

ForcesWatch

The Last Ambush?

**Aspects of mental health
in the British armed forces**

ForcesWatch

ForcesWatch scrutinises armed forces recruitment and proposes changes in policy that we believe will better serve the interests of young people. We raise public awareness of the issues and seek to hold the armed forces to account on their recruitment practices, especially those aimed at the youngest and most disadvantaged groups.

October 2013.

Published by ForcesWatch (forceswatch.net).

This report may be copied and distributed freely.

Clarifications and corrections from interested parties are welcome via office@forceswatch.net.

Citation: Gee, D. (2013). *The Last Ambush? Aspects of mental health in the British armed forces* (London: ForcesWatch).

Vince Bramley was a machine-gunner with 3 Parachute Regiment at the night-time battle of Mount Longdon in the Falklands War. He describes it as ‘combat at very close quarters, hand to hand, eye to eye, very bloody stuff’ and recalls the scene at the top of the mountain after the battle in the early hours of the morning:

‘It wasn’t until daylight, when I ran into the bowl on the summit and saw the number of dead people there, including my own friends and colleagues, that the shock hit me. Nobody touched me, but it was as if somebody had punched me in the stomach. And I just went into a state of shock. ...

‘I remember looking around at some of my friends who had survived as well and were in this bowl, and I hadn’t realised until then that I wasn’t the only one crying. And there were Argentines who had been taken prisoner, and they were crying as well. I think all of us were shocked at the extent of what we’d done to each other. And then you begin to realise you’re not the rough, tough British paratrooper that the programme of training had made you out to be. You realise you’re human, and you have human feelings, and that the men beside you are no different.’^a

CONTENTS

Executive summary	1
Introduction	5
The wounded self: How and why do some veterans experience mental health problems?	8
Measuring the unmeasurable? Limitations of mental health research in military groups.....	12
Taking the temperature: Six indicators of mental health in military groups	18
Before: The role of adolescent maturity and childhood adversity	26
During: The role of military culture, structures and operations.....	30
After: The role of social and structural support after leaving the armed forces	39
Summary	43
Conclusion.....	49
Appendix I: Tables and figures	52
Appendix II: Sourcing and use of the studies	59
Acknowledgements and endnotes.....	64
Bibliography	69

EXECUTIVE SUMMARY

This report investigates some of the main mental health effects of a career in the British armed forces during the last decade. It explores how widespread these effects are, whom they affect most, and why. It finds that harmful levels of drinking, as well as violent behaviour after deployment, are serious problems in the armed forces. Compared with the general population and with current personnel, former personnel are markedly more affected by post-traumatic stress disorder, harmful drinking, common mental disorders (types of anxiety and depression), and self-harming behaviour. Pre-enlistment adversity, exposure to warfare at close quarters, and loss of social support after leaving the forces are among the most potent risk factors. While many people in the armed forces have good mental health, some face substantially greater risks than others. The youngest recruits from socio-economically disadvantaged backgrounds are the group most at risk.

Measuring mental health in the armed forces

Research of mental health in military groups has developed appreciably since the Vietnam War but the problems of accurately defining and reliably measuring the mental health effects of an armed forces career have yet to be addressed satisfactorily. The limitations of research methods lead to substantial under-reporting of psychological ill-health in military groups. Narrow definitions of mental health problems, the common absence of anonymity for participants in studies, and the unpredictability and complexity of veterans' reactions to traumatic stress, are all significant limitations on the reliability and validity of the available evidence base. Despite this, research contributes important insights into which groups within a military population are most affected and why. [See page 12.]

Most of the quantitative research in the UK is directly funded by the Ministry of Defence, which has increased its contribution to this work in the last decade. This development, while welcome, also constrains the scope of the research: the Ministry of Defence is able to determine, through funding decisions, which research questions are investigated. [See page 16.]

Noting these limitations, this report draws on the available research of six indicators of mental health pathology in order to investigate the relative risks for different groups within the armed forces and with comparison to the general population. These indicators are: post-traumatic stress disorder (PTSD), common mental disorders (types of depression and anxiety), alcohol misuse ('harmful' levels of drinking), violent behaviour after deployment, self-harm, and suicide. [See page 18.] The evidence base is comprised of 41 quantitative British studies that have researched relevant aspects of the six mental health-related outcomes discussed in this report.⁽¹⁻⁴¹⁾ These sources are supplemented by the findings of 10 US quantitative studies⁽⁴²⁻⁵¹⁾ and around 100 further published sources, as well as informal interviews with veterans. [See page 59.]

Prevalence

Although not all veterans are severely affected, a military career carries significant mental health risks, particularly at times of war when substantial numbers of psychiatric casualties are usual. Research from the last decade shows that certain mental health-related problems in the armed forces, particularly harmful alcohol use and post-deployment violent behaviour, are a serious problem. Those who have left the forces during the last decade show markedly higher rates of a number of mental health-related problems, particularly PTSD and harmful levels of drinking.

In the armed forces, harmful drinking has been found to be more than **twice** as common as in the general population (**13.0%** vs. **5.4%**); the problem is more common among deployed than non-deployed personnel. Studies have found the prevalence of PTSD among personnel deployed to Iraq and/or Afghanistan to be about **20% higher** than in the general population (**3.2%** vs. **2.7%**), whereas among those not yet deployed it was found to be **about the same** (**2.8%** vs. **2.7%**). The rate of common mental disorders in the armed forces as a whole has been shown to be about **30% higher** than in the general population (**19.7%** vs. **15.0%**), but the prevalence of self-reported self-harm has been approximately **50% lower** (**4.2%** vs. **8.0%**), as has the long-term incidence of suicide. [For sources and detail, see page 18 and also Figure 4 on page 25].

Among personnel who have left the forces in the last decade, the prevalence of PTSD, alcohol misuse, common mental disorders and self-harm is appreciably higher in each case than that found in either current armed forces personnel or the general population. Compared with the general population, studies of ex-armed forces personnel have found that PTSD (for those deployed to Iraq and/or Afghanistan) and alcohol misuse are both **more than three times** as common (Alcohol: **16.8%** vs. **5.4%**; PTSD: **9.2%** vs. **2.7%**); prevalence of common mental disorders has been found to be about **90% higher** (**28.3%** vs. **15.0%**); and self-harming behaviour approximately **30% higher** (**10.5%** vs. **8.0%**). The long-term incidence of suicide among ex-forces personnel is about **the same** as that found in the general population. [For sources and detail, see page 18 and also Figure 4 on page 25].

Although veterans are less likely overall to have a criminal record, lifetime offences of a violent nature are more common than in the general population (**11.0%** vs. **8.7%**). One study found that the rate of violent offending among Iraq and Afghanistan War veterans after they returned from their deployment was **twice** what it was before they enlisted. The rate of self-reported post-deployment violent behaviour is also high; one study found that **12.6%** of Iraq War veterans reported having behaved violently towards family members or others within weeks of returning from their tour of duty. [See page 21 for sources and detail].

The studies show a high degree of co-morbidity (symptoms of more than one problem at once), with strong associations found between the six mental health-related problems investigated in this report. For example, personnel screening positive for PTSD were found to be approximately **four times** as likely to report homecoming violent behaviour as those without such symptoms, ^{(32)b} about **three times** as likely to have committed a violent offence after deployment, ^{(34)c} and nearly **eight times** as likely to report a history of self-harming behaviour. ^{(29)d} [See page 23 for sources and detail.]

Risk factors

Pre-military, military, and post-military factors all strongly affect the risks personnel face; consequently, distribution of mental health problems is highly uneven.

Principal pre-military risk factors are youth and factors associated with a socio-economic disadvantage such as a background of childhood adversity, a history of anti-social behaviour and/or under-achievement in school.

Youth and childhood adversity both predispose vulnerability to trauma. Iraq War veterans in the youngest age group have been found to be about **twice** as likely to screen positive for PTSD as those in the oldest (**5.7%** vs. **2.6%**). Although young age is associated with higher prevalence of mental health problems in the general population, the limited comparable data available show that young armed forces personnel are more affected than their civilian counterparts. For example, when comparing the youngest age groups in the armed forces and general population, harmful levels of drinking were around **three times** as common in the military group (**26.1%** vs. **8.4%**) and, after leaving the forces, the long-term suicide rate has been **between two and three times** as high. Elevated rates of mental health-related problems are also found in personnel who under-achieved at school, have a history of anti-social behaviour or had a troubled home life as a child. Proportionally nearly **four times** as many personnel with the highest levels of adversity in their childhood background were screening positive for PTSD as were those without such a background (**7.2%** vs. **1.9%**) and the disorder was more than **twice** as prevalent among those without GCSEs as among personnel who had A Levels (**8.4%** vs. **3.3%**). [See page 26 for sources and detail.]

Military factors affecting mental health risk include the stigmatisation of mental health problems, quality of leadership, in-unit social support, and the degree of control personnel experience over their own situation. Structural factors, such as rank and branch also matter. Problems are much less prevalent in the RAF and Navy than they are in the Army, for example: studies have found a **4.8%** rate of PTSD in the Army, vs. **2.8%** in the Navy and **2.5%** in the RAF; **6%** of the Army's deployed Infantry troops screened positive for PTSD. The most potent risk factor for the onset of mental health-related problems is the intensity and duration of a person's exposure to warfare when deployed. Of personnel deployed in a combat role to Iraq and/or Afghanistan, the rate of alcohol misuse was found to be **22.5%**, which compares with **14.2%** among troops in support roles and is about **four times** the **5.4%** rate found in the general population. Rates of PTSD and post-deployment violence have both been found to increase in proportion to the number of traumatic events a combatant has experienced. [For sources and detail, see page 30 and Table 3 on page 34.]

Risk factors affecting veterans after leaving the armed forces include social exclusion, negative life events and lack of social support. For example, a study of current and former armed forces personnel found that those who said they had few or no friends were **up to three times** as likely, and those with family problems **up to 2.5 times** as likely, to report self-harming behaviour as were veterans with access to good social support. Although exposure to combat is the most potent trigger of trauma-related mental health problems in general, the most important factor in their persistence is the loss of social support after leaving the forces. [See page 39 for sources and detail.]

Women remain a minority group in the armed forces (**9.8%**) and the factors impinging on their mental health are complex. In civilian life, women are more likely than men to screen positive for PTSD and common mental disorders but this difference is less pronounced in the armed forces. In common with the general population, in the armed forces fewer women than men drink heavily; even so, women in the military drink substantially more heavily than their civilian counterparts. Potential sources of traumatic stress for women in the armed forces include the behaviour of male peers; a 2006 study found that **20%** of women of low rank reported a 'particularly upsetting' experience of unwanted sexual behaviour directed at them from a colleague in the previous 12 months. [See page 32 for sources and detail.]

High- and low-risk groups

Personnel to whom few of the major risk factors apply are likely to have good mental health and better than that found in the general population on average. Indeed, far from all veterans are significantly affected by mental health problems. Those to whom a number of risk factors apply – whether pre-military, military (especially

exposure to warfare) or post-military – are much more likely to suffer from a serious mental health effect of their military career. In particular, mental health problems in the armed forces are concentrated among those who have been most exposed to war stress and/or who carry the pre-traumatic vulnerabilities associated with a socio-economically disadvantaged background.

Higher- and lower-risk career pathways largely depend on the socio-economic status of personnel at the point of recruitment. The youngest personnel from the most disadvantaged backgrounds are: more vulnerable to trauma; more likely to be in a close-combat role and exposed to traumatic stress when deployed; and then less likely to be able to draw on the social support they need to manage a mental health problem after leaving the forces. This group is therefore disadvantaged before, during and after their military career in terms of the mental health risks they face. Infantry personnel, who are typically enlisted at younger ages from disadvantaged backgrounds and are most exposed to war zone trauma, carry a high concentration of these risk factors. [See Figure 6 on page 46 and page 56.]

It is impossible to know with certainty whether recruits from disadvantaged backgrounds would have fared better or worse had they not chosen to enlist, although there is evidence that a military career at a time of war exacerbates rather than ameliorates the effects that pre-existing disadvantage has on mental health. Research on PTSD, for example, shows that exposure to traumatic stress is particularly harmful to individuals who have certain psychological vulnerabilities associated with a socio-economically disadvantaged background. One complex study of British personnel found that PTSD and common mental disorders are more prevalent among combat-exposed personnel whether or not they had pre-existing disorders, but that those who did were most affected. Other studies have shown that although pre-enlistment factors partly account for elevated rates of PTSD and post-deployment violent behaviour, more important are post-enlistment factors, especially combat exposure. [See pages 22, 26 and following.]

Recommendation: Review policy of recruiting from age 16

The report highlights a particular concern for the youngest recruits, who can enlist from age 16 and may be as young as 15 when they first apply. This group is unlikely to be aware of the mental health risks of their prospective career, unlikely to be told of them, and unlikely to be able consider seriously their real-life implications at that age. The youngest recruits are also heavily over-represented in roles most exposed to the risk of traumatic stress once they are deployed to war from age 18. In the last five years the Infantry, which is just 14% of the armed forces but has suffered by far the highest fatality rate in Afghanistan, accounted for 31.7% of all new armed forces recruits aged 16 or 17 (versus 24.1% of all adult recruits). This and other evidence gathered in this report points strongly to the conclusion that those who enlist youngest face the highest mental health risks.

The report calls for the policy of recruiting from age 16 to be reviewed so that the greatest burden of risk is not left to the youngest, most vulnerable recruits to shoulder. Raising the minimum age of recruitment to 18 would ensure that recruits share the risks more equally and that they accept them at the age of adult responsibility. [See page 47 and page 57].

INTRODUCTION

Does a career in the armed forces have an effect on wellbeing? How widespread are mental health problems in the armed forces and how severe are these? Who are most affected and why?

This report, based on academic studies but written for a general reader, aims to present in broad terms the nature and extent of mental health problems in British armed forces personnel and former personnel.

The public debate about mental health in the armed forces is morally charged and politically sensitive. It is characterised in large part by an argument between those who believe the overall burden of mental illness in the armed forces is small and others who believe it is large. This polarised exchange is often encouraged by confusing representations of the issues in the media and elsewhere.

A recent BBC News item, ‘UK soldier and veteran suicides “outstrip Afghan deaths”’⁽⁵²⁾ illustrates this well. The headline, which compares the relatively lower British military’s fatality rate in Afghanistan for 2012 with the suicide rate among current and former personnel, is not meaningful as it does not compare like with like. Responding to the story, the Ministry of Defence claimed that the prevalence of post-traumatic stress disorder (PTSD) and the incidence of suicide in the armed forces are lower than in the general population.^{(52) (53)} In fact, although the suicide rate is indeed **lower** than that found in civilian life, the rate of PTSD among current personnel is about **the same or slightly higher**.^e The more serious flaw in this official statement is that it excludes ex-forces personnel. Among veterans who left the forces in the last decade, the PTSD rate is about **three times** that found among civilians. The long-term suicide rate has been about **the same** as among the general population, while the youngest recruits have been at nearly **twice** the long-term suicide risk faced by their civilian counterparts in the same age group.^f The government’s recent claim that ‘[i]n general, mental health in serving personnel and veterans is as good as, and in most cases better than, the

civilian population’⁽⁵⁴⁾ is further still from the mark (see Figure 4 on p. 25).

Amid these complexities, is it even possible to determine whether the rate of mental health problems in the armed forces is ‘high’ or ‘low’? Following academic norms, most studies and the Ministry of Defence take ‘mental health problems’ to mean narrowly defined, diagnosable disorders existing at the point the research takes place. If this is our measure, and if we assume that participants in studies report their symptoms accurately, then such disorders affect a minority of armed forces personnel, albeit a larger minority in general than is found in the general population. By these standards, for example, the prevalence of probable PTSD is **2.8%-3.2%** among armed forces personnel (depending on whether they deployed to Iraq/Afghanistan) and **9.2%** among ex-forces personnel who left in the last decade,⁽³⁰⁾ which compares with a **2.7%** rate in the general population (adjusted for the proportions of men and women in the armed forces).^{(55)g} Perhaps these single-figure percentage values seem ‘low’, but in a current military population of over 170,000 and an ex-military population much greater still, the effect of this apparently small difference in prevalence equates to many thousands of people suffering the effects of debilitating traumatic stress.

The minority deemed to be experiencing a ‘mental health problem’ grows if we also count less severe but still appreciable symptoms of mental health disorder, such as individuals who have nightmares of their war zone experiences but not some of the other symptoms required for a diagnosis of PTSD. It grows further if we consider prevalence of mental health disorders over a longer period, such as at any point since the beginning of an armed forces career, rather than only at the point that researchers carry out their study. It expands again if we take into account the strong stigmatisation of mental health issues in the armed forces, which leads to under-reporting in the research, especially (such as is the case in the PTSD study just cited) when participants are not

assessed anonymously. And it grows further still if we include important mental health effects that are not routinely investigated, such as the intense shame feelings that some veterans experience, as well as the effect of military training and warfare on empathy and aggression.

If these considerations are included in the analysis then the prevalence of mental health problems in the forces is much higher than that presented in official statements. For example, when sub-threshold PTSD symptoms were included in analyses of lifetime prevalence in Falklands War and Vietnam War veterans, the proportion experiencing a measurable stress reaction, whether mild or severe, rose to **50% or more** of all those deployed to the war zone.^{(1) (56)}

Hence, the answer to whether prevalence of mental health problems in military populations is ‘high’ or ‘low’ depends very much on what is meant by the question and when it is being asked.

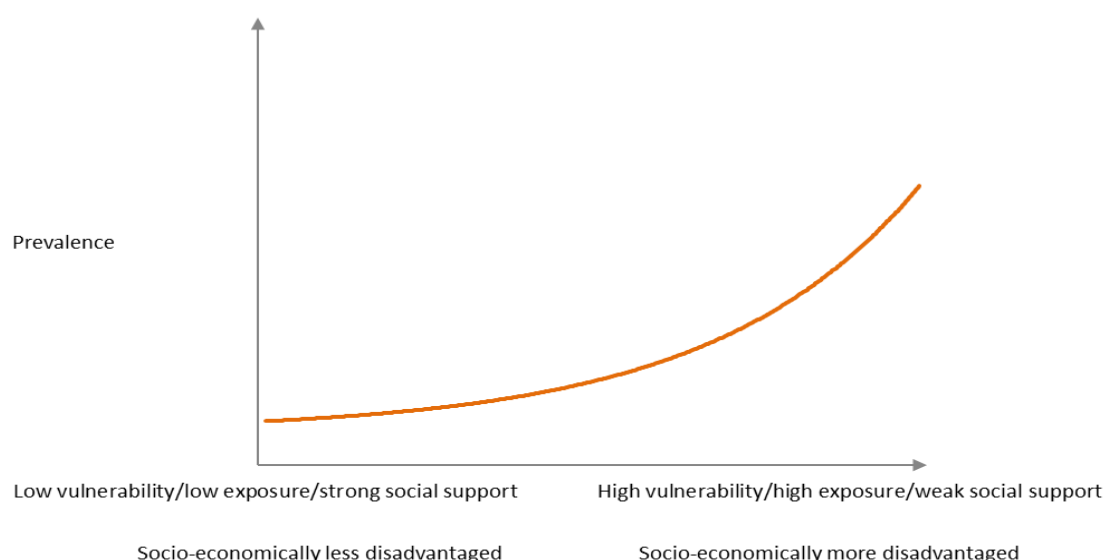
Whichever prevalence values are taken to be definitive for the armed forces as a whole, these do not tell us who is most affected and why. Personnel join the armed forces from different backgrounds and do different jobs carrying markedly variable degrees of mental health risk; when they leave, life circumstances also play an important role in exacerbating or ameliorating certain mental health effects of a military career. In general, personnel at higher risk are those: with a socio-economically disadvantaged background; and/or who experience more traumatic events in a war zone; and/or who do not have access to strong social support after a traumatic event (or after leaving the armed forces). As this report will show, the youngest and most socio-economically disadvantaged recruits are more likely than others to have a higher concentration of risk factors before, during and after their military career. Personnel for whom none of these risk factors applies can still be negatively affected by a military career, but their mental health is more likely on average to be better than that found in civilian life. This is due to the so-called ‘healthy worker effect’, according to which individuals who are fit enough to work and do not encounter traumatic stressors have better health than the average in the general population.

This means that a minority of personnel – albeit a large one – accounts for most of the elevated prevalence of

mental health problems found in the armed forces as a whole. Indeed, the prevalence of mental health problems is heavily concentrated in certain higher-risk groups, particularly personnel in close-combat roles deployed to war zones. Within this sub-group, the risk rises dramatically for those who experience multiple traumatic events, such as seeing a friend killed or killing someone at close range, particularly if exposure to these experiences is repeated or prolonged and if the individuals affected are already vulnerable to stress due to an adverse childhood background. Except in full-scale wars spanning several years, such as the World Wars, relatively few personnel repeatedly experience such harrowing events as these when deployed, but those who do are at a much higher risk of stress reactions such as PTSD and harmful alcohol use. This report suggests that the relationship of the main risk factors to prevalence can be modelled in a curvilinear fashion. That is, most personnel, including those without significant background disadvantage, officers, most of the RAF and much of the Navy, show relatively good mental health. In contrast, certain groups, particularly those in the Army, especially the Infantry; personnel of low rank; and/or those with a socio-economically disadvantaged background, account for a disproportionate share of the overall burden of illness (for example, see Figure 8 on page 55). In this light, the contested question of whether prevalence is high or low – whatever we may take these terms to mean – also depends on which part of the armed forces personnel are in, the roles they perform, whether they are deployed to war zones, what their background is, and other factors connected with their military career.

Based on the evidence reviewed in this report, the figure below shows a hypothesised relationship between the prevalence of a stress-related mental health problem such as PTSD and factors associated with socio-economic disadvantage. It suggests that prevalence in a large part of the armed forces is comparatively low, but climbs steeply for individuals from the poorest backgrounds. It also indicates why a single percentage value for the prevalence of a mental health problem in the armed forces can be misleading insofar as it obscures the differential risks that veterans face, particularly those who have left the forces.

Figure 1:
Hypothesised distribution of trauma-related disorders in a military population.



About this report

In hope of contributing to debate, some parts of this report present an interpretation of the existing research that differs from that usually found, including in the government's presentation of the issues. Specifically, the report interrogates claims that the burden of mental illness is 'low'; it argues for a socio-economic analysis of why some groups are more affected than others; and it suggests that the findings of mental health research should guide not only *post-hoc* interventions but the policy determining who is recruited and for which military roles. The report presents evidence for these propositions but more research is needed, particularly focused on recruits who enlist from age 16, in order to understand better how and why the risks they face differ from their peers.

Beginning with an introduction to stress-related mental health problems in military populations, the report goes on to outline some of the strengths and limitations of the approach normally taken to assess these. With these in mind, the main body of the text shows how and why socio-demographic factors such as adversity during childhood; military factors including the nature of deployment to a war zone; and post-military factors

such as social isolation after leaving the armed forces, each and all affect mental health outcomes for military personnel. Finally, the report shows why the youngest recruits from the poorest backgrounds carry the greatest burden of mental ill-health in the British armed forces.

In considering the impact of war on military populations, it is important to bear in mind that the nation's forces are always a sub-population of all those whose mental health is affected. In all wars in which the UK has participated since and including the Falklands, for example, forces on the opposing side have suffered the greater number of military fatalities and, by extension, the greater burden of mental illness. In almost all wars since and including the Second World War, civilians have suffered most of all.

Note on referencing and use of terms

In the text, numerals in superscript refer to works cited in the Bibliography from page 69. Superscript letters refer to additional information in endnotes from page 65. The use of certain terms is explained on page 60. A description of the evidence base can be found from page 59.

THE WOUNDED SELF:

HOW AND WHY DO SOME VETERANS EXPERIENCE MENTAL HEALTH PROBLEMS?

Mental health as a casualty of war

It is a commonplace that people in the armed forces face risks over and above those in civilian life. In the main, the media present those risks as physical, namely death and serious injury; the psychiatric impact of war is much more common and yet less widely known or understood.

The psychological strain of war affects all military personnel to a degree, even those deployed in rear areas at a distance from direct violence.^{(56) (57)} Many, possibly most, veterans never experience the stress burden as harmful.^{(56) (58)} Others feel damaged in some way by their war experience, particularly (but not only) veterans from the front-line of intense, close-quarters fighting; those with a history of childhood trauma; and those who struggle to resettle into civilian life after leaving the forces.^{(15) (16) (46) (56) (59)} Still others might feel healthy immediately after their war experience, only to find that problems arise some time afterwards.^{(33) (60) (61) (59)}

Most personnel are not directly involved in roles carrying a high risk of traumatic stress. For those who are, the abnormal inhumanity of extreme violence on a mass scale places the mental adaptability of the person under strain. The severe stressors of warfare are many. Coming under fire, physical injury, handling mutilated bodies, committing violence, fear of imminent fatal attack, and witnessing the death and injury of others, are among the many experiences of war that can generate overwhelming stress in those involved.⁽¹⁶⁾

Stressors of this kind stimulate the sympathetic nervous system, driving a 'fight or flight' response charged with aggression and fear; cognitive functions that would otherwise restrain or regulate behaviour are suppressed. This powerful physiological reaction has evolved to

facilitate urgent, short-term survival responses to emergency situations. When the sympathetic nervous system is aroused frequently or continuously, however, or in such a way that overwhelms a person's ability to cope, the stressor is deemed traumatic and has an impact on mental health.

According to the trauma psychiatrist, Judith Herman:

'Traumatic reactions occur when action is of no avail. When neither resistance nor escape is possible, the human system of self-defense becomes overwhelmed and disorganised.'^{(62)h i}

The futility of escape and resistance amounts to a complete loss of sovereignty over one's own existential safety. A British veteran of the night-time battle at Goose Green in the Falklands War is still living with PTSD over 30 years later. When asked what it was about that night that was traumatising he replied without hesitation: 'You've got no control.'⁽⁶¹⁾ The research evidence reflects this: an external 'locus of control' – that is, the experience that the forces determining a situation are outside one's self – plays a role in a traumatic stress reaction.^{(19) (42)} Significantly, one of the immediate imperatives of the military training regime is to command recruits' unhesitating obedience, achieved by enforcing an external locus of control.^{(63) (61)}

Veterans returning from war with a stress reaction might find it more difficult than they did previously to express emotion, manage strong feelings such as anger and fear, or feel at ease in a public place. Heavy drinking, risky behaviour (e.g. while driving), and violence directed at others or oneself are common behavioural consequences, and in many cases are accompanied by bouts of depression and/or sudden swings of mood. For some, re-adjustment on return from war appears to go

well, but at a cost: empathy with others is degraded and displaced by suspicion or indifference.

The mental health impact of warfare can, when severe, disrupt daily life, corrode relationships, lead to addictive behaviours and physical health problems, damage general life prospects, and increase the risk of violence to self and others.^{(7) (32) (50) (56) (64) (65)} British Iraq War veteran David Adams was suffering from post-traumatic stress disorder (PTSD) when he suddenly fell into a rage in his family home:

‘I just flipped. I was withdrawn in myself and for some reason I just absolutely exploded, from the top to the bottom of the house it got wasted. I don’t know what the reason behind it was. I can remember just standing there thinking “What the hell have I just done?” All I remember was prior to that I was thinking about being in Iraq.’⁽⁶⁶⁾

Compounding the problem for veterans and those who could support them is a pervasive stigma in the armed forces against talking about mental health issues.^{(34) (56) (67) (68)} Individuals might hesitate to seek help for fear of losing opportunities for promotion or training, being medically discharged, becoming ostracised by their peers, or failing to embody a warrior identity.^{(34) (58) (60) (61) (68)} In one study, around **half** of participants said seeking help for problems would lead their chain of command to treat them differently, their peers to see them as weak, and/or others to lose confidence in them.⁽³⁴⁾ ‘[I]f you have a psychological injury,’ said a veteran in an interview for another study, ‘you either keep it to yourself, or you get out.’⁽⁶⁷⁾

Another barrier to care is that individuals will not necessarily recognise their own behaviour or psychological state as symptomatic of a mental health issue if they are unfamiliar with how traumatic stress manifests.⁽⁶⁹⁾ Training, pre-deployment briefing, and post-deployment debriefing might not be adequate to identify symptoms of nascent mental trauma and/or to support veterans to recognise these themselves.^{(16) (65) (66) (68)} While in Iraq, Sergeant Major John Dale had been first on the scene to deal with dead and injured women and children in a home that had been destroyed in an attack. When he returned home no diagnosis was made. By his own account, he was haunted by his war experiences and drank heavily ‘to try and medicate’; his marriage broke down.⁽⁶⁵⁾ He was redeployed for a further tour of duty. Having attempted suicide and committed violence against his new partner, he later spent time in prison. Eventually, he found some of the support he needed to begin a recovery in a three-day course provided by a veterans organisation.

Looking back on his experience, he said that all personnel should be seen by a doctor on return from a war zone.⁽⁶⁵⁾

Does war ‘have to hurt’?

There is some evidence that the adversities of combat are not necessarily deleterious to health.⁽⁸⁾ Deployment engages large numbers of people in strenuous physical activity, the adversities of warfare can strengthen ties between personnel,⁽⁷⁰⁾ and an experience of existential threat can even become a source of new personal life motivation in some cases.⁽⁵⁹⁾

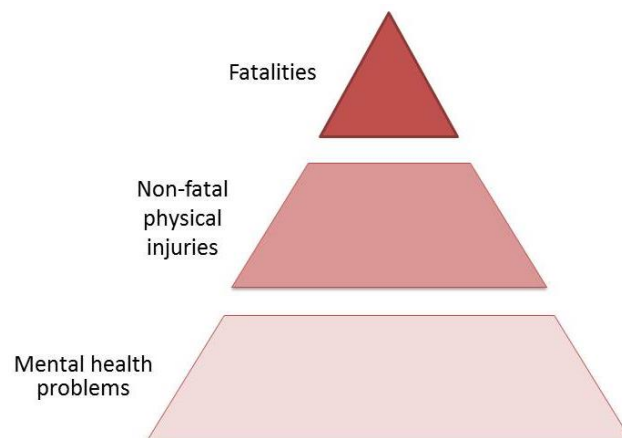
These consequences of war zone experiences are potentially protective of mental health but this salutary effect of war-zone exposure is marginal. All but one of the deployment-based British studies from the last ten years have found higher rates of PTSD in the armed forces and ex-forces personnel than are found in the general population. The one study that found a lower rate was based exclusively on the Army’s Air Assault Brigade during their deployment in Iraq.⁽⁸⁾ The finding inspired the authors to title their paper ‘War does not have to hurt’, although the study was small and they stressed that their findings were preliminary. Tellingly, another study of personnel conducted during deployment to Iraq found a similarly lower PTSD prevalence, at **1.7%**, but when anonymous forms were used to gather the data, the rate rose to **4.8%**, which is almost **three times** as high.⁽³⁴⁾ It appears that during deployment, studies detect lower rates of mental health problems,^{(8) (24) (34)} which could be due to intensified stigma in the war zone, as well as other factors such as the high morale that is usually found during deployment but not at other times.^{(27) (28) (71)}^k After homecoming, however, higher rates of problems are generally found;^{(10) (23)} these rates appear to increase further when veterans leave the forces.⁽⁴¹⁾

An historical analysis of wars from the 19th century to the present day found that large numbers of combatants were referred to clinicians for psychological reasons.⁽⁴⁾ The study’s authors observed that even experienced veterans were breaking down under prolonged and repeated exposure to the extreme stresses of war. They also concluded that ‘a constant relationship’ exists between the number killed or wounded and the number of psychiatric casualties. Morale, preparedness and good leadership could modify this relationship but not remove it.⁽⁴⁾

We can extend the authors' findings to show that the prevalence of identifiable mental health problems is larger than the number of non-fatal physical battle injuries, which is larger in turn than the number of

fatalities.¹ This proportional relationship between fatalities, physical casualties and psychiatric casualties is represented diagrammatically in the figure below.

Figure 2:
Expected relationship between the proportion of combatants killed, physically wounded and psychologically harmed by involvement in warfare.



Stress: A normal response to the abnormality of war

Although combat-related mental health problems have always existed, few attempts to understand them clinically were made before the First World War. As Judith Herman notes, interest faded after the armistice and some clinicians still regarded 'shell shock' as the just deserts of a morally feeble individual.⁽⁶²⁾

By the end of the Second World War, psychiatrists were beginning to understand the approximate contours of veterans' symptoms as reactions to war stress. Two psychiatrists who had studied the war's impact on veterans' mental health speculated in the *Journal of the American Medical Association* that 200-240 days of combat would psychologically damage even the most hardened of soldiers.⁽⁷²⁾ 'There is no such thing as "getting used to combat",' they wrote.⁽⁷²⁾ Other studies have also found that war stress has a cumulative effect.^{(4) (12) (32) (36) (46) (48) (73)}

The Vietnam War stimulated a larger field of research, but the assumption that stress reactions indicated the personal deficiencies of certain veterans was still common.⁽⁴⁴⁾ Only in 1980 was PTSD approved as a

clinical diagnosis for individuals whose daily functioning was appreciably impaired by chronic re-experiencing of traumatic events.⁽⁶²⁾ Applying the new diagnosis retrospectively to a large study of Vietnam War veterans, researchers found that **half** had experienced at least some aspects of the disorder, equivalent to **1.3 million** veterans.⁽⁵⁶⁾

It is now well recognised that chronic stress reactions are attempts by the nervous system to adapt to persistent conditions of trauma, but which are inappropriate for everyday life once the traumatic episode has come to an end. In other words, the individual is not abnormal, but war is; stress reactions are normal physiological and psychological responses to abnormal situations of chronic stress.^{(74)m}

In general terms, it is now known that the most potent factor provoking a stress reaction such as PTSD or alcohol misuse in veterans is the traumatic intensity and duration of war-zone experience, but this is still only one part of the picture.⁽⁴³⁾ Factors existing before enlistment, as well as the social context following a traumatic episode, also influence how a person responds to prolonged or frequent stress. Young age and childhood trauma substantially increase the risk of a

stress reaction, for example, as does poor social support after leaving the forces.

Despite the emerging understanding of war's effect on the mind after the Vietnam War, little effort was made to investigate systematically the prevalence of stress reactions in British veterans of the short but intense Falklands War.^{(1) (2)} For one study, researchers had to advertise in the press for participants because the Ministry of Defence had denied confidential access to veterans' contact details.⁽²⁾ In recent years this situation has changed. Since the Persian Gulf War, a number of large-scale studies of British veterans have been carried out. The establishment of the King's Centre for Military Health Research in 2004, supported then and since by Ministry of Defence funding, has given new impetus to investigations of mental health in the British armed forces. This report is greatly indebted to this work.

Professional mental health support for veterans has also improved, although it accounts for a very small part of

the personnel budget. In any case, whilst even extensive professional interventions could better support veterans to manage the effects of trauma in the long-term, this is not the same as reversing them: memories of horrific events cannot be erased and distressing nightmares can persist independently of a diagnosable disorder.⁽⁵⁹⁾ 'I don't think it ever really leaves you, to be honest, the experiences you've had out in Iraq,' said one former soldier who had problems with combat stress after leaving the Army.⁽⁶⁹⁾ Some of the US research literature has found that traumatised Vietnam veterans who had apparently re-adjusted to civilian routines were, while outwardly functioning well, finding emotional intimacy difficult within their families.⁽⁷⁰⁾ⁿ A Falklands War veteran said of formerly traumatised soldiers who had long since settled into civilian life: 'They cope better; I don't think they are better.'⁽⁶¹⁾

MEASURING THE UNMEASURABLE?

LIMITATIONS OF MENTAL HEALTH RESEARCH

IN MILITARY GROUPS

How assessment works

This report draws on psychiatric research in order to indicate in broad terms some of the mental health effects of a military career, particularly at a time of war. It also explores some of the conditions in which these effects are more or less likely to occur.

In general, mental health researchers frame their endeavour in terms of the degree to which specific disorders affect a given population. Assessment is based on a sample group, which usually participates voluntarily. The sample is then weighted to reflect the demographic profile of the entire population under investigation. To assess large groups, researchers usually ask participants to complete paper-based questionnaires which collect evidence of symptoms, demographic information, and participants' recall of past events. There may also be follow-up phone or face-to-face interviews with a smaller sample group. A robust methodology will try to make contact with a number of the individuals who chose not to participate, in order to assess whether non-participation is due to factors associated with the mental health issues under investigation. The data-gathering process may or may not be anonymous, which appreciably affects the results found for military groups.⁽³⁴⁾

An analysis of the gathered data produces a percentage value showing the proportion of personnel who meet the criteria for a given disorder at a certain point or during a specified period. This estimate of prevalence may then be compared with past findings for the same group, with another military group, or sometimes with similar studies of the general population.

Most studies also try to ascertain the conditions under which prevalence is found to be higher or lower, called

'risk factors' and 'protective factors', respectively. For example, the analysis might calculate whether a veteran's rank is associated with the risk of alcohol problems. To this end, some studies investigate the role of pre-military factors, such as childhood background; others assess military factors, such as the impact of being deployed to a war zone; and others research the influence of post-military factors, such as the strength of social support available to a veteran after leaving the armed forces. Some studies investigate aspects of all three groups of factors.

Researchers have to contend with a number of thorny questions. Is the weighted volunteer sample group truly representative of the whole population? Are participants responding to questions fully; might they have reason to exaggerate their symptoms or, conversely, keep them to themselves? Can they remember past events accurately? If a participant meets the criteria for a disorder on paper, does that mean they have the disorder in reality? Conversely, if a participant does not meet the criteria, does this mean they do not have clinically relevant symptoms? Is the diagnostic construct (i.e. the definition of a given disorder) a valid and reliable measure of a mental health effect? These questions and others like them do not have fully adequate answers.

Despite these difficulties, since the Second World War research has greatly furthered understanding of the effects of a military career on mental health. In particular, the research can usefully indicate which parts of a military population are most at risk of certain defined mental health problems and propose reasons for this. Even so, participants only report what they report and researchers only measure what they can measure. The diversity and complexity of the possible mental health effects of military life make defining and

measuring them a complex challenge that research has yet to address satisfactorily.

Assessment substantially under-estimates the prevalence of mental health problems

In general, the studies' use of diagnostic criteria to assess a person as well or unwell makes a threefold assumption: that an individual with a given mental health problem will present with a specific set of symptoms of specific severity at a specific time.

A diagnosis is a construct which researchers have fitted to repeated observations of similar symptoms, but the fit is imperfect and depends on which symptoms researchers are looking for. Individuals who may be unwell, but whose constellation of symptoms does not fit the criteria for diagnosis, are deemed by default to be well, simply because their symptoms are not adequately detected.

For example, for an individual to be deemed to have PTSD, he or she must have experienced an event involving, (whether actual or threatened) death, serious injury or sexual violence.⁽⁷⁵⁾ The event must have left the individual with symptoms of repeated or prolonged hyper-arousal (e.g. sudden outbursts), avoidance/numbing (e.g. marked estrangement from others), and re-experiencing of the event (e.g. in flashbacks or nightmares).⁽⁷⁵⁾ All symptoms must have persisted for more than a month and there must be evidence of significant distress or impairment of daily functioning.⁽⁷⁵⁾

These criteria are validated by a large volume of clinical evidence but not all military personnel will show symptoms of stress in this way, as veterans testify.⁽⁶¹⁾ Trauma specialists themselves agree that PTSD is only one way in which symptoms of trauma will manifest.^{(59) (76)} Therefore, whilst a study of PTSD in a military population can show the prevalence of PTSD symptoms, it does not show the prevalence of other manifestations of traumatic stress. If PTSD is the main or only diagnostic construct by which studies measure trauma in a population, they are likely to under-represent its extent.

Criteria for symptom severity are also problematic. In real life, mental health problems are experienced in degrees along a spectrum from mild to severe. Academic studies using psychiatric diagnostic criteria

rarely reflect this; most assume a binary definition of 'caseness', which is to say that an individual is deemed either to have or not to have a given disorder.

Again, assessment for PTSD provides an example. The assessment tool used in large studies is the PTSD Checklist questionnaire (PCL), which asks 17 questions about elements of a stress reaction and is scored between 17 and 85. Most studies take a score of 50 or more to indicate 'probable PTSD', meaning that the subject would probably be diagnosed with PTSD in a clinical interview.^o By implication, a person scoring 49 is deemed not to be suffering from trauma, even though that score indicates the presence of significant symptoms of stress. For example, one large British study found that post-traumatic impairment of daily functioning affected a large minority (27%) of those personnel who scored less than 50 on the PCL scale; the authors wrote:

'Adherence to a rigid diagnosis of PTSD may leave a substantial group of service personnel feeling that they do not get appropriate care if they do not completely fulfil the PTSD criteria, but suffer meaningful levels of impairment.'⁽²²⁾

These so-called 'sub-threshold' PTSD cases are not usually included in study reports. Only **seven** of the **38** British and US quantitative studies on PTSD reviewed for this report included its sub-threshold variant in their findings, being cases of post-traumatic stress scoring (usually) 39-49 on the PCL scale.^{(22) (30) (33) (35) (36) (46) (47)}

Just as studies assess military populations using specific diagnostic criteria for symptoms at a specific level of severity, most also assess for prevalence at a specific moment in time, called the 'point prevalence'. In reality, the symptoms of a mental health problem might not appear for some years, or they might be present at assessment but quickly fade afterwards, or they might come and go for a lifetime depending on other life events. In order to measure a mental health effect of a military career, it would be most appropriate to assess whether an individual has experienced symptoms at any time (called 'lifetime prevalence') or since their military career began, and then compare this with a non-military group. Most studies assess for point prevalence because this is logistically easier to do and does not depend on participants accurately remembering symptoms from a distant past, but in doing so they underestimate the overall effect on personnel.

A fourth difficulty researchers face is participants' under-reporting of symptoms, which is a severe problem for studies of military populations where mental illness

is common but the stigma against revealing it is strong.^{(34) (42) (68)} Anonymity is an important prerequisite for the trust and openness of study participants, but most studies undertaken by the UK's major research centre, the King's Centre for Military Health Research, are not conducted in anonymous conditions. The reason for this is that these studies are typically longitudinal (based on assessing the same military cohort over time), which means researchers have to ask participants for personally identifying information in order to follow them up in the future. Although King's researchers strongly assure participants of confidentiality, one of their own studies has shown that stigma still leads veterans to under-report mental health symptoms by a large degree.⁽³⁴⁾ This study found that **almost three times** as many anonymous participants reported symptoms meeting the criteria for PTSD as did participants who were asked to provide identifying information.^p Although the study was quite small (about 600 participants), this finding was a statistically significant one. This means that findings in all the King's Centre studies on which this report draws could be identifying less than half of those with symptoms of probable PTSD. This would partly explain, alongside important differences in combat intensity, why PTSD rates in the UK military have been found to be lower than those in the US.^{(10) (46)} The major US military health research institute, the Walter Reed Army Medical Centre, typically does not ask participants for information that could identify them.⁽⁷⁷⁾

For these four reasons, findings based on the standard research approach do not allow firm conclusions to be made about the mental health of military populations. Perhaps the only safe conclusion is that studies tend to underestimate substantially the impact of military life on the psychological wellbeing of personnel. In effect, the studies deal with the tip of an iceberg of mental health issues, most of which remains hidden beneath the waterline.

Staying with PTSD as an illustration of this, when rates of sub-threshold PTSD are included at assessment for life-time prevalence,^{(1) (36)} more of the iceberg reveals itself. The major study of Vietnam War veterans found a full-PTSD point prevalence of **15%** after the war, but lifetime prevalence of both full and sub-threshold PTSD was more than three times as high, exceeding **50%**.⁽⁵⁶⁾ Assessment of British Falklands War veterans found a point prevalence rate of **2%-7%** immediately after the conflict but a later study found a rate of **22%** five years afterwards; this study also found that only **28%** of personnel reported no symptoms of the disorder.⁽¹⁾

Despite the evidence of a widespread psychiatric impact of warfare and the limitations inherent in research methodology, several British studies of military personnel have concluded that prevalence of mental health problems is 'low'.^{(21) (23) (25) (34) (78)} These studies do not say what they mean by 'low', nor do they note that many of 'low' rates found are higher than those in the general population.

Assessment of whole military populations poorly indicates where problems are most or least severe

After the problem of diagnosis, a second obstacle to research is the highly uneven distribution of mental health problems within large military groups. Problems are much more prevalent in some parts of the armed forces, such as among enlisted low-rank Infantry riflemen if they are deployed to war zones, than they are in others, such as commissioned officers in the Navy if they have never been to war. Indeed, the majority of armed forces personnel are not typically exposed to traumatic stressors and show rates of PTSD similar to or below those found in the general population.^q

These differences are obscured in the majority of studies, which lump all armed forces personnel together, only disaggregate data for large sub-sections of the whole (e.g. Army versus Navy versus RAF), or do not distinguish between current and former personnel. One reason for this is that it becomes difficult to produce statistically significant findings in smaller groups, but a consequence is that the studies only go so far in showing where problems are most and least concentrated, and why.

When studies specify categories of personnel facing potentially different degrees of risk, the criteria used tend to lack specificity. For example, some British studies distinguish those deployed in combat roles versus those in support roles, but 'combat role' is a vague term. A soldier who fires a long-range artillery piece at a target some kilometres away performs a 'combat role' but is less likely to suffer a stress reaction than a close-combat soldier who has seen his best mate killed beside him,⁽⁴⁸⁾ killed an enemy combatant at point blank range,⁽⁶¹⁾ or seen children's body parts on the road.⁽⁷⁹⁾ Studies draw closer to identifying major risk factors for traumatic stress when they ask veterans whether they have experienced certain events in the war zone, but these also poorly discriminate between

differing exposures to stress. For example, a veteran who endorses 'weapon discharged in direct combat' from a list of potential stressors might do so because he once fired at suspected enemy positions in the distance; alternatively, he might have killed or wounded enemy combatants or even civilians at point-blank range. Each type of experience confers a markedly different risk of traumatic stress⁽⁸⁰⁾ which is not accounted for in the way most studies are designed.

The few studies that drill further down into their results reveal strong differences between sub-groups. For example, a large meta-analysis (study of studies) of British and US personnel deployed to Afghanistan or Iraq found an average post-deployment PTSD point prevalence of **5.5%** overall, but **13.2%** in Infantry troops.⁽⁵¹⁾ A study of the British Infantry alone also found substantially higher rates of PTSD and alcohol misuse than those found by other studies elsewhere in the Army (see Table 3 on page 34).⁽²⁵⁾

Even so, most studies tend to investigate each risk factor separately, controlling for other variables in order to determine its specific effect. For example, the study just cited investigated mental health risks for Infantry troops, but there are likely also to be strong differences within the Infantry between troops from a disadvantaged background who had high levels of combat exposure and others without these characteristics. This compounding of risk factors (and protective factors) is common in the armed forces and divides largely along socio-economic lines, as this report will show, but there has yet to be a major British study to investigate this. This is partly due to the difficulty, just mentioned, of achieving statistical significance in smaller sub-groups, but again, the consequence is that studies are not fully reflecting the uneven distribution of mental health problems.

A related limitation of the research is that few studies investigate former armed forces personnel, despite the markedly higher rates of PTSD, common mental disorders and alcohol misuse found in those discharged in the last decade. This group is also at greater distance from official sources of support. Hence, despite being most affected, ex-forces personnel are least researched.^f

Assessment methods pathologise normal humane responses to abnormal traumatic experiences

A third limitation of the research, possibly the most serious, is the implicit assumption that the mental health of a population can be reckoned in terms of the prevalence of mental health disorders. A veteran without a disorder is not necessarily healthy. Conversely, a veteran with a stress reaction may be 'unhealthy' insofar as this affects his or her wellbeing, but 'healthy' insofar as his or her reaction constitutes a humane response to the inhumanity of war. In particular, there may be a strong moral content to the stress reaction of warfare as veterans try to come to terms with their involvement in extreme violence.⁽⁶⁰⁾ According to the military psychologist Dave Grossman, '[a combatant's] mental health is totally invested in believing that what he has done is good and right'.^{(80)s} If a veteran begins to doubt the legitimacy of the war in which he or she has participated, a debilitating psychological conflict can arise between what the individual has done and what they believe they ought to have done.

Many veterans' stories reflect this. Ken Lukowiak, an Infantryman in the Falklands War battles of Goose Green and Wireless Ridge, wrote a decade later:

At the church service in Port Stanley, after the war, we gave thanks to God for our deliverance from death. We also asked him to care for the loved ones of the dead. We thanked the Lord, but we never once asked forgiveness. But I've asked a few times since.⁽⁸¹⁾

Writing in 1981, the psychiatrist Peter Marin noted the 'moral pain' with which many Vietnam War veterans were living.⁽⁶⁰⁾ This experience, he observed, may be *both* highly stressful *and* the healthy response of a morally functional individual. A British Iraq War veteran commented that, given his war experiences, if he was not feeling a stress reaction he would think something had gone wrong with himself.⁽⁶¹⁾

Despite strong associations found in Vietnam veteran groups between PTSD and shame feelings,^{(44) (47) (73)} studies rarely investigate the roles that conscience, empathy and shame might play in generating war stress, particularly when onset is delayed for months or years after deployment. There appear to be no such studies of British personnel, for example. Thus, mainstream research risks reducing the activity of conscience to

pathology, as the humane complexity of moral responses to war experiences are subsumed into a ‘stress reaction’ and lost from view. Apart from contributing to misleading conclusions on the mental health of military populations, the pathologisation of ‘moral pain’ risks encouraging a view among veterans that their humane responses to warfare signify illness and a constitutional weakness on their part.⁽⁶⁰⁾

Conversely, in certain circumstances a veteran with no stress reaction may be healthy in terms of daily functioning, but less than healthy in other ways. A lack of empathy, or its subconscious suppression in the heat of war, might serve to protect an individual against a stress reaction, at least temporarily and possibly permanently. Most academic studies of military populations would not identify a stress-free individual with radically diminished empathy to be manifesting ill-health, but would pathologise the morally anguished veteran as having a ‘disorder’.

The mental health effects of military life are far-reaching, subtle and resist measurement

These limitations show that as much as the established research approach can illuminate the mental health of military groups, it can also obscure it. It can inadvertently encourage the assumption that the mental health effects of a military career, particularly of warfare, are easily measurable and confined to a small minority of individuals. As a final illustration of this, consider these example characterisations of real-life veterans:

1. A soldier who has occasional nightmares and flashbacks (but does not present with all the symptoms of PTSD) after seeing a child leaning over her father’s dead body, mutilated by an air strike from his allies in the war.⁽⁷⁹⁾
2. A former soldier whose military training programme conditioned his mind to use violence as a first response to any perceived threat, such that now he perceives every civilian street as a range of threats waiting to manifest.⁽⁶¹⁾
3. A soldier unable to talk to his family about his war experience, believing they would think ill of him and not understand him.⁽⁶¹⁾
4. A marine who has started to enjoy killing people (dubbed by one veteran ‘The Highlander

Effect’ after the 1980s film in which the killing of one person makes another stronger).^{(60) (61) (80)}

These cases all indicate clearly deleterious effects of war on either the individuals concerned or those around them, but none would register as such in most academic studies. Each testifies in its own way to how the mental health of military personnel resists precise definitions or measurements.

Academic research is not fully independent of military authorities

A further limitation of the available evidence is that major research institutions conducting large studies typically rely on close collaboration with military authorities for access to armed forces personnel and for funding.

There are some safeguards to ensure that funders are not able to influence research findings. Most journals, including all but one of those used for the primary evidence base of this report (see Appendix II), require authors submitting papers to declare conflicts of interest, reveal their main funding sources, and state that funders have not shaped the conduct or outcome of the study. Even so, when the state funds research directly (rather than at arm’s length through one of the Research Councils) it is able to determine, through funding decisions, which research questions are investigated and which are not. Even were academic institutions willing to forego military funding, they still require government approval for access to personnel. These constraints pose a barrier to research into politically sensitive research questions. Examples of potentially controversial studies could include: the role of shame in generating stress reactions to war experiences; the relative risk of negative mental health outcomes for personnel who enlist as minors; and certain mental health outcomes (such as self-harm) in high-risk groups such as Infantrymen deployed to high-intensity war zones.

Whilst military funding to investigate mental health issues in the armed forces is a welcome and necessary component of a responsible duty of care to personnel, particularly given that this has enabled the field to grow appreciably in the UK during the last decade, very little of this research has been financially independent of the state. All but three of the quantitative studies carried out by the Kings Centre for Military Health Research and used in this report received major or sole funding from

the Ministry of Defence (the remaining three did not specify).

Towards an alternative approach

The foregoing discussion shows the mental health effects of military life are only partially detected by the existing research. Nonetheless, the research has substantially furthered understanding of mental health in the armed forces and without it this report would not be possible. Although the evidence base is largely limited to only the severest of mental health outcomes, it effectively highlights those groups most at risk and how and why they might be disproportionately affected. In particular, it shows that factors before, during and after a military career can all influence the risk of a variety of mental health outcomes that personnel face.

In order to use the studies effectively, mental health in military groups needs to be understood in its context of a career process – from childhood background and the recruitment process, through training, deployment, homecoming, discharge and re-adjustment to civilian life. Most studies necessarily limit their investigations to risk factors in only one part of this process, but it is

possible to use them collectively to piece together a fuller picture. The remainder of this report aims to contribute to this goal.

The advantage of such a process-based approach, contextualised in the career pathways of personnel, is that it can identify distinct routes that different social groups take through a military career, each with differing levels of risk. Individuals with most pre-enlistment vulnerabilities (generally younger recruits from disadvantaged backgrounds) are more likely to travel along a higher-risk military pathway than are older recruits from less-disadvantaged backgrounds. For example, a male teenage recruit from a disadvantaged background is more likely than others to have pre-enlistment vulnerabilities *and* to be targeted by recruiters *and* to join the Infantry (where the odds of exposure to trauma is higher) *and* experience poor social support after leaving the armed forces. For these reasons, this report's conclusion will attempt to situate the mental health risk of an armed forces career in the social and economic context in which recruitment takes place.

TAKING THE TEMPERATURE: SIX INDICATORS OF MENTAL HEALTH IN MILITARY GROUPS

Before exploring in the following sections why some groups in the armed forces are more affected than others, this section considers the prevalence of six mental health indicators in the armed forces as a whole, and also among those who have left the armed forces in the last decade. These six indicators – two defined mental health problems and four behaviours which indicate underlying mental health issues^t – are:

1. Post-traumatic stress disorder.
2. Common mental disorders.
3. Alcohol misuse.
4. Post-deployment violent behaviour.
5. Self-harm.
6. Suicide.

In respect of these outcomes, armed forces personnel have so far been more extensively studied than veterans who have left the forces. It appears that only two British studies have focused exclusively on the mental health of those who discharged from the forces since 2003.^{(7) (41)} Fortunately, the evidence base can be broadened by a small number of other studies that have investigated both current and former personnel simultaneously and disaggregated some of their results accordingly. All have found that former personnel have substantially higher rates of the six indicators listed above.

In the discussion to follow, the prevalence values for these indicators are based on assessments during the last 10 years, with the most recent findings preferred where possible. Suicide rates are an exception, being based on a 20-year period. Since the Afghanistan War began in 2001, the armed forces have had to stretch to meet their commitments worldwide. It has been a time of relatively high deployment activity, with most armed forces personnel deploying to Iraq or Afghanistan or

both. If British troops leave Afghanistan in 2014 as planned, exposure to traumatic stress will reduce overall, but the long-term mental health effects of the two wars have yet to be seen.

Note that the figures given for ‘ex-forces personnel’ throughout this report, except where stated otherwise, are representative of those who left the forces after 2003 only and do not apply to the wider veterans community.

Post-traumatic stress disorder

Post-traumatic stress disorder (PTSD, formerly known non-clinically as *shell shock*, *traumatic war neurosis* and by other terms) can be triggered by any severely traumatic event that is experienced with fear, helplessness or horror. Such events are not confined to war but are a common feature of it. Being shot at, handling mutilated bodies, seeing someone killed, and killing or wounding other people at close quarters are among the many traumatic events military personnel experience when at war.

PTSD is typically a long-term condition with both psychological and bodily (somatic) symptoms including nightmares, flashbacks, emotional numbing, avoidance and hyper-vigilance. Secondary symptoms in veterans might also include depression, fear, guilt, shame feelings, mistrust, low self-esteem, exaggerated startle responses, self-harm and physical illness.^{(29) (44) (42) (76) (82)}

A sudden ‘swing’ from feeling numb to an aggressive outburst is a common characteristic of PTSD,⁽⁷⁶⁾ as evidenced in the testimonies from veterans quoted in the opening section.

Onset of the disorder might be immediate or delayed, even by a decade or more; one British study found that the onset of approximately **half** of PTSD cases in the armed forces at the time of assessment had been delayed by six months or more.⁽³³⁾ The disorder can fade completely or persist; it can remit partially to leave a residual mental health effect; and it can also resurface years later in conditions of stress.^{(35) (59)}

Besides individuals with full PTSD, others with some significant symptoms but who do not meet all the criteria for the disorder are deemed to have ‘sub-threshold’ or ‘partial’ PTSD. Few studies count such cases into their findings but they undoubtedly matter; it is common for some symptoms of PTSD to remit, such as nightmares, while others persist in the long-term, such as emotional detachment from others and mood swings.⁽⁵⁹⁾ In such cases, an individual is no longer deemed to have the disorder PTSD yet they continue to experience significant symptoms of post-traumatic stress; one study found that a large minority (**31%**) of ‘sub-threshold’ PTSD cases included some kind of post-traumatic impairment of daily life, for example.⁽²²⁾

The prevalence of sub-threshold PTSD is usually about the same as full PTSD;^{(1) (23) (33) (42)} a rough estimate of the combined prevalence of both variants of the disorder may be made by doubling the rate found for full PTSD.

Measure

Except where stated, by PTSD this report means the full, clinically defined disorder because the evidence base for sub-threshold PTSD in both the British armed forces and the general population is undeveloped.

For all studies of military populations used in this report, a probable case is measured by the 17-item PTSD Check List (PCL) questionnaire with a cut-off of 50 points (51 points for some US studies). This cut-off level has been found to give the most reliable indication of the prevalence of the disorder that would be found if all study participants were given a clinical interview.^u

The PTSD study of the general population used a different measure: the Trauma Screening Questionnaire with a cut-off of six points or more to indicate a probable case.

PTSD prevalence and risk

The PTSD rate found in the general population in 2007 was **3.0%** (**2.6%** in men; **3.3%** in women);⁽⁵⁵⁾ a civilian group with the same proportions of men and women as

are found in the armed forces would be expected to show a PTSD rate of **2.7%**.^v

One study in 2006, a time of low deployment activity, found that the prevalence of PTSD in the armed forces was approximately the same (**2.4%**)⁽⁹⁾ as the general population rate. When the armed forces are deployed to war zones, this rate increases; it is higher again in veterans who have left the armed forces.

A study published in 2012 found that the prevalence of PTSD was **4.2%** in a large sample of British armed forces and ex-forces personnel.⁽³⁰⁾ Among current personnel who had never deployed, the prevalence was **2.8%**, so if this group reported their symptoms accurately and fully then it is **no different** from the general population in respect of PTSD. Among current personnel who deployed to Afghanistan or Iraq, prevalence of the disorder was **3.2%**, which is about **20% higher** than in the general population.⁽³⁰⁾

The same study found higher rates of PTSD in those who had left the armed forces: **6.9%** in those who had never deployed and **9.2%** among Iraq War and/or Afghanistan War veterans.⁽³⁰⁾ These rates are between **two-and-a-half and three-and-a-half times** that found in the general population. Of the six mental health-related outcomes discussed in this report, PTSD shows the greatest difference in prevalence between the general population and former forces personnel. A separate study of ex-forces personnel (surveyed in 2004-2006), found a similar rate of **8.5%** (deployed and not deployed) screening positive for PTSD.⁽⁴¹⁾

PTSD is probably the most investigated disorder in military populations. This has enabled researchers to build an evidence base for a wider range of risk factors than is known for other types of disorder. In summary, studies have found that prevalence of PTSD is higher among those with any of a number of pre-military vulnerabilities, those who are deployed to war zones and experience traumatic events, and those with poor social support after leaving the armed forces.

Common mental disorders

Common mental disorders, (also known as common psychological disorders and common mental health disorders) are a collective term for types of recent anxiety and depression, as indicated by symptoms such as loss of sleep due to worry, low self-confidence, feelings of being under strain and/or loss of concentration on tasks.

Measure

A case of common mental disorders is defined in this report as a score of four points or more on the 12-item GHQ questionnaire. The assessment method is sensitive to both mild and severe symptoms of disorder.

Prevalence and risk of common mental disorders

The prevalence of common mental disorders in the general population was found to be **18.3%** in 2011.⁽⁸³⁾ This Office for National Statistics study did not disaggregate data for men and women; however, the variation for common mental disorders in men and women is available elsewhere⁽⁵⁵⁾ and, if these are applied to the ONS data then the inferred rate of common mental disorders in men is **14.2%** and in women is **22.4%**. Using these figures as a base, a civilian group with the same proportions of men and women as are found in the armed forces would show rate of common mental disorders of **15.0%**.^w

The most recent British study (2010) of common mental disorders in the armed forces found a prevalence of **19.9%** among non-deployed troops (**19.6%** among those deployed to Iraq/Afghanistan), which is approximately **30% higher** than the **15.0%** rate found in the general population.^{(23) x}

A study of ex-forces personnel found that **28.3%** had common mental disorders,⁽⁴¹⁾ which is about **90% higher** than the rate found in the general population.⁽⁵⁵⁾

Rates of common mental disorders are higher among personnel from: disadvantaged backgrounds; in the Army; deployed to war zones (in some cases only); of low rank; and/or experiencing traumatic events in warfare. Unlike the five other mental health outcomes discussed in this report, the available evidence in the studies reviewed shows that common mental disorders have no association with age.

Alcohol misuse ('harmful drinking')

The armed forces have a heavy drinking culture and high rates of alcohol misuse do not necessarily imply underlying mental health issues. It is also the case, however, that many personnel turn to drink as a way to relieve the effects of war-zone stress. This is evidenced in the higher rates of alcohol misuse found among troops who deployed to Iraq and/or Afghanistan, the heavy

drinking that often accompanies stress reactions such as PTSD, and in testimony from veterans.

Some veterans have said that drinking more heavily than usual can bring genuine comfort from war stress,^{(61) (69)} but it can also be an early sign of a nascent long-term stress reaction, as this former soldier testifies:

'I look back now I can see it especially in terms of drinking too much and things like that, that I started to feel really bad about things, I started to get really bad flashbacks and that, and there was nobody ever there. It wasn't identified, you know.'⁽⁶⁹⁾

The World Health Organisation classifies alcohol problems in three categories of severity: hazardous use, harmful use, and dependence. Following most of the British studies on alcohol use in the armed forces, this report uses 'alcohol misuse' to mean 'harmful use', which is 'a high level of alcohol problems' including 'feeling of guilt or remorse after drinking, blackouts, alcohol-related injury, other concern about alcohol consumption'.⁽⁵⁵⁾

Measure

'Alcohol misuse' is measured using the AUDIT questionnaire; a score of 16 points or more indicates a case of harmful drinking (NB: the AUDIT scale values should not be confused with units of alcohol intake).

Prevalence and risk of alcohol misuse

The rate of alcohol misuse in the general population was found in 2007 to be **5.8%** among men and **1.9%** among women.⁽⁵⁵⁾ A civilian group with the same proportions of men and women as are found in the armed forces would show an alcohol misuse rate of **5.4%**.^y

Of the six mental health indicators considered in this report, the greatest difference in prevalence between the general population and current members of the armed forces is found in alcohol misuse. The most recent large study in 2010 found a prevalence of **10.9%** among personnel who had not deployed to Iraq or Afghanistan,^{(23) z} which is about **twice** the rate in the general population (**5.4%**).^{(55)aa} The rate among those who had deployed to either or both war zones was **15.7%**, which is about **three times** the rate in the general population.

(A separate study used the less severe 'hazardous drinking' construct as a measure, requiring an AUDIT score of 8 or more. This found **67%** of men and **49%** of

women in the armed forces met this criterion, which compared with **38%** of men and **16%** of women in the general population.⁽¹⁴⁾

A study of ex-forces personnel found a **16.8%** rate of alcohol misuse ('harmful drinking'),⁽⁴¹⁾ which is about **50% higher** than that found in those still in armed forces employment⁽²³⁾ and more than **three times** as high as the rate in the general population (**5.4%**).^{(55)bb}

The extent of alcohol misuse is highest among personnel who are young, have a disadvantaged background, or have been deployed to a war zone.

Post-deployment violent behaviour

Although violence does not necessarily indicate an underlying mental health problem, this report interprets elevated rates of violence on return from a war zone as indicating a mental health effect of deployment. Indeed, deployment to war shows a strong association with violent behaviour afterwards, particularly among front-line troops.^{(32) (36)}

Measure

Post-deployment violent behaviour means self-reported involvement in physical violence outside the family or towards a family member in the weeks after returning from the war zone.^{(32)cc} Violent offending is defined as records for violent offences on the Police National Database.⁽³⁶⁾

Prevalence and risk of post-deployment violence

A study of UK troops returning from Iraq found that **12.6%** reported committing physical violence either outside the family or towards a family member in the weeks after returning from the war zone.^{(32)dd} There are no civilian comparators but the authors described this rate as 'high'. Of troops who were still in the armed forces at the time of the study, **12.3%** said they had behaved violently on homecoming from Iraq; among those who had left the forces the proportion was **16.2%**.^{(32)ee}

A US study asking a similar question as used in the British study found a similarly elevated (**17.7%**) rate of homecoming violence three months after return; this had increased slightly (**18.4%**) six months later.⁽⁵⁰⁾

Military personnel are less likely than the general population to have a criminal record but offences of a violent nature have been found to be more common among military males (**11.0%**) than civilian males (**8.7%**).^{(36) ff} One study found that the rate of violent offending among Iraq and Afghanistan War veterans after their deployment was just over **twice** what it was before they enlisted, indicating a strong effect of deployment on troops' behaviour afterwards.⁽³⁶⁾

Rates of post-deployment violence are markedly higher among younger personnel, those with an adverse childhood background, those in combat roles, and troops exposed to multiple traumatic events.

Post-deployment antisocial behaviour is strongly associated with similar risk factors as those for post-deployment violence.⁽³²⁾

Self-harm

Self-harm is usually defined as the non-fatal poisoning or injuring oneself of as an expression of distress.⁽⁸⁴⁾ Such behaviour includes injury to the skin, intentional clashing with objects, overdose, and other forms of inflicting harm to the body. It can also include reckless risk-taking, addictive behaviours and many other acts that cause harm to the self. In this report, self-harm includes behaviours with or without suicidal intent.

It is notoriously difficult to measure rates of self-harm in large studies as these usually depend on participants reporting their behaviours using paper forms without an interview.⁽²⁹⁾ This difficulty is magnified in the armed forces due to the strong stigma that surrounds revealing symptoms of mental health problems.^{(34) (42) (68)}

Measure

This report draws on two studies of self-harm, which together illustrate another limitation of the established research approach. A large study in 2013 used paper forms to ask members and former members of the armed forces a single question about self-harming behaviour: 'Have you ever purposefully harmed yourself (e.g. overdose)?'⁽³⁹⁾ As such, this study aimed to quantify the lifetime prevalence of self-harming behaviour, but participants could easily misunderstand the question to be whether or not they have ever taken an overdose. This, combined with the expected effect of stigma in military groups, gives reason to doubt the reliability of the prevalence estimates in this study.

The other study of self-harm, published in 2012, relied on telephone clinical interviews with 821 members or former members of the armed forces.⁽²⁹⁾ This methodologically more robust study found approximately **twice** the prevalence of self-harm than that detected in the paper-based 2013 study.

This report uses the 2012 study as an approximate indicator of prevalence, and both studies as evidence for risk factors.

Prevalence of self-harm

A lifetime prevalence of self-reported self-harming behaviour in the general population, with or without suicidal intent, was found in 2007 to be **8.0%**, with no significant differences between men and women.^{(55)gg}

Prevalence of self-harming behaviour in the armed forces has been found to be similar to or less than in the general population, although as with all the outcomes discussed in this report, the risk is unevenly distributed. The self-reported, lifetime prevalence of intentional self-harm in current members of the armed forces was found to be **4.2%**,⁽²⁹⁾ about **half** the **8.0%** prevalence in the general population.

The prevalence of self-reported self-harm among ex-forces personnel, at **10.5%**, is **2½ times** that found in those still in the armed forces and **30% higher** than in the general population.^{(29) (55)}

Those at elevated risk include younger personnel and/or those with a background of childhood adversity;⁽²⁹⁾ those with PTSD;⁽²⁹⁾ veterans who spent time in local authority care;⁽³⁹⁾ and those lacking social support.⁽³⁹⁾

In the general population, young women (aged 16-24) are substantially more likely to report self-harming behaviour than young men in the same age group; a difference not evident in older age groups.⁽⁵⁵⁾ The findings of the two studies of self-harm in the armed forces do not agree on whether a gender difference exists; the questionnaire-based study found that women in the armed forces were nearly twice as likely as men to report the behaviour; the phone-based study found that women were marginally less likely to report the behaviour.^{(29) (39)}

Suicide

Suicides in the armed forces are few; as such, it is difficult to draw firm conclusions about the major risk

factors. Since suicide is a rare event, the absolute risk is low, but higher rates for certain groups are likely to indicate correspondingly higher prevalence of underlying mental health problems.

Suicide data

Suicide rates are measured using official records over several years. Following standard practice, the term 'suicide' incorporates 'open verdict' cases, meaning deaths whose cause a coroner could not determine beyond reasonable doubt.

Long-term incidence of suicide

Overall, the long-term incidence of suicide in the armed forces has been found to be appreciably less than in the general population. Over a 20-year period from 1993-2012, the suicide rate among men in the armed forces has been **12 per 100,000** in the Army and **8 per 100,000** in both the Navy and RAF.^{(37)hh} This is approximately **half** the suicide rate among men in the general population and overall the trend has been downward during the period.⁽³⁷⁾ There are insufficient data to calculate a suicide rate among women.^{(18) (37)}

The suicide rate among those who have left the armed forces has been found to be approximately **twice** that among those still serving and about **the same** as in the general population.⁽¹⁸⁾

Those in the youngest age group are most at risk of suicide.^{(18) (40)} Some younger age groups show both in-service and post-discharge suicide rates that are substantially higher than those for the same age group in the general population.^{(18) (40)}

Comparisons with the general population

The stratification of the armed forces along social class lines complicates comparisons with the general population and some care is therefore needed when interpreting research findings accordingly. Many armed forces recruits, especially enlisted soldiers, are from socio-economically disadvantaged backgrounds, which would indicate that a relatively higher rate of mental health problems will be present before enlistment. For this reason, some recruits undoubtedly carry pre-existing problems into the armed forces and prevalence findings are partially due to pre-enlistment socio-

demographic factors. Other personnel, notably commissioned officers, are likely to come from privileged backgrounds, up to and including royalty. This group is much less likely to screen positive for mental health problems either before or during their armed forces career.

If it were feasible, an appropriate comparator for military groups would be civilians with a matched socio-demographic profile but this, too, would be imperfect. All armed forces personnel have completed a relatively rigorous selection process, including a medical that has deemed them to be physically and psychologically suitable for the demands of an armed forces career. This confers a so-called ‘healthy worker effect’, by which mental health at the point of enlistment would be better than that of a matched civilian group, which would include people who were unemployed or in poor health.

Given that we cannot know precisely how recruits would have fared had they chosen not to enlist, might it be tenable to speculate that an armed forces career is beneficial to mental health? The large majority of the research evidence does not support this. Indeed, the research shows that, whilst issues connected with the socio-economic background of recruits are an important explanatory factor, collectively the most important factors are those encountered after enlistment, particularly when they interact with vulnerability factors such as childhood adversity.^{(16) (17) (42) (45) (56) (59) ii}

If rates of PTSD in the armed forces were wholly due to recruits ‘carrying in’ these problems from their childhood background, we would expect to see elevated rates at times of low deployment activity, but this is not the case. One study undertaken in 2002, when deployments were few, found a rate of PTSD similar to that later found in the general population (2.4% vs. 2.7%, respectively).^{(9) (55)jj} Indeed, one of the most sophisticated British studies reviewed for this report found that combat-exposed veterans were substantially more likely to screen positive for PTSD and common mental disorders than those without such exposure, whether or not they already had the symptoms before deployment.⁽¹⁷⁾ A striking finding of this study was that, although combat exposure conferred an effect on veterans both with and without pre-existing symptoms, the effect was markedly greater on the former.

In two other studies, researchers found that being deployed to Iraq in a combat role⁽³⁶⁾ or being exposed to traumatic events in the war zone⁽³²⁾ conferred on personnel a risk of violent behaviour after homecoming, even when they controlled for pre-enlistment factors. One of the clearest suggestions of an effect of

deployment on behaviour is in the finding that the post-deployment of violent offending among Iraq and Afghanistan War veterans has been **twice** what it was before they enlisted.

As will be discussed shortly, mental health problems in the general population are more prevalent among younger and disadvantaged groups, so this is likely to account for some of the elevated rates found in similarly matched groups in the armed forces, but not all. In fact, where comparable civilian and military data are available, younger armed forces personnel show higher rates of mental health problems than are found among their counterparts in the general population.^{kk} [See Table 2 on page 28]

The findings of these studies represent strong evidence against the view that the elevated prevalence of problems such as PTSD and post-deployment violence are due to trauma before rather than during a military career. War has a mental health effect, irrespective of pre-enlistment background, but the effect is greater for those who already have problems before deployment. Hence, the higher prevalence of mental health problems found in the armed forces relative to the general population, and among young and disadvantaged personnel when compared with similarly matched groups in the general population, is explained partly by pre-enlistment factors, but mostly by military factors. Whilst there are, no doubt, exceptions to these generalities, when the trauma vulnerabilities associated with youth and socio-economic disadvantage combine with exposure to war stress, an armed forces career appears to worsen the mental health of the youngest and most disadvantaged recruits.

Co-morbidity

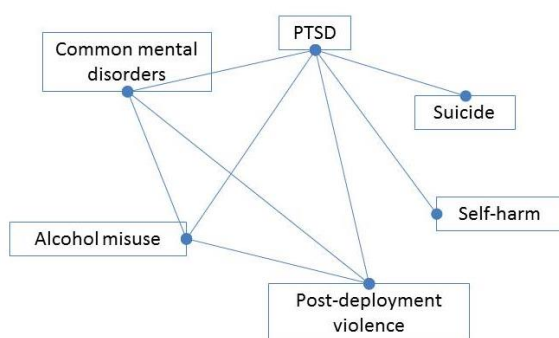
The studies show that it is common for individuals who experience one condition to be more vulnerable to others, known as ‘co-morbidity’. For example, research in both civilian and military settings has found that **a majority** of individuals with PTSD also have one or more other clinically significant psychological problems.^{(22) (33) (59)}

In research of British armed forces personnel, most co-morbidity associations have been found to be strong. Studies of military populations have found that PTSD is associated with common mental disorders,^{(2) (22)} alcohol misuse,^{(3) (56) (22)} post-deployment violent behaviour,⁽³²⁾ self-harm,⁽²⁹⁾ and (based on evidence from a US study)

suicide.⁽⁸⁵⁾ Alcohol misuse is also associated with anti-social and violent behaviour;^{(26) (32) (36)} and common mental disorders are associated with post-deployment violent behaviour.⁽³²⁾

Most of these factors also increase the odds of unemployment and/or social exclusion after discharge.⁽⁷⁾ For example, when compared with personnel without PTSD, those who screened positive for the disorder were found to be approximately **four times** as likely to report homecoming violent behaviour,^{(32)ll} about **three times** as likely to have committed a violent offence after deployment,^{(36)mm} and nearly **eight times** as likely to report a history of self-harming behaviour.⁽²⁹⁾ⁿⁿ A US study found that personnel with PTSD were also approximately **four times** as likely to suicide.

Figure 3: Co-morbidity associations (shown by connecting lines) between PTSD, common mental disorders, alcohol misuse, post-deployment violence, self-harm, and suicide, based on the evidence of studies used for this report. ^{(2) (3) (22) (26) (29) (32) (36) (56) (85)}



Overview

The findings presented in this section are summarised in the table and figure overleaf. The figure shows the relative prevalence among armed forces and recent ex-armed forces personnel of five of the mental health indicators just discussed, with the general population as a reference group in each case. Post-deployment violent behaviour is not included in the figure because civilian comparators are unavailable. Note that in the case of common mental disorders and alcohol misuse, values for armed forces personnel are based on samples that include a minority of ex-forces personnel, and are probably slightly skewed upwards as a consequence. However, for reasons discussed earlier, the prevalence values for current forces personnel are likely to represent under-estimates overall, due to the stigma attached to reporting symptoms, especially when study participants are not assessed anonymously. The largest differences are shown in alcohol misuse (general population vs. armed forces vs. ex-armed forces) and post-traumatic stress disorder (armed forces vs. ex-armed forces), especially among those deployed to Iraq and/or Afghanistan. There are also smaller but still appreciable differences in the rates of common mental disorders.

Figure 4: Prevalence of PTSD, alcohol misuse, common mental disorders, self-harming behaviour and suicide according to the most recent studies of British armed forces and ex-armed forces personnel who left the forces after 2003, compared with general population (adjusted for proportions of men and women in the armed forces). ^{(18) (23) (29) (30) (37) (41) (55) (83) (86)}

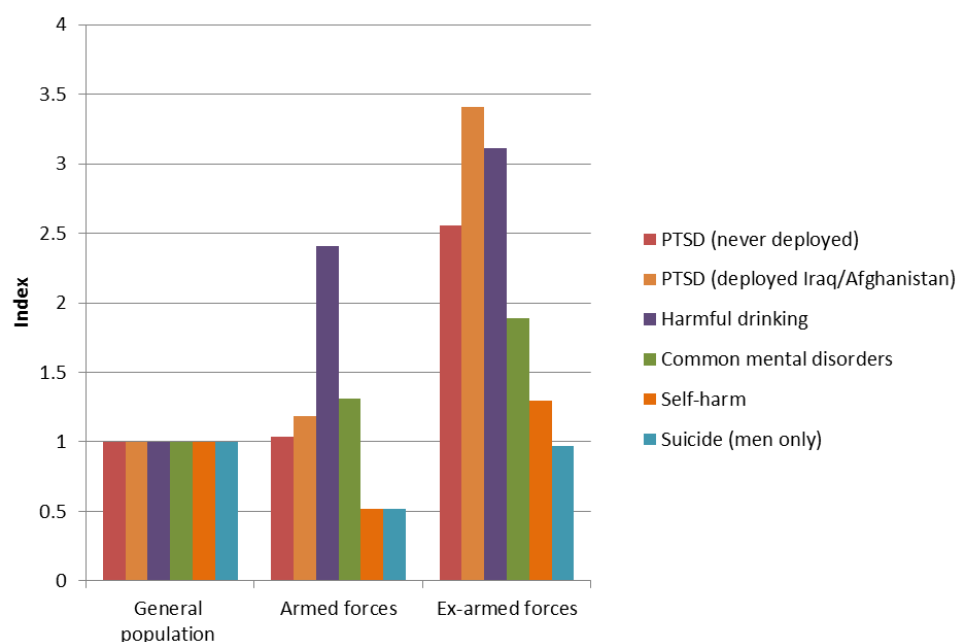


Table 1:
Studies published 2004-2013: Prevalence of PTSD, alcohol misuse, common mental disorders, self-harm and long-term incidence of suicide in British armed forces personnel and former armed forces personnel, with general population comparison.

	General population	Armed forces		Ex-armed forces	
		Deployed	Not deployed	Deployed	Not deployed
Probable PTSD	2.7%	3.2%	2.8%	9.2%	6.9%
Alcohol misuse (harmful drinking)	5.4%	13.0% †		16.8%	
		15.7% †	10.9% †		
Common mental disorders	15.0% *	19.7% †		28.3%	
		19.6% †	19.9% †		
Post-deployment (Iraq) violent behaviour	N/A	12.3%	N/A	16.2%	N/A
Self-harm	8.0%	4.2%		10.5%	
Suicide (men)	1	0.52		0.97	

Studies of military populations used same or very similar dataset with identical assessment criteria: PTSD case = PCL > 49 (military) or TSQ > 5 (gen.pop.); common mental disorders case = GHQ-12 > 3; Alcohol misuse case = AUDIT > 15; post-deployment violence case = self-reported violence against family member or in community in weeks after homecoming; questions used to assess for self-harming behaviour were similar in the military and general population studies; suicide figures are expressed as age-standardised mortality ratios, where gen. pop. = 1 (based on 20 year period 1993-2012).

Figures for the general population are adjusted for the gender profile of the armed forces, with the exception of self-harming behaviour, which showed no significant differences between men and women in the general population.

All armed forces figures are for veterans who were in the armed forces in 2004 or later; all ex-armed forces figures are for veterans who left the armed forces after 2003.

Deployed/not deployed columns refer to deployment to either Iraq or Afghanistan or both, except in the case of PTSD, where the 'not deployed' category refers to personnel who had never deployed to any war zone or peacekeeping operation. Merged cells indicate that the sample contained both deployed and non-deployed personnel. The division of armed forces / ex-armed forces in the case of post-deployment violent behaviour refers to whether or not the study participant had left the armed forces at the point they completed their questionnaire.

The figure marked * is an estimate based on differences in prevalence among men and women inferred from a separate study.⁽⁵⁵⁾ Figures marked with † are based on samples that contain a minority (23%) of ex-armed forces personnel; this is likely to inflate the values slightly.

Sources: Armed forces: ⁽³⁰⁾ for PTSD; ⁽²³⁾ and ⁽⁸⁶⁾ for alcohol misuse and common mental disorders; ⁽³²⁾ for violence; ⁽²⁹⁾ for self-harm; ⁽³⁷⁾ for suicide.

Ex-armed forces: ⁽³⁰⁾ for PTSD; ⁽⁴¹⁾ for alcohol misuse and common mental disorders; ⁽³²⁾ for violence; ⁽²⁹⁾ for self-harm; ⁽¹⁸⁾ for suicide.

General population: ⁽⁸³⁾ for common mental disorders; ⁽³⁷⁾ for suicide; ⁽⁵⁵⁾ for all other values.

BEFORE:

THE ROLE OF ADOLESCENT MATURITY AND CHILDHOOD ADVERSITY

Why age and childhood background matter

Certain aspects of the socio-demographic background of recruits confer mental health vulnerabilities that become important after enlistment. In particular, younger recruits and/or those from disadvantaged backgrounds show markedly higher rates of most of the mental health problems discussed in this report. For example, most of the six mental health-related problems discussed in this report show a linear relationship to age, with the youngest personnel the most affected and the oldest, the least. In part, this is because younger recruits often have a concentration of other risk factors such as childhood adversity, low rank and having a close-combat role, but it is partly also due to adolescent maturity, which affects how trauma is processed.

There has been relatively little research on the role of age and socio-economic background on mental health in the British armed forces but there are some lessons from the Vietnam War. One study of veterans with persistent PTSD ten or more years after the war found that the average age at which they had experienced combat was just **18.3** years. By contrast, a control group of veterans without the disorder had experienced combat at **21.5** years of age on average.⁽⁷⁰⁾⁽⁹⁰⁾ A particularly sophisticated study found that young age of male Vietnam War troops was directly associated with higher rates of PTSD, even when researchers controlled for other age-related variables such as greater war-zone exposure:

‘Regardless of their degree of exposure to war-zone stressors, men who were younger when they went to war were more likely to display post-war PTSD symptoms.’⁽⁴⁵⁾

The authors noted that this finding was consistent with earlier research indicating that maturity of the ego affects how well veterans cope with trauma and with the transition to civilian life afterwards.^{(87) (88)}

Alongside the elevated risk faced by the youngest personnel, adversity during childhood – such as problems in the family, at school, or with police – predisposes individuals to develop stress-related disorders like PTSD if they experience traumatic stress as adults.^{(15) (16) (45) (76)} For example, a study of Vietnam War veterans found that pre-war vulnerability factors put combatants at greater risk when they experienced a high level of war zone stress.⁽⁴⁵⁾ Given that a strong attachment bond with others before, during, and after a traumatically stressful experience is protective of mental health, when this bond is lacking (as it can be for recruits from a troubled background) or disrupted (as it can be when veterans leave the forces), the post-traumatic risk to mental health increases.⁽⁸⁹⁾

Not only are young people from socio-economically disadvantaged backgrounds more vulnerable to trauma, they are also the primary target group for armed forces recruiters, especially for the Army. The government states that the minimum recruitment age, **16**, reflects the statutory school leaving age⁽⁹⁰⁾ and the Ministry of Defence is concerned ‘to recruit people before they have made other lifestyle choices’.⁽⁹¹⁾ Testimony from veterans and other commentators also suggests that armed forces prefer younger recruits because, compared to older recruits, they are psychologically malleable in training and more willing to accept military culture uncritically.^{(61) (92)} In his landmark book *War*, the naval veteran and historian Gwynne Dyer writes of teenage recruits:

‘It’s easier if you catch them young. You can train older men to be soldiers; it’s done in every major war. But you can never get them to believe that they like it, which is the major reason armies try to get their recruits before they are twenty. There are other reasons, too, of course, like the physical fitness, lack of dependents, and economic dispensability of teenagers, that make armies prefer them, but the most important qualities teenagers bring to basic training are enthusiasm and naiveté.’⁽⁹²⁾

A Falklands War veteran, looking back on his decision to enlist as a teenager more than 35 years previously, commented that only impressionable young people would be willing to relinquish their autonomy in favour of military authority. ‘You couldn’t get a 30 year old to do it, they just wouldn’t do it,’ he said.⁽⁶¹⁾

In the UK, which is one of just 19 states in the world that recruit into the armed forces from age 16, over half of new enlistments are aged 20 or less; in 2012-13, about one in five (2,460; **18.5%**) was aged under 18.⁽⁹³⁾ A 2007 study of men in the armed forces found that **37.5%** had had problems with the police; **17.9%** had been suspended or expelled from school; and **9.7%** reported being regularly hit by a parent or care-giver as children.⁽¹⁵⁾

Almost all armed forces recruits aged less than 18 join the Army (**91.5%** in 2012-13).⁽⁹³⁾ Most Army recruitment takes place in disadvantaged regions⁽⁹⁴⁾ and targets mid-teens,⁽⁹⁵⁾ with the poorest social groups encountering recruiters most often (e.g. in schools).⁽⁹⁶⁾ Consequently, the Army contains a high proportion of young people from disadvantaged backgrounds – higher than that in either the RAF or Navy.^{(15) (26) (93)} The 2007 study just mentioned found that **28.7%** of Army personnel scored highest on a scale of childhood adversity, which compared with **17.9%** in the Navy and **15.4%** in the RAF.⁽¹⁵⁾

The concentration of younger, more disadvantaged recruits is higher still in the Infantry, which is also by far the most combat-exposed part of the Army; it has seen proportionally **six times** as many fatalities in Afghanistan as the rest of the Army to date (see Table 11 on page 58). Unlike many other armed forces roles, one can join the Infantry at age 16 and without holding GCSEs at any grade. The Infantry accounts for just **14.3%** of armed forces personnel but in the last five years, **31.7%** of new armed forces recruits aged under 18 (vs. **24.1%** of adult recruits) enlisted as Infantrymen.^{PP} A study found that **36%** of Infantry recruits scored highest on the childhood adversity scale just mentioned – a substantially higher proportion than is found in the rest

of the armed forces.^{(15) (25)} Other studies have shown that a recruit with a pre-enlistment history of violent/anti-social behaviour is **between 1½ times and twice** as likely to enlist into a combat role, including the Infantry.^{(26) (36)} We have shown elsewhere that those who enlisted into the Army at 16 and passed out of training have been approximately **twice** as likely to die in Afghanistan as those who enlisted as adults; part of the reason is likely to be the disproportionate number of 16 year olds joining the Infantry.⁽⁹⁷⁾ (Table 9 and Table 10 on page 57 show the concentration of younger and disadvantaged recruits in the Infantry compared with other parts of the armed forces.)

In summary, the youngest and poorest recruits tend to do the most dangerous and psychologically traumatic jobs in the armed forces. Being both more vulnerable to trauma and more exposed to it, young and disadvantaged recruits in the armed forces are at particularly elevated risk of psychological ill-health. As outlined in the evidence that follows, this group shows significantly higher rates of most of the six indicators of mental health problems discussed in this report.

A report published by the Mental Health Foundation in 2013 called for more focused research on how and why younger military personnel are affected by mental health issues; we join this call.⁽⁹⁸⁾

Youth and socio-economic disadvantage as risk factors in the British armed forces

Youth

Several studies have found that PTSD is more common among younger personnel.^{(3) (9) (16) (23) (86)} A study of British Iraq War veterans in 2008 found that personnel aged under 25 had a PTSD rate of **5.7%**, **slightly higher** than the **5.0%** rate found in the same age group in the general population; ^{(16) (55)qq} the rate in the oldest military group (aged 40+) was **2.6%**.⁽¹⁶⁾

US studies also show an increased risk of PTSD for younger personnel.^{(43) (47) (56)} In studies of Vietnam War veterans, a young age at enlistment and at entry into the war zone were each associated with higher rates of negative mental health outcomes.^{(56) (45) (47)}

Alcohol problems are much more prevalent among the youngest personnel. The most recent large British study investigating alcohol use by age (in 2010) found that personnel most likely to drink at harmful levels were the

youngest age group assessed (aged 18-24), with the rate reducing with increasing age.⁽²³⁾ In this group, **26.1%** were misusing alcohol,⁽⁸⁶⁾ which is approximately **three times** the **8.4%** rate found in 2007 of a similar age group (aged 16-24, adjusted for the gender profile of the armed forces).^{(55)IT}

The British study investigating post-deployment violent behaviour found that the average age of those reporting such behaviour was younger than those not reporting it.⁽³²⁾ In 2012, **20.6%** of British male armed forces personnel aged 30 or younger in 2012 were found to have committed a violent offence at some point in their lives, compared with **6.7%** at the same age in the general population.^{(36) (99)} Again, the proportion with such offences fell with increasing age.⁽³⁶⁾

Self-harm and suicide are also more common among younger personnel.^{(18) (29) (37) (39)} Suicides among males

aged under 20 in the British armed forces were **82%** more common from 1993 to 2012 than among people with a matched demographic profile in the general population;^{(37) (39)} this age group also has the least contact with specialist mental health support services.⁽¹⁸⁾ The risk among younger veterans appears to increase after leaving the armed forces;^{(18) (29)} one study found that the suicide rate among ex-forces personnel aged 16-24 was **two to three times higher** than in the same age group in the general population.⁽¹⁸⁾ This study also found that the risk was highest for the youngest age group (16-19) and decreased steadily with increasing age; the 30-39 age group showed a suicide rate lower than that for the same age profile in the general population.⁽¹⁸⁾

In common with findings for the general population, youth appears to be unrelated to the prevalence of common mental disorders in the armed forces.^{(1) (15) (55)}

Table 2 and Figure 5:
Relative prevalence of PTSD and alcohol misuse and incidence of suicide in youngest age group in armed forces and general population.

	General population	Armed forces
PTSD	5.0%	5.7%
Alcohol misuse	8.4%	26.1%*
In-service suicide (relative risk ratio)	1	1.82

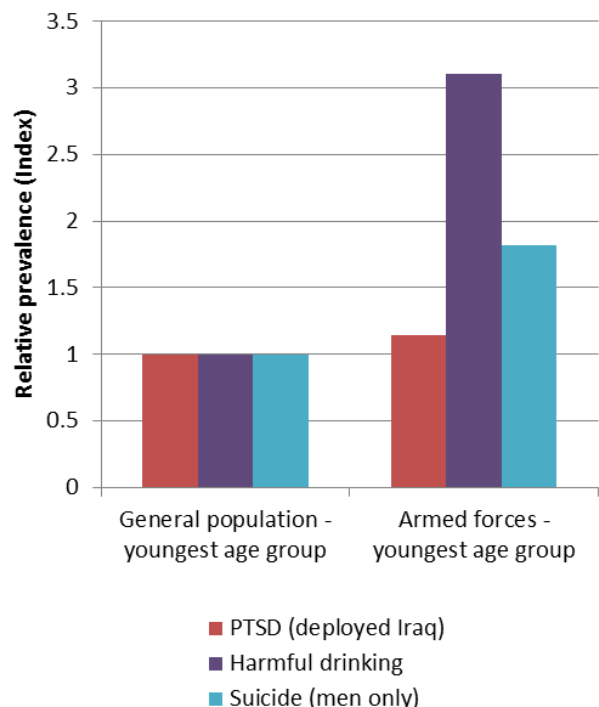
Value marked with * are based mainly on current personnel and include a minority (36%) of former personnel. See ⁽²³⁾ (Table 2).

Age groups are: PTSD armed forces, 18-24; PTSD general population, 16-24; alcohol misuse, 16-24; suicide, 16-19.

Sources: ⁽³⁷⁾ for suicide; ⁽¹⁶⁾ for PTSD in armed forces; ⁽⁸⁶⁾ for alcohol misuse in armed forces; ⁽⁵⁵⁾ for PTSD and alcohol misuse in general population (adjusted for gender profile of the armed forces);

All armed forces sources (except for suicide) use the same or a very similar dataset with identical assessment criteria (PTSD case: PCL > 49; Alcohol misuse: AUDIT > 15).

Comparable data for common mental disorders and self-harm are not available.



Socio-economic disadvantage

The armed forces do not collect information about the socio-economic background of recruits and, as far as can be ascertained, no study of forces personnel has investigated direct associations between socio-economic factors and mental health outcomes. Despite this, three other factors on which data are available can serve as approximate statistical proxies for socio-economic disadvantage: educational under-attainment,^{(100) (101)} childhood social adversity,⁽¹⁰²⁾ and a history of anti-social behaviour (ASB).⁽¹⁰³⁾

Collectively, the studies reviewed for this report show that personnel who under-achieved at GCSE level, report an adverse childhood background, or have a history of ASB show markedly higher rates of most of the mental health-related problems discussed in this report. In the armed forces, poor GCSE results are associated with PTSD, common mental disorders and alcohol misuse,^{(16) (21) ss} adversity in childhood is an important risk factor for PTSD,^{(15) (16) (21) (30)} common mental disorders,⁽²¹⁾ alcohol misuse,⁽¹⁵⁾ post-deployment violence,^{(32) (36)} and self-harm;^{(29) tt} and a history of ASB is associated with alcohol misuse⁽²⁶⁾ and post-deployment violence;^{(32) uu}

For example, one study found a PTSD rate of **8.4%** among Iraq War veterans who had joined the armed forces with no GCSE qualifications, which compared with **3.3%** among those with A Levels.⁽¹⁶⁾ Recruits without qualifications are also most likely to be enlisting youngest, straight after secondary school. Another study found that **7.2%** of military personnel with a background of high childhood adversity met the criteria for PTSD, which compares with **1.9%** among those with least adversity in their background.^{(15) vv}

Of personnel with the highest levels of childhood adversity, **27.2%** screened positive for alcohol misuse (compared with **6.6%** of those with least adversity) and **29.0%** for common mental disorders (compared with **12.5%** of those with least adversity).⁽¹⁵⁾ Prevalence of common mental disorders was found to be **23.3%** among those who joined the armed forces with no qualifications.⁽²¹⁾

A study that investigated self-reported violent behaviour in the weeks following homecoming from Iraq, also asked participants if they had a pre-enlistment history of anti-social behaviour. Some **29.6%** of personnel with such a history reported that they had behaved violently on homecoming, which compared with **8.1%** among those without such a background.^{(32) ww}

A self-reported history of self-harm in the armed forces has been found to be **three times** as common among those who had spent time in local authority care when compared with those who did not,⁽³⁹⁾ and **several times** as common among those who reported multiple childhood adversity factors, as among those who reported few or none.⁽²⁹⁾

Studies of Vietnam War veterans found that low educational attainment and other factors associated with socio-economic disadvantage were strong predictors of PTSD after war zone exposure^{(43) (47)} and that childhood corporal punishment was associated with the persistence of PTSD after war-zone exposure.⁽⁴⁷⁾

Just as prevalence of certain mental health problems is higher in socio-economically disadvantaged armed forces personnel, so the same applies to the civilian population. Precisely comparable data for military and general populations are not available. In the poorest fifth of civilian households, **6.2%** of men and **4.1%** of women were found to have PTSD, which equates to **6.0%** when adjusted to match the gender profile of the armed forces.^{(55) xx} This is about **twice** the average rate,. It is still **lower** than that found among military personnel without GCSEs (**8.4%**)⁽¹⁶⁾ or with a high degree of adversity in their childhood background (**7.2%**),^{(15) yy} although these measures are not directly comparable.

Although direct comparisons with civilian life are not possible, the research gives reason to caution against the belief that joining the armed forces benefits socio-economically disadvantaged individuals by reforming previous violent behaviour or heavy drinking, or by improving mental health. The limited available evidence appears to point in the opposite direction.

DURING: THE ROLE OF MILITARY CULTURE, STRUCTURES AND OPERATIONS

Military culture

The training regime

Military culture is largely shaped by the armed forces' need to turn young civilians into operationally effective combatants by inculcating conformity with and obedience to the military system. Whilst training includes conventional teaching of skills such as fieldcraft and handling weapons, its main objective is to reinvent how recruits think and behave.^{(63) (80)} Training 'breaks you down and then rebuilds you in a different way', as one veteran has put it.⁽⁶⁷⁾ Another described training as operating on two fronts: it shapes minds by 'indoctrinating' recruits into the ideological values of the military system and 'conditions' behaviours by rewarding obedience and punishing dissent.⁽⁶¹⁾

In 1986, the sociologist and former soldier John Hockey wrote a detailed description of military training, which in large part still stands today.⁽⁶³⁾ The training regime aims to dispossess recruits of their civilian role and build a new self-image in its place, explains Hockey. It achieves this by creating distance from civilian life from the first day. The process operates by making absolute demands of recruits which erode self-determination (free choice), autonomy of movement, privacy and choice of personal appearance. Required to look and behave the same, recruits are anonymised and controlled. The consequence of relentless activity is fatigue; of the demands of authoritarian power, anxiety; and of the absence of civilian norms and social support, disorientation.^{(63)zz} Hockey says that this 'socialisation under pressure' will 'soften' recruits in readiness for the imposition of new personal self-images, values, and definitions of personal achievement.^{(63)aaa}

An effect of these adversities is the deepening of peer camaraderie, which veterans frequently cite as the most valued benefit of an armed forces career. Camaraderie serves as a source of psychological freedom within a coercive system and a form of solidarity in the face of the arduous demands made by authority figures. On the other hand, it also serves the purposes of the military system. If one person fails in a task, the whole group is punished, ensuring that recruits begin to exert mutual peer pressure in such a way as to reinforce compliance with the demands made.^{(63)bbb (61) (104)} In effect, the peer group collaborates with the system to assure the successful imposition of military values and behaviours.

Once the enculturation of values and behaviours has succeeded in gaining the willing compliance of trainees, the socialisation process enters a new, less rigorous phase, Hockey observed.⁽⁶³⁾ As a measure of permissiveness returns, trust and humour between commander and commanded partially offset the strictures of the training regime. Trainees might no longer respond to their superiors' gestures of leniency with relief, but rather with gratitude. With normativity thus established, the authoritarian application of power is less immediately necessary, although it remains omnipresent as the guarantor of military culture.

Trainers and trainees affirm hyper-masculine norms: aggression, stoicism and aversion to weakness. 'Role effectiveness' is associated with 'masculine potency', according to Hockey.^{(63)ccc} In the military group, the uniformity of this identity is enforced through the training process and reinforced by formal and informal (including illicit) hyper-masculine bonding rituals. Social and institutional pressures to conform create a strong insider-outsider dynamic, in which 'military' is understood in opposition to 'civilian', strength and weakness become gendered polar opposites, and values

antithetical to a hyper-masculine ideal are resisted as threatening. Indeed, Hockey and others have found that weakness and failure are frequently associated with femininity or homosexuality.^{(63) (104) (105) (106) (107)}

Those who are able to conform to these cultural norms and gain insider status within their unit group are likely to benefit from relatively strong peer support, which is a protective factor for mental health in the immediate aftermath of war trauma.^{(27) (28)} Individuals who do not identify with a hyper-masculine culture risk becoming outsiders within the system; in the event of traumatic stress, these may be at greater risk of a reaction that persists.

Training builds recruits' preparedness for warfare, which is an important mitigator of later risks.⁽⁴⁾ On the other hand, the effects of the training regime are not uniformly benign. It valorises an ideal of hegemonic masculinity by rewarding toughness, aggressiveness, endurance and loyalty.⁽⁶⁷⁾ It lionises its place in national identity by inculcating pride in regimental histories.⁽⁶¹⁾ Its purpose includes to overcome recruits' innate inhibition to killing at close quarters by conditioning their minds to use lethal violence on demand and without hesitation. R Wayne Eisenhart, a Vietnam War veteran, remembers one of his trainers expressing this in stark, simple terms after a close-combat exercise:

'The next time you are in a bayonet fight, one of you will die and that will be the one who is not aggressive enough.'⁽¹⁰⁴⁾

The process subjects trainees to a complex of psychological effects – positive and negative – which are likely to affect how they react to traumatic experiences later.⁽⁸⁰⁾ Among the demands that military structure and culture make of new recruits are:

- To embrace pride in the armed forces, including its symbol structures, rites, rituals and its chosen narrative epitomised by regimental histories;
- To obey orders without hesitation, affirm hierarchical power structures, and accept the punitive sanctions of military discipline;
- To maintain a high level of fitness and develop psychological and functional readiness for challenging tasks;
- To accept the terms and conditions of service, which forbid trainees to leave for a number of years once the first few months of training have passed;^{ddd}

- To strive for recognition, such as by embodying honourable values, being promoted and achieving distinction in the course of duty;
- To support others under pressure and accept support in turn, but also to spend long periods away from familial and other civilian sources of support;
- To accept the armed forces' ethical judgements on warfare and to suppress doubt, including moral doubt and shame;
- To be stoical in the face of hardship and not to complain openly.

Some of these demands, such as fitness, peer support, preparedness, personal striving and stoicism may be protective in respect of later potential trauma.^{(4) (27) (28)} Others, such as distance from family and friends, loss of autonomy, restrictive terms of service, and suppression of shame feelings, may all enhance vulnerability.^{(6) (7) (67)} Denial of doubts, as well as enculturated pride in the armed forces, might each play a role in supporting personnel to manage the effects of traumatic events while they are happening, only to postpone them until homecoming or they leave the forces and look back on their military career with the perspective of civilians.^{(60) (80)}

Few studies attempt to investigate whether the inculcation of military culture as a whole protects or harms mental health, but two conclusions are possible. First, the demands of a military culture affect the ways in which veterans respond to trauma and try to cope with it, even if we cannot determine exactly how.⁽⁶⁸⁾ Second, the mental health effects of building preparedness for warfare are likely to be complex, with some that enhance resilience and others that exacerbate vulnerabilities.^{(4) (6) (7) (27) (28) (60) (67) (80)}

Leadership and in-unit support

If personnel complete training, deploy to war zones, and experience traumatic events, the culture of a well-functioning military unit can partially mitigate the risk to mental health.^{(27) (28)} Conversely, units that are poorly led (e.g. commanders are not fair to some personnel), have low morale (e.g. personnel are unmotivated), or are less mutually supportive (e.g. there is little trust between peers), tend to be at higher risk.^{(27) (28)}

Two recent studies show that, in general, personnel deployed to Iraq and Afghanistan have reported strong unit cohesion; for example, **85%** of troops deployed to Iraq⁽²⁷⁾ and **92%** of those deployed to Afghanistan⁽²⁸⁾

reported a ‘sense of comradeship’ in their unit. Of those deployed to Afghanistan, 70% said unit morale had ‘generally been high’,⁽²⁸⁾ which contrasts strongly with the annual armed forces survey, which in 2013 found that only 19% reported high unit morale.^{(71) eec} Deployed personnel generally reported good leadership from their commanders, although they also expressed some ambivalence: of personnel deployed to Afghanistan, 59% said their commanders always or often ‘treated all members of the unit fairly’; the remaining 41% thought that this was only sometimes or seldom the case.^{(28) fff}

To what extent are these factors associated with mental health risks? The studies show that unit cohesion appears to mitigate the risk of PTSD and also has a slight-to-moderate effect on the prevalence of common mental disorders.^{(27) (28)} Good leadership and morale are also associated with slightly reduced prevalence of the same two mental health outcomes in personnel deployed to Afghanistan.^{(28) ggg} Both studies found that, of the three in-unit factors investigated, cohesion (particularly as measured by perceptions of unit comradeship) is the most influential in mitigating mental health risks, although the Iraq study found that this did not moderate the effect of traumatic events on personnel.⁽²⁷⁾ It therefore seems that good leadership, cohesion and high morale are all protective of mental health but cannot inure personnel against the effects of intense or prolonged combat exposure.

Women and men in military culture

Several commentators have noted that, historically, the British armed forces have self-identified as a white, male, heterosexual, and hyper-masculine organisation.^{(67) (108) (107) (106)} At various times, it has been a matter of policy to discount or tightly circumscribe the potential contributions of women, sexual minorities and ethnic minorities. Traditionally, armed forces authorities have seen these minority groups^{hhh} as manifestations of otherness, deleterious to the social cohesion of military units and, thus, a risk to operational effectiveness.⁽¹⁰⁸⁾ These attitudes persist, but in recent decades military institutions have had to take account of rapidly changing social norms. In the 1970s, the armed forces became more receptive to recruits from ethnic minority backgrounds;⁽¹⁰⁸⁾ in the 1990s more roles were opened to women;⁽¹⁰⁹⁾ and a landmark ruling in 1999 at the European Court of Human Rights forced the Ministry of Defence to overturn a ban on gay and lesbian personnel. The following year, the UK signed an optional addition to the Convention on the Rights of the Child prohibiting the involvement of minors (aged under 18) in hostilities.⁽¹¹⁰⁾ In the early 2000s, following

criticisms of institutional sexism and racism, and realising a growing need to broaden the socio-demographic profile of recruits in order to fill the ranks, military authorities introduced strongly framed equal opportunities and diversity management policies, which have had some progressive effects. There appears to be no evidence that any of these developments has compromised operational effectiveness; a diverse military is not a less able one.

Women have been among those benefiting from this evolution in policy. In 1990, just 5.7% of armed forces personnel were women;⁽¹¹¹⁾ⁱⁱⁱ now the proportion has reached an all-time high, at 9.8%,⁽¹¹²⁾ although the status of women as a minority group in the forces remains. Indeed, certain policies, aspects of military culture, and the behaviour of some male colleagues ensure that women’s treatment and status remains unequal to that of men. The consequences of this for women’s mental health are not straightforward. Given the marked gender differences in the mental health of the general population, it is perhaps surprising that these are generally not found in the armed forces as a whole. The reasons for this appear to be complex.

It is policy, for example, to bar women from ground-based, close-combat roles, irrespective of whether they are able to achieve the same standards of physical fitness and strength required of men in these roles.⁽¹⁰⁹⁾ The barred roles account for around a third of all those available in the Army and also include the Royal Marines and RAF Regiment.^{jjj} Whilst the Ministry of Defence acknowledges that women are capable of front-line combat, it believes they present ‘potential risks associated with maintaining cohesion in small mixed-gender tactical teams’.^{(109)kkk} The policy does not explain the effect that women – as women – could have on ‘cohesion’ and the justice of this long-standing decision is widely contested. Nevertheless, by ensuring women’s exposure to traumatic events is less than men’s, as it has been in Iraq and Afghanistan,⁽³¹⁾ the policy’s effect is likely to reduce the risk to mental health.

The exclusion of women from certain roles assures their differential status in the forces, which is in turn reinforced by the hyper-masculine values enacted in military culture and which women have to navigate from the first day of their training. Insofar as women are identified as ‘other than’ the hyper-masculine norm, they may be less able than their male peers to access the strong social support from their unit colleagues that can be protective of mental health in situations of traumatic stress; a study to investigate this could be useful. The ‘otherness’ of women in armed forces culture is tacitly

supported by official military doctrine, according to the sociologist Victoria Basham. She argues that military authorities have historically cleaved to a speculative belief that operational effectiveness stands or falls on uniform 'social cohesion' – cohering as a group around a shared (in this case male) identity.^{(108)lll} In this light, the good faith underlying official diversity policies may be at odds with, and thus limited by, cultural suppositions about the kind of social group on which military effectiveness depends.⁽¹⁰⁷⁾ Sexual minorities and ethnic minorities could also be affected in the same way and for similar reasons.

The cultural and policy barriers to the full inclusion of women as equal participants in the military system have repercussions in the behaviour of some male peers. Specifically, in a culture that assumes an ideal of hegemonic masculine power, the behaviour of male colleagues can be a potential source of traumatic stress for women. In 2006, the Ministry of Defence and the Equal Opportunities Commission co-sponsored a study on the extent and nature of sexual harassment in the forces. 15% of respondents reported having had a 'particularly upsetting' experience of unwanted sexual behaviour directed at them from a colleague in the previous 12 months.⁽¹¹⁾ Among women aged 16-23 or of low rank, the proportion reporting the same outcome was higher, at 20% in each case. The study also found that whilst derisive attitudes about women were far from universal among military men, they were clearly pervasive and not routinely challenged: 'Ok there are a few exceptions but on the whole they shouldn't be here,' was one of many similar comments made by men interviewed.^{(11)mmmm} This study, undertaken some years after diversity and equality policies had been strengthened, showed that there remained a common view that women are problematic in a military context.⁽¹⁰⁷⁾ This consideration also bears on the debate concerning the exclusion of women from direct combat roles. One male veteran has said that while women remain a small minority of the armed forces, allowing them to join front-line units, although otherwise a progressive development for the armed forces, would increase the risk of harassment because such units often work as small teams in isolated locations.⁽⁶¹⁾

Another consideration is that women in the general population are more likely than men to screen positive for PTSD and common mental disorders.ⁿⁿⁿ Hence, women joining the forces may be more likely than male recruits to have experienced trauma before their military career begins. At the same time, civilian women are much less likely than men to drink at the harmful levels known to lead to other mental health-related

problems.⁽¹⁴⁾ Women are also more likely to join as officers than to enlist into the ranks, and to be in the Navy or RAF than in the Army;⁽¹¹²⁾ and women tend to experience fewer traumatic events in the war zone than do men (although women in medical roles are an exception).^{(5) (13) (31)} All these factors are likely to reduce the mental health risk for women.^{ooo}

As this discussion shows, the mental health risk specific to the situation of women in the armed forces is complex, with some factors likely to exacerbate the risk and others to mitigate it. The research in this area is limited. This report draws on three large British studies on gender differences in mental health in the armed forces and the few other studies which disaggregate results by the sex of participants. These have found that women in the forces experience higher rates of PTSD and alcohol misuse than are found in women in the general population and similar rates of common mental disorders;^{(5) (13) (31)} there is conflicting evidence on the relative risk of self-harm,^{(29) (39)} and no available data on suicide risk.⁽³⁷⁾

When compared with men in the armed forces, most studies have found that women show similar rates of PTSD and common mental disorders, and are less likely to misuse alcohol;^{(5) (13) (31)} again, evidence for relative risk of self-harm and suicide is inconclusive.^{(29) (37) (39)} However, the most recent large, general study of the prevalence of PTSD revealed a significant difference: 5.5% of women deployed to Iraq and/or Afghanistan screened positive, compared with 4.1% of men.⁽³⁰⁾

There are few studies of the ex-forces population and these tend not to disaggregate data by sex. There is some evidence that the suicide rate of ex-forces women is similar to that among ex-forces men.⁽¹⁸⁾

Overall, therefore, there appear to be few differences between men and women in the armed forces in respect of the prevalence of mental health-related problems. Despite the gendered differences in pre-enlistment vulnerability, combat exposure, risk of sexual harassment, and other factors, it is plausible that these operate against each other in shaping the mental health risks that women face.

The research also shows that, like men, prolonged or repeated combat exposure markedly increases the risk to women of a traumatic stress reaction.^{(13) (31)} One study found that women were more likely than men to develop a stress reaction to lower levels of combat exposure, but at higher levels this difference disappeared.⁽³¹⁾ A similar finding has been reported in a large US study.⁽⁴⁸⁾

Military structures

Although mental health research has devoted relatively little attention to the effect of military cultural factors, its structures and the nature of deployment have been more widely investigated. Two structural factors are routinely included in many studies: branch and rank.

Branch: Army (including Infantry) vs. Navy vs. RAF; and Regulars vs. Reserves

As discussed earlier, most of the youngest and socio-economically disadvantaged recruits join the Army, especially the Infantry.^{ppp} Older and less-disadvantaged recruits are more likely to join the Navy or RAF.^{(15) (113)}

This matters because in mostly ground-based wars such as those in the former Yugoslavia, Iraq and Afghanistan, the Army is more heavily engaged in high-stress combat operations than are the RAF or Navy. Of British wars in the last 40 years, only the Falklands conflict saw a large-scale, high-risk mobilisation of the Navy; none has seen more than a small minority of RAF personnel deployed in high-risk situations.^{qqq} For these reasons, being in the Army would be expected to confer greater mental health risk than either of the other two branches and indeed it does.^{(32) (37) (86)} Within the Army, Infantrymen experience the most high-intensity war zone exposure; the Infantry's fatality rate in Afghanistan has been approximately **six times** that for the rest of the Army over the duration of the war to date (see Table 11 on page 58). As discussed in the opening section, the risk of injury or fatality shows a close correspondence with the number of psychiatric casualties;⁽⁴⁾ it is therefore unsurprising that PTSD, common mental disorders and alcohol misuse in veterans returning from war are more prevalent in the Infantry than in other Army regiments/corps.^{(25) (86)} See Table 3 for detail.

For many of the same reasons, the Royal Marines (part of the Naval Service) also face higher risks than other parts of the armed forces, although their mental health is better overall than that of Infantrymen.⁽²⁵⁾ This might be because the Marines recruit fewer of the youngest and most disadvantaged recruits, although the official fatalities listing shows that their level of exposure to intense combat in Afghanistan has been similar to that of the Infantry.⁽¹¹⁴⁾

Two studies found that, when compared with deployed regulars, deployed reservists were much more likely to screen positive for certain psychological problems (but not for alcohol misuse).^{(10) (23)} This might reflect reservists' lower degree of preparedness for the stresses of deployment. Another factor could be that (according

to anecdote), in-unit social support, which is a protective factor immediately following a traumatic event, is experienced less strongly by reservists who are sent to join a unit that has already socially bonded.⁽⁶⁹⁾

These factors could have far-reaching repercussions for the future mental health of armed forces personnel if the government completes its restructuring of the Army to comprise a much higher proportion of reservists from 2020.

Table 3: Prevalence of three mental health problems, post-deployment violent behaviour and suicide in the British armed forces deployed to Iraq and/or Afghanistan, by branch and including the Infantry.

	Infantry	Army (inc. Infantry)	Navy	RAF
PTSD	6%	4.8%	2.8%	2.5%
Common mental disorders	24%	20.4%	18.9%	17.9%
Alcohol misuse	26%	14.4%	14.0%	7.9%
Post-deployment (to Iraq) violence	Not assessed	15.6%	11.1%	3.6%
In-service suicide (rate per 100,000)	Not assessed	12	8	8

All figures are for both deployed and non-deployed personnel, apart from those for post-deployment violence, which are for personnel returning from Iraq, and those for the Infantry, which are for deployed troops only.

Sources: ⁽²⁵⁾ for Infantry (excludes Paratroop Regiment); ⁽³²⁾ for post-deployment violence; ⁽³⁷⁾ for suicide; ⁽⁸⁶⁾ for all other values. All sources (except for suicide) use the same or a very similar dataset with identical assessment criteria (PTSD case: PCL > 49; Common mental disorders: GHQ-12 > 3; Alcohol misuse: AUDIT > 15; Violent behaviour: self-reported within weeks of homecoming)

Rank

A second important structural factor is rank. Commissioned officers tend to be older, come from middle class backgrounds and, on the whole, are less likely to be on the front line than other personnel; all these factors are protective of mental health. The opposite holds true for enlisted personnel.

Alongside these differences in age, socio-economic status and degree of probable combat exposure, high- and low-rank groups also experience different degrees

of control over their situation, which is another important factor in understanding why mental health problems are more common in personnel of low rank. Private soldiers and their equivalents in the Navy and RAF have least authority and control within the military structure, which has been shown to be a risk factor for PTSD in both British and US contexts.^{(19) (42)} In 2009, researchers investigated whether perceptions of ‘job control’ – feeling a measure of control over situations arising in one’s occupation – correlated with certain mental health problems in the British armed forces.⁽¹⁹⁾ They found that low job control was associated, independently of other factors, with PTSD, common mental disorders and alcohol misuse. For example, **5.0%** of personnel who experienced low job control screened positive for PTSD, versus just **2.2%** of those with high job control. An important finding was that ‘low job control was associated with psychological symptoms, even when the participant perceived their job as non-demanding’.⁽¹⁹⁾

In summary, low rank represents at least four vulnerability factors in respect of traumatic stress: undeveloped maturity due to young age; childhood adversity due to the relative socio-economic disadvantage of enlisted recruits compared with commissioned officers; greater probability of traumatic exposure in war; and low job control due to the diminished autonomy of low-rank personnel in the military hierarchy.

In this light, it is perhaps not surprising that personnel of low rank show higher rates of PTSD,^{(17) (19) (86)} common mental disorders,^{(19) (86)} alcohol misuse,^{(19) (86)} post-deployment violence,^{(32) (111)} self-harm,^{(29) (39)} and suicide.^{(18) (115)} Table 4 shows the striking difference in prevalence between lowest-rank enlisted personnel and commissioned officers with regard to PTSD, common mental disorders, alcohol misuse and post-deployment violence.

Table 4: Prevalence of three mental health problems and post-deployment violent behaviour in the British armed forces, by Private (or equivalent) rank and commissioned officer rank.

	Private or equivalent rank	Commissioned officer rank
PTSD	6.7%	1.5%
Common mental disorders	23.2%	16.4%
Alcohol misuse	22.6%	6.5%
Post-deployment violence	23.8%	3.1%

All figures are for both deployed and non-deployed personnel, apart from those for post-deployment violence, which are for personnel returning from Iraq.

Sources: ^{(32) (111)} for post-deployment violence; ⁽⁸⁶⁾ for all other values. Both sources use the same or a very similar dataset with identical assessment criteria (PTSD case: PCL > 49; Common mental disorders: GHQ-12 > 3; Alcohol misuse: AUDIT > 15; Violent behaviour: self-reported violence within weeks of homecoming)

Equivalent statistics for suicide and self-harm are not available.

Military operations

Deployment

The studies reviewed for this report are divided on whether deployment *per se* has a mental health effect on military populations when considered as a whole. For example, two British studies, five from the US and one from Australia found that deployment was associated with markedly higher rates of PTSD.^{(1) (21) (43) (46) (49) (50) (56) (116)} Three British studies^{(3) (9) (30)} found that deployment was not so associated, with the most recent (in 2012) finding that personnel deployed to Iraq or Afghanistan showed rates of PTSD **no higher** than those who did not deploy there.⁽³⁰⁾ One finding is clear, however: the duration and frequency of deployments matter. For example, one study found a PTSD rate of **3.0%** among those deployed for less than five months in the previous three years but **5.2%** among those deployed for 13 months or more.⁽¹²⁾

Findings for common mental disorders among deployed vs. non-deployed personnel are also unclear. Whilst several studies have found an association between deployment to war zones and common mental

disorders,^{(1) (2) (9) (21) (46) (116)} others have found little or no association,^{(17) (23)} and one US study found that the prevalence of common mental disorders was very similar in both deployed and non-deployed groups.⁽⁴⁶⁾ The most recent British study investigating common mental disorders in the armed forces as a whole (2010) found a rate of **19.6%** among those who deployed to Iraq or Afghanistan,⁽²³⁾ which is similar to the rate found in those who did not deploy (**19.9%**); both figures are higher than that for the general population (**15.0%**).^{(83)ttt} Prolonged deployment and being in a combat role both raise the risk of common mental disorders but the effect is small.^{(12) (23)}

Before discussing why and how some personnel are more likely than others to experience the direct violence that is a common trigger for a stress reaction, it is worth noting that alcohol misuse follows a more complex pattern. Studies show a strong association between deployment of all kinds and high levels of drinking.^{(1) (9) (10) (21) (23) (46) (116)} The most recent British study of alcohol misuse among deployed and non-deployed personnel found a **10.9%** rate among non-deployed personnel and **15.7%** among those deployed to Iraq and/or Afghanistan.⁽²³⁾ Among those deployed for 13 months or more during the three years up to 2003, the rate of alcohol misuse was found to be **23.9%**; more than **twice** the rate among those deployed for less than five months in the same period (**10.9%**).⁽¹²⁾ These results are likely to be due to the role of alcohol both as a means of bonding in military culture, perhaps especially when away from home, and as a way for traumatised personnel to 'self-medicate'.

Part of the reason for the lack of clarity on whether deployment *per se* confers a mental health risk is that the majority of personnel perform support roles. For these individuals, the prospect of traumatically stressful experiences is real but less than that faced by front-line combat troops, although much depends on the nature and intensity of the military action. Risk is therefore better understood in terms of the nature of military action and the role an individual performs in it. Only then is it possible to see why some personnel are much more affected by war than others.

Deployment roles

Deployments differ in terms of intensity of combat (if any), duration, type of enemy tactics, environmental conditions, and public support for or opposition to the war at home. Individuals' experiences of a mostly ground-based war, such as that seen in Iraq, will also differ markedly for an Infantryman on the front line and

an officer on a ship in a stand-off position; both are types of deployment but in each, the risk of traumatic stress is starkly different. For example, where British troops spent more than one month in a 'forward area' in Iraq (in either combat or support role), the rate of PTSD was found to be **6.8%**, about **five times** the rate found among deployed personnel who never spent time there (**1.3%**).⁽¹⁶⁾ Note that this **1.3%** rate is much lower than that found in the general population (**2.7%**),^{(55)uuu} whereas prevalence of the disorder was much higher among those who were closer to the trauma of warfare. If we also note that only **26%** of personnel reported spending more than a month in a forward area, whereas some **42%** never spent time there,⁽¹⁶⁾ it is clear that a minority of armed forces personnel were accounting for most of the elevated prevalence of stress.

In order to account for differing deployment experiences among personnel, some studies distinguish those with 'combat roles', on the grounds that these are more likely than others to be exposed to trauma. Since the combat role designation includes close-combat troops, it would be expected to indicate relatively higher rates of trauma exposure and consequent mental health problems, but for reasons discussed earlier the term is still problematically vague.

Nonetheless, studies show that personnel in combat roles are more likely to screen positive for PTSD^{(10) (23) (30)} (especially delayed-onset PTSD)⁽³³⁾ and/or alcohol misuse⁽²³⁾ and/or report post-deployment violent behaviour,^{(32) vvv} but they are not more likely to have higher rates of common mental disorders⁽²³⁾ or self-harm.⁽³⁹⁾ For example, of personnel deployed in a combat role to Iraq or Afghanistan or both, the rate of alcohol misuse was **22.5%**, which is more than **four times** the **5.4%** rate found in the general population^{(55)www} and approximately **60% higher** than the **14.2%** rate among troops deployed in support roles.⁽²³⁾ There are no data on whether combat roles confer a differential risk of suicide.

The most recent study (2010) of PTSD prevalence found that **6.9%** of personnel in combat roles screened positive for PTSD.⁽²³⁾ US studies have also found that personnel in combat roles are more likely than others to meet the criteria for PTSD at assessment.^{(50) (51)} A large meta-analysis of 28 British and US studies of Afghanistan War or Iraq War veterans found an average PTSD post-deployment rate of **5.5%**, but **13.2%** in the Infantry.⁽⁵¹⁾

One of the most striking apparent effects of deployment was found in two studies investigating post-deployment violent behaviour and offending. One found that the rate of violent offending (and other types of offending)

after deployment increased from pre-military and military pre-deployment levels,⁽³⁶⁾ which suggests that enlistment and subsequent deployment to Iraq continued and extended pre-military violent behaviour rather than ameliorated it. Of those self-reporting violent behaviour after deployment, approximately half also said they had a history of pre-enlistment anti-social behaviour,⁽³²⁾ which implies that the other half had no such history yet had become violent after their military experience. This study found that **22.9%** of combat personnel said they had behaved violently in the weeks after their return from Iraq.^{(32) xxx} Although combat roles are most likely to be filled by younger and more disadvantaged personnel who are also more likely than others to behave violently, the study's authors concluded that this did not fully explain the findings; deployment to Iraq had played a role in engendering post-deployment violent behaviour. They wrote:

'The rate of offending in the post-deployment period was greater than in the in-service pre-deployment and pre-military periods for all types of offending including violent offending. ... Deployment was not independently associated with increased risk of violent offending, but, among deployed personnel, serving in a combat role conferred an additional risk of violent offending after adjustment for pre-military violent offending and sociodemographic and military factors for violence (rank, service, engagement status, and serving status).'⁽³⁶⁾

An earlier US study had produced similar results showing a high rate of post-deployment violence among returning combat troops.⁽⁵⁶⁾

Intensity of warfare and exposure to traumatic events

Rather than rely on the 'combat role' designation, some studies have investigated intensity of warfare exposure and experiences of specific traumatic events as factors, since these are powerfully influential in shaping the risk of a stress reaction.^{(1) (2) (16) (17) (32) (36) (43) (46) (47) (56) (116)} For example, a US study found that male Vietnam veterans with high war-zone exposure were about **seven times** more likely, and female veterans **four times** more likely, to develop PTSD than those with moderate or low exposure.⁽⁵⁶⁾ More recently, a US study found that personnel experiencing high-intensity combat in Iraq were approximately **three times** as likely to screen positive for mental health problems as those in low-intensity situations.⁽⁴⁸⁾ That study and a British one, also based on Iraq deployments, both found that the risk

increased with the duration and frequency of tours.^{(12) (48)} These results appear to support findings from the Second World War and Vietnam: that relentless exposure eventually wears down individuals' resilience.^{(4) (72) (73)} Substantial periods of rest between deployments can partially, though apparently not fully, buffer the effects of prolonged exposure.⁽¹²⁾

Similar findings have been replicated in other studies from the last decade. In general, these assess degree of exposure by asking participants to say which traumatic events from a pre-set list they have experienced, if any. One British study's list included, among other items: 'Discharged weapon in combat', 'Thought might be killed', 'Saw personnel wounded or killed', 'Handled bodies'.⁽¹⁷⁾ A US study used a similar list, which also included items such as 'Being responsible for the death of an enemy combatant', 'Seeing injured women or children you were unable to help', 'Engaged in hand-to-hand combat', and 'Being responsible for the death of a non-combatant'.⁽⁴⁶⁾ Note that violence committed by others against oneself and violence by oneself against others are *both* traumatic; they are both influential as risk factors for PTSD, for example.^{(16) (80)}

Such lists are at least partially arbitrary. One veteran cast doubt on their validity by pointing out that they do little to capture the stressful effect of anticipated attack. In Northern Ireland, he said, the relentless expectation of violence was highly stressful, whether or not the attack ever came.⁽⁶¹⁾ Another limitation, which applies in particular to British studies, is that the lists provided to participants typically omit to ask whether they personally killed or wounded others at close quarters,^{(10) (16) (31)} which is known to be among the most stressful of all war experiences.⁽⁸⁰⁾

These reservations aside, the studies collectively show that exposure to traumatic events in combat is associated with PTSD^{(1) (2) (16) (17) (43) (46) (47) (56) (116)} and post-deployment violent behaviour,^{(32) (36)} but not common mental disorders.^{(17) yyy} An important finding is that PTSD and violent behaviour both show a 'dose-response' relationship to trauma, meaning that prevalence increases in proportion to exposure to traumatic events.^{(16) (32) (36) (46) (56)}

For example, **7.2%** of British Iraq War veterans who had experienced three or more events perceived as life-threatening met the criteria for PTSD, which is a prevalence more than **four times** greater than that among those with no such experiences (**1.7%**).⁽¹⁶⁾ A US study of soldiers in front-line battalions returning from Iraq found that the more firefights they had experienced, the more likely they were to develop PTSD, with **19.3%**

of those who had experienced more than five firefights meeting the criteria for the full disorder.⁽⁴⁶⁾ That PTSD rates found in US troops are higher than those found in British studies^{(10) (46)} reflects at least three differences: a) the greater intensity of warfare US personnel experience, on average;⁽⁴⁶⁾ b) the longer tours of duty, at usually 12 months for US troops and six months for the UK;⁽¹²⁾ and c) US studies' anonymous data gathering methods, which are known to result in more participants reporting symptoms.^{(34) (46)}

A strong dose-response relationship has been found between exposure to war trauma and self-reported violent behaviour in the weeks following homecoming. **23.7%** of those who experienced multiple traumatic events in Iraq reported this behaviour, which contrasts strikingly with **4.2%** among those without such experiences:^{(32) zzz}

- No experience of traumatic events: **4.2%** reporting their own violent behaviour on homecoming.
- One traumatic event: **5.8%** reporting the behaviour.
- Two or three events: **11.0%**
- Four or more events: **23.7%**.^{aaaa}

A strong dose-response relationship persisted even when other factors were controlled for in the analysis, such as pre-enlistment anti-social behaviour, length of deployment, and socio-demographic factors.⁽³²⁾

The British study on violent offending,⁽³⁶⁾ which shows similar results to a US study,⁽⁵⁶⁾ found the following dose-response relationship with respect to trauma exposure and subsequent conviction for a violent offence:

- Zero to one traumatic event: **1.6%** had subsequent convictions for one or more violent offences.
- Two to four traumatic events: **4.1%** with convictions for violence.
- Five to 16 traumatic events: **5.1%** with convictions for violence.^{bbbb}

All these findings point to the same conclusion: that the more directly a military group is involved in close combat and the more intense the warfare, the greater the proportion of psychiatric casualties and the greater the rate of post-deployment violence.

Caveat

Whilst this discussion shows that front-line personnel face by far the greatest mental health risks of deployment, and that those some distance from direct violence may not be affected negatively at all, there are of course exceptions. Personnel in support roles – usually the majority of those deployed – can still be affected by the stressors of war. For example, significant deployment-related stress reactions were found in US personnel responsible for graves registration in the Vietnam War, far from the front line.⁽⁵⁶⁾ In taking personnel a long way from home for extended periods, deployment adds strain on family life⁽¹²⁾ and is likely to reduce available social support, increasing vulnerability to mental health effects in the short- and long-term (see next section for detail). As mentioned earlier, there might also be aspects of deployment that are beneficial to mental health for those fortunate enough not to experience traumatically stressful events although, all factors considered, these potential benefits are marginal when compared with the risks.^{cccc}

AFTER: THE ROLE OF SOCIAL AND STRUCTURAL SUPPORT AFTER LEAVING THE ARMED FORCES

Former personnel who left the forces in the last 10 years are shouldering a substantially higher burden of mental health problems when compared to current personnel (all six outcomes) and the general population (five outcomes) (See Figure 4 on page 25). There are almost certainly several reasons for these striking differences. One is probably that mental health problems have led some veterans to leave the forces or to be discharged by their commanding officers. Another is that veterans are more likely to report symptoms to researchers when free of the strong stigma surrounding mental health issues within the armed forces. These factors are unlikely to tell the whole story, however. That mental health effects of warfare are often delayed, sometimes even for years, is also likely to contribute to the higher prevalence figures for veterans who have returned to civilian life.

One reason for this concerns what happens after someone has experienced traumatic events. If good social support is available immediately and in the longer-term, this can mitigate a stress reaction. In this respect, armed forces culture can be protective insofar as a strong sense of belonging persists for most members of the same unit.^{(27) (28)} In training, group solidarity buffers the oppressive effects of the military regime;⁽⁶³⁾ in war, veterans might have trusted one another with their lives. One former soldier told a researcher:

‘Strong *esprit de corps* and comradeship because you rely on your pals so much ... the kinship of your mates, that’s what pulls you through.’⁽⁶⁹⁾

This experience is not universal; military peer groups still have an insider-outsider dynamic⁽⁶⁷⁾ and the Army in particular has a chronic bullying problem currently reported by around **12%** of soldiers in the ranks.^{(71) dddd} ‘I got fucking hammered by the lads, because I was the youngest, naive, and they hammered me totally,’ said

another former soldier in the study that interviewed the veteran quoted above.⁽⁶⁹⁾ Even so, when personnel experience mutual trust in the face of adversity, as most do, it can have a psychologically protective effect.^{(67) (70)} Strong structural support, such as a secure income and home situation, can also buttress veterans’ resilience.

When veterans leave the armed forces, this buffer against a stress reaction can disappear. Three factors can conspire to increase the risk to ex-forces personnel: the ready support of peers is at least partially lost; the structural security of work and a steady income becomes more precarious; and stigmatic military culture, which suppresses open expressions of doubt and vulnerability, is at least partially lifted.

Many, perhaps most, veterans make the transition to civilian life and re-employment without difficulty,⁽⁷⁾ ^{eeee} but a significant minority struggle. One British study found that, of Gulf War veterans who had left the forces by 1997, **11.9%** were unemployed,⁽⁷⁾ a substantially **higher** rate than that found among the economically active general population in that year, which varied **between 6.6% and 7.7%**.⁽¹¹⁷⁾

Besides the practical difficulties of gaining re-employment, a recent study of ex-forces personnel found that veterans were also struggling to rebuild the social support networks they needed:

‘There was less social participation outside work, more social isolation and an apparent disengagement with military social contacts among service leavers in comparison to serving personnel.’⁽³⁸⁾

If conditions of relative security cannot be re-established in a civilian context then delayed-onset mental health problems become more likely.^{(7) (38) (47)} Veterans who are medically discharged by the armed forces appear to be at

heightened risk,⁽⁶⁾⁽⁶⁹⁾ as are those who are single and/or young.⁽⁶⁾ Veterans who leave before the end of their minimum contracted period of employment (between 3.5 and 6 years depending on military branch and age at enlistment) are by far the worst affected; one study found a probable PTSD rate in this group of **20.3%** – nearly **three times** the rate found in those who had left after serving out their minimum contract (**7.3%**)⁽⁴¹⁾ and more than **seven times** the rate in the general population (**2.7%**).^{(55)ffff}

Loss of social support can both result from and lead to unemployment, social exclusion, strained relationships with family members, or financial worry.⁽⁶⁾⁽⁷⁾ Negative life events, such as divorce, can compound the effect of poor social support and further increase the risk of military-related mental health problems surfacing and persisting.⁽⁴³⁾ Physical injuries can also play a role as daily triggers for re-experiencing traumatic events long afterwards.⁽⁵⁶⁾

Re-adjustment to civilian life is complicated by the culture shift that this requires. Just as new trainees strive to embody the values of a new culture when they join the forces, leavers undergo a partial reversal of this process when the norms of a civilian social context become predominant again. The military identity – knowing that one is a soldier, for example, and what this means to oneself – is shed and a new identity suitable for civilian life is needed.⁽⁶⁹⁾ Hyper-masculine behaviour, aggression, and suspicion of threat, which are encouraged from the beginning of an armed forces career, are generally discouraged in a civilian context and yet these attitudes are not readily reversible. As one veteran put it in a BBC interview:

‘The Army have trained you to think in certain ways, they’ve programmed you to react in certain ways, and you can’t come back and just switch off...’⁽⁶⁵⁾

A veteran of the Troubles who had long since left the Army said, ‘I’m threat-assessing all the time.’⁽⁶¹⁾ Asked what he meant, he pointed to a building across the street and said that he asks himself why some windows are open and others closed. In an interview for a study, another veteran pointed to the difficulty of moving from one culture in which lethal aggression is rewarded to another which forbids it:

‘We kill and experience that and at the end of the day [we’re] not normal people. I don’t consider myself to be a normal person, I don’t see it anymore. I look around and I think

they’re normal people, I’m not, I’m an ex-soldier, I’m not a civilian, I’m an ex-soldier.’⁽⁶⁷⁾

When veterans who have experienced traumatically stressful events leave the forces, they may not only have to manage the practical and cultural challenges of a return to civilian life, but also the re-emergence of distressing memories that had lain buried. This is partly because in the immediacy of a highly stressful event, the nervous system typically acts to prevent traumatic symptoms from manifesting in order to avoid their overwhelming effect.⁽⁶⁰⁾⁽⁶²⁾⁽⁴²⁾ By ‘burying’ trauma in the heat of warfare, the psyche is able to remain functional and survive an existential threat, but this might only defer a stress reaction. Writing in the *American Journal of Psychiatry*, J Stephen Frye and Rex Stockton concluded that the Vietnam War veteran

‘was generally able to develop and use the defense mechanisms of denial-numbing and repression to cope with the extreme fear, combat brutalization, uncertainty, and unpredictability of jungle warfare in Viet Nam. As the level of combat increased, the intensity of the defense mechanisms increased. These defense mechanisms facilitated survival and were adaptive in combat but, paradoxically, created the potential for delayed stress disorders once the veteran returned home.’⁽⁴²⁾

Asked about dealing with stress during deployment, one veteran said that despite many potentially traumatic experiences, he only once saw soldiers expressing signs of trauma at the time of the event, which was when a comrade had been killed by the IRA.⁽⁶¹⁾ More usually, it is only when conditions of relative safety have returned that veterans will experience a traumatic event retrospectively in its factual and emotional detail.⁽⁶¹⁾⁽⁶²⁾ The psychiatrist Peter Marin has suggested that leaving the armed forces also allows veterans space to reflect on the meaning and moral significance of past events.⁽⁶⁰⁾ This period of soul-searching is accompanied with feeling low and more vulnerable than usual to the stresses of daily life such as family strain.⁽⁶¹⁾⁽⁷³⁾⁽⁸⁰⁾ The anguish of post-war reflection could serve to trigger delayed-onset problems, especially if social support during this period is weak.⁽⁶⁰⁾⁽⁵⁹⁾ This might help to explain why some studies have found that the likelihood of presenting with PTSD symptoms increases with time elapsed after deployment.⁽²³⁾⁽³³⁾⁽⁵⁰⁾⁽⁵⁶⁾ It could also account for some of the substantially elevated prevalence of alcohol misuse and PTSD found in veterans from the Iraq and Afghanistan wars.

Relatively little research has been carried out into how veterans have fared after leaving the armed forces during the last decade, despite the greater burden of mental illness they have to shoulder. However, both British and US studies have found that loss of social support is a predictor of PTSD (especially unremitting PTSD) and self-harm in veterans.^{(7) (35) (38) (39) (43) (47) (56) (59)}

A US study found that loss or degradation of support, such as weakened ties with friends and family and deteriorating finances, was the most powerful predictor of the disorder persisting in the long-term.⁽⁴⁷⁾ British studies have produced similar findings.^{(35) (38)} One found that veterans with PTSD who felt socially unsupported were **11 times** more likely than well-supported individuals to still screen positive for the disorder three years later.⁽³⁵⁾

Less is known about whether loss of social support is more common in some groups than others, but the available evidence points once again to the influence of socio-economic factors. Veterans who were socio-economically disadvantaged before enlistment are more likely than others to struggle when they leave the forces, typically eight to nine years later.^{(118) gggg} Unsurprisingly, for example, British Gulf War veterans with 'low' educational attainment were more likely to be unemployed after leaving the forces;⁽⁷⁾ this was also found in a study of Vietnam War veterans.^{(43) hhhh} The same US study also showed that soldiers who experienced poor social support in childhood were more likely than others to experience the same after leaving the forces.⁽⁴³⁾ A British study found that nearly half (**46.6%**) of personnel with the lowest educational attainment (i.e. no GCSEs) had experienced the highest levels of childhood adversity measured, including problems at home and with parents/guardians (vs. **13.8%** of those with the most educational attainment);⁽¹⁵⁾ such problems would be likely to reduce availability of social support when leaving the forces. The 'confounding effects' of social disadvantage and low social support in military populations have also been noted in another British study.^{(6) iiii} The limited available evidence therefore appears to confirm anecdote: that socio-economic disadvantage before enlistment confers a risk of reduced social support after leaving the forces, although more research is needed.

Just as mental health problems grow worse when social and structural support is poor, they can also undermine prospects for receiving that support, resulting in a vicious cycle.^{(7) (23) (32) (47)} PTSD is a strong predictor in military populations of later homelessness, alcohol misuse and violent behaviour,^{(23) (32)} as well as unemployment and social exclusion in general.⁽⁷⁾ For

example, a study in 2010 found that PTSD was seriously impairing the daily functioning of between **8.5%** and **14%** of returning US soldiers who were assessed as having the disorder, meaning that PTSD had made it 'very' or 'extremely' difficult 'to do your work, take care of things at home, or get along with people'.⁽⁵⁰⁾ The study also found that the difficulties increased between three and 12 months after deployment.⁽⁵⁰⁾

For the same reasons, it is at least plausible that loss of social support is a factor in the elevated risk of common mental disorders, violent offending, self-harm and suicide after leaving the forces,^{(18) (36) (38) (39) (41)} particularly among those who were in the Army (in respect of suicide/self-harm)⁽¹⁸⁾ and those who performed combat roles (in respect of violent offending).⁽³⁶⁾ The study showing that suicide in the ex-forces population was about **twice** as common as among those still in the forces, also found that the risk was greatest during the two years after discharge,⁽¹⁸⁾ which is when many veterans experience the loss of social support most keenly. A separate study of current and former personnel found that those who said they had few or no friends were **up to three times** as likely, and those with family problems **up to 2½ times** as likely, to report self-harming behaviour as were veterans with access to good social support.⁽³⁹⁾

To a civilian ear, veterans' stories of war experiences can sound as if they belong to another culture, with its own idioms and values that are difficult to enter into imaginatively. Personal communication with veterans suggests that they are often reluctant to talk to civilians, including family members, about traumatic memories of their war experiences. One veteran said he wants to avoid burdening people he cares for by bringing his horrible experiences into their lives.⁽⁶¹⁾ He also said that he and others would be reluctant to confide details of their war experiences to their female partners. 'It's a man thing,' said another veteran.⁽⁶¹⁾ Both these veterans said they did not expect most civilians, including some mental health professionals, to understand their experiences from their point of view: 'I don't want to explain what a .50 Cal is,' said one.^{(61) jiii}

Charitable organisations wanting to work with veterans of the Iraq and Afghanistan wars have proliferated in recent years. This has broadened the availability of support services and introduced new forms of informal support, which often contrast with some of the more formal, official sources of help that some veterans find alienating and are 'like being back in [the military]'.⁽⁶¹⁾ The quality of this support is highly variable, however, prompting veterans and others to express some ambivalence about this development.^{(61) (119) (120)} One

veteran said that, although he has accessed some of these services, he prefers to rely on his own resources with support from other veterans he trusts in order to manage the mental health effects of his military experiences.⁽⁶¹⁾ For others, including Sergeant Major John Dale, whose story was mentioned in the opening section of this report, charities are picking up the baton the military system has dropped.

Is recovery possible? The psychiatrist Judith Herman argues that this depends on the re-empowerment of the traumatised individual, supported by good relationships with others.⁽⁶²⁾ Veterans able to talk about their situation to other people, who are in turn non-judgemental and empathic, are likely to have better prospects of managing and recovering from a mental health problem.^{(61) (69)} As war stress results from the catastrophic mass-breakdown of relationships, so the restoration of healthy relationships can create an environment in which a veteran might find what they need to heal.

Whether veterans will meet constructive attitudes from civilians depends on how we construct ‘the soldier’ –

and his/her counterparts in the Navy and RAF – in social culture. Civilians who treat veterans as the *Universal Soldier* who ‘really is to blame’ for war, according to the popular Vietnam-era Donovan song,⁽¹²¹⁾ merely compound and facilitate trauma without understanding it. Martie Rafferty, who worked with combatants from many conflicts, reminds us that ‘we all create the warrior’ and need to take our share of responsibility for the harm war causes to all those affected, including to those who fight in it.⁽¹²²⁾

Representing an altogether different attitude to veterans are civilians for whom every soldier is a hero; this, too, is facile. A study of 64 Falklands War veterans found that they disliked being lauded as ‘heroes’.⁽¹⁾ Whilst there are heroic acts in the midst of war, participants in this study thought the ‘hero’ epithet showed poor understanding of their involvement in the chaotic and brutal violence of the conflict.⁽¹⁾ Civilian distaste for soldiers on the one hand, and the cavalier lionisation of the warrior role on the other, both amount to the same thing: a convenient way to keep the complex humanity of veterans at arm’s length.

SUMMARY

In surveying six narrowly defined indicators of psychiatric ill-health in military populations, this report can only approximately describe some of the mental health effects associated with an armed forces career. By drawing on studies that: do not assess individuals anonymously and are thus subject to significant under-reporting; assess for problems only at a specific point in time; and only count as 'cases' individuals with relatively severe symptoms, this report's findings are likely to reflect a marked under-estimation of the mental health effects of an armed forces career, particularly among personnel deployed to war zones.

Despite these considerations, some conclusions are possible:

1. Alcohol misuse and post-deployment violent behaviour are the most significant problems affecting current armed forces personnel; PTSD and certain other mental health-related problems are in general not more common among current personnel than civilians;
2. Among personnel who left the forces in the last ten years, PTSD, alcohol misuse, common mental disorders, self-harm, and suicide are substantially more common than among current personnel, and (with the exception of suicide) than the general population;
3. Pre-military, military and post-military factors all powerfully affect mental health outcomes; the military group of factors is the most important, particularly war zone experiences, although the elevated prevalence of mental illness in the armed forces and ex-forces personnel is due to the combination of all three groups of factors;
4. Risk varies widely with socio-economic background and is greatest for young people from poor backgrounds; and
5. Those enlisting at 16 and 17 are most likely to be worst affected.

1. Alcohol misuse and post-deployment violent behaviour are the most serious problems affecting current forces personnel overall.

In the armed forces, harmful drinking has been found to be more than **twice** as common as in the general population (**13.0%** vs. **5.4%**); the problem is more common among deployed than non-deployed personnel. The rate of post-deployment violent behaviour is also high, with **12.3%** of armed forces personnel reporting violence against others within weeks of homecoming from Iraq. The rate of violent offending among Iraq and Afghanistan veterans after their deployment was found to be twice what it was before they enlisted. (For sources and detail, see page 18 and Figure 4 on page 25.)

The studies show that the prevalence of PTSD among personnel deployed to Iraq and/or Afghanistan was found to be **20% higher** than that found in the general population (**3.2%** vs. **2.7%**); among those not yet deployed it was **not appreciably different** (**2.8%** vs. **2.7%**). The rate of common mental disorders was **30% higher** than in the general population (**19.7%** vs. **15.0%**), while the prevalence of self-harm has been approximately **50% lower** (**4.2%** vs. **8.0%**), as has the long-term incidence of suicide. (For sources and detail, see page 18 and Figure 4 on page 25.)

The studies also show a high degree of co-morbidity (symptoms of more than one problem at once), with strong associations found between most of the six mental health-related problems investigated in this report. For example, personnel screening positive for PTSD were found to be approximately **four times** as likely to report homecoming violent behaviour as those without such symptoms, ^{(32)llll} about **three times** as likely to have committed a violent offence after deployment, ^{(36)mmmm} and nearly **eight times** as likely to report self-harming behaviour. ⁽²⁹⁾ⁿⁿⁿⁿ

Women remain a minority group in the armed forces, accounting for **9.8%** of all personnel. The factors impinging on their mental health are complex.⁽¹¹²⁾ In civilian life, women are more likely than men to have PTSD and common mental disorders but in the armed forces this difference is much smaller. In common with men and women in the general population, in the armed forces fewer women than men drink heavily. Even so, hazardous and harmful alcohol misuse is much more common among military women than civilian women. For example, **49.6%** of women met the conditions for criteria for ‘hazardous drinking’, which compares with **16%** in the general population.^{(31) (55) 0000} Potential sources of traumatic stress for women in the armed forces include the behaviour of male peers. A 2006 study found that **20%** of women of low rank reported a ‘particularly upsetting’ experience of unwanted sexual behaviour directed at them from a colleague in the previous 12 months.⁽¹¹⁾

2. Among ex-forces personnel, rates of most mental health problems are much higher than those found in the general population.

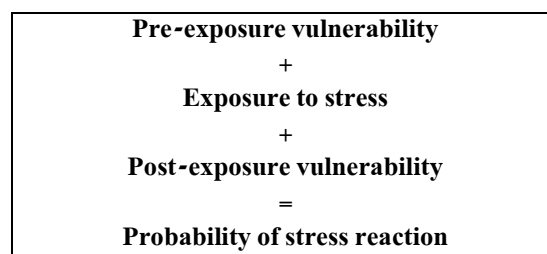
Ex-forces personnel discharged in the last decade show strikingly higher rates of mental health-related problems than do current personnel. In the ex-forces group, the prevalence of PTSD, common mental disorders, alcohol misuse and self-harm is markedly higher than that found in both the general population and the armed forces. Compared with the general population, studies of ex-armed forces personnel have found that alcohol misuse and PTSD (for those who deployed to Iraq and/or Afghanistan) are both **more than three times** as common (Alcohol: **16.8%** vs. **5.4%**; PTSD: **9.2%** vs. **2.7%**); prevalence of common mental disorders has been found to be **90% higher (28.3% vs. 15.0%)**; and self-harming behaviour **30% higher (10.5% vs. 8.0%)**. Long-term incidence of suicide among ex-forces personnel is about **the same** as that found in the general population. The rate of post-deployment violent behaviour is high, with **16.2%** of Iraq War veterans who had since left the forces saying they had committed violence against others within weeks of their homecoming. (For sources and detail, see page 18 and Figure 4 on page 25.)

3. Pre-military, military and post-military factors all affect mental health outcomes.

One reason for the added burden of symptoms in the armed forces is that youth and socio-economic disadvantage, which characterise a majority of enlisted recruits, predispose psychological vulnerability to trauma. Even so, this is only one part of the overall picture. The evidence from the studies is clear: stress-related mental health problems arise not simply because someone is vulnerable, but mainly because of the severity of the stressful events to which that person is exposed (see page 22).^{(16) (30) (32) (36) (42) (56)} For example, researchers found that being deployed to Iraq or Afghanistan in a combat role⁽³⁶⁾ or being exposed to traumatic events in the war zone⁽³²⁾ conferred a risk of committing violent behaviour after homecoming, even when they controlled for pre-enlistment factors. In other words, the violent behaviour could not be explained by pre-enlistment vulnerabilities alone; deployment to Iraq played a significant role, too.

Whilst the mental health effect of deploying to a war zone may be neutral for some personnel and even occasionally positive,⁽⁸⁾ the overwhelming evidence points to the inevitability of psychiatric casualties when a military group is deployed in war. Collectively, the studies show that front-line troops are worst affected but mental health problems can also affect others, including those deployed to rear positions or not deployed at all.⁽⁵⁶⁾

The evidence gathered in this report shows that if an individual has pre-enlistment vulnerabilities, is exposed to prolonged or repeated stress, and lacks social support afterwards, he or she is substantially more likely than others to experience a significant negative mental health effect. In broad terms, the relationship between vulnerability and exposure can be described as follows:



The research shows that all of the following are strongly associated both independently and collectively with negative mental health outcomes: ^{(15) (16) (30) (32) (36) (41) (42) (43) (47) (56) (67)}

- Pre-military (socio-demographic) factors including young age and factors associated with socio-economic disadvantage; ^{PPPP}
- Military factors including: being of low rank; being in the Army (especially the Infantry); experiencing low degree of control; being deployed to a war zone in a combat role; being exposed to war zone stress (especially repeatedly or for prolonged periods); or being repeatedly deployed, with the stigmatisation of mental health problems in military culture aggravating the effects;
- Post-exposure (including post-military) factors including loss of economic, social and emotional support, and leaving the armed forces early or at a young age.

Of these, the studies show that the military factors group is the most powerful when levels of combat exposure are taken into account. ^{(16) (42) (56) qqqq} Deploying personnel to war zones, particularly to repeated situations of intense fighting at close quarters, increases the risk of PTSD, alcohol misuse, and violent behaviour on homecoming. ^{(10) (23) (30) (32)} The Infantry, where young recruits from socio-economically disadvantaged backgrounds are over-represented (see page 56), faces the highest levels of exposure and bears the brunt of these risks. ⁽²⁵⁾

These pre-military, military and post-military risk factors are all important in understanding why some people in the armed forces are much more likely than others to suffer from mental health problems, while others are unaffected or not significantly adversely affected by a military career (see Figure 1 on page 7). Even so, these factors are still insufficient by themselves to explain why some people suffer more than others. The difference in risk is also due to the distinct career paths taken by recruits according to their socio-economic background.

4. Risks vary widely by socio-economic background; the youngest recruits from the poorest backgrounds are most at risk.

This report's findings provide strong evidence that recruits from different socio-economic backgrounds tend to follow distinct career pathways with starkly differing risks. Specifically, young people from disadvantaged backgrounds, who are more vulnerable to stress-related disorders, ^{(15) (16)} are also more likely than others to enlist into roles most exposed to traumatic stress, ^{rrrr (26) (36)} and then have poor social support when they return to civilian life. ⁽⁴³⁾ In contrast, older, socio-economically privileged individuals are more likely to join as officers or enlist in a wider variety of roles, and to have secure social ties after discharge. ^{(15) (16) (43) (123)}

Mental health problems are more common among those who are younger ^{(3) (9) (15) (18) (21) (23) (32) (36) (37) (39) (43) (47) (56)} and/or have a socio-economically disadvantaged background. ^{(15) (21) (30) (32) (36) (43) (47) (56)} Where it is possible with limited evidence to compare these groups with similarly matched groups in the general population, the greater prevalence is found in the armed forces (see page 26 and Table 2 on page 28).

In the armed forces, being young is associated with higher rates of PTSD, alcohol misuse, post-deployment violence, self-harm, and suicide. ^{(16) (18) (23) (32) (36) (37) (39) (86)} PTSD, alcohol misuse and long-term suicide rates decrease in proportion to increasing age. ^{(16) (18) (32) (86)} A background of socio-economic disadvantage, as measured by level of childhood adversity, is associated with higher rates of PTSD, common mental disorders and alcohol misuse, ^{(15) (16) (21) (30)} and a history of anti-social behaviour is a predictor of post-deployment violence. ^{(32) ssss} Educational under-attainment is also a marked risk factor for PTSD, common mental disorders, alcohol misuse and post-deployment violence. ^{(15) (32) tttt}

Since the youngest recruits are also those who leave education at an early stage, there is likely to be a high degree of overlap between youth and socio-economic disadvantage as risk factors. ⁽¹²⁴⁾

Some of the research findings are striking. For example, in respect of youth:

- Among Iraq war veterans, the youngest age group was more than **twice** as likely to screen positive for PTSD as the oldest (**5.7%** vs. **2.6%**). ⁽¹⁶⁾

- When comparing the youngest age groups in the armed forces and general population, the rate of drinking at levels deemed 'harmful' is more than **three times** as high in the military group (**26.1%** vs. **8.4%**)^{(55) (86)} and, after leaving the forces, the suicide rate is **between two and three times** as high.⁽¹⁸⁾

In respect of socio-economic disadvantage:

- Proportionally more than **three times** as many personnel with the highest levels of adversity in their childhood background were screening positive for PTSD as were those without such a background (**7.2%** vs. **1.9%**)⁽¹⁵⁾ and the disorder was more than **twice** as prevalent among those without GCSEs as among personnel who had A Levels (**8.4%** vs. **3.3%**).⁽¹⁶⁾ This compares with a rate of **2.7%** in the general population.^{(55)uuuu}
- 27.2%** of personnel who experienced high levels of adversity in their childhood were

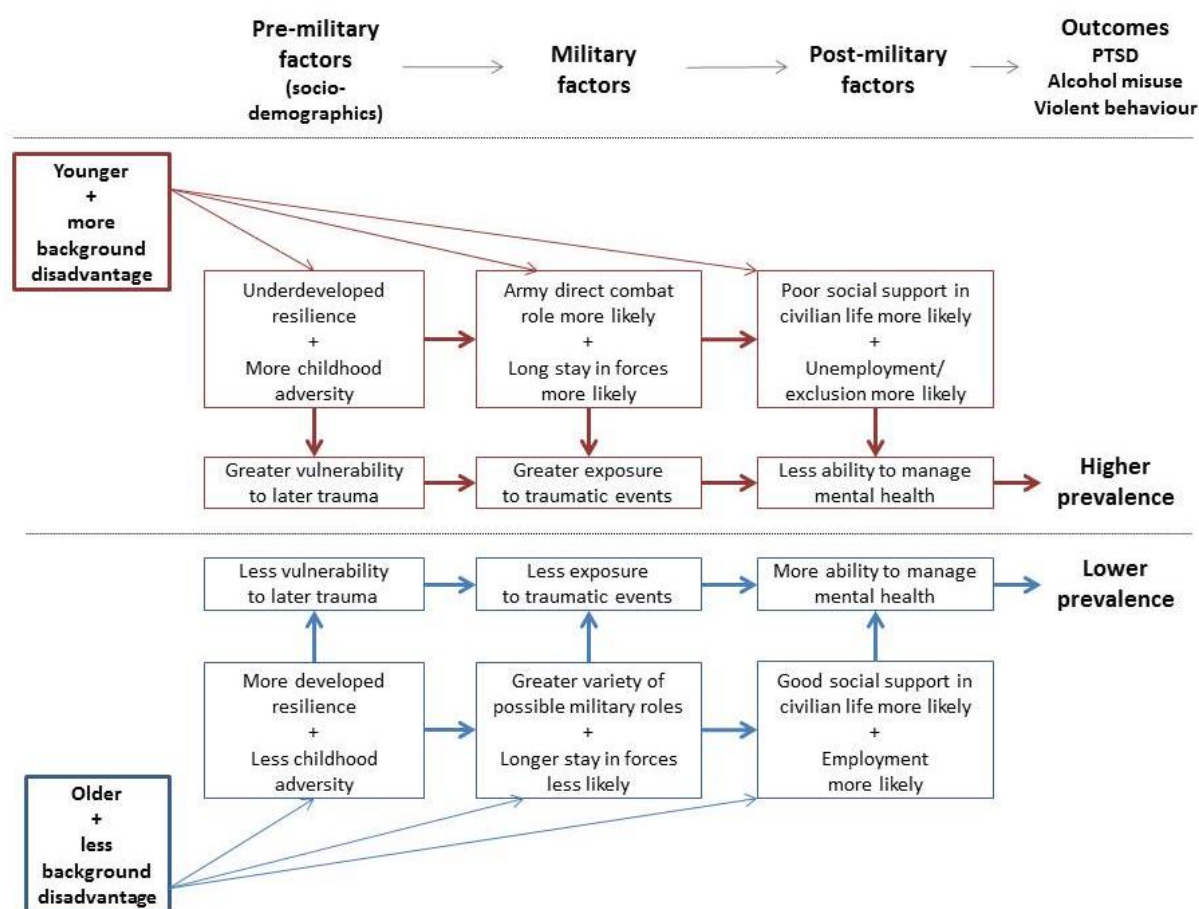
found to be drinking at 'harmful' levels, about **four times** the **6.6%** rate among those with least childhood adversity (**5.4%** in the general population on average).^{(15) (55)vvvv}

- In a representative sample of Iraq War veterans with a pre-enlistment history of anti-social behaviour, **29.6%** reported behaving violently on homecoming, nearly **four times** the **8.1%** rate among those without such a history.^{(32) wwwv}

The socio-economic influences on risk before, during and after a military career are described diagrammatically in the figure below. The figure shows why it is important to interpret the prevalence of mental health problems in the context of the differing career pathways followed by socio-economically disadvantaged, versus less disadvantaged, recruits.

Figure 6:

Armed forces career pathways and their effect on prevalence of mental health problems in: a) younger and more disadvantaged recruits; and b) older and less disadvantaged recruits.



5. Those enlisting at 16 and 17 are most likely to be worst affected.

The evidence collected in this report shows that those who are youngest, most socio-economically disadvantaged, and deployed in close-combat roles to war zones, face the highest mental health risks of military life. The group of recruits most likely to be affected by all three groups of risk factors are those who join as minors, aged 16 or 17, and are then sent to war at 18.

The reason for this, again, concerns the high-risk career pathway minors are most likely to follow. Young people who leave school at 16, choosing not to continue their education beyond GCSE level (or to re-sit GCSEs) are typically from socio-economically disadvantaged backgrounds,⁽¹²⁴⁾ and thus more likely than others to have a history of childhood adversity that predisposes vulnerability to later stress. With relatively poor or no GCSE qualifications, minors who enlist are more likely than others to be given a direct combat job in the Infantry, carrying a much greater risk of exposure to trauma. If deployed at age 18, the recruit who joined at 16 is at a relatively higher risk of both vulnerability and exposure to traumatic stress. In contrast, those enlisting as adults are more likely to hold good GCSEs (achieved by resitting if necessary) and/or A Levels or equivalent, reflecting statistically less socio-economic disadvantage overall. These better qualifications will make them eligible not only for most of the less dangerous roles in the Army, but also roles in the Navy and RAF, which are usually less exposed to war trauma.

There are of course exceptions to these generalities, but the evidence for the different typical career pathways of those who enlist as minors versus adults is strong. For example, almost all minors who enlist join the Army; in 2012-13, **2,470** minors joined the armed forces, of whom just **210 (8.5%)** joined either the Navy or RAF.⁽⁹³⁾ In the last five years, **31.7%** of minors enlisting in the armed forces joined the Infantry, compared with **24.1%** of adult recruits (see page 57 for more detail). The low entry requirements for the Infantry, combined with a low minimum recruitment age of 16 (before the possibility of GCSE re-sits or A Levels) ensures that enlisted minors are channelled disproportionately into the armed forces' most dangerous jobs.

This situation is grimly reflected in British forces fatalities during the Afghanistan War. Of the **34** 18 and 19 year old fatalities to date, **30** were Infantrymen and **27** had enlisted as minors.⁽¹¹⁴⁾ Infantrymen killed in Afghanistan have been two years younger on average

than fatalities in the rest of the Army.^{(114)xxxx} These facts reflect the over-representation of young people in the Infantry, their consequent increased exposure to risk, and the Army's practice of deploying soldiers to Afghanistan very soon after their 18th birthday. A recent study by ForcesWatch and Child Soldiers International found that Army recruits who joined at 16 and completed their training have been approximately **twice** as likely to die in Afghanistan as those who enlisted at 18 or above.^{(97)yyyy} Given that recruits who enlist at age 16 are not deployed to war zones until they turn 18, this difference in risk is particularly striking. We speculated that most of the difference could be explained by the proportion of enlisted 16 year olds who had joined the Infantry and their career length being longer on average than that of soldiers who enlisted as adults.⁽⁹⁷⁾

Since recruits enlisting at 16 have shown higher fatality rates in Afghanistan⁽⁹⁷⁾ (despite being prohibited to deploy to war zones until the age of 18) and the fatality rate in warfare is known to relate to the prevalence of mental health problems,⁽⁴⁾ we would expect such problems to be more common among recruits enlisting at 16. Although there is no British study investigating whether enlistment age is a mental health risk factor,⁽¹²⁵⁾ there are several indications that it is. Among these are the higher rates of PTSD, harmful drinking, and violent behaviour found in personnel from disadvantaged backgrounds, just discussed. In addition, a study of Vietnam War veterans found that young age at enlistment conferred a greater risk of PTSD,⁽⁵⁶⁾ as did low age at entry into the war zone, according to other studies.^{(45) (47) (70)zzzz}

It is also clear from the foregoing discussion that those joining the armed forces as minors are disadvantaged at each stage of their military career in terms of the mental health risk that they face. Consider a likely career pathway of a hypothetical male 16-year-old recruit, Rob, who lives on a council estate in Sunderland; his story is loosely based on veterans' testimonies and informed by the findings presented in this report.

By the time Rob is studying for GCSEs, he has already had contact with Army recruiters; most recruitment takes place in disadvantaged regions⁽⁹⁴⁾ and targets mid-teens,⁽⁹⁵⁾ with the poorest social groups tending to encounter recruiters most often (e.g. in schools).⁽⁹⁶⁾ Rob is impressed with the recruitment literature and websites and looks up to the recruiters he has met as role models; they assure him that the Army will provide him with purposeful work and a steady income. By comparison, his chances on the civilian jobs market seem

bleak. His teachers tell him he will need to work harder if he is to pass his core GCSEs in English and Maths and failure looks increasingly likely. Instead of knuckling down or planning for re-sits, he decides to join the Army. Rob's parents sign the consent forms at home without having met with recruiters.^{aaaaa}

Having left education at an early stage, when Rob enlists he is more likely than others to join a combat role in the Infantry.^{(36) bbbbbb} If Rob escapes being bullied,^{cccc} then sources of stress are likely to be few until he is deployed. Indeed, the training regime is likely to make Rob physically fitter than ever before. Having a steady job and new mates, his mental health is not likely to be any worse than it was at school and may be better.

Once he is deployed to a war zone from age 18, however, Rob's role as an Infantry Rifleman is much more likely than others to expose him to the severely traumatic events of warfare, such as being shot at, handling dead bodies, and killing other people at close quarters.^{dddd} Having enlisted young and from a disadvantaged background, he is already statistically more vulnerable than others to a long-term stress reaction to traumatic events.

His first tour in Afghanistan is busy but not unduly stressful until he is sent to clear up after a US air strike. He sees the body parts of a girl in the road; another girl of four or five is kneeling by her father's dead and mutilated body and crying, calling for help.^{eeeee} Rob wants to help but doesn't know how; he gets on and finishes the clear-up job.

Rob feels shaken by this experience. It is difficult to talk about this openly with the members of his unit, with his girlfriend at home or with his parents. He ups his drinking, which seems to help.

Returning home, Rob is now more likely than older, less-disadvantaged soldiers and those who have not witnessed battlefield trauma, to behave violently in the home or in the

community.^{(32) (36)} As a young Infantryman from a vulnerable background who has witnessed trauma, Rob now has all the major risk factors for a lasting stress reaction.^{(15) (16)}
(21) (30) (37) (39) (43) (47) (56)

If Rob is suffering from a mental health effect of his deployment experiences, he will leave the armed forces earlier, on average, than other personnel^{(7) ffff (41)} (he is also statistically more likely to leave earlier because he has a disadvantaged background);^{(41)ggggg} if he does not leave now, he is likely to stay longer in the armed forces than other personnel,^{(118) hhhhh} but this will prolong his exposure to traumatic events through successive redeployments, which will affect him more strongly as time goes on.^{(4) (12) (48)}

When Rob does leave, he is less likely than other personnel to be able to forge the social support he needs to manage and recover from a mental health effect he may be experiencing, given that Rob's initial background disadvantage means he is less likely than others to have secure social support.^{(7) (43)} If he does experience loss of social support, existing mental health effects are more likely to persist or new problems may manifest for the first time.^{(7) (18) (35) (39) (43) (47) (56)} This will place a strain on his relationship with his girlfriend and with his friends and family.

Rob is 26 when he leaves the Army, which is typical for someone who joined the Army aged 16.^{(118) iiii} Given that he enlisted without GCSEs in English and Maths and has not had the opportunity to gain these since, he is now at a disadvantage on the civilian jobs market when compared to the large majority of his peers (94%) who stayed on in education after the age of 16.^{(126)jjjjj (127) (128)}

Of course, there is no such person as a typical recruit, but in outline Rob's story is well supported by the research with respect to minors enlisting in the armed forces. The findings of this report strengthen the case for investigating directly whether those enlisting as minors face worse mental health outcomes than other personnel.

CONCLUSION

Given the myriad subtleties of well-being and ill-being, all claims about mental health in any group, perhaps especially a military one, must be provisional. If meaningful conclusions are possible at all, academic research ought to shape them, but a fuller understanding depends on more than what studies can tell us about prevalence and risk factors for narrowly defined mental health effects. If an Infantryman with a troubled family background develops a stress reaction in Afghanistan, or if alcohol misuse has contributed to a veteran's homelessness, then the questions of why and how this has happened are not only – or even mainly – psychological; they have their roots in society at large. What, then, do mental health problems in the armed forces tell us about our society and the place of the armed forces within it? Is there a wider narrative in which the mental health research becomes socially and politically meaningful?

The research reviewed for this report points strongly to: a) socio-economic disadvantage as a major factor in pre-traumatic vulnerability; b) the preponderance of the most vulnerable individuals in the most dangerous military roles; and c) prolonged exposure to the traumatic stressors of warfare as the primary triggers for stress reactions in combatants. In general terms, war is a marriage of poverty and violence, in which people from poor backgrounds are recruited into violence on behalf of the state. Whether or not war is a necessary evil, the research shows that it attacks the minds of those who enact it. For the poorest recruits, this is likely to be the latest assault in a long line, beginning with the material poverty of their childhood. Whilst the psychological impact of military training and war is manageable for some or even negligible, for others, particularly the youngest from the poorest backgrounds, this last ambush may be a tenacious one.

Against this, the prevailing, official narrative characterises armed forces careers as formative opportunities for young people who would struggle in civilian life. The Ministry of Defence states:

'We take pride in the fact that our armed forces provide challenging and constructive education and training opportunities for young people, equipping them with valuable and transferable skills. The services are amongst the largest training providers in the UK, with excellent completion and achievement rates, and the quality of our training and education is highly respected.'⁽¹²⁹⁾

Whether Infantry recruits do gain meaningful training that will transfer to the civilian jobs market later on is far from clear. Even so, whilst some veterans, having seen war for what it is, say that they would never encourage a young person to join up,^{(61) (81)} others look back on their time in the forces with appreciation. For example, in a Radio Tees phone-in about the minimum age for recruitment, a veteran who joined the Army at 16 said that if he had not done so he would have ended up in prison.⁽¹³⁰⁾ There are as many veterans' views about their time in the forces as there are veterans.

How we interpret the mental health research depends on which narrative we choose to situate it in: one of exploitation or one of opportunity. Does the state put young people's minds in harm's way by recruiting them into what two veterans have called a 'killing machine'?^{(67) (131)} Or are young people well served by the armed forces despite a minority unfortunate enough to suffer problems as a result, as others have suggested?^{(6) (15)} Both these narratives rest on claims about the best interests of young people and, less obviously, moral views about warfare. The findings of mental health research appear to both support and challenge each of these positions. On the one hand, the armed forces can be formative for young people; far from all personnel have mental health problems as a result of their work. At the same time, the armed forces are not a glorified version of the social services; they achieve their purposes by violence and it is for the performance of this violence that some of society's poorest young people are recruited. If military recruitment supports *and* exploits young people, it

demands a narrative incorporating shades of both realities. It is this third perspective, perhaps, that can best situate the findings of mental health research in their social and political context.

Whatever perspective we may choose to take, there are certain views that the research shows clearly to be false. One such assumption, historically stubborn but perhaps now losing traction, is that mental health problems are due to the constitutional weakness of certain individuals. The research shows that this is wrong. Whilst factors connected with an individual and their background shape responses to trauma, these are not responsible for traumatising itself. There is no virtue of character that can bestow immunity to trauma; veterans are traumatised not because they are defective, but because they have been immersed in the dehumanising abnormality of extreme violence, which eventually takes a toll on even the most hardened of veterans. The research shows that immersion in traumatic events makes personnel more likely to commit violence,^{(32) (36)} suffer from PTSD,⁽¹⁶⁾ and/or misuse alcohol⁽²³⁾ whether or not these problems were already part of their history (but particularly if they were). The evidence points to the grim, unavoidable conclusion that, in the wake of war, a substantial proportion of its participants become more violent and suffer from debilitating mental health problems, although neither outcome will affect most individuals fortunate enough to avoid the worst that war can be.

The research also shows that it makes little sense to describe prevalence of mental health problems in the armed forces as 'high' or 'low'. We can confidently say: that the mental health risks are significant and appreciably higher in general than those found in civilian life, especially for those who have left the forces; that identifiable mental health-related problems are common and that these only describe part of the mental health effect of military life; and that war trauma affects certain groups of personnel, particularly younger individuals from poor backgrounds, appreciably more than others. If potential recruits, who may be as young as 15 when they apply to enlist, are not told of these risks or are not able to consider seriously their real-life implications, then recruiting them is an exploitative practice.

It would also be wrong to assume that all veterans are significantly harmed by military life, or to be fatalistic about the prospect of recovery when many veterans are resourceful in their own healing. One veteran, eight years after leaving the Army, said that he scrutinises his behaviours daily in order to facilitate his gradual recovery.⁽⁶¹⁾ Professional help is important, he said, but

he and other veterans still have to work at recovery themselves using their own resources. The research on post-traumatic loss of social support, as well as veterans' own stories, show that those who are able to describe their situation and draw informal and professional support from those around them may be better able to manage than those who cannot.^{(42) (47) (61)} This depends in turn on others, perhaps especially civilians, being willing to listen non-judgementally to veterans' stories when they choose to tell them and to respect their silence when they do not.⁽⁴²⁾

In recent years, the Ministry of Defence has increased funding for mental health research, supported informal sources of support such as helplines, and improved access to specialist psychiatric help. Genuine progress is being made, although this still fulfils only a small part of the rigorous duty of care that the state owes to the people it sends to war. Mental health in the armed forces must be understood in the context of the complete career process: what happens before joining, during the career itself, and afterwards, are all important factors in the mental health or illness of personnel. An assumption that mental health problems are primarily a post-deployment challenge would be ignoring the effect of pre-military factors on vulnerability; in particular, the evidence shows that who gets recruited for which roles matters. This report has shown that recruits from the most socio-economically disadvantaged backgrounds, who are most vulnerable to the effects of traumatic stress, are being channelled disproportionately into the most trauma-exposed, front-line combat roles.

In this regard, the age at which personnel are recruited is critical: the youngest recruits are typically the most socio-economically disadvantaged and are over-represented in direct combat roles, as discussed earlier. This finding strengthens calls for a review of the policy which allows the armed forces to recruit school-leavers from age 16. The Ministry of Defence has resisted this on grounds that these individuals are not suited to mainstream education and would struggle to find civilian jobs,⁽¹³²⁾ and that recruitment targets would be unachievable without them.⁽¹³³⁾ No verifiable evidence has been presented to support either claim.^{kkkkk}

The UK's practice of recruiting from age 16 is unique in the European Union and rare worldwide; most states now recruit only adults into their armed forces. The exceptional British position has been challenged by the United Nations Committee on the Rights of the Child, Parliamentary Committees, and a number of human rights organisations.^{lllll (123) (134) (135) (136) (137) (138) (139)} The policy also remains starkly at odds with the bar on

young people joining the civil emergency services, buying alcohol or tobacco, watching a violent adult film, signing legally binding contracts and even playing certain computer games that simulate military roles, until they attain the age of adult responsibility at 18. There is a growing global consensus that only after a person reaches this age should society deem them ready to make an informed and responsible choice about whether to enlist. Since those who enlist as minors into the British armed forces bear a disproportionate share of the risks, as shown in this report and elsewhere,⁽⁹⁷⁾ the justice of the policy is in question and it deserves to be reviewed. The government's obligations under the United Nations Convention on the Rights of the Child, which include ensuring that the best interests of young people are 'a primary consideration' in how policies are crafted,^{(140)mmmmmm} add further justification to the accumulating calls for change.

All that said, the research collected for this report points to one conclusion that is beyond reach of policies on either recruitment or welfare. In the final analysis, veterans' trauma proceeds from the crucible of war, in which extreme violence leads to substantial numbers of psychologically wounded people. Many will live with this insidious legacy of warfare for the rest of their lives. The scourge is war itself. We as a society must realise that we cannot support wars without also condoning the traumatisation of combatants and civilians alike. We can choose health or war, but not both.

APPENDIX I: TABLES AND FIGURES

The following tables and graphs show the prevalence of a number of mental health-related problems found in studies from the last decade. For the reasons given in the main text, the prevalence values given are likely to under-represent the full mental health effects experienced by personnel, but the differences found between military groups are a useful approximation of relative risk.

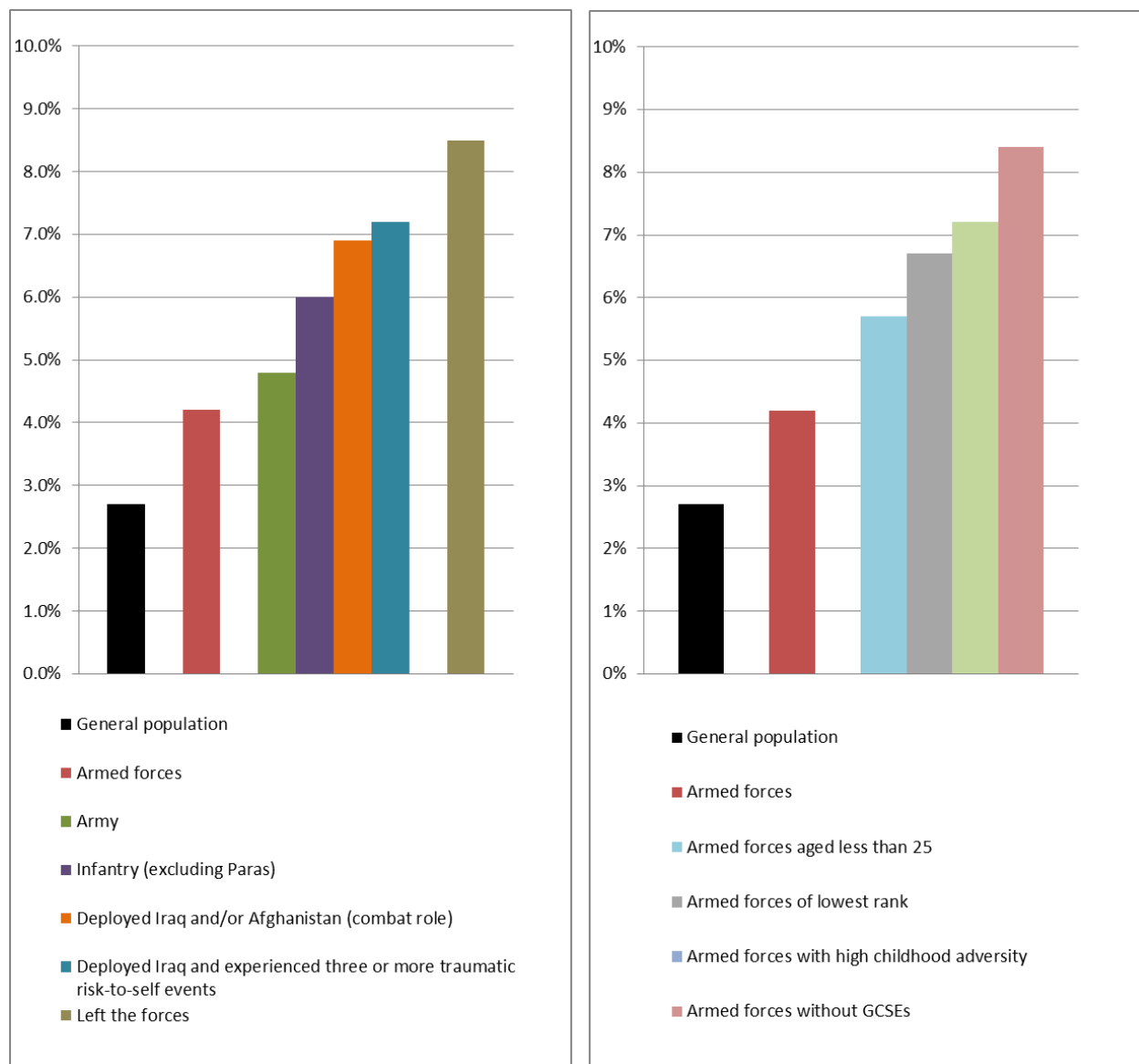
PTSD

Table 5: Prevalence of PTSD in British armed forces personnel, by degree of war-zone exposure (with general population comparison adjusted for proportions of men and women in the armed forces).								
	General population	Armed forces	Army	Deployed Infantry (excluding Paratroop Regiment)	Deployed to Iraq and/or Afghanistan (any role)	Deployed to Iraq and/or Afghanistan (combat role)	Deployed to Iraq and experienced three or more traumatic risk-to-self events	Left the forces
Prevalence	2.7% ⁽⁵⁵⁾	4.2% ⁽³⁰⁾	4.8% ^{(86)*}	6% ⁽²⁵⁾	4.2% ^{(30)*}	6.9% ^{(23)*}	7.2% ⁽¹⁶⁾	8.5% ⁽⁴¹⁾
Studies of military populations use same or very similar dataset with identical assessment criteria (case = PCL > 49); the civilian study used the Trauma Screening Questionnaire (case = TSQ > 5) Values marked with * are based mainly on current personnel and include a minority (23%) of former personnel. See ⁽²³⁾ (Table 5).								

Table 6: Prevalence of PTSD in British armed forces personnel, by pre-enlistment characteristics of personnel (with general population comparison).						
	General population	Armed forces	Armed forces aged less than 25	Armed forces of lowest rank	Armed forces with high childhood adversity ⁿⁿⁿⁿⁿ	Armed forces without GCSEs
Prevalence	2.7% ⁽⁵⁵⁾	4.2% ⁽³⁰⁾	5.7% ^{(86)*}	6.7% ^{(86)*}	7.2% ⁽¹⁵⁾	8.4% ⁽¹⁶⁾
Studies of military populations use same or very similar dataset with identical assessment criteria (case = PCL > 49); the civilian study used the Trauma Screening Questionnaire (case = TSQ > 5) Values marked with * are based mainly on current personnel and include a minority (23%) of former personnel. See ⁽²³⁾ (Table 5) and ⁽¹⁰⁾ (Table 3).						

Figure 7:

Prevalence of PTSD among British armed forces personnel in higher-risk groups, by 1) military factors; and 2) pre-military socio-demographic factors (with general population comparison adjusted for gender profile of the armed forces). See Table 5 and Table 6 for sources.



Personnel deployed to Iraq and/or Afghanistan

The following table shows the prevalence values, for five mental health-related outcomes (suicide is excluded due to a lack of available comparable data), of British armed forces personnel and ex-forces personnel who deployed to Iraq and/or Afghanistan. Data are divided by selected military and socio-demographic risk factors. The table shows the relatively greater prevalence of mental health-related problems in young personnel from disadvantaged backgrounds, and in those most exposed to warfare and its traumatic stressors.

Table 7:
Prevalence of PTSD, common mental disorders, alcohol misuse, post-deployment violent behaviour and self-harming behaviour in British armed forces personnel deployed to Iraq and/or Afghanistan, by: a) selected military risk factors; and b) by pre-enlistment characteristics of personnel (with general population as comparison). [All results drawn from research undertaken in the last decade, with the most recent studies preferred.]

	General population	Armed forces	Army	Deployed Infantry (excluding Paratroop Regiment) †	Combat role	Support role	Experienced multiple traumatic events
PTSD	2.7% ⁽⁵⁵⁾	4.2% ⁽³⁰⁾	4.8% ⁽³⁰⁾	6% ⁽²⁵⁾	6.9% ⁽³⁰⁾	3.0% ⁽³⁰⁾	Increases risk further. ⁽¹⁷⁾ ooooo
Common mental disorders	15.0% ⁽⁸³⁾	17.9% ⁽²³⁾	20.4% ⁽⁸⁶⁾ †	24% ⁽²⁵⁾	20.6% ⁽²³⁾	19.7% ⁽²³⁾	No increased risk found. ⁽¹⁷⁾
Alcohol misuse	5.4% ⁽⁵⁵⁾	15.1% ⁽²³⁾	14.4% ⁽⁸⁶⁾ †	26% ⁽²⁵⁾	22.5% ⁽²³⁾	14.2% ⁽²³⁾	Not assessed.
Post-deployment violent behaviour (Iraq deployments)	Not applicable.	12.6% ⁽³²⁾	15.6% ⁽³²⁾	Not assessed.	22.9% ⁽³²⁾ ppppp	7.9% ⁽³²⁾ qqqqq	23.7% ⁽³²⁾ rrrrr
Self-harming behaviour	8.0% ⁽⁵⁵⁾ sssss	5.6% ⁽²⁹⁾	6.7% ⁽²⁹⁾	Not assessed.	Not assessed.	Not assessed.	Not assessed.
	General population	Armed forces	Lowest rank (Private or equivalent)	Aged less than 25	High degree of childhood adversity ^{tttt}		
PTSD	2.7% ⁽⁵⁵⁾	4.2% ⁽³⁰⁾	6.3% ⁽³⁰⁾	4.4% ⁽³⁰⁾	8.6% ⁽³⁰⁾		
Common mental disorders	15.0% ⁽⁸³⁾	17.9% ⁽²³⁾	23.2% ⁽⁸⁶⁾ †	21.1% ⁽⁸⁶⁾ †	29.0% ⁽¹⁵⁾ *		
Alcohol misuse	5.4% ⁽⁵⁵⁾	15.1% ⁽²³⁾	22.6% ⁽⁸⁶⁾ †	26.1% ⁽⁸⁶⁾ †	27.2% ⁽¹⁵⁾ *		
Post-deployment violent behaviour (Iraq deployments)	Not applicable.	12.6% ⁽³²⁾	23.8% ⁽³²⁾	Increased risk ⁽³²⁾ uuuuu	29.6% ⁽³²⁾ vvvvv		
Self-harming behaviour	8.0% ⁽⁵⁵⁾ wwwww	5.6% ⁽²⁹⁾ †	Not assessed. Rate in all ranks below commissioned officer: 7.4%. ⁽²⁹⁾	Not assessed.	11.7% ⁽²⁹⁾		

Studies of military populations used same or very similar dataset with identical assessment criteria: PTSD case = PCL > 49 (military) or TSQ > 5 (gen.pop.); common mental disorders case = GHQ-12 > 3; Alcohol misuse case = AUDIT > 15; post-deployment violence case = self-reported violence against family member or in community in weeks after homecoming; questions used to assess for self-harming behaviour were for lifetime prevalence and similar in the military and general population studies.

Where data are available for 'deployed to Iraq only' vs. 'deployed to Afghanistan only' vs. 'deployed to Iraq or Afghanistan', the latter has been used. Childhood adversity values apply to men only, with the exception of the value for PTSD, which applies to both sexes.

* indicates that the sample assessed included only men, of whom around half had deployed to Iraq and half had not. Additionally, only men comprise the Infantry.

† indicates that this value is based on a sample including a minority (<33% in all cases) of personnel not deployed to Iraq or Afghanistan.

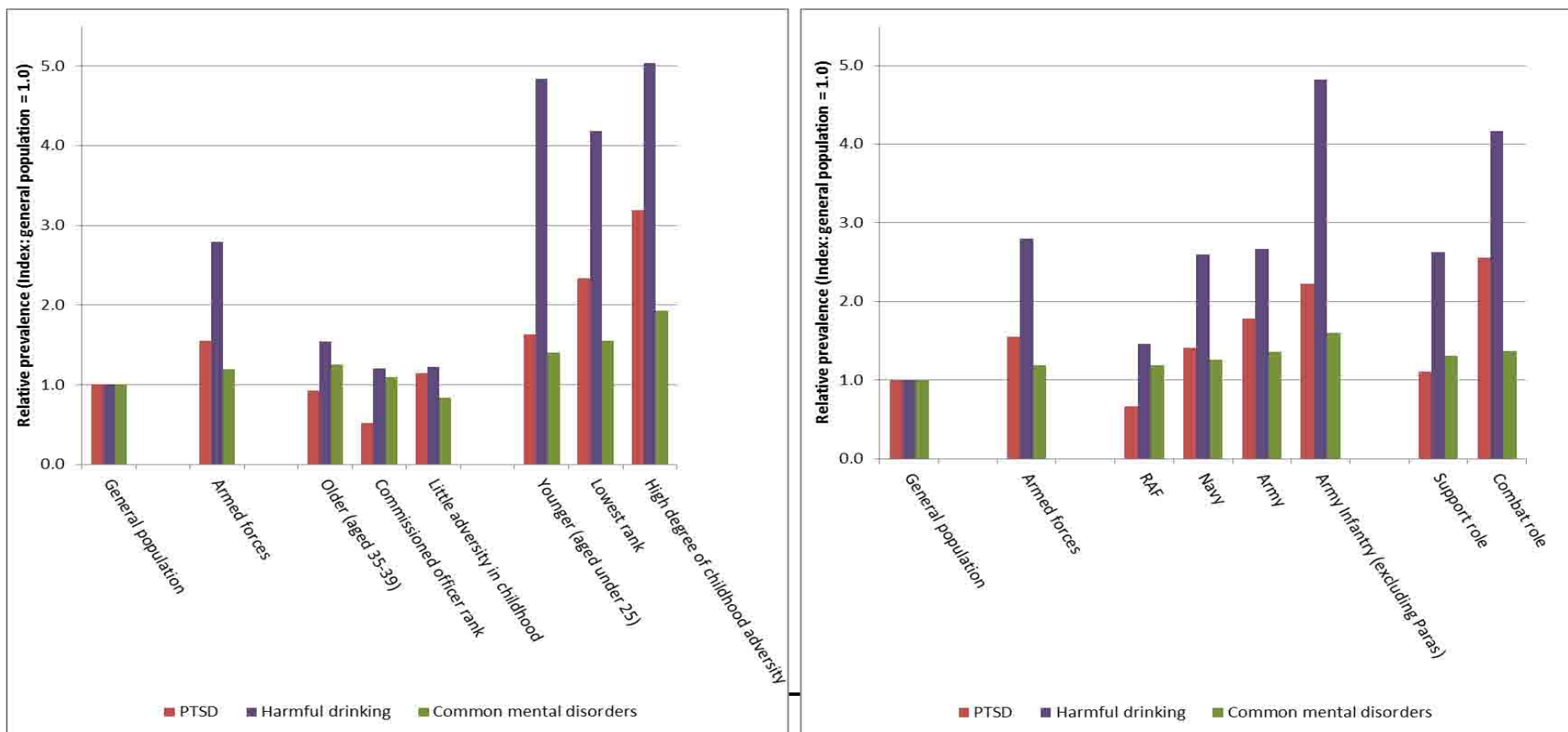
All sample groups are based mainly on current personnel, although some include a minority (<27% in all cases) of former personnel.

General population values are adjusted for the gender profile of the armed forces; the value for common mental disorders is inferred from two sources. Refer to 'Taking the temperature' section of this report for details.

In respect of British forces personnel deployed to Iraq and/or Afghanistan, the figures below show, relative to the general population, the prevalence of three mental-health related outcomes (PTSD, alcohol misuse and common mental disorders) for which there are sufficient data available to divide by various pre-enlistment and post-enlistment risk factors. Rates of the three outcomes as found in the general population (adjusted for the gender profile of the armed forces) are shown as 1.0 on the vertical axis. The graphs show that the burden is concentrated among those who: are young, of lowest rank, have a background of childhood adversity, perform combat roles, and/or are in the Army (especially the Infantry). By contrast, those with no significant background disadvantage or who are commissioned officers have, on average, similar or better mental health than the average for the general population, by these measures. Being older, in the RAF, or in a support role all show only marginal added risk when compared with the general population (with the exception of alcohol misuse, which is prevalent in all armed forces groups assessed).

Figure 8:

Relative prevalence of PTSD, alcohol misuse and common mental disorders among British armed forces personnel deployed to Iraq and/or Afghanistan, by: a) pre-enlistment; and b) military factors. General population (adjusted for gender profile in the armed forces) shown as reference group (=1.0) (Sample groups are based mainly on current personnel at the time of assessment; some include a minority [<27% in all cases] of former personnel. A few sample groups include a minority [<33% in all cases] of personnel not deployed to Iraq or Afghanistan; please refer to table on previous page for details.) ^{(15) (23) (25) (30) (55) (83) (86)}



Post-deployment violent behaviour (Iraq War veterans)

Table 8:

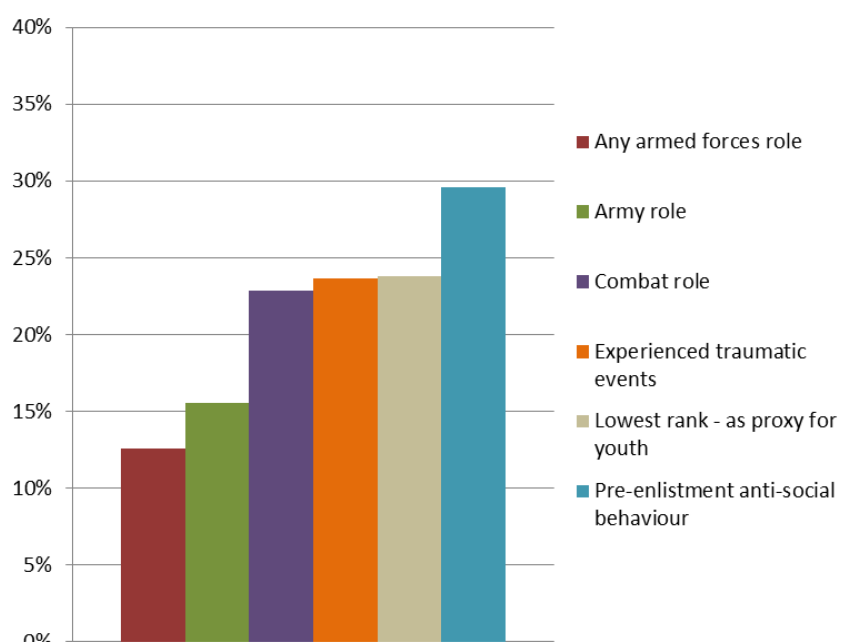
Prevalence of self-reported violent behaviour against family members or others in the weeks following return from Iraq, as reported by current and ex-forces personnel, by military and socio-demographic risk factors .⁽³²⁾

	Any armed forces role	Army role	Combat role	Experienced four or more traumatic events during deployment	Lowest rank (as proxy for youth)	Pre-enlistment anti-social behaviour
Prevalence	12.6%	15.60%	22.9%	23.7%	23.8%	29.6%

Sample based mainly on current personnel and includes a minority (8%) of former personnel.^{xxxxx}

Figure 9:

Prevalence of veterans' self-reported violent behaviour against family members or others in the weeks following return from Iraq, by selected military and socio-demographic risk factors.⁽³²⁾



Evidence for a) the concentration of the youngest and most disadvantaged recruits in the Infantry and b) the consequent greater war zone risk

The following two tables show the disproportionate number of 16 and 17 year olds who join the Infantry when compared with adult recruits, and the markedly lower educational attainment and higher childhood adversity scores of Infantry personnel when compared with the rest of the Army and with the Navy and RAF.

Table 9:
The number and proportion of a) minors and b) adults who enlisted in the armed forces in the last five years,* by branch (including the Infantry).

	Age 16 or 17	Age 18 and above	Total (all ages)
A. Total joiners	18,825	67,730	86,555
B. Joining Navy	1,955	13,740	15,695
C. Joining RAF	1,515	10,350	11,865
D. Joining Army	15,345	43,660	59,005
E. Infantry	5,960	14,710	20,670
F. Infantry intake as proportion of all joiners (E / A)	31.7%	24.1%	25.8%
G. Infantry intake as proportion of all Army joiners (E / D)	38.8%	36.9%	37.4%

Sources:

A, B, C, D: Defence Analytical Services and Advice (DASA) 'Annual Personnel Report' (2011, 2012 and 2013 editions [Table 7 in each]) and 'UK Regular Forces Intake and Outflow by Age' (2008-09 and 2009-10 editions [Table 1 in each]) available at www.dasa.mod.uk – accessed 21 October 2013.

E: ⁽¹⁴¹⁾

F and G are calculated from values in the table.

* The five-year period is from April 2008 to March 2013, with the exception of the Infantry intake figures, which are for April 2008 to February 2013.

Notes: a) Excludes commissioned officers; b) As DASA rounds all figures to the nearest five, totals may not equal the sum of the parts.

Table 10:
Indicators of socio-economic disadvantage in the armed forces, by branch and including the Infantry (2012/2013).^{(15) (25)}

	Of recruits with English and Maths GCSEs, proportion with poorer grades (D-G)	Proportion with highest childhood adversity score
All Army	34%-35%	29%
Infantry	47%-49%	36%
Rest of Army	28%-31%	27%
Navy	Unknown	18%
RAF	Unknown	15%

Sources:

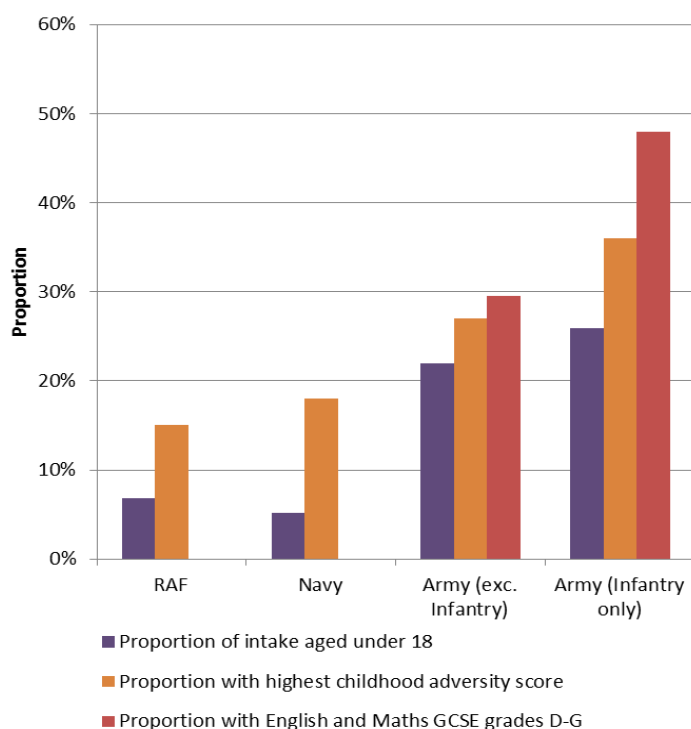
Childhood adversity (2003/2004): ⁽¹⁵⁾ for Army, Navy, RAF; ⁽²⁵⁾ for Infantry (using same data set).

Educational attainment (2012/2013): calculated from data in ⁽¹⁴¹⁾.

Rest of Army values are calculated from Infantry and All Army values using size of Infantry of 23,272 ⁽¹⁴²⁾ (24.6%) in an Army of 94,610. ⁽¹⁴³⁾

Figure 10:

Proportions of youngest and socio-economically most disadvantaged recruits in each branch of the armed forces, including Infantry. (See tables above for sources) GCSE data for the Navy and RAF are not available and values have been left blank.



The following table shows that the rate of Infantry fatalities in the Afghanistan War has been approximately **seven times** that in the rest of the armed forces and **six times** that in the rest of the Army. The fatality rate in the Royal Marines has also been high, at **3.7 times** that in the rest of the armed forces. Overall, **68%** of fatalities have been of personnel in the Infantry and Marines, which account for only **18%** of the armed forces. Combined, the Infantry and Marines have seen a fatality rate some **9.4 times** the rate in the rest of the armed forces.

Table 11: Fatalities in Afghanistan to 30 September 2013, by branch (including Infantry and Royal Marines)				
	Fatalities	As proportion of all fatalities	Size of branch (% of armed forces)	Fatality rate relative to rest of armed forces
All armed forces	444	100%	162,250 (100%)	--
Army	361	81.3%	94,610 (58.3%)	3.1 : 1
<i>Infantry</i>	241	54.3%	23,272 (14.3%)	7.1 : 1
<i>Rest of Army</i>	120	27.0%	71,338 (44.0%)	0.5 : 1
Navy	61	13.7%	31,810 (19.6%)	0.7 : 1
<i>Royal Marines</i>	61	13.7%	6,680 (4.1%)	3.7 : 1
<i>Rest of Navy</i>	0	0%	25,130 (15.5%)	--
RAF	22	5.0%	35,820 (22.1%)	0.2 : 1
Relative fatality in Infantry and Marines compared with rest of Armed Forces				9.4 : 1
Relative fatality in Infantry compared with rest of Army				6.2 : 1
Sources: ⁽¹¹⁴⁾ for the number of fatalities by branch, including the Infantry (at 30 September 2013); ⁽¹⁴³⁾ for size of Army, Navy, RAF and armed forces as a whole; ⁽¹⁴²⁾ for Infantry size; and ⁽¹⁴⁴⁾ for Royal Marines size. ^{yyyyy}				
The relative risk shown applies to the branch as a whole and not necessarily to all individuals in each branch, as some are more likely to be deployed than others and for tours of differing duration.				

APPENDIX II:

SOURCING AND USE OF THE STUDIES

Primary evidence base

The principal evidence base for this report is the results of **51** quantitative epidemiological academic studies which investigate certain mental health-related problems in military populations, particularly the British armed forces, and some of the main risk factors for these.

British research

Of these **51** studies, **41** investigate, in the British armed forces past and present, the prevalence of, and/or risk factors for, the six mental health-related problems of interest in this report, namely PTSD, common mental disorders, alcohol misuse, post-deployment violence, self-harm and/or suicide. As far as can be ascertained, these studies include all the published, quantitative, epidemiological evidence from academic research of British military and ex-military populations in the last 10 years that is relevant to the six mental health outcomes discussed in this report.^{zzzzz}

The majority of these studies are based on large sample groups of several thousand personnel. Most have been conducted by the King's Centre for Military Health Research (KCMHR), which was established in 2004 and is now the UK's leading centre of excellence on issues of mental health in the armed forces. The KCMHR works used for this report include all its quantitative epidemiological studies that: a) are of relevance to the mental health-related outcomes discussed; b) have used the same measures as those used in this report; and c) apply to current and former armed forces personnel during the last decade. A number of other studies, not conducted by KCMHR, cover periods of past wars, including the Persian Gulf War and Falklands War, or investigate contemporary issues that KCMHR's work does not extensively address.

US research

10 US studies supplement the British findings and are used for comparisons and as a source of further knowledge on risk factors for the mental health problems discussed.

Study types

Most studies are either prospective or cross-sectional in design, and based on randomly selected cohorts of participants who take part voluntarily. Results are then weighted to reflect the socio-demographic profile of the military group under investigation.

All studies have been published in academic journals (or by government) and been subject to their peer review processes accordingly (except one: a major report too long to publish in a journal).⁽⁶⁾ In selecting both British and US research papers, large, robustly designed studies have been preferred.

Use of the studies

The sources have been used in the following ways:

- For current prevalence values and major risk factors, large or medium-sized epidemiological studies of the British armed forces carried out in the last decade have been used, including all relevant epidemiological research published by the KCMHR.
- For comparisons, and to draw on findings for general risk factors, large studies of US armed forces investigating the same issues have been consulted.
- Small studies have been used in order to supplement the findings of larger studies and also when no large studies have been available, including, for example, in the case of Falklands War veterans.

Where studies produce differing prevalence values in the same or similar military population, the most recent finding has been used.

Secondary evidence base

In addition to the main evidence base, the report draws on around **100** other works, including official statistical data, thematic works, and published veterans' testimonies. Informal discussion with a small number of veterans has also contributed to the discussion and shaped this report's critique of the research approach and its findings.

Statistical comparisons and criteria

When discussing prevalence, the report makes four types of comparisons:

- With the general population adjusted for the gender profile of the armed forces and adjusted for age where age-specific comparisons are made.
- Within the armed forces, including between branches (e.g. Army vs. RAF), subgroups with specific characteristics (e.g. deployed vs. non-deployed) or sections within subgroups (e.g. Infantry vs. Army as a whole).
- With similar groups in other countries (e.g. British Infantry vs. US Infantry).
- With prior or later findings for the same or similar group (e.g. pre-deployment group vs. similar group post-deployment).

Except where indicated in the text, comparisons between studies are made only when comparable assessment criteria are used. These are explained from page 18.

All data used is statistically significant where applicable, with non-significant ($p > 0.05$) results ignored. For odds ratios and trends, p values are given in footnotes. Confidence intervals are omitted for reasons of readability, but since most studies used are large, intervals for the data provided are typically narrow.

Use of terms

Reference to '**armed forces**' in the text implies the British armed forces, except where stated otherwise.

Reference in the text to '**a study**' means research published in an academic journal (or by government) investigating characteristics of British armed forces or ex-armed forces personnel, except where stated otherwise. An '**epidemiological study**' investigates the prevalence of, and/or risk factors for, one or more health conditions in a given population.

Army, Navy (including Royal Marines) and RAF are each a '**branch**' of the armed forces.

For the purposes of this report, '**deployment**' means being sent to a war zone for military purposes, excluding peace-keeping operations but including 'peace enforcement' operations.

'**Ex-forces personnel**' or '**former personnel**' mean personnel who left the forces after 2003; these terms do not refer to the veterans community as a whole except where indicated.

'**General population**' means the adult population in households in England and theoretically includes military personnel living in the community.

'**Mental health problem**' is used to mean a recognised diagnosable disorder. '**Mental health effects**' is used more broadly to include changes in mental health which would not necessarily fall within the rubric of a recognised disorder.

'**Prevalence**' and '**rate**' mean the extent of a given condition (e.g. defined mental health problem) in the population specified; this report uses '**point prevalence**' rates (prevalence at a specific time) except where stated otherwise.

A variable or condition which can stand for another statistically is a '**proxy**' (e.g. low educational attainment in a given group may be a proxy variable for socio-economic disadvantage)

A '**risk factor/protective factor**' is a statistical association between a variable (e.g. young age) and a negative/positive outcome.

In this report, a '**veteran**' is any person who has joined the armed forces at any point, regardless of whether they were deployed to a war zone and whether or not they have since left the armed forces. The term 'veteran' is used to refer to those of the British armed forces unless stated otherwise.

British quantitative epidemiological studies (oldest first)

1. A small study of **64 elite British Army Falklands War veterans** who were still serving five years after the war and a matched, non-deployed control group of identical size and character, to investigate the prevalence of PTSD (pub. 1991).⁽¹⁾
 2. A small study of about **100 British veterans of the Falklands War** who had left the armed forces, to investigate the prevalence of, and risk factors for, PTSD and common mental disorders between four and seven years after the war (pub. 1993).⁽²⁾
 3. A large study of about **4,000 British veterans of the Persian Gulf War** to investigate the prevalence of a number of mental health problems between six and seven years after the end of the war (pub. 2000).⁽³⁾
 4. An **historical study** of wars in which psychiatric casualties were recorded, to investigate the relationship between the numbers of combatants killed or wounded and the number with significant psychiatric symptoms (pub 2001).⁽⁴⁾
 5. A medium-sized study of **645 women in the British armed forces, both deployed (to the Persian Gulf or Bosnia) and not deployed**, to investigate the effect of deployment on mental health and to compare this with men with similar deployment experiences (pub. 2002).⁽⁵⁾
 6. A major report incorporating a study of **400 'at risk' British veterans** to investigate transition to civilian life after leaving the armed forces, incorporating a small, qualitative study of the same issues with a smaller veterans group (pub. 2003).⁽⁶⁾
 7. A large study of about **8,000 British forces and ex-forces personnel** who were in the armed forces in 1991 to investigate factors for leaving the armed forces and subsequent employment prospects by 1997 and 2001 (pub. 2005).⁽⁷⁾
 8. A small study of **254 members of the British Air Assault Brigade before and during deployment in Iraq** in 2004 to investigate prevalence of PTSD and common mental disorders (pub. 2005).⁽⁸⁾
 9. A large study of **4,500 British military personnel** conducted in 2002 to investigate a range of mental health problems at a time of relatively low deployment activity (pub. 2006).⁽⁹⁾
 10. A large study of around **4,500 British Iraq War veterans** deployed to the initial phase of the war (matched with a similar group who had not deployed) to investigate the prevalence of a number of physical and mental health problems between one and three years after the war (pub. 2006).⁽¹⁰⁾
 11. A large study of around **9,400 women in the British armed forces** to investigate the extent and nature of sexual harassment (pub. 2006).⁽¹¹⁾
 12. A large study of around **5,500 regular British armed forces personnel** deployed in the previous three years to investigate the prevalence of, and risk factors for, PTSD, common mental disorders and alcohol misuse in personnel deployed for short and long periods (pub. 2007).⁽¹²⁾
 13. A large study of around **5,000 British armed forces personnel** to investigate differences in mental health outcomes for men and women (pub. 2007).⁽¹³⁾
 14. A large study of around **8,700 British personnel who were in the armed forces in 2003** to investigate prevalence of, and risk factors for, hazardous alcohol use (pub. 2007).⁽¹⁴⁾
 15. A large study of around **8,000 male members of the British armed forces** to investigate whether certain social factors existing before enlistment predisposed vulnerability to a number of mental health problems (pub. 2007).⁽¹⁵⁾
 16. A large study of nearly **5,000 British Iraq War veterans** to investigate pre-military and military risk factors for PTSD (pub. 2008).⁽¹⁶⁾
 17. A medium-sized study of around **2,000 British Iraq War veterans** to investigate mental health history, combat exposure and in-unit social support as risk/protective factors for post-deployment mental health problems (2009).⁽¹⁷⁾
 18. A small study of the **244 individuals who committed suicide** during or after their British armed forces career between 1996 and 2005 to investigate risk factors (pub. 2009).⁽¹⁸⁾
 19. A large study of about **7,750 British Iraq War veterans and non-deployed personnel** (surveyed between 2004 and 2006) to investigate the association of job strain and rank, with PTSD, common mental disorders, alcohol misuse and other psychiatric and physical health problems (pub. 2009).⁽¹⁹⁾
 20. A small study of the **694 men in the British regular armed forces who died due to suicide** (or open verdict death) between 1984 and 2007 to investigate comparison with suicide rates in the general population (pub 2009).⁽²⁰⁾
 21. A large study of about **10,000 British military personnel deployed and not deployed to the Iraq War** to investigate the prevalence of, and risk factors for, PTSD, common mental disorders and alcohol misuse (pub. 2009).⁽²¹⁾
 22. A large study of around **10,000 members of the British armed forces, deployed to Iraq and not deployed**, to investigate associations between PTSD and impairment of daily functioning, common mental disorders and alcohol misuse (pub. 2009).⁽²²⁾
-

23. A large study of around **10,000 British forces personnel deployed to and returned from Iraq and/or Afghanistan** between 2003 and 2009 to investigate the prevalence of PTSD, common mental disorders and alcohol misuse (pub. 2010).⁽²³⁾
 24. A medium-sized study of **611 armed forces personnel, mostly soldiers, while on deployment to Iraq** in 2009 to investigate prevalence of PTSD and common mental disorders, and certain risk factors for these. (pub. 2010).⁽²⁴⁾
 25. A medium-sized study of around **1,000 British Infantry and Royal Marine troops** who were in the armed forces in 2003, to investigate rates of, and risk factors for, PTSD, common mental disorders and alcohol misuse (pub. 2010).⁽²⁵⁾
 26. A large study of around **10,000 British military personnel** in service in 2003 to investigate the association of pre-enlistment anti-social behaviour on subsequent anger, aggression, risky behaviour and alcohol misuse (pub. 2011).⁽²⁶⁾
 27. A large study of around **4,900 British male Iraq War veterans** (surveyed between 2004 and 2006) to investigate the associations of unit cohesion and leadership quality with PTSD, common mental disorders and alcohol misuse (pub. 2012).⁽²⁷⁾
 28. A large study of about **1,400 Afghanistan War veterans** (surveyed between 2004 and 2006 and in 2010) to investigate the associations of unit cohesion, leadership quality, and morale, with PTSD, common mental disorders and alcohol misuse (pub. 2012).⁽²⁸⁾
 29. A medium-sized study of **821 British armed forces personnel** to investigate prevalence of self-harming behaviour and its risk factors (pub. 2012).⁽²⁹⁾
 30. A large study of about **8,000 British armed forces personnel**, deployed and not deployed, to investigate which pre-enlistment and deployment factors are associated with PTSD (pub. 2012).⁽³⁰⁾
 31. A large study of **432 women and 4,554 men in the British armed forces deployed to the Iraq War** to investigate prevalence of, and risk factors for, PTSD, common mental disorders and hazardous alcohol use (pub. 2012).⁽³¹⁾
 32. A large study of about **10,000 British armed forces personnel** deployed and not deployed to initial phase of the Iraq war to investigate the prevalence of violent behaviour among veterans returning from deployment (pub. 2012).⁽³²⁾
 33. A medium-sized study of around **1,400 British armed forces personnel** to investigate prevalence and risk factors for delayed-onset PTSD.⁽³³⁾
 34. A medium-sized study of about **600 British armed forces personnel** to investigate whether anonymity of participants affected findings for assessment of PTSD and common mental disorders (pub. 2012).⁽³⁴⁾
 35. A large study of around **6,500 British armed forces personnel** to investigate factors for persistence and remission of PTSD (pub. 2012).⁽³⁵⁾
 36. A large study of around **12,000 male British armed forces personnel** with and without criminal records on the Police National Computer Database, to investigate the prevalence of and risk factors for violent offending after deployment (pub. 2013).⁽³⁶⁾
 37. A small study of the **438 suicides in the British armed forces** between 1993 and 2012 to investigate prevalence and some risk factors (pub. 2013).⁽³⁷⁾
 38. A large study of around **8,000 British current and former armed forces personnel** to investigate associations between social support and participation and certain mental health outcomes (pub. 2013).⁽³⁸⁾
 39. A large study of about **10,000 British current and former armed forces personnel** to investigate the prevalence of self-harming behaviour and its principal risk factors (pub. 2013).⁽³⁹⁾
 40. A small study of the **95 Falklands War veterans who have suicided since the conflict ended**, to investigate comparison with the suicide rate in the general population (pub. 2013).⁽⁴⁰⁾
 41. A medium-sized study of **874 British ex-forces personnel** to investigate the prevalence of certain mental health problems and their risk factors (pub. 2013).⁽⁴¹⁾
-
- ## US quantitative epidemiological studies (oldest first)
-
42. A small study of **88 US officer veterans of the Vietnam War** to investigate pre-military, military and post-military risk factors for PTSD (pub. 1982).⁽⁴²⁾
 43. A small study of **200 US Vietnam War veterans** to investigate the risk factors for trauma-related mental health problems (pub. 1990).⁽⁴³⁾
 44. A small study of **111 Vietnam War veterans hospitalised for PTSD, depression or substance misuse** to investigate and compare the role of shame and low self-esteem in these disorders (pub. 1992).⁽⁴⁴⁾
 45. A large study of around **1,632 US Vietnam War veterans** to investigate pre-war and combat-related risk factors for PTSD (pub. 1996).⁽⁴⁵⁾
 46. A large study of around **6,000 US Army and Marines Iraq War and Afghanistan War veterans** and a further 82,000 non-deployed Army/Marines, to investigate the prevalence of a range of mental health problems shortly after the war

ended, and risk factors arising from deployment experiences (pub. 2004).⁽⁴⁶⁾

47. A small study of **500 Vietnam veterans** to investigate the factors that predict both the initial onset and the persistence of PTSD and partial PTSD (pub. 2004).⁽⁴⁷⁾
48. A large study of about **1,800 US soldiers and marines** while on deployment in Iraq to investigate the relationship between intensity of combat and various mental health-related outcomes (pub. 2007).⁽⁴⁸⁾
49. A large study of **2,000 US Persian Gulf War veterans**, deployed and non-deployed to the war, to investigate the prevalence of a range of mental health problems 10 years after the war (pub. 2007).⁽⁴⁹⁾
50. A large study of around **18,000 US direct combat regular and reserve troops deployed to and returned from the Iraq War** to investigate rates of PTSD, violent behaviour and alcohol misuse, including co-morbidity issues (pub. 2010).⁽⁵⁰⁾
51. A large meta-analysis covering **28 studies of British and US forces personnel** deployed to Iraq and/or

Afghanistan to investigate the differences in studies' findings in prevalence of PTSD among deployed troops (pub. 2012).⁽⁵¹⁾

Sources for the general population

Civilian comparators for British military studies have been taken from a national **NHS survey of people aged 16 and over living in private households in England in 2007**, which investigated a range of mental health problems (pub. 2009).⁽⁵⁵⁾ The same survey has been used for comparison data in British studies on military mental health and is considered to be the most reliable, most recent study of psychiatric morbidity in the general population. Since this survey used a measure for common mental disorders which was not compatible with the military studies, comparable data were drawn instead from **a survey by the Office for National Statistics in 2011**.⁽⁸³⁾

ACKNOWLEDGEMENTS AND ENDNOTES

Thanks

In preparing this report I have had to lean heavily on the patient support of a number of people whose experience and expertise have greatly enriched the process. With much appreciation, I would like to thank Victoria Basham, Rachel Brett, Linda Dowdney, Owen Everett, Anna Goodman, Lianne Minasian, Barnaby Pace, Haifa Rashed, Rachel Taylor, Sunniva Taylor and Christopher Walker for giving their time generously to offer their thoughts on the complex questions with which this project has sought to engage. This work belongs to them as much as to anyone else, although I am responsible for any errors that may remain and would welcome any clarifications and corrections from interested parties.

Special thanks are due also to a small number of unnamed veterans who kindly gave up their time to share their experiences for this project; their testimony is the measure against which I hold the content of this report, which is dedicated to them.

This report presents one of many possible approaches towards a better understanding of mental health in military groups. Where the conclusions differ from those that others have drawn elsewhere, no criticism is intended. To the contrary, I gratefully acknowledge and appreciate the painstaking work of the many authors of the studies on which I have drawn and without which this project would not have been possible. In particular, I would like to express appreciation for the work of the King's Centre for Military Health Research, which has done so much to advance understanding of the issues in a British context during the last decade. My thanks are also due to Charles Hoge, formerly of the Walter Reed Army Institute of Research, for sharing his expertise on screening for PTSD and why research indicates that the disorder is more common in US forces than among British personnel.

About the author

I founded www.BeforeYouSignUp.info, an independent information service for potential and current armed forces recruits, and co-founded ForcesWatch, which scrutinises armed forces recruitment policy on ethical grounds. I am the author of *Informed Choice? Armed Forces Recruitment Practice in the United Kingdom* (2008), *One Step Forward: The case for ending recruitment of minors by the British armed forces* (2013) and other research reports investigating issues in British military recruitment. My guiding interest in this work is the effect of armed forces recruitment on the transition of young people to adulthood.

David Gee

Endnotes

^a Bramley V. [quotation]. In Hallock D. 'Bloody Hell: The price soldiers pay'. Robertsbridge, Sussex: Plough, 1999. p. 65.

^b Calculated from Table 3 in cited study.

^c See Table 4 in cited study.

^d See Table 3 in cited study.

^e See 'Post-traumatic stress disorder' on p. 19 and 'Suicide' on p. 22 for detail.

^f See 'Post-traumatic stress disorder' on p. 19 and 'Suicide' on p. 22, Figure 4 on p. 24, and 'Youth' from p. 27 for detail. A request under the Freedom of Information Act revealed that the Ministry of Defence had mistakenly misspecified the PTSD rate in its statement, but at the time of writing the figures remain uncorrected on the BBC website. (53)

^g See 'Post-traumatic stress disorder' on p. 19 for detail.

^h See p. 34 of cited work.

ⁱ In a similar vein, the trauma specialist Bessel van der Kolk wrote in 1988: 'The essence of the trauma experience is that it leaves people in a state of "unspeakable terror." The experience does not fit into existing conceptual schemata: it overwhelms. This precludes accommodation and assimilation of the experience; leaving the experience to be organized on a sensorimotor or iconic level – as horrific images, visceral sensations, or as fight/flight/freeze reactions.' (76) p. 282.

^j See pp. 158-162 of cited work.

^k For detail, see p. 30 of this report.

^l Casualties among British forces in Afghanistan provide an example. As at 31 December 2012, 438 British forces personnel had died and 1,991, or about 1% of the armed forces, had suffered non-fatal physical battle injuries requiring referral to a field hospital. (153) (This figure is for casualties since 2007; comparable data for earlier years is not available.) This approximate 5:1 ratio of injuries to fatalities has remained constant annually since 2007 despite the fluctuating fatality rate. (114) (153) (This ratio is calculated on an annual basis and has varied from 6.1:1 max and 4.5:1. See (123) for detail.) The rate of psychiatric casualties is difficult to quantify for reasons to be discussed below. The most conservative measure is the number of personnel deployed to Afghanistan who have been assessed as having a mental health disorder at MoD Departments of Community Mental Health – 1,836 individuals in 2011-12. (152) This figure, which is for just one year and only includes veterans with clinically significant symptoms who seek professional help, is greater than the number of personnel with battle injuries for the entire conflict since 2007.

^m The characterisation of PTSD as a normal reaction to abnormal experiences has been disputed on grounds that not all triggers are 'abnormal', if this means rare, and PTSD is not a 'normal' reaction because not all individuals exposed to the same stressor will react in the same way. (155) However, if an 'abnormal' experience is defined not as 'rare' but as 'overwhelming', and if a 'normal' reaction is understood as a generally predictable reaction given certain conditions of pre-traumatic vulnerability, traumatic intensity, and post-traumatic lack of support, then the abnormal/normal description used in this report is at least a defensible one.

ⁿ See p. 161 of cited work.

^o British studies tend to use a cut-off for PTSD caseness using the PCL-17 scale of 50 or more points; US studies have used 51 or more.

^p The finding was statistically significant but due to small sample size the confidence interval was wide.

^q Personnel groupings with PTSD rates similar to or lower than those found the civilian population include those in support roles (who comprise the majority of the armed forces), officers, and those in the RAF. (22)

^r See p. 20 and following for detail.

^s See p. 212 of cited work.

^t These six indicators include the outcomes related to mental health that are most often studied in the literature. Others, such as fatigue and smoking are assessed in only very few studies; the relevant evidence for these is less extensive and they have therefore been omitted from this report.

^u KCMHR has said that use of the PCL with a cut-off score of 50 markedly over-estimates the true prevalence of the disorder. However, the two studies cited as evidence to support this claim, (159) (160) do not appear to do so: one of these studies did not use the PCL; (159) the other was investigating the utility of the PCL for screening for a specific variant of PTSD (i.e. PTSD that will have persisted three months later) rather than the point prevalence of current PTSD symptoms. (160) A cut-off of 50 was originally established in 1993 and has been validated in other studies since then. In probably the most sophisticated analysis of the PCL, conducted in the US, a cut-off of 50 was not found to over-estimate true prevalence of the disorder when used for military groups; indeed, a lower cut-off of 44 was found to be more accurate for one sample of 1,692 soldiers and marines. (156) The principal investigator for this study, Dr Charles Hoge, believes that 50 is the most appropriate cut-off to use in studies of military groups deployed to Iraq or Afghanistan. (161) In the absence of evidence to the contrary, a cut-off of 50 remains the most reliable screening indicator available of the true prevalence of the full disorder.

^v 9.8% of the armed forces are women; 90.2% are men. (112)

^w Ibid.

^x The sample used in this study included a minority (23%) of ex-forces personnel, so the prevalence value given for still-serving armed forces personnel is likely to be a slight over-estimate.

^y 9.8% of the armed forces are women; 90.2% are men. (112)

^z The sample used in this study included a minority (23%) of ex-forces personnel, so the prevalence value given for still-serving armed forces personnel is likely to be a slight over-estimate.

^{aa} Adjusted for gender profile of the armed forces.

^{bb} Ibid.

^{cc} Number of weeks not specified in question provided to participants.

^{dd} The sample used in this study included a minority (8%) of ex-forces personnel, so the prevalence value given for still-serving armed forces personnel is likely to be a slight over-estimate.

^{ee} Calculated from Table 1 in cited study.

^{ff} Based on those aged 46 in 2001.

^{gg} This percentage value is calculated from McManus et al. (2007), Chapter 4. (55). In this national survey of households in England, 4.9% of survey participants reported self-harming behaviour without suicidal intent and 5.6% reported a suicide attempt. 51% of those who reported self-harming behaviour without suicidal intent, also said they had attempted suicide at some point in their lives, which means that the proportion of the general population who had committed self-harming behaviour with or without suicidal intent is $(49\% \times 4.9\% = 2.4\%) + 5.6\% = 8.0\%$.

^{hh} There are no comparable statistics for women because the number of suicides among women in the armed forces is low.

ⁱⁱ One British study (30) found that the associated with PTSD of childhood adversity was slightly greater than that of having a combat role when deployed to Iraq and/or Afghanistan. However, the 'combat role' designation poorly indicates the risk of traumatic experiences in warfare, and so this study may be understating the role that deployment-related factors in the genesis of the disorder. Another British study on PTSD, (16) which was based on Iraq War veterans alone and used specific deployment factors as variables found that these were more important than pre-enlistment factors.

^{jj} Adjusted for gender profile of the armed forces.

^{kk} There is less evidence available to compare disadvantaged groups in the armed forces and in the general population.

^{ll} Calculated from Table 3 in cited study.

^{mm} See Table 4 in cited study.

ⁿⁿ See Table 3 in cited study.

^{oo} See p. 160 of cited work.

^{pp} See Table 9 on p. 60 and Table 11 on p. 61 for sources and detail.

^{qq} See p. 58 of cited study. PTSD prevalence of 5.0% for the 16-24 age group in the general population is based on 5.1% in men and 4.2% in women and adjusted for the proportions of men and women in the armed forces.

^{rr} See p. 161 of cited study. Alcohol misuse prevalence of 8.4% for the 16-24 age group in the general population is based on 8.8% in men and 4.8% in women and adjusted for the proportions of men and women in the armed forces.

^{ss} In the studies reviewed for this report, there are no relevant data for possible associations between underachievement at GCSE level and post-deployment violent behaviour, self-harm or suicide.

^{tt} In the studies reviewed for this report, there are no relevant data for possible associations between childhood adversity and suicide (whether before or after leaving the forces).

^{uu} In the studies reviewed for this report, there are no relevant data for possible associations between PTSD, common mental disorders, self-harm or suicide.

^{vv} Males only.

^{ww} Calculated from Table 1 in cited study.

^{xx} See p. 59 of cited study.

^{yy} Males only.

^{zz} See pp. 27-9 of cited work.

^{aaa} See pp. 23-4 of cited work.

^{bbb} See p. 28 of cited work.

^{ccc} See p. 34 of cited work.

^{ddd} Enlisted minors are an exception, having a legal right to leave the forces if they give three months' notice in writing before their 18th birthday.

^{eee} See p. B-21 of cited study. This question was not asked in the study of personnel deployed to Iraq.

^{fff} This rating of in-unit fairness of treatment is similar to the individual fairness treatment rating found in the annual survey of armed forces personnel for 2013 (67%). See (71) p. B-121. This question was not asked in the study of personnel deployed to Iraq.

^{ggg} Effects on other mental health outcomes were not measured in these two studies.

^{hhh} In the armed forces, women are a minority group.

ⁱⁱⁱ Percentage figure is calculated from values in the table.

^{jjj} These close-combat roles account for around a third of all those available in the Army and also include the Royal Marines and RAF Regiment (a force of ground troops within the RAF).

^{kkk} See p. 4 of cited report.

^{lll} Victoria Basham argues that despite the emphasis that military doctrine lays on 'social cohesion' (cohering as a group around a shared identity), the research evidence does not support this, pointing instead to the importance to effectiveness of 'task cohesion' (cohering as a group around a shared task).

^{mmm} See p. 9 of cited study.

ⁿⁿⁿ See from p. 18, this report.

^{ooo} So-called 360° warfare in Iraq and Afghanistan has tended to increase the risk to personnel in support roles, although front-line positions remain the most dangerous. '360° warfare' indicates that a lethal threat is likely to come from any direction and will not necessarily be aimed in a predictable manner at front-line personnel.

^{ppp} See previous section for sources and more detail.

^{qqq} Although neither the Navy nor RAF have been deployed extensively in high-risk operations since the Falklands War, a minority of personnel, notably Royal Marines and aircraft pilots, have faced substantial risks in several conflicts.

^{rrr} Calculated from Table 1 in cited study.

^{sss} Ibid.

^{ttt} Adjusted for gender profile of the armed forces.

^{uuu} Ibid.

^{vvv} Calculated from Table 1 in cited study.

^{www} Adjusted for gender profile of the armed forces.

^{xxx} Ibid.

^{yyy} The studies reviewed for this report did not investigate the relationship between trauma exposure and alcohol misuse.

^{zzz} These percentage values are calculated from Table 2 in cited study.

^{aaaa} Odds ratios: 0 events (OR=1); 1 event (OR=1.42, not significant); 2-3 events (OR=2.84, significant, $p<0.001$); 4+ events (7.19, significant, $p<0.001$). Adjusted odds ratio for 4+ events: 3.73, significant, $p<0.001$. Statistically significant trend ($p<0.0001$).

^{bbbb} Odds ratios: 0-1 event (OR=1); 2-4 events (OR=4.1); 5-16 events (OR=1.65); all $p=0.01$ or less.

^{cccc} See 'Does war 'have to hurt'?' on p. 11.

^{dddd} See p. B-123 of cited work.

^{eeee} The sample of veterans used in this study was not fully representative of the military population as a whole but was broadly comparable.

^{ffff} Adjusted for gender profile of the armed forces.

^{gggg} Based on age at enlistment of those leaving the Army between 1 July 2009 and 31 July 2011.

^{hhhh} See Table 1 of cited study.

ⁱⁱⁱⁱ See p. 148 of cited study.

^{jjjj} A .50 Cal is a powerful mounted machine gun.

^{kkkk} See pp. 61, 132 of cited study. In a similar vein, Bessel van der Kolk wrote in 1988: 'The trauma can only be worked through when a secure bond is established with another person; this then can be utilized to hold the psyche together when the threat of physical disintegration is reexperienced ... Both the etiology and the cure of trauma-related psychological disturbance depend fundamentally on the security of interpersonal attachments.' (76) p. 286-287.

^{llll} Calculated from Table 3 in cited study.

^{mmmm} See Table 4 in cited study.

ⁿⁿⁿⁿ See Table 3 in cited study.

^{oooo} 'Hazardous drinking' is a less severe category of unhealthy alcohol use than 'harmful drinking'.

^{pppp} Socio-economic disadvantage as indicated by under-attainment in school, a background of childhood adversity, and/or a history of anti-social behaviour. See p. 29.

^{qqqq} The difference is less clear when studies rely on the 'combat role' designation and do not take degree of stressful combat exposure into account. For example, see Jones, M *et al.* (2012). op cit. (30)

^{rrrr} For further sources and detail, see p. 57.

^{ssss} Equivalent statistics for suicide and self-harm are not available.

^{tttt} The three studies investigating suicide and self-harm do not investigate educational attainment as a risk factor.

^{uuuu} Adjusted for gender profile of the armed forces.

^{vvvv} Adjusted for gender profile of the armed forces.

^{wwww} Calculated from Table 1 in cited .

^{xxxx} See Child Soldiers International and ForcesWatch (2013) for detail. (123).

^{yyyy} This study found no statistically significant evidence that having enlisted at 17 conferred a greater risk than joining at any other age.

^{zzzz} See p. 160 of cited work.

^{aaaaa} This situation is common, according to a senior member of recruiting staff. (158) For discussion of this, see (95), section 3.2.4.

^{bbbbb} The British Infantry contains one third of all minors in the Army, but is only a quarter of its size. (145) In 2011-12, 39.5% of 16- and 47.3% of 17-year-old Army recruits joined the Infantry. (157) Unlike many other roles in the armed forces, the Infantry does not require applicants to hold GCSEs and can be joined at age 16, which means that it tends to attract recruits who both underachieved at school and left school at 16. For discussion and detail, see Child Soldiers International and ForcesWatch (2013). (123)

^{ccccc} In 2013, 12% of enlisted soldiers reporting having been bullied in the previous 12 months. See (71), p. B-123.

^{ddddd} The risk of fatality in Afghanistan in the Infantry has been 5.45 times the rate for the rest of the Army for the duration of the conflict to March 2013. The injury: fatality ratio among British forces during the conflict since 2007 has been consistent; hence, exposure to traumatic events can be assumed to reflect the higher fatality rate in the Infantry. (114) (153).

^{eeeee} This scenario is based on a veteran's story. (79)

^{fffff} A US study also found a correlation between leaving the forces early and PTSD. (42)

^{ggggg} Indicators of 'disadvantaged background' in this case are under-attainment at GCSE level and/or a background of childhood adversity. See cited work for detail.

hhhhh Based on data from the Infantry, calculated based on age at enlistment of those leaving between 1 July 2009 and 31 July 2011.

iiiiii Based on age at enlistment of those leaving the Army between 1 July 2009 and 31 July 2011.

jjjjj This figure applies to young people who were staying on in education after the age of 16 in 2009-10. See p. 51 of cited work.

kkkkk With Child Soldiers International, ForcesWatch has questioned these claims in detail and presented alternative evidence. See (123).

lllll In 2008 the UN Committee on the Rights of the Child called upon the UK to review the policy of recruiting under-18s into the armed forces and expressed concern that “[the] active recruitment policy may lead to the possibility of targeting those children who come from vulnerable groups”. [See (134) p.3.] In 2005 the House of Commons Defence Committee called on the Ministry of Defence to review the policy of recruiting minors. [See (135) p. 7.] In 2009, the House of Commons and House of Lords Joint Committee on Human Rights endorsed the recommendations made by the UN Committee on the Rights of the Child in 2008 (see above). See (136) pp. 47-48.

In 2013, the House of Commons Defence Committee questioned ‘...why the Army is so dependent on recruiting personnel under the age of 18 years compared to the other two Services’. [See (137) p. 7.]

mmmmm Article 3: ‘In all actions concerning children [any person aged under 18], whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies, the best interests of the child shall be a primary consideration.’

nnnnn Except in the case of the violent behaviour outcome, background disadvantage is indicated here by a count of six or more self-reported negative childhood experiences from a list of 16, such as getting ‘shouted at a lot at home’, being ‘regularly hit or hurt by a parent or caregiver’, and having ‘problems and trouble with police’. For the violent behaviour outcome, background disadvantage is indicated by self-reported history of anti-social behaviour.

ooooo Traumatic events substantially increase odds of PTSD but no percentage of those affected is publicly available with this data set.

ppppp Calculated from Table 2 in cited work.

qqqqq Ibid.

rrrrr Ibid.

sssss This percentage value is calculated from McManus et al. (2007), Chapter 4. (55). In this national survey of households in England, 4.9% of survey participants reported self-harming behaviour without suicidal intent and 5.6% reported a suicide attempt. 51% of those who reported self-harming behaviour without suicidal intent, also said they had attempted suicide at some point in their lives, which means that the proportion of the general population who had committed self-harming behaviour with or without suicidal intent is $(49\% \times 4.9\% = 2.4\%) + 5.6\% = 8.0\%$.

ttttt For outcomes except post-deployment violent behaviour, background disadvantage is indicated here by a count of six or more (four or more in the case of PTSD) self-reported negative childhood experiences from a list of 16, such as getting ‘shouted at a lot at home’, being ‘regularly hit or hurt by a parent or caregiver’, and having ‘problems and trouble with police’. For the violent behaviour outcome, background disadvantage is indicated by self-reported history of anti-social behaviour.

uuuuu Youth increases odds of post-deployment violent behaviour but no percentage of those affected is available with this data set.

vvvvv Calculated from Table 1 in cited work.

wwwww This percentage value is calculated from McManus et al. (2007), Chapter 4. (55). In this national survey of households in England, 4.9% of survey participants reported self-harming behaviour without suicidal intent and 5.6% reported a suicide attempt. 51% of those who reported self-harming behaviour without suicidal intent, also said they had attempted suicide at some point in their lives, which means that the proportion of the general population who had committed self-harming behaviour with or without suicidal intent is $(49\% \times 4.9\% = 2.4\%) + 5.6\% = 8.0\%$.

xxxxx Calculated from Table 1 cited work.

yyyyy Note: Army, Navy, RAF sizes are for 1 January 2013; Infantry strength is for 1 February 2013. Size for each branch may not match the total due to DASA convention of rounding to nearest 5. The relative sizes of these have not fluctuated greatly since the war began and so are a reasonable basis for this calculation.

zzzzz As a verification measure an online search using Google Scholar was made. The search string was constructed to return all articles since 2003 whose titles included the terms ‘UK’ or ‘British’, and ‘armed forces’ or ‘military’, and any one or more of the following terms: ‘psychiatric’, ‘mental health’, ‘post-traumatic stress disorder’, ‘posttraumatic stress disorder’, ‘PTSD’, ‘alcohol’, ‘drinking’, ‘common mental disorders’, ‘CMD’, ‘suicide’, ‘self-harm’, ‘self-harming behaviour’.

BIBLIOGRAPHY

Citations follow the Vancouver referencing system. Index numbers correspond with superscript citations in the main text.

1. O'Brien LS, Hughes SJ. 'Symptoms of post-traumatic stress disorder in Falklands veterans five years after the conflict'. *British Journal of Psychiatry*. 1991; 159: p. 135-141.
2. Orner RJ, Lynch T, Seed P. 'Long-term traumatic stress reactions in British Falklands War veterans'. *British Journal of Clinical Psychology*. 1993; 32(4): p. 457-459.
3. Ismail K, Blatchley N, Hotopf M, Hull L, Palmer I, Unwin C, et al. 'Occupational risk factors for ill health in Gulf veterans of the United Kingdom'. *The Journal of Epidemiological and Community Health*. 2000 May; 54: p. 838-838.
4. Jones E, Wessely S. 'Psychiatric battle casualties: an intra- and interwar comparison'. *British Journal of Psychiatry*. 2001; 178(3): p. 242-247.
5. Unwin C, Hotopf M, Hull L, Ismail K, David A, Wessely S. 'Women in the Persian Gulf: Lack of Gender Differences in Long-term Health Effects of Service in United Kingdom Armed Forces in the 1991 Persian Gulf War'. *Military Medicine*. 2002; 167(5): p. 406-413.
6. Dandekar C, Wessely S, Iversen A, Ross J. 'Improving the delivery of cross departmental support and services for veterans'. King's College London, Department of War Studies and Institute of Psychiatry ; 2003.
7. Iversen A, Nikolaou V, Greenberg N, Unwin C, Hull L, Hotopf MDC, et al. 'What happens to British veterans when they leave the armed forces?'. *European Journal of Public Health*. 2005; 15(2): p. 175-184.
8. Hacker Hughes J, Cameron F, Eldridge R, Devon M, Wessely S, Greenberg N. 'Going to war does not have to hurt: preliminary findings from the British deployment to Iraq'. *British Journal of Psychiatry*. 2005; 186: p. 536-537.
9. Jones M, Rona RJ, Hooper R, Wessely S. 'The burden of psychological symptoms in UK Armed Forces'. *Occupational Medicine*. 2006 May; 56: p. 322-328.
10. Hotopf M, Hull L, Fear NT, Browne T, Horn O, Iversen AC, et al. 'The health of UK military personnel who deployed to the 2003 Iraq war: a cohort study'. *The Lancet*. 2006 May; 367: p. 1731-1741.
11. Rutherford S, Schneider R, Walmsley A. 'Quantitative & Qualitative Research into Sexual Harassment in the Armed Forces' London: Equal Opportunities Commission and the Ministry of Defence; 2006.
12. Rona RJ, Fear NT, Hull L, Greenberg N, Earnshaw M, Hotopf M, et al. 'Mental health consequences of overstretch in the UK armed forces: first phase of a cohort study'. *BMJ*. 2007 September; 335(7620): p. 603.
13. Rona RJ, Fear NT, Hull L, Wessely S. 'Women in novel occupational roles: mental health trends in the UK Armed Forces'. *International Journal of Epidemiology*. 2007; 36: p. 319-326.
14. Fear NT, Iversen A, Meltzer H, Workman L, Hull L, Greenberg N, et al. 'Patterns of drinking in the UK Armed Forces. *Addiction*. 2007; 102: p. 1749-1759.
15. Iversen AC, Fear NT, Simonoff E, Hull L, Horn O, Greenberg N, et al. 'Influence of childhood adversity on health among male UK military personnel'. *The British Journal of Psychiatry*. 2007 August; 191: p. 506-511.
16. Iversen AC, Fear NT, Ehlers A, Hacker Hughes J, Hull LM, Greenberg N, et al. 'Risk factors for post-traumatic stress disorder among UK Armed Forces personnel'. *Psychological Medicine*. 2008; 38: p. 511-522.
17. Rona RJ, Hooper R, Jones M, Iversen AC, Hull L, Murphy D, et al. 'The Contribution of Prior Psychological Symptoms and Combat Exposure to Post Iraq Deployment Mental Health in the UK Military. *Journal of Traumatic Stress*. 2009 February; 22(1): p. 11-19.
18. Kapur N, While D, Blatchley N, Bray I, Harrison K. 'Suicide after Leaving the UK Armed Forces — A Cohort Study'. *Public Library of Medicine*. 2009 March; 6(3).
19. Fear NT, Rubin J, Hatch S, Hull L, Jones M, Hotopf M, et al. 'Job Strain, Rank, and Mental Health in the Armed Forces'. *International Journal of Occupational and Environmental Health*. 2009; 15(3): p. 291-298.
20. Fear NT, Ward VR, Harrison K, Davison L, Williamson S, Blatchley NF. 'Suicide among male regular Armed Forces personnel, 1984-2007'. *Occupational and Environmental Medicine*. 2009; 66(7): p. 438-441.
21. Iversen AC, van Staden L, Hacker Hughes J, Browne T, Hull L, Hall J, et al. 'The prevalence of common mental disorders and PTSD in

-
- the UK military: using data from a clinical interview-based study'. *BMC Psychiatry*. 2009 October; 9(68).
22. Rona RJ, Jones M, Iversen A, Hull L, Greenberg N, Fear NT, et al. 'The impact of posttraumatic stress disorder on impairment in the UK military at the time of the Iraq war'. *Journal of Psychiatric Research*. 2009 March; 43(6): p. 649-655.
 23. Fear NT, Jones M, Murphy D, Hull L, Iversen AC, Coker B, et al. 'What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study'. *The Lancet*. 2010 May; 375: p. 1783-1797.
 24. Mulligan K, Jones N, Woodhead C, Davies M, Wessely S, Greenberg N. 'Mental health of UK military personnel while on deployment in Iraq'. *British Journal of Psychiatry*. 2010; 197(5): p. 405-410.
 25. Sundin J, Jones N, Greenberg NRRJ, Hotopf M, Wessely S, Fear N. 'Mental health among commando, airborne and other UK infantry personnel'. *Occupational Medicine*. 2010; 60: p. 552-559.
 26. MacManus D, Dean K, Iversen AC, Hull L, Jones N, Fahy T, et al. 'Impact of pre-enlistment antisocial behaviour on behavioural outcomes among UK military personnel'. *Social Psychiatry and Psychiatric Epidemiology*. 2011; 47(8): p. 1353-1358.
 27. Du Preez J, Sundin J, Wessely S, Fear NT. 'Unit cohesion and mental health in the UK armed forces'. *Occupational Medicine*. 2012; 62(1): p. 47-53.
 28. Jones N, Seddon R, Fear NT, McAllister P, Wessely S, Greenberg N. 'Leadership, Cohesion, Morale, and the Mental Health of UK Armed Forces in Afghanistan'. *Psychiatry*. 2012; 75(1): p. 49-59.
 29. Pinder RJ, Iversen A, Kapur N, Wessely S, Fear NT. 'Self-harm and attempted suicide among UK Armed Forces personnel: Results of a cross-sectional survey'. *International Journal of Social Psychiatry*. 2012 July; 58(4): p. 433-439.
 30. Jones M, Sundin J, Goodwin L, Hull L, Fear NT, Wessely S, et al. 'What explains posttraumatic stress disorder (PTSD) in UK service personnel: deployment or something else?'. *Psychological Medicine (ePub 2012 Nov 13)*. 2012; 43(8): p. 1703-12.
 31. Woodhead C, Wessely S, Jones NNT, Hatch SL. 'Impact of exposure to combat during deployment to Iraq and Afghanistan on mental health by gender'. *Psychological Medicine*. 2012 September; 42(9): p. 1985-1996.
 32. MacManus D, Dean K, Al Bakir M, Iversen AC, Hull L, Fahy T, et al. 'Violent behaviour in UK military personnel returning home after deployment'. *Psychological Medicine*. 2012; 42: p. 1663-1673.
 33. Goodwin L, Jones M, Rona R, Sundin J, Wessely S, Fear N. 'Prevalence of delayed-onset posttraumatic stress disorder in military personnel: is there evidence for this disorder?: Results of a prospective UK cohort study'. *Journal of Nervous and Mental Disease*. 2012 May; 200(5): p. 429-437.
 34. Fear NT, Seddon R, Jones N, Greenberg N, Wessely S. 'Does anonymity increase the reporting of mental health symptoms?'. *BMC Public Health*. 2012; 12(797).
 35. Rona RJ, Jones M, Sundin J, Goodwin L, Hull L, Wessely S, et al. 'Predicting persistent posttraumatic stress disorder (PTSD) in UK military personnel who served in Iraq: A longitudinal study'. *Journal of Psychiatric Research*. 2012; 46(9): p. 1191-1198.
 36. MacManus D, Dean K, Jones M, Rona R, Greenberg N, Hull L, et al. 'Violent offending by UK military personnel deployed to Iraq and Afghanistan: a data linkage cohort study'. *The Lancet*. 2013; 381: p. 907-917.
 37. Defence Analytical Services and Advice. 'Suicide and Open Verdict Deaths in the UK Regular Armed Forces: Edition 1984-2012'. [Online].; 2013. Cited 2013 June 16. Available from: <http://www.dasa.mod.uk/applications/newWeb/www/index.php?page=48&pubType=1&thiscontent=250&PublishTime=09:30:00&date=2013-03-28&disText=1984%20-%202012&from=listing&topDate=2013-03-28>.
 38. Hatch SL, Harvey SB, Dandeker C, Burdett H, Greenberg N, Fear NT, et al. 'Life in and after the Armed Forces: social networks and mental health in the UK military'. *Sociology of Health and Illness*. 2013 January 29; [Volume not given].
 39. Hines LA, Jawahar K, Wessely S, Fear NT. 'Self-harm in the UK military'. *Occupational Medicine*. 2013 June.
 40. Defence Analytical Services and Advice. 'A study of deaths among UK Armed Forces personnel deployed to the 1982 Falklands Campaign: 1982 to 2012'. [Online].; 2013. Cited 2013 June 16. Available from: http://www.dasa.mod.uk/publications/people/health/falklands/_20121231_14_june_1982_to_31_december_2012/14_june_1982_to_31_december_2012.pdf.
 41. Buckman JEJ, Forbes HJ, Clayton T, Jones M, Jones N, Greenberg N, et al. 'Early Service leavers: a study of the factors associated with premature separation from the UK Armed Forces and the mental health of those that leave early'. *European Journal of Public Health (Early Epub release 25 April 2012)*. 2013 June; 23(3): p. 410-415.
 42. Frye S, Stockton R. 'Discriminant Analysis of Posttraumatic Stress Disorder Among a Group of Viet Nam Veterans'. *American Journal of Psychiatry*. 1982; 139(1): p. 52-56.
 43. Green BL, Grace MC, D LJ, Gleser GC, Leonard A. 'Risk Factors for PTSD and Other Diagnoses in a General Sample of Vietnam Veterans'. *American Journal of Psychiatry*. 1990; 147(6): p. 729-733.
 44. Wong MR, Cook D. 'Shame and its contribution to PTSD'. *Journal of Traumatic Stress*. 1992; 5(4): p. 557-562.
 45. King D, King L, Gudanowski DM, Foy D. 'Prewar Factors in Combat-Related Posttraumatic Stress Disorder: Structural Equation Modeling With a National Sample of Female and Male Vietnam Veterans'. *Journal of Consulting and Clinical Psychology*. 1996; 64(3): p. 520-531.
 46. Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. 'Combat Duty in Iraq and Afghanistan, Mental Health Problems, and Barriers to Care'. *The New England Journal of Medicine*. 2004 July; 351(1): p. 13-22.
-

47. Schnurr PP, Lunney CA, Sengupta A. 'Risk Factors for the Development Versus Maintenance of Posttraumatic Stress Disorder'. *Journal of Traumatic Stress*. 2004 April; 17(2): p. 85-95.
48. Castro CA, McGurk D. 'The Intensity of Combat and Behavioral Health Status'. *Traumatology*. 2007; 13(4): p. 6-23.
49. Toomey R, Kang HK, Karlinsky J, Baker DG, Vasterling JJ, Alpern R, et al. 'Mental health of US Gulf War veterans 10 years after the war'. *British Journal of Psychiatry*. 2007; 190: p. 385-393.
50. Thomas JL, Wilk JE, Riviere LA, McGurk D, Castro CA, Hoge CW. 'Prevalence of Mental Health Problems and Functional Impairment Among Active Component and National Guard Soldiers 3 and 12 Months Following Combat in Iraq'. *Archives of General Psychiatry*. 2010 June; 67(6): p. 614-623.
51. Kok BC, Herrell RK, Thomas JL, Hoge CW. 'Posttraumatic Stress Disorder Associated With Combat Service in Iraq or Afghanistan: Reconciling Prevalence Differences Between Studies'. *The Journal of Nervous and Mental Disease*. 2012 May; 200(5): p. 444-450.
52. BBC News. 'UK soldier and veteran suicides "outstrip Afghan deaths"'. [Online].; 2013. Cited 2013 July 14. Available from: <http://www.bbc.co.uk/news/uk-23259865>.
53. Ministry of Defence. Information obtained under the Freedom of Information Act (ref. 20130730), 30 July 2013.
54. Hansard. HC Deb, 9 October 2013, c298W.
55. McManus S, Meltzer H, Brugha T, Bebbington P, Jenkins R. 'Adult psychiatric morbidity in England, 2007: Results of a household survey'. University of Leicester, The NHS Information Centre; 2009.
56. Friedman J. 'Post-traumatic stress disorder in the military veteran'. *Psychiatric Clinics of North America*. 1994; 17(2): p. 265-277.
57. Lee H. 'Causation'. In Lee H, Jones E. 'War and Health: Lessons from the Gulf War'. Chichester: Wiley; 2007. p. 41-64.
58. Combat Stress. 'Key facts sheet, January 2013'. 2013.
59. McFarlane A, Yehuda R. 'Resilience, Vulnerability, and the Course of Posttraumatic Reactions'. In van der Kolk BA, McFarlane AC, Weisaeth L, editors. 'Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society'. New York: Guilford Press; 1999. p. 155-181.
60. Marin P. 'Living in Moral Pain'. *Psychology Today*. 1981 November; : p. 66-80.
61. Personal communication with veterans. 2013.
62. Herman JL. 'Trauma and recovery: From domestic abuse to political terror' London: Pandora; 2001 (first publ. 1992).
63. Hockey J. 'Squaddies: Portrait of a Subculture' Exeter: Exeter University; 1986.
64. Friedman MJ. 'Acknowledging the Psychiatric Cost of War'. *New England Journal of Medicine*. 2004 November; 351(1).
65. BBC (Today). 'Iraq veteran: "You can't come back and just switch off"'. [Online].; 2010. Cited 2013 April 29. Available from: http://news.bbc.co.uk/today/hi/today/newsid_8843000/8843930.stm.
66. BBC (Today). 'Iraq veteran David Adams speaks of PTSD struggle'. [Online].; 2011. Cited 2013 April 29. Available from: <http://www.bbc.co.uk/news/uk-england-york-north-yorkshire-14522152>.
67. Green G, Emslie C, O'Neill D, Hunt K, Walker S. 'Exploring the ambiguities of masculinity in accounts of emotional distress in the military among young ex-servicemen'. *Journal of Social Science and Medicine*. 2010; 71(8): p. 1480-1488.
68. Langston V, Gould M, Greenberg N. 'Culture: What Is Its Effect on Stress in the Military?'. *Military Medicine*. 2007; 172(9): p. 931-935.
69. Green G, O'Neill D, Walker S. 'Welfare and warfare. an uneasy mix'. Colchester: University of Essex, Department of Health and Human Sciences; 2008.
70. Van der Kolk BA. 'Psychological Trauma' Washington DC: American Psychiatric Press; 1987.
71. Defence Analytical Services and Advice. 'Armed Forces Continuous Attitude Survey (Reference Tables)'. [Online].; 2013. Cited 2013 August 28. Available from: http://www.dasa.mod.uk/publications/other/surveys/armed_forces_continuous_attitude_survey/2013/2013_reference_table.pdf?PublishTime=09:30:00.
72. Appel JW, Beebe GW. 'Preventive psychiatry: An epidemiological approach', *Journal of the American Medical Association*, 131, pp. 1468-1471. In Herman JL. 'Trauma and recovery: From domestic abuse to political terror'. London: Pandora; 2001 (first publ. 1992). p. 25.
73. Hendin H, Pollinger Haas A, Singer P, Gold F, Trigis GG. 'The influence of precombat personality on posttraumatic stress disorder'. *Comprehensive Psychiatry*. 1983 November-December; 24(6): p. 530-534.
74. Royal College of Psychiatrists. 'Post-traumatic stress disorder'. [Online].; nd. Cited 2013 April 23. Available from: <http://www.rcpsych.ac.uk/expertadvice/problemsdisorders/posttraumaticstressdisorder.aspx>.
75. American Psychiatric Association. 'Diagnostic and statistical manual of mental disorders' [Criteria for posttraumatic stress disorder]. 5th ed. Washington DC; 2013.
76. Van der Kolk BA. 'The Trauma Spectrum: The Interaction of Biological and Social Events in the Genesis of the Trauma Response'. *Journal of Traumatic Stress*. 1988; 1(3): p. 273-290.
77. Personal communication with former Walter Reed researcher. 2013.
78. Ismail K, Kent K, Brugha T, Hotopf M, Hull L, Seed P, et al. 'The mental health of UK Gulf war veterans: phase 2 of a two phase cohort study'. *BMJ*. 2002 September; 325(576).

79. BBC (Panorama). 'Soldiers on the run' [television documentary]. [Online].; 2007. Cited 2007 April 9. Available from: <http://news.bbc.co.uk/1/hi/programmes/panorama/6479769.stm>.
80. Grossman D. 'On Killing: The Psychological Cost of Learning to Kill in War and Society' New York: Back Bay Books; 2009 (first pub. 1995).
81. Lukowiak K. 'A Soldier's Song: True stories from the Falklands' (first publ. 1993). 2nd ed. London: Phoenix; 1999.
82. Clauw D. 'The health consequences of the first Gulf war'. *BMJ*. 2003 December; 327: p. 1357-1358.
83. Office for National Statistics. 'Measuring National Well-being, Discussion paper on domains and measures [Table: Measuring National Well-being - Health data tables (GHQ Mental Health Assessment)]'. [Online].; 2011. Cited 2013 May 29. Available from: <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-249007>.
84. National Collaborating Centre for Mental Health (for the National Institute for Clinical Excellence). 'Self-harm: The short-term physical and psychological management and secondary prevention of self-harm in primary and secondary care' (National Clinical Practice Guideline Number 16) London: British Psychological Society; 2004.
85. Bullman TA, Kang HK. 'Posttraumatic stress disorder and the risk of traumatic deaths among Vietnam veterans'. *The Journal of Nervous and Mental Disease*. 1994 November; 182(11): p. 604-610.
86. Fear NT, Jones M, Murphy D, Hull L, Iversen AC, Coker B et al. 'What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study' ('Supplementary webappendix'). *The Lancet*. 2010 May; 375: p. 1783-1797.
87. Wilson JP. 'The Forgotten Warrior Project (Parts I and II)'. In King D, King L, Gudanowski D, Foy D. 'Prewar Factors in Combat-Related Posttraumatic Stress Disorder: Structural Equation Modeling With a National Sample of Female and Male Vietnam Veterans'. *Journal of Consulting and Clinical Psychology* 64 (3); 1996. p. 520-531.
88. Wilson J. 'Conflict, stress, and growth: The effects of war on psychosocial development among Vietnam veterans'. In Figley CR, Leventman S, editors. 'Strangers at Home: Vietnam Veterans Since the War'. New York: Praeger; 1980.
89. Van der Kolk BA, Weisaeth L, van der Hart O. 'History of Trauma in Psychiatry'. In van der Kolk BA, McFarlane AC, editors. 'Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society'. New York: Guilford; 1996. p. 47-76.
90. Hansard. HC Deb, 22 October 2010, c881W.
91. Ministry of Defence. 'The Government's response to The House of Commons Defence Committee's third report of session 2004-05, on Duty of Care' London: Ministry of Defence; 2005.
92. Dyer G. 'War' (London: Guild, 1985). In Grossman D. 'On Killing: The Psychological Cost of Learning to Kill in War and Society'. New York: Back Bay Books; 2009 (first pub. 1995). p. 266.
93. Defence Analytical Services and Advice. 'UK Armed Forces Annual Personnel Report'. [Online]. London: Ministry of Defence; 2013. Cited 2013 June 23. Available from: http://www.dasa.mod.uk/publications/people/military/annual_personnel_report/_20130401_1_april_2013/1_april_2013.pdf?PublishTime=08:30:00.
94. Hansard. HC Deb, 6 March 2013, c1088W.
95. Gee D. 'Informed Choice? Armed forces recruitment practice in the United Kingdom'. London.; 2008.
96. Gee D, Goodman A. 'Army recruiters visit London's poorest schools most often'. [Online]. London; 2010. Cited 2013 April 23. Available from: <http://www.informedchoice.org.uk/armyvisitschools.pdf>.
97. Gee D, Goodman A. 'Young age at Army enlistment is associated with greater war zone risks'. [Online]. London; 2013. Cited 2013 September 3. Available from: http://www.forceswatch.net/sites/default/files/Young_age_at_army_enlistment_greater_risks%28FINAL%29.pdf.
98. Samele C. 'The mental health of serving and ex-Service personnel: A review of the evidence and perspectives of key stakeholders' London: Forces in Mind Trust and the Mental Health Foundation; 2013.
99. Prime J. 'Criminal careers of those born between 1953 and 1978' (London: Home Office). In MacManus D. 'Violent offending by UK military personnel deployed to Iraq and Afghanistan: a data linkage cohort study', *The Lancet*, (381).; 2013. p. 914.
100. Paterson L. 'Socio-economic status and educational attainment: A multi-dimensional and multi-level study'. *Evaluation and Research in Education*. 1991; 5(3): p. 97-121.
101. White KR. 'The Relation Between Socioeconomic Status and Academic Achievement'. *Psychological Bulletin*. 1982; 91(3): p. 461-481.
102. Bradley RH, Corwyn RF. 'Socioeconomic Status and Child Development'. *Annual Review of Psychology*. 2002; 53: p. 371-99.
103. Piotrowska PJ, Stride CB, Rowe R. 'Social gradients in child and adolescent antisocial behavior: a systematic review protocol'. *Systematic Reviews*. 2012; 1(38).
104. Eisenhart RW. 'You Can't Hack It Little Girl: A Discussion of the Covert Psychological Agenda of Modern Combat Training'. *Journal of Social Issues*. 1975; 31(4): p. 13-23.
105. Barrett FJ. 'The Organizational Construction of Hegemonic Masculinity: The Case of the US Navy'. *Gender, Work and Organization*. 1996 July; 3(3): p. 129-141.
106. Atherton S. 'Domesticating military masculinities: home, performance and the negotiation of identity'. *Social and Cultural Geography*. 2009; 10(8): p. 821-836.

107. Woodward R, Winter P. 'Gender and the Limits to Diversity in the Contemporary British Army'. *Gender, Work and Organization*. 2006 January; 13(1): p. 45-67.
108. Basham V. 'Effecting Discrimination: Operational Effectiveness and Harassment in the British armed forces'. *Armed Forces and Society*. 2008 September; 35(4): p. 728-744.
109. Ministry of Defence. 'Report on the review of the exclusion of women from ground close-combat roles'. London: ; 2010.
110. Organisation UN. 'Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict'. Geneva, Switzerland: UN Office of the High Commissioner for Human Rights; 2000.
111. Defence Analytical Services and Advice. 'Table 2.12 - Strength of UK Regular Forces by sex and rank' ['1990' column]. [Online].; 2003. Cited 2013 August 24. Available from: <http://www.dasa.mod.uk/modintranet/natstats/ukds/2003/chap2frame.html>.
112. Defence Analytical Services and Advice. 'UK Armed Forces Quarterly Personnel Report: 1 July 2013 (Table 4a)'. [Online].; 2013. Cited 2013 August 24. Available from: http://www.dasa.mod.uk/publications/personnel/military/quarterly_personnel_report/2013-07-01/1_july_2013.pdf?PublishTime=09:30:00.
113. Defence Analytical Services and Advice. 'TSP 19 - UK Regular Forces Intake and Outflow by Age (2009-10)'. [Online].; 2010. Cited 2012 August 23. Available from: <http://www.dasa.mod.uk>.
114. Ministry of Defence. 'British Fatalities: Operations in Afghanistan'. [Online].; 2013. Cited 2013 April 1. Available from: <https://www.gov.uk/government/fields-of-operation/afghanistan>.
115. National Center for Telehealth Technology. 'Department of Defense Suicide Event Report'. In *Guardian*. 'US military suicides in charts: how they overtook combat deaths'. Washington DC: Department of Defense; 2011.
116. Ikin JF, Sim MR, Creamer MC, Forbes AB, McKenzie DP, Kelsall HL, et al. 'War-related psychological stressors and risk of psychological disorders in Australian veterans of the 1991 Gulf War'. *British Journal of Psychiatry*. 2004; 185: p. 116-126.
117. Office for National Statistics. 'Labour Market Statistics, September 2013 [Table UNEM01; includes historical data]'. [Online].; 2013. Cited 2013 October 3. Available from: <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-276583#tab-Unemployment-tables>.
118. Hansard. HC Deb, 12 September 2011, c1007W.
119. MacManus D, Wessely S. 'Veteran mental health services in the UK: Are we headed in the right direction?'. *Journal of Mental Health*. 2013; 22(4): p. 301-305.
120. BBC (Panorama). 'Forgotten Heroes' [television documentary]; 7 February 2011.
121. Donovan. 'Donovan - Universal Soldier' [performance] [YouTube]. [Online].; 1965. Cited 2013 July 24. Available from: <http://www.youtube.com/watch?v=UC9pc4U40sI>.
122. Quaker Peace & Social Witness. 'Affirming the Light: Ten stories of Quaker peace witness' London: Quaker Books; 2002.
123. Child Soldiers International and ForcesWatch. 'One Step Forward: The case for ending recruitment of minors by the British armed forces'. London: ; 2013.
124. Bowers-Brown T. 'Widening participation in higher education amongst students from disadvantaged socio-economic groups'. *Tertiary Education and Management*. 2006; 12(1): p. 59-74.
125. Personal communication with the King's Centre for Military Health Research; 2013.
126. Wolf A. 'Review of Vocational Education – The Wolf Report' London: Department for Education; 2011.
127. Hansard. HC Deb, 19 July 2011, c862W.
128. Hansard. HC Deb, 30 November 2011, c976W.
129. BBC News. 'Army recruits must get chance to study, says Labour'. [Online].; 2013. Cited 2013 July 5. Available from: <http://www.bbc.co.uk/news/uk-politics-23053690>.
130. BBC Radio Tees. Member of the public in radio phone-in. 2013 May 21.
131. Parker T. 'Soldier Soldier'. 2nd ed. Sevenoaks: Coronet; 1987.
132. Personal communication with senior MoD official; 2013.
133. Ministry of Defence (Defence Personnel Secretariat). Letter to the author; 16 September 2013.
134. United Nations Committee on the Rights of the Child. 'Consideration of Reports Submitted by States Parties Under Article 8 of the Optional Protocol to the Convention on the Rights of the Child on the Involvement of Children in Armed Conflict – Concluding Observations: United Kingdom (CRC/C/OPAC/GBR/CO/1)'. [Online].; 2008. Cited 2013 September 10. Available from: <http://www2.ohchr.org/english/bodies/crc/docs/AdvanceVersions/CRC.C.OPAC.GBR.CO.1.pdf>.
135. House of Commons Defence Committee. 'Duty of Care (Third Report of Session 2004-5)' London: The Stationery Office; 2005.
136. House of Commons and House of Lords Joint Committee on Human Rights. 'Children's Rights (Twenty-fifth Report of Session 2008–09)' London: The Stationery Office; 2009.
137. House of Commons Defence Committee. 'The Armed forces Covenant in Action? Part 4: Education of Service Personnel (Fifth Report of Session 2013-14)' London: The Stationery Office; 2013.
138. Amnesty International. 'United Kingdom: Army Barracks Deaths: Families Demand Justice'. [Online].; 2003. Cited 2013 September 10.

-
- Available from: <http://www.amnesty.org/en/library/asset/EUR45/004/2003/fr/0087c2f2-d6d8-11dd-ab95-a13b602c0642/eur450042003en.html>.
139. UNICEF. 'UNICEF questions UK's right to deploy child soldiers in cases of "genuine military need"'. [Online].; 2003. Cited 2013 September 10. Available from: http://www.essex.ac.uk/armedcon/story_id/000085.html.
 140. United Nations. 'Convention on the Rights of the Child' Geneva: UN; 1989.
 141. Hansard. HC Deb, 11 June 2013, c235W.
 142. Personal communication with Defence Analytical Service and Advice; 25 March 2013.
 143. Defence Analytical Services and Advice. 'UK Armed Forces Quarterly personnel report: 1 January 2013 (Table 2)'. [Online].; 2013. Cited 2013 August 7. Available from: <http://www.dasa.mod.uk/applications/newWeb/www/index.php?page=48&pubType=1&thiscontent=560&PublishTime=09:30:00&date=2013-02-14&displayText=01%20January%202013&from=listing&topDate=2013-02-14>.
 144. Hansard. HC Deb, 3 June 2013, c983W.
 145. Hansard. HC Deb, 19 January 2011, c824W.
 146. Bramley V. [quotation]. In Hallock D. 'Bloody Hell: The price soldiers pay'. Robertsbridge, Sussex: Plough; 1999. p. 65.
 147. Iversen A, Greenberg N. 'Mental health of regular and reserve military veterans'. *Advances in Psychiatric Treatment*. 2009; 15: p. 100-106.
 148. Office for National Statistics. 'Labour Market Statistics, January to May 2013'. [Online].; 2013. Cited 2013 June 15. Available from: <http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/may-2013/statistical-bulletin.html>.
 149. Carroll JM, Maughan B, Goodman R, Meltzer H. 'Literacy difficulties and psychiatric disorders: evidence for comorbidity'. *Journal of Child Psychiatry and Psychology*. 2004 October; 46(5): p. 524-532.
 150. Statutory Instrument No. 1523. 'The Armed Forces (Terms of Service) (Amendment) Regulations 2011); 2011.
 151. Sampson RJ, Laub JH. 'Socioeconomic Achievement in the Life Course of Disadvantaged Men: Military Service as a Turning Point, Circa 1940-1965'. *American Sociological Review*. 1996 June; 61(3): p. 347-367.
 152. Defence Analytical Services and Advice. 'UK Armed Forces Mental Health Report - Annual Summary (2007-08 - 2011-12)'. [Online]. London; 2013. Cited 2013 July 3. Available from: <http://www.dasa.mod.uk/applications/newWeb/www/index.php?page=48&thiscontent=1290&pubType=0&date=2012-07-31&PublishTime=09:30:00>.
 153. Ministry of Defence. 'Op Herrick casualty and fatality tables'. [Online].; 2013. Cited 2013 March 13. Available from: <https://www.gov.uk/government/publications/op-herrick-casualty-and-fatality-tables>.
 154. Child Soldiers International. 'Mind the Gap: Education for minors in the British armed forces'. [Online].; 2012. Cited 2013 September 10. Available from: http://www.child-soldiers.org/research_report_reader.php?id=337.
 155. Shalev AY. 'Stress versus Traumatic Stress: From Acute Homeostatic Reactions to Chronic Psychopathology'. In van der Kolk BA, McFarlane AC, editors. 'Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society'. New York: Guilford Press; 1999. p. 77-101.
 156. Terhakopian A, Sinaii N, Engel CC, Schnurr PP, Hoge CW. 'Estimating Population Prevalence of Posttraumatic Stress Disorder: An Example Using the PTSD Checklist'. *Journal of Traumatic Stress*. 2008 June; 21(3): p. 290-300.
 157. Hansard. HC Deb, 13 May 2013, c99W.
 158. Personal communication with senior recruitment staff; 2007.
 159. Engelhard IM, Van Den Hout MA, Weerts J, Arntz A, Hox JJCM, McNally RJ. 'Deployment-related stress and trauma in Dutch soldiers returning from Iraq: Prospective study'. *British Journal of Psychiatry*. 2007 August; 191: p. 140-145.
 160. Arbisi P, Kaler M, Kehle-Forbes S, Erbes C, Polusny M, Thuras P. 'The predictive validity of the PTSD Checklist in a nonclinical sample of combat-exposed National Guard troops'. *Psychological Assessment*. 2012 December; 24(4): p. 1034-1040.
 161. Personal communication with Dr. Charles Hoge; 2013.
-

'In providing a detailed, thorough and timely review of key issues surrounding military mental health, The Last Ambush invites readers to more carefully consider the human, social and societal costs of war. The report, which meticulously reviews existing evidence on military mental health and situates it in its wider social context, is a much needed intervention that compellingly demonstrates that such costs of war fall more heavily on the youngest and most disadvantaged in our society. The conclusions it draws from the evidence may be uncomfortable reading but the violence that war inflicts, including on those who wage it, requires our full attention.'

Victoria Basham, Senior Lecturer in Politics, Exeter University

'The Last Ambush is an excellent, wide-ranging report. By providing a comprehensive analysis of the main effects of military service on mental health, the report goes beyond the narrow confines of official MOD statements which play down the problems veterans are left to deal with. The Last Ambush should be required reading for parents, teachers and young people thinking of a military career.'

Ben Griffin, Co-ordinator, Veterans for Peace UK

ISBN 978 1 907703 99 7

ForcesWatch
5 Caledonian Road
London N1 9DY

020 7837 2822
office@forceswatch.net
www.forceswatch.net

ForcesWatch