Original Article

The association between job quality and the incidence of PTSD amongst police personnel[1]

Brendan Burchell*, Jessica Miller*, Chris Brewin*, Magdalena Soffia* and Senhu Wang*

Abstract It has been widely reported that surveys have found high levels of ICD-11 complex post-traumatic stress disorder (CPTSD) (12.6%) among police personnel, and a further 8.0% with PTSD. Until now, there has been little research linking PTSD to working conditions. This report examines how the prevalence of CPTSD varies with measures of job quality. Positive indicators of job quality (for instance, the feeling of doing meaningful work, support from colleagues and managers, work–life balance, job security, and promotion prospects) typically predict half the rate of CPTSD. Negative indicators of poor job quality (such as having to deal with sexual harassment or extreme time pressures) are associated with CPTSD rates twice as high as the policing average. Additional evidence shows that police forces with better working conditions tend to have markedly lower rates of PTSD. These analyses cannot prove the direct causal relationship from job quality to PTSD but do provide unequivocal evidence of an association. Improving job quality may greatly reduce the level of this most debilitating psychological disorder, CPTSD, in the policing population.

Introduction

Post-traumatic stress disorder (PTSD) was identified as a psychiatric disorder in the 1980s but is not routinely measured by UK police forces despite officers' high levels of exposure to trauma. Most prior research has been based on the definitions of PTSD provided by the Diagnostic and Statistical Manual of Mental Disorders (DSM) published by the American Psychiatric Association. More recently, however, the International Classification of Diseases (11th edition: World Health Organization, 2018),

*Brendan Burchell, Professor, Department of sociology, University of Cambridge, Cambridge, UK. E-mail: bb101@cam.ac.uk
*Jessica Miller, Research Associate, University of Cambridge, Cambridge, UK
*Chris Brewin, Professor Emeritus, Clinical Educational & Health Psychology, University College London, London, UK
*Magdalena Soffia, Senior Analyst, What Works for Wellbeing, Cambridge, UK
*Senhu Wang, Assistant Professor, Department of Sociology, National University of Singapore, Singapore

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distinguished two related disorders, PTSD and complex PTSD (CPTSD). According to ICD-11, PTSD is a stress-related disorder that results from exposure to traumatic events (including those experienced directly and indirectly in the workplace) and is typified by symptoms of re-experiencing in the present, avoidance, and a sense of ongoing threat. CPTSD is a separate disorder that, in addition to the characteristics of PTSD, is typified by a sense of failure and worthlessness, inability to regulate emotions effectively, and disruption to personal relationships. Both disorders involve impairment of functioning. To the best of the authors' knowledge, this is the first study to report how, within an occupational group with high trauma exposure, the prevalence of these disorders is related to working conditions.

Other potential psychological sequelae of police work include burnout and secondary traumatic stress. Burnout is classically defined in terms of the three elements of exhaustion, cynicism about the value of one's occupation, and feeling ineffective (Maslach *et al.*, 2001), symptoms that are not part of PTSD or CPTSD. Secondary traumatic stress refers to the observation that those who come into continued close contact with trauma survivors may begin to experience symptoms of traumatic stress related to those survivors' reported experiences and become indirect victims of the trauma themselves (Bride *et al.*, 2004). PTSD and CPTSD differ in that symptoms are related to officers' own exposure to traumatic events.

Recent publications demonstrate a worryingly high rate of ICD-11 PTSD and CPTSD in serving police officers in the UK of the order of 20% (Brewin *et al.*, 2022). Not only are these disorders a significant source of poor mental health and misery for police officers and their families, but they are also a threat to service quality and performance. Whether this be as a result of disturbances to behaviour or to key areas of cognitive function (such as situational awareness, Miller *et al.*, 2017), unprocessed trauma inevitably makes it more difficult for police to achieve their targets for crime investigation and prevention, or improving relationships with the general public. What is more, CPTSD appears to be more prominent in policing populations than PTSD (Brewin *et al.*, 2022).

There are several approaches to dealing with the challenge of the high rate of PTSD and CPTSD among serving police personnel. Prevention might focus on the operational management of trauma exposure (such as TRiM, 'trauma risk management', Jones *et al.*, 2017) or preventative training in how to process traumatic incidents more effectively (such as Trauma Impact Preventative Techniques, Miller *et al.*, 2020). Without monitoring and treatment of PTSD and CPTSD in policing and emergency response work being mandated by Government, forces and services are dependent on research such as this (and that undertaken by the Open University and King's Centre for Military Health Research, commissioned by The Royal Foundation)[2] to find local solutions to a national problem. There has been little enquiry into how job quality is related to work-related PTSD in any field, and it is this relationship in UK policing that this paper investigates for the first known time.

Job quality

What makes policing a job worth doing is a question that research is wanting to ask now more than ever. With an influx of some 20,000 new recruits due by 2022,[3] retaining this new generation in a post-Covid climate is not going to be without its challenges. Research into the motivations, expectations, and priorities of new recruits is highly valuable (see Charman, 2017), but the quality of the opportunities that await them is perhaps less understood. As part of a larger police trauma resilience research project, we have already provided some analyses of job quality amongst police personnel. Job quality is now considered to be an important

[2] 'Assessing the mental health and wellbeing of the Emergency Responder community in the UK' (2020) Open University, The Royal Foundation and King's College London (King's Centre for Military Health Research, KCMHR).

[3] Available from https://www.gov.uk/government/news/national-campaign-to-recruit-20000-police-officers-launches-today (last accessed 12 April 2021).

lens through which we can understand well-being in employment, giving us much clarity on how to improve working conditions. This is in line with the motto 'more and better jobs' as embodied in the Lisbon Strategy in 2000 to which the European Union has long been committed (Piasna, 2018). In designing the survey *Policing: The Job & The Life* (TJTL), we were guided by the most widely used measures of Job Quality in the EU, as first developed by Eurofound in 2012 (Green and Mostafa, 2012). Green suggested that there are eight aspects of job quality that should apply to most jobs:

- Pay
- Prospects
- Working hours
- Physical environment
- Social environment
- Freedom from excessive work intensity
- Skill and autonomy
- Meaningful work

The theoretical framework underlying Green's model is based on the very large multidisciplinary literature of what makes a good job, and the essential features of a good job that can facilitate well-being in a number of different ways (for instance, safety from harm, good mental health and providing the capability to lead a healthy life outside of work) (Wang *et al.*, 2022).

Green conceptualized job quality as being an objective feature of a job. This is not to be confused with job satisfaction, which is often measured in surveys but is of limited utility to identify which particular job characteristics drive poor employee well-being. Moreover, there are plenty of examples of groups of individuals claiming to be highly satisfied, not because their jobs are good but because their expectations from jobs are very low (often referred to as *adaptive preferences*, see Teschl and Comim, 2005). Green's approach to job quality downplays differences between people's preferences (for instance, introverted employees might prefer to work alone, while extroverts might prefer working with others), and assumes that there is a broad consensus in what makes a 'good job'.

Although there would be a number of different ways in which job quality could be ascertained (for instance, statistics on injuries at work or time-and-motion studies in the workplace) in most the cases the only practical way of measuring job quality on a large scale is through self-report of the employees themselves. Thus, although TJTL survey items are designed to ask factual questions rather than opinions, this probably works well for some measures (such as hours of work) but may be more susceptible to self-report bias in others (for instance, whether a line manager is helpful and supportive).

In a previous publication (Miller *et al.*, 2018), we have already compared the scores we obtained in 2018 from police officers, staff, and other police personnel with the same questions when they were asked of a representative sample of the UK workforce as part of the European Working Conditions Survey in 2015. As

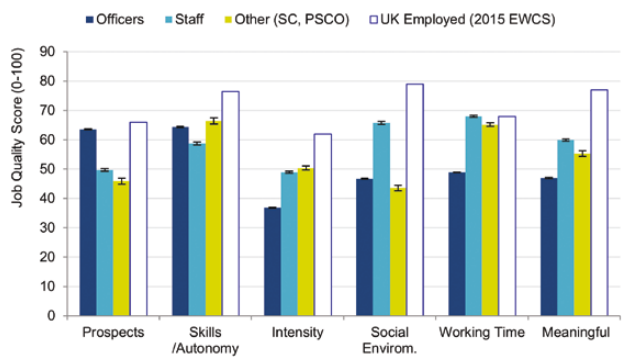

Figure 1: Mean job quality scores (0–100) for UK Police, compared to other UK employees (2015 EWCS in Miller *et al.*, 2018). SC and PCSO stand for Special Constable and Police Community Support Officer.

can be seen in Fig. 1 on the six scales where we could make meaningful comparisons between police officers and the UK workforce, there was only one—job prospects—where the police were on a par with other occupations; in 2018 policing was seen as a secure job with reasonable opportunities for career progression (the office of constable protects warranted officers from redundancy). On the other five dimensions, policing lagged well behind other jobs. Some of these findings are unsurprising; there are aspects of policing that inevitably require the working of unsociable hours or working in challenging social environments. Perhaps more unexpectedly police were also well below average on the 'meaningful work' scale, reporting low levels of feeling that they were doing a useful job and doing it well. This is a striking contrast with research on police identity which saw meaningfulness of work typify new recruits' motivations for joining the police (specifically being able to help people and taking an incident through from start to finish, as reported by Charman, 2017, p. 253).

This low level of job quality in policing may well be responsible for a number of problems for policing in the UK, for instance, low morale and high turnover. But, this paper asks a further question—is there perhaps an association between low job quality and the incidence of PTSD and CPTSD? Although this is a vital line of research aimed at finding strategies to prevent PTSD arising out of police work, it is rather surprising that there is virtually a complete absence of research on this topic to date, either in policing or elsewhere.

For some of these eight dimensions, we had a clear hypothesis as to whether there would be a relationship with PTSD and CPTSD, in other cases the analyses were conducted without any clear expectations.

Hypotheses

Social environment. There is overwhelming evidence that social support can protect individuals from problems with their mental health, although the data for PTSD are more limited. Laffaye *et al.* (2008) found no evidence that initial levels of perceived social support reduced chronic PTSD symptoms among male veterans, although a systematic review of the literature on sudden or violent bereavement by Scott *et al.* (2020) found general support for the protective effect of social support against PTSD. Recent research in the UK also found that lack of support from management was associated with higher levels of CPTSD in policing (Steel *et al.*, 2021). Studies of New Zealand police have found stronger evidence for the link between emotional support from colleagues and reduced symptoms of PTSD (Stephens and Long, 1999). Peer support is recognized as mitigating against psychological issues in the military (Greenberg and Wignall, 2012) and one of the factors most likely to have a positive impact upon police respondents' morale is said to be their relationship with colleagues (Elliott-Davies, 2020). Furthermore, recent research with an English police force has differentiated between *actual* received peer support and *perceived* peer support, with both predicting psychological well-being (Jackman *et al.*, 2020). There is also evidence of high rates of PTSD among people who have experienced poor social environments at work, in particular bullying (Matthiesen and Einarsen, 2004).

Intensity of work. It has long been recognized that PTSD arises when an individual is not able to make sense of (i.e. cognitively process) a traumatic incident naturally after the event (Brewin *et al.*, 1996). An essential part of being able to make sense of an incident is to be able to have the opportunity and sufficient time for the mind to do that. Lack of time between incidents on the job has been reported in 56% of UK police officers and staff and this was closely correlated with negative perceptions of trauma management on behalf of the force (Miller *et al.*, 2018). Instead of taking time to think through and discuss a traumatic incident or job, police personnel are being required to move straight on to the next incoming task. We therefore hypothesize a positive relationship between time pressure at work and PTSD.

Quality working time and work–life balance. Jackson *et al.* (2017) found that one of the

[4] PFEW research includes officers (not staff) and up to the rank of Chief Inspector (excluding ranks above) in England and Wales (excluding Scotland, Northern Ireland, and Ireland).

strongest predictors of PTSD among surgeons was long hours of work, with a clear linear relationship between working hours and likelihood of a positive PTSD screen. Research undertaken by the Police Federation of England and Wales regularly reports on working conditions of officers[4] and in 2020, 39% of respondents reported that they were working such extensive hours that they never or were rarely able to take their full rest break entitlement (Elliott-Davies, 2020). As with time pressure at work, working longer hours might not give police personnel adequate time for the healthy cognitive and emotional processing of traumatic events.

Skill and autonomy. Although there is a very large literature on the importance of autonomy or decision latitude as a moderator of stress at work, there is very little evidence about any link between autonomy at work and PTSD. One exception to this was the surgeons surveyed by Jackson *et al.* (2017). One of the 'work-environmental' items in their survey asked about satisfaction with autonomy: dissatisfaction was twice as high (10%) in the PTSD+ group compared to PTSD− (5%), although this did not quite reach statistical significance in their small sample ($P < 0.1$). Discretionary powers are a recognized feature of contemporary policing (a feature supported by guidelines such as the National Decision Making Model[5]) and yet there are circumstances in operational policing where decisions need to be made under stressful and high-risk conditions, exacerbating the potential for trauma impact. An example of this is being first on scene at an incident, which has been cited as one of the most common situational factors in officers' worst reported incidents on the job (Miller *et al.*, 2022).

Meaningful work. We suspect that there might be a relationship between high rates of PTSD and people describing their jobs as having no use, but this may be a case of reverse causation; a symptom of Complex PTSD is the loss of a sense of purpose in life or as the charity Mind describes,[6] 'constant feelings of emptiness or hopelessness and feeling as if you are permanently damaged or worthless'. As the dataset we have is cross-sectional, we have no way of explicitly testing for causal direction.

On two of the other dimensions, 'job prospects' and 'physical environment', we had no expectations of finding relationships between job quality and PTSD. We did not collect data on the final dimension, pay.

Methods

Participants

An online survey was hosted between 15 October and 16 December 2018 on the website of Police Care UK, a registered charity concerned with the physical and psychological welfare of former and serving police officers and staff, volunteers, and their families. The 'Policing: The Job & The Life' survey, advertised as covering issues about policing in general, trauma management, well-being, and working conditions, was disseminated via social media and official communication channels within established UK policing networks. Although the survey does not have a probability representative sample, it achieved a very large sample size and attempted to minimize selection bias by neutrality in the advertising of the survey and by making equal mention of positive and negative aspects of policing. The survey was targeted at the population of currently employed UK Police Force officers and staff of all ranks, including community support officers and special constables. A raw total of 18,185 respondents from the 43 territorial police services of England and Wales as well as from Police Scotland, Police Service of Northern Ireland, British Transport Police, and the National Crime Agency took part in the research. After removal of retired or non-serving police, reported age outside 18–70 years old, reported length of service over 50 years, difference between years of service and age below likely limits (<16), duplicated entry, straight-line responses to

[5] The National Decision Model (College of Policing), available from https://www.app.college.police.uk/app-content/national-decision-model/the-national-decision-model/#application (last accessed 12 April 2021).

[6] Available from https://www.mind.org.uk/information-support/types-of-mental-health-problems/post-traumatic-stress-disorder-ptsd-and-complex-ptsd/complex-ptsd/#.XIkykij7SUl (last accessed 12 April 2021).

questionnaire items, and omission of explicit consent for data to be used in research, the final sample was 16,857. The present report uses a base sample of 12,248 serving police officers. It includes front-line and office-based staff but excludes support staff in exclusively administrative roles as well as volunteer community support officers. Representation of police ranks was consistent with UK Home Office records. The study was approved by the Sociology Research Ethics Committee of the University of Cambridge, UK.

Measures

Officers were asked a general trauma exposure question ('In your work with the police, have you ever experienced events which were to some extent traumatic?') and, if they said Yes, about the time of the most disturbing event. More details of their exposure can be found elsewhere (see Brewin *et al.*, 2022 for details).

Officers answering 'Yes' to the general trauma exposure question completed the International Trauma Questionnaire (ITQ) (Cloitre *et al.*, 2018) in relation to their most troubling experience. The ITQ consists of two items measuring each of the three core elements of ICD-11 PTSD and the three additional core elements of Complex PTSD, as well as six items measuring functional impairment. Each item refers to the past month and is measured on a 5-point scale ranging from 0 'Not at all' to 4 'Extremely'. A score of 2 'Moderately' is required for an item to count towards diagnosis. The measure is psychometrically robust, and its ability to distinguish between PTSD and CPTSD has been established using confirmatory factor analysis and latent profile analysis (Cloitre *et al.*, 2018; Owczarek *et al.*, 2019; Ho *et al.*, 2020; Tian *et al.*, 2020). A PTSD diagnosis required endorsement of at least one item measuring each of the three core features plus functional impairment. Officers additionally endorsing at least one item measuring each of the three core CPTSD features plus functional impairment were assigned a CPTSD diagnosis. Diagnoses corresponded to the requirements specified in ICD-11.

Job quality was measured drawing on Green and Mostafa's model using a selection of variables from the European Working Conditions Survey (EWCS). These variables were treated as independent potential predictors of PTSD.

Working time was covered through: length of working hours, how many times a month do you 'work at night?' or 'more than 10 hours a day?' (*Never* to *31*), 'To take an hour or two off to take care of personal or family matters is…?' (*Very easy*/*Fairly easy*/*Fairly difficult*/*Very difficult*) and 'How are your working time arrangements set?' (set by the organization, you can adapt your working hours, etc.). Overall fit between work and life was also measured on a four-point scale from fitting *very well* to *not at all well*.

Physical environment was measured through a single item: does your work involve 'Handling or being in direct contact with materials which can be infectious (such as waste, bodily fluids, laboratory materials, etc.)?' (7-point scale from *All of the time* to *Never*).

The quality of *social environment* was captured through seven items: 'Your colleagues help and support you', 'Your line manager helps and supports you' (both in 5-point scale from Always to Never), exposure to 'verbal abuse', 'threats', 'humiliating behaviours', and subjection to 'physical violence' or 'sexual harassment' (Yes/No).

There were five measures for *adequate intensity*: 'You have enough time to get the job done', 'Your job requires that you hide your feelings' (both in 5-point scale from Always to Never), 'Does your job involve working to tight deadlines?' 'Handling angry members of the public', and 'Being in situations that are emotionally disturbing for you' (all three in a 7-point scale from *All of the time* to *Never*).

Skill and autonomy covered two items: 'You are able to apply your own ideas in your work' (5-point scale from Always to Never) and 'Does your main policing job involve solving unforeseen problems on your own?' (*Yes*/*No*).

Job prospects were measured through two items: job security—'I might lose my job in the next 6 months' and 'my job offers good prospects for career advancement' (both in 5-point scale from *Strongly Agree* to *Strongly Disagree*).

Lastly, *Meaningful work* was measured by two items: 'You have the feeling of doing useful work' and 'Your job gives you the feeling of work well

done' (5-point scale from *Always* to *Never*). *Pay* was excluded from the survey questionnaire.

In other contexts (e.g. Eurofound, 2017) a large number of variables are summed to form an index for each of Green's eight dimensions of job quality, but in this case because the online survey TJTL was designed to be completed in less than 25 min, and because there were so many other topics to be covered in the survey, a smaller subset of questions were asked. Initially, the research plan was to analyse the association between job quality, PTSD, and CPTSD using Green's multi-item scales, but after exploratory analyses, it became clear that it was more illuminating to analyse the relationship between individual survey items and the incidence of PTSD.

The results were analysed as bivariate crosstabulations between the PTSD categories (No PTSD, PTSD, and Complex PTSD) and the items on job quality. For the multivariate analysis we used ordered logistic regressions which are suitable when the outcome variable is naturally ordered but the distance between each adjacent category (No PTSD, PTSD, and Complex PTSD) is unknown. Because each job quality item is treated independently, a different model was fitted for each item. We then report the pseudo[7] R^2 for each model which represents the model fit. We also tested the difference of model fit between including only demographics as predictors and including the job quality item, reporting the change in R^2. If there is little change in the R^2 between these two models it would suggest that the relationship between job quality and CPTSD might be a spurious artefact caused by associations with those demographic variables.

We did also investigate whether the patterns differed between men and women, but there was little evidence of gender-specific relationships.[8]

Although this report is framed around the assumption that there may be a direct causal relationship between working conditions and PTSD, we cannot rule out the possibility that at least some of our findings reflect other causal processes. For instance, it may be that the very nature of PTSD or CPTSD changes working conditions (for instance, police officers might avoid working overtime if they are struggling with PTSD, or it might be more difficult for their colleagues to develop and maintain supportive relationships with them if they are displaying symptoms of CPTSD whilst on duty). Alternatively, PTSD might lead to changes in the perceptions of one's job (for instance, perceiving more threats in the workplace, or losing perspective on the importance of policing to society).

Furthermore, some of the questions that are often used to measure job quality might also be measuring symptoms of PTSD. For this reason, some of those questions where this is most plausible have been omitted from this analysis, for instance, asking respondents whether they kept worrying about work when not at work (which we know is a much bigger problem for police officers than other UK employees) may be a cause or consequence of PTSD, or quite possibly both.

Even if we do accept that it is highly likely that poor job quality is a causal factor in the high rates of PTSD and complex PTSD amongst police officers, we still don't know exactly how that relationship works. There are at least three pathways that might be operating, and the cross-sectional dataset does not allow us to differentiate between them:

- Good working conditions might facilitate resilience and thus reduce susceptibility to adverse reactions to traumatic events.
- Good working conditions might facilitate the appropriate processing of traumatic events and therefore reduce the chance of them leading to PTSD or CPTSD.
- Good working conditions might facilitate a faster recovery from PTSD, thus lead to a lower prevalence of both PTSD and CPTSD in the police workforce.

[7] R^2 is a commonly used statistic to demonstrate the fit of a model, and is particularly useful to show how the fit changes as a new variable is added. For some types of regression, such as the logistic regression used here, there is no exact R^2, but statisticians have derived a close equivalent (pseudo R^2) that allows the same comparisons to be made between models).

[8] We also experimented with multivariate analyses including all job quality variables, but again little was gained from those more complex analyses.

Results

The overall rates for CPTSD, PTSD, and No PTSD for the sample cases were 12.5%, 8.0%, and 79.5%, respectively (see Miller *et al.* 2018 for further details). These will serve as the baseline to compare the figures when disaggregated by the job quality measures. The overall pattern of results is very similar for CPTSD and PTSD, so similar conclusions would be drawn whether one considers just CPTSD or CPTSD and PTSD combined. For the sake of brevity, only the breakdown of CPTSD is given in this paper; a full set of breakdowns is available from the authors. It should be remembered that CPTSD is a particularly severe form of psychological disorder that can affect all aspects of an individual's life, in work, at home, in family, and in social life. All effects reported below are statistically significant at least at the 1% level unless stated otherwise.

Working time quality

There was a strong relationship such that worse work–life balance was associated with higher levels of PTSD. The rate of CPTSD was particularly high (24.2%) for the 15% of the sample who described the relationship between work and the rest of their lives as fitting 'Not at all well'. At the other end of the scale, when work and non-work fit 'very well' the CPTSD rate is only 8.3%, but unfortunately such a good fit is rare amongst the police—less than 7% of the sample were that positive about work–life fit.

The survey enabled us to learn a bit more about the sorts of working hours that were associated with higher rates of CPTSD. The highest rates for CPTSD occurred where there were regular changes in working hours (15.2%) and even higher if those changes were only announced at short notice. The total number of hours worked a week seemed to make little difference to CPTSD rates, but working long shifts (more than 10 hours) or working nights did marginally increase the risk of CPTSD. For instance, 16.1% of those who worked 12 or more long shifts per month were diagnosed with CPTSD. There was a similar effect for working nights. This potential for sleep disruption from long individual shifts and night working may be a mediating factor for this, given that sleep disturbance is known to impair the functionality of brain areas responsible for trauma memory processing (Tempesta *et al.*, 2011; Mohlenhoff *et al.*, 2014). On a positive note, CPTSD rates were lower for those who could determine their own hours (8.6%). Flexibility for employees to take an hour or two off for personal or family matters has been shown to be important for well-being, and there is a strong relationship with CPTSD. For instance, those who say it is 'very difficult' to have any such control over their hours had a CPTSD rate of 19.3%, whereas those who found it 'very easy' had rates of only 6.3%. Unfortunately, less than 5% of personnel had such high rates of working time autonomy, whereas 20% reported the lowest levels of such autonomy.

Physical environment

One interesting item concerning the physical environment of police work concerned *handling or being in direct contact with potentially infectious materials* (such as bodily fluids or laboratory samples). The rate of CPTSD was highest (22.7%) for those who reported exposure, 'All of the time'; whereas those who were only exposed 'almost never' or 'never' had a CPTSD rate of 10.0%. Positively, often-exposed workers only represent 5% of the sample and the modal group (43% of the sample) are rarely exposed to infectious materials. The implications of this finding for the Covid and post-Covid era are worth considering.

Social environment

As predicted, those who handle angry members of the public 'all of the time' had much higher rates of CPTSD (23.2%). Being subject to threats at work increased the rate of CPTSD from 12% to 14.9%. There was a small effect (13.7% with CPTSD) for being subject to verbal abuse at work which is nonetheless reported by two-thirds of the sample. However, being subject to humiliating behaviours had a stronger effect, raising rates of CPTSD to 18.4% for those exposed (42% of the sample). Being

exposed to sexual harassment[9] also had a large effect on CPTSD (22.0%). This is not negligible considering that at least 10% of the police sample were exposed to this behaviour. Yet being exposed to physical violence had little effect on CPTSD.

Somewhat surprisingly, the effect of being in situations that were embarrassing 'all of the time' (6% of the sample) produced an even stronger effect with rates of CPTSD at 32.5%.

Of all the effects in the dataset, the strongest single predictor of CPTSD was reporting that the respondent could never rely on the help and support of colleagues (43.9% with CPTSD) compared to a rate of only 7.0% among those who could always rely on their colleagues' support. Fortunately, reporting that one could 'Never' or 'Rarely' rely on the support of colleagues was exceedingly rare in the sample (4%). Being able to rely on the support of managers was almost as important, with rates of CPTSD of 28.4% for those who reported never being able to rely on their manager's help and support, which was less of a common situation (2% of the sample).

Work intensity

It was expected that working under time pressure would be a predisposing factor for PTSD, and there was some evidence for this. The 28% of the sample who reported working to tight deadlines 'all of the time' had rates of CPTSD of 18.8%. 'Never' having 'enough time to get the job done' also had a strong effect with rates of CPTSD of 22.1%.

Skill and autonomy

There is a large literature recognizing the importance of decision latitude or autonomy in employment. This is demonstrated to also be the case here: those who say that they can 'always' apply their own ideas at work only have a 6.3% rate of CPTSD compared to a rate of 24.1% for those who can 'never' use their own ideas at work. The effect was linear between these two extremes.

Unexpectedly though, the relationship with 'solving unforeseen problems on your own' was the opposite of that predicted. Rates of CPTSD were actually higher among those who reported solving unforeseen problems by themselves (14% with CPTSD) compared to those who did not (6.4%). Our tentative explanation of this finding is that this question is acting as a proxy for single-crewing (or being first on scene) and having a colleague who accompanies the respondent to a traumatic incident (or who is already at the scene) makes it easier for them to process the trauma without it developing into PTSD. There are other possible explanations too; for instance, it might reflect problems that, in the eyes of the respondent, should have been solved higher up the chain of command.

Job prospects

Strong relationships were found between perceptions of the future career in policing and CPTSD. Those who 'strongly disagreed' that they had good prospects for career advancement had twice the average rate of CPTSD (25%). The relationship with job security was also very strong; there were only 2% of the sample who strongly agreed that they might lose their job in the next 6 months, but their rate of CPTSD was 33.2%. Again, the causal relationship is unclear here, especially given that in the past having a sense of a foreshortened future has been included as a symptom of PTSD (American Psychiatric Association, 2000).

Meaningful work

The feeling of doing useful or meaningful work is strongly linked to well-being, and the same seems to be true for PTSD. Respondents who say they 'Always' or 'Almost always' get a feeling of a job well done only have a 6.3% incidence of CPTSD. This increases linearly to 28% among those who responded 'Never'. There is a similar effect on CPTSD for the small number of participants who reported that their job gives them a feeling of doing

[9] In some cases, it is arguable whether the survey items were measuring working conditions or trauma. The use of the term 'Trauma' is used to refer to single, extreme events. More recently, ICD-11 chronic events like ongoing sexual harassment also qualify as traumas if they create high levels of fear. Our survey data do not permit us to distinguish between working conditions and chronic traumas, but the problem is also conceptual.

useful work 'Always' (5.9% with CPTSD) compared to those at the other extreme who responded 'Never' (where 31.7% had CPTSD). Once more, given that a key feature of CPTSD is a sense of worthlessness causality is unclear here.

A note on sexual harassment

Sexual harassment from members of the public is reported by 5.8% of policemen and 15.3% of policewomen, but the effect on their rates of CPTSD is not very different—19.5% and 23.4% with CPTSD, respectively. However, the effects are stronger when they are asked about sexual harassment from colleagues. Although the rates of sexual harassment from colleagues are much lower (0.6% for men and 6% for women), the differential is now much greater: a ratio of 10:1 female to male, compared to 3:1 for harassment from the public. Of policewomen who reported sexual harassment by colleagues in the last 12 months, 28.8% have CPTSD. The figure is similar for policemen (33.3%), but as this is only based on 39 cases it is not reliable enough to report with any accuracy: the confidence intervals suggest that the true figure could be anywhere from 18% to 48%.

Controlling for demographics

One way in which these results can be summarized more concisely is by using a more advanced statistical method, ordered logistic regression, to compare the effects of each of these working conditions variables on a three-point PTSD scale (no PTSD, PTSD, complex PTSD) through the calculation of a 'pseudo R^2'. These coefficients are given in Table 1, ordered by the strength of the effect. This analysis also facilitated a further important check on our results by controlling for demographic variables. To guard against the possibility that some of the correlations were spurious, started with gender, age, rank, and length of service (logged) in the models, and used increase in the pseudo R^2 when the job quality item was added as a more accurate measure of the true relationship between working conditions and PTSD. Reassuringly, there is very little difference in the two columns in Table 1 and all of the working conditions variables that we have discussed in this article remain highly significant after these controls are added to the statistical models. This confirms that all of the variables we have identified as being linked to CPTSD are still linked even when controlling for demographic variables, strengthening our confidence that there is a causal link of some sort.

Differences between forces

So far, the results suggest that some of the variability in rates of PTSD and CPTSD is attributable to variations in job quality. This suggests that the forces that have better working conditions should have lower rates of PTSD and CPTSD. This was explored by creating a new aggregate dataset of forces from the larger datasets. The number of survey responses across the 48 forces varied greatly; for this analysis, we only include the 18 forces with more than 300 respondents. Average working conditions in those forces were created by calculating the mean of each of the working conditions items considered in this article so far.

With only 18 cases (i.e. forces) the statistical analysis lacked power, but some of the (Spearman's rho) correlations between rates of PTSD plus CPTSD and working conditions were so strong that they were still significant. The clearest example is the relationship with work intensity. Work intensity was measured by asking how often respondents were working to tight deadlines, from 'all of the time' (score = 1) to 'Never' (score = 7). The results shown in Fig. 2 already show the high work intensity associated with UK police work in 2018; the two modal categories are 'Almost all of the time' followed by 'all of the time'. As noted in the introduction, the average score is considerably higher for the police than for the rest of the UK working population. Conversations with police personnel often revolved around the time pressures they have been under, particularly since the severe austerity cuts that were imposed on the national police budgets between 2010 and 2016 (see Spectator, 2019). The marked reduction in police numbers but without a corresponding decrease in the demands of the job inevitably led to more time pressure on the remaining personnel.

The rates of PTSD plus CPTSD varied considerably between the 18 forces, from 13% to 29%.

Table 1: Ordered logit regression models

	Pseudo R^2 (bivariate relationship between PTSD and each job quality indicator) and significance of the model (*P*-value)	Difference in pseudo R^2 (between baseline model with demographics and full model with both demographics and job quality) and its significance (*P*-value)
Feeling work well done	0.0326***	0.030***
Good prospects for career advancement	0.0286***	0.0261***
Adverse social behaviour—subjection to humiliating behaviour	0.0277***	0.0266***
Feeling doing useful work	0.0272***	0.0247***
Job security	0.0250***	0.0229***
Work intensity—tight deadlines of work	0.0220***	0.0229***
Emotional demand—handling angry members	0.0201***	0.0204***
Fit between working hours and non-work commitments	0.0198***	0.0184***
Help and support from managers	0.0183***	0.0192***
Being able to apply own ideas	0.0180***	0.0159***
Help and support from colleagues	0.0172***	0.0176***
Easiness of taking 1 or 2 hours off	0.0161***	0.016***
Physical environment—handling infectious materials	0.0135***	0.0124***
Adverse social behaviour—subjection to threat	0.0085***	0.0074***
Solving unforeseen problems by yourself	0.0082***	0.0081***
Adverse social behaviour—subjection to sexual harassment	0.0081***	0.0095***
Regular changes in working hours arrangements	0.0054***	0.0052***
Adverse social behaviour—subjection to physical violence	0.0033***	0.0024***
Control over working hours arrangement	0.002***	0.0012**
Number of night work days	0.0013**	0.0012**

Note: $^{**}P < 0.01$, $^{***}P < 0.001$.

N varied between 6,579 and 9,429.

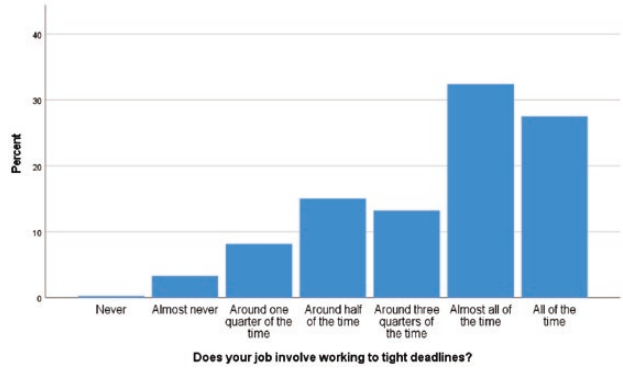

Figure 2: High rates of working time intensity in policing.

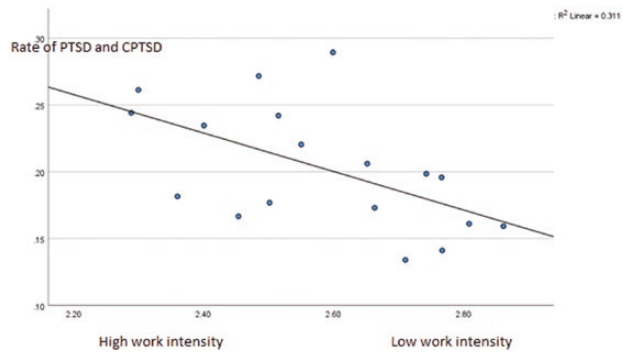

Figure 3: Forces with poor levels of work intensity have higher rates of PTSD and CPTSD.

Looking at the relationship between these two as a scatterplot in Fig. 3, we find a high correlation between work intensity and PTSD plus CPTSD (rho = 0.60, $P < 0.01$), as well as with Complex PTSD on its own (rho = 0.52, $P < 0.05$).[10]

Similar relationships with the rates of PTSD plus CPTSD were also found for the prevalence of sexual harassment (rho = 0.53), working long shifts of more than 10 hours (0.64), and supportive and helpful line managers (0.50) (all *P*s < 0.05). This provides further support for the argument that the prevalence of PTSD and CPTSD might be greatly reduced if the working conditions in the average and below-average forces could be improved to be closer to the forces with the best working conditions.

Discussion

These analyses have clearly demonstrated a strong correlation between working conditions and CPTSD. Although the figures were not given in this paper, the results for ICD-11 PTSD showed effects that mirrored those for complex PTSD. Furthermore, the effect sizes are often large; working conditions are, in several cases, associated with rates of CPTSD that are twice or three times as high as the baseline rates.

There has been almost no previous research on this topic in the UK but the general pattern of results was as expected: in almost all cases better working conditions were associated with lower rates of CPTSD; the one exception was solving

[10] For reasons of confidentiality, we cannot identify individual forces in this report, but we have done thorough checks to ensure that the results we present here are not misleading being driven by the very different nature of the different forces—if anything the relationship is even stronger if we remove some of the non-standard forces, such as Northern Ireland, British Transport, or the Metropolitan Police.

unforeseen problems on one's own, which may hint at the greater risk of PTSD or CPTSD for those single-crewing and those first on scene (as reflected in parallel research into worst reported traumatic incidents from the same dataset). If the results were surprising in any way it was in the sheer number of working conditions that predicted rates of CPTSD and the large size of those effects.

As previously mentioned, this cross-sectional survey cannot give conclusive proof on whether the correlations uncovered here are causal—in other words, can we be sure that improving job quality would bring about a corresponding reduction in PTSD and CPTSD? Short of a dedicated longitudinal survey that measured variations in job quality and PTSD over several years, or an experimental study that improved job quality for some groups but not others, causal mechanisms cannot be confirmed. But showing that there is a strong correlation between the aggregated working conditions in a force and the prevalence of PTSD and CPTSD in that force, along with the great variation between forces in PTSD and CPTSD rates (from 13% to 29%) again suggests that there is considerable scope to reduce the prevalence of PTSD amongst police officers by improving working conditions. Variation between forces on time pressure (and its impact on being able to process traumatic incidents before moving on to the next job), support from line managers, and handling sexual harassment in the workplace strongly suggest that these are key factors that differentiate whether forces have higher or lower levels of trauma impact.

Even with this clarity, there are many job quality variables that predict elevated levels of PTSD and CPTSD and it is difficult to offer forces definitive direction on how to prioritize working conditions that should receive their most urgent attention.

The highest prevalence of CPTSD, 43.9% for those who responded that they could never rely on the support of their colleagues, is truly shocking, but fortunately, this affected less than half of 1% of the sample. Other aspects of poor working conditions, such as finding it 'very difficult' in taking time off work for personal or family matters' elevated CPTSD to 19% but accounted for a much larger 20% of the sample. Similarly, 15% of the sample reported very poor work–life balance, and that was associated with a doubling of CPTSD.

A large number of the job quality variables were associated with unpleasant but intrinsic aspects of policing, for instance, dealing with physical violence, threats, and verbal abuse, but these were only linked with modest increases in the rate of CPTSD. Other variables with a more emotional side such as having to deal with sexual harassment, humiliating and embarrassing situations, and having to hide one's feelings were associated with much larger elevations in the rate of CPTSD, suggesting that the types of trauma that lead to CPTSD are not so much linked with actual danger as with the emotional resonance of those traumas.

The results also point to the importance of forces to create a sense of support and safety within the policing community. Like any family, if that community is strong it facilitates resilience against the stresses and threats faced in police work, but if there are threats from *within* that environment, for instance, from unsupportive peers or management, or sexual harassment from other officers, that betrayal increases the risk of PTSD and CPTSD.

The other classes of variables that are implicated are the pressures on work intensification and extensification that are common in policing; and have almost certainly been exacerbated by the austerity cuts to the police budget between 2010 and 2016. This suggests that the prevalence of PTSD and CPTSD could be reduced through more careful planning of shift patterns and workloads.

Even if some of the relationships in this article are caused by PTSD or CPTSD worsening job quality or the perception of job quality, this does not mean that those relationships are unimportant. Consider, for instance, the strong relationships between PTSD and the feeling of doing useful or meaningful work, and the sense of job security. This may be indicating how PTSD is not just a burden on the unfortunate sufferers and their families but feeds directly back into the morale of the police forces. If high rates of PTSD feed through to a sense of disenchantment with the job of policing, this demonstrates yet another important reason why it is so important to prioritize the prevention and treatment of PTSD in the UK policing.

Conclusions

There are three overall findings that we can confidently assert from the *Policing: The Job and The Life* dataset. Firstly, the working conditions for police officers are, in many respects, worse than the average working conditions in the UK (the only notable exceptions being in job security and job prospects). Secondly, we find a high prevalence of both PTSD and Complex PTSD in police personnel. Third, we find that there are strong relationships between poor working conditions and high rates of PTSD and CPTSD.

From all of these findings, we think it highly likely that improving the job quality for police officers could lead to a reduction in the rates of PTSD and CPTSD, although we should be careful to acknowledge that we don't have conclusive proof of the direction of that relationship. Although the discussion in this paper tends to have been drawing attention to those groups with higher levels of CPTSD, it could equally have been written to draw attention to those who reported good working conditions and had much lower levels of CPTSD where their risk of CPTSD was often halved to rates of 6%.

A pertinent question might be to what extent is it actually feasible to improve the working conditions in policing? Perhaps these jobs are, by their very nature, challenging and at times unpleasant? Working time pressures and work–life balance, job security, and prospects for promotion are perhaps beyond the reach of anyone force to 'fix', particularly given the impact of the UK Government's austerity measures after the 2008 economic crash. Without the government's support, forces have little capacity to rise against these national challenges, and therefore have no choice but to look inwards, to the way they manage their resources as a force, and to how they help their employees manage their own mental health as individuals.

Looking more locally, forces may well be suitably resourced to provide better opportunities to process trauma after incidents, to empower managers to have trauma-informed conversations with teams to encourage openness about trauma impact, and to better manage sexual harassment in the workplace. These are all seemingly achievable steps forward for any UK force wanting to improve its resilience and well-being.

Furthermore, there are two specific and compelling reasons we believe that there is much scope to increase job quality in the UK policing. Firstly, on all of the scales, there is variation from police personnel from the lowest to the highest quality on each dimension—we are not suggesting that all police jobs could be good all of the time, but just that we can shift the balance to have more good experiences and fewer bad experiences at work. Secondly, there is clear evidence of large differences in job quality between the police forces in the UK. Some of that may be due to the different types of policing between, say, urban (or highly populated) and rural (or remote) areas, but we also suspect that much of that variability in job quality is the effect of different styles of management. If best practice in specific, actionable job quality factors were rolled out between forces, it should be possible to make significant reductions in the destructive misery caused by PTSD and CPTSD. This paper offers UK forces some clear guidelines to address this pressing public health issue in increasingly challenging times.

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