental health disorders (including PTSD) and have deployed for longer than 13 months within a 3 year period. Adhering to the Harmony Guidelines may be important not only for the service personnel themselves but also for the health and well-being of their family unit.

### Key points

- Research to date on military children suggests that parental deployment affects children’s well-being and functioning; this study of the perceived impact of a military career on children adds to our knowledge by considering the wider military experience (rather than deployment alone) and exploring parental perceptions of impact rather than other measures of outcomes in children.
- Perceiving a negative impact of a military career on children was associated with a range of parental characteristics, namely not being in a relationship and reporting symptoms of common mental health disorder or probable post-traumatic stress disorder, and of military characteristics, namely being a regular, a non-commissioned officer and having deployed for >13 months in the last 3 years.
- This research provides evidence supporting adherence to UK Ministry of Defence Harmony Guidelines for upper limits to the length of operational deployments, to help maintain the health and well-being not only of serving personnel but also of their families.

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## Conflicts of interest

S.W. is Honorary Civilian Consultant Advisor in Psychiatry to the British Army and a Trustee of Combat Stress, a UK charity that provides services and support for veterans with mental health problems. All other authors declare no competing conflict of interest.

## References

- Park N. Military children and families: strengths and challenges during peace and war. *Am Psychol* 2011;**66**: 65–72.
- Wong L, Gerras S. *The Effects of Multiple Deployments on Army Adolescents*. <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=962> (2 July 2013, date last accessed).
- Andres MD, Moelker R. There and back again: how parental experiences affect children's adjustments in the course of military deployments. *Armed Forces Soc* 2010;**37**:418–447.
- White CJ, de Burgh HT, Fear NT, Iversen AC. The impact of deployment to Iraq or Afghanistan on military children: a review of the literature. *Int Rev Psychiatry* 2011;**23**:210–217.
- Coulthard J. The impact of deployment on the well-being of military children: a preliminary review. *Res Militaris* 2011;**1**:1–29.
- Palmer C. A theory of risk and resilience factors in military families. *Milit Psychol* 2008;**20**:205–217.
- Fear NT, Jones M, Murphy D *et al*. What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study. *Lancet* 2010;**375**:1783–1797.
- Hotopf M, Hull L, Fear NT *et al*. The health of UK military personnel who deployed to the 2003 Iraq war: a cohort study. *Lancet* 2006;**367**:1731–1740.
- Iversen A, Liddell K, Fear N, Hotopf M, Wessely S. Consent, confidentiality, and the Data Protection Act. *Br Med J* 2006;**332**:165–169.
- Tate AR, Jones M, Hull L *et al*. How many mailouts? Could attempts to increase the response rate in the Iraq war cohort study be counterproductive? *BMC Med Res Methodol* 2007;**7**:51.
- Iversen AC, Fear NT, Simonoff E *et al*. Influence of childhood adversity on health among male UK military personnel. *Br J Psychiatry* 2007;**191**:506–511.
- Felitti VJ, Anda RF, Nordenberg D *et al*. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med* 1998;**14**:245–258.
- MacManus D, Dean K, Jones M *et al*. Violent offending by UK veterans—Authors' reply. *Lancet* 2013;**381**:2252.
- NAO. *Recruitment and Retention in the Armed Forces*. HC 1633-I, Session 2005–06, ed. R.b.t.C.a.A. general. Norwich: The Stationery Office, 2006.
- Goldberg DP, Gater R, Sartorius N *et al*. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med* 1997;**27**:191–197.
- Weathers FW, Litz BT, Herman DS, Huska JA, Keane TM. *The PTSD Checklist—Civilian Version (PCL-C)*. Boston: National Centre for PTSD, 1994.
- Agresti, A., *An Introduction to Categorical Data Analysis*. New York: John Wiley and Sons Inc., 1996.
- StataCorp. *Stata Statistical Software: Release 11*. Texas: Stata Corporation, 2009.
- Black SE, Devereux PJ, Salvanes KG. The more the merrier? The effect of family size and birth order on children's education. *Q J Econ* 2005;**120**:669–700.
- Zuravin SJ. Unplanned childbearing and family size: their relationship to child neglect and abuse. *Fam Plann Perspect* 1991;**23**:155–161.
- Brody GH. Siblings' direct and indirect contributions to child development. *Curr Dir Psychol Sci* 2004;**13**:124–126.
- Molnar BE, Buka SL, Kessler RC. Child sexual abuse and subsequent psychopathology: results from the National Comorbidity Survey. *Am J Public Health* 2001;**91**:753–760.
- Chandra A, Martin LT, Hawkins SA, Richardson A. The impact of parental deployment on child social and emotional functioning: perspectives of school staff. *J Adolesc Health* 2010;**46**:218–223.
- Wiens TW, Boss P. Maintaining family resiliency before, during, and after military separation. In: Castro CA, Adler AB, Britt TW, eds. *Military Life: The Psychology of Serving in Peace and Combat (Vol. 3): The Military Life*. Westport, CT: Praeger Security International, 2006; 13–38.
- Buckman JE, Sundin J, Greene T *et al*. The impact of deployment length on the health and well-being of military personnel: a systematic review of the literature. *Occup Environ Med* 2011;**68**:69–76.
- Rona RJ, Fear NT, Hull L *et al*. Mental health consequences of overstretch in the UK armed forces: first phase of a cohort study. *Br Med J* 2007;**335**:603.
- Fear NT, Rubin GJ, Hatch S *et al*. Job strain, rank, and mental health in the UK Armed Forces. *Int J Occup Environ Health* 2009;**15**:291–298.
- Sundin J, Fear NT, Hull L *et al*. Rewarding and unrewarding aspects of deployment to Iraq and its association with psychological health in UK military personnel. *Int Arch Occup Environ Health* 2010;**83**:653–663.
- Browne T, Hull L, Horn O *et al*. Explanations for the increase in mental health problems in UK reserve forces who have served in Iraq. *Br J Psychiatry* 2007;**190**:484–489.