Community integration after deployment to Afghanistan: a longitudinal investigation of Danish soldiers

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Abstract

Objective: In the years following military deployment, soldiers may experience problems integrating into the community. However, little is known about the nature and prevalence of these problems and if they relate to posttraumatic symptomatology.

Methods: In a prospective, longitudinal study of Danish soldiers deployed to Afghanistan in 2009 (N=743), we assessed community reintegration difficulties 2.5 years after home coming (study sample: N=454). Furthermore, symptoms of posttraumatic stress disorder (PTSD) were assessed before, during, and after deployment. Trajectories of PTSD symptoms from a previously published Latent Growth Mixture Modeling (LGMM) analysis were used to address whether community reintegration difficulties differ as a result of course and level of PTSD symptoms.

Results: Between 3.6% and 18.0% reported to have some, a lot, or extreme difficulties in reintegration domains such as interpersonal functioning, productivity, community involvement, and self-care. Mean level of reintegration difficulties differed significantly across six PTSD symptom trajectories (range: 6.35-36.00); with more symptomatic trajectories experiencing greater community reintegration difficulties.

Conclusions: Reintegration difficulties after deployment are present in less than 20% of Danish soldiers who return from Afghanistan. Difficulties are greater in individuals who follow symptomatic PTSD trajectories in the first years following deployment than in those who follow a resilient-low-stable trajectory with no or few symptoms.

Keywords: Community reintegration, PTSD, Military, Operation Enduring Freedom, longitudinal analysis, Mixture Modeling
Introduction

Veterans who return from military deployment face the simultaneous challenges of processing their combat experiences and reintegrating into civilian society and community life. While recent decades have seen extensive research on psychiatric adjustment problems among war veterans [1], less is known about difficulties of community reintegration and how psychiatric problems such as posttraumatic stress disorder (PTSD) relate to these difficulties [2].

While overall community reintegration across several domains has not been the topic of many investigations, constructs related to reintegration difficulties have been under research scrutiny. Employment problems after deployment have been investigated in a few studies, most often in relation to PTSD. Most of these studies have found an increased risk of not finding or keeping a job in veterans with PTSD compared to veterans without PTSD [3-6], while one study did not find this association [7]. Other domains related to reintegration have also been investigated in relation to deployment and PTSD, such as quality of life [4,8], impaired functioning [9], financial difficulties [10], and functioning in marriage or intimate relationships [11,12]; all have reported greater difficulties in these areas for soldiers with PTSD or high levels of PTSD symptoms compared to soldiers without PTSD or with low symptom levels.

Recently, however, attention has been devoted to overall community reintegration as a concept with the development of a community reintegration measure by Sayer and colleagues [13]. This measure has been applied to assess the level of reintegration difficulties and its relation to PTSD in Iraq and Afghanistan veterans [14]. The authors of these studies define post-deployment reintegration as the levels of functioning at home, at work, in their relationship, and in the community after deployment [13]. In a sample of Iraq and Afghanistan veterans receiving VA medical care, they found that 25 to 56% reported some, a lot, or extreme difficulties in social functioning, productivity, community involvement, and self-care domains [14]. They also found that probable PTSD was related to more reintegration difficulties across all domains, as well as to more interest in treatment. Finally, overall community reintegration difficulties was the subject of a recent study of 800 US service members
returning from Iraq or Afghanistan; revealing that mental health problems were related to greater reintegration difficulties [15].

Most often, studies investigating domains of reintegration difficulties and the relation to war-related PTSD have done so in cross-sectional studies using either probable PTSD diagnosis [4,9,11,14] or average level of PTSD symptoms [9,11]. However, recent longitudinal studies have shown that PTSD-symptoms after combat are best captured in heterogeneous trajectories that show fluctuating symptom levels over time [16-19]. Given this diversity of traumatic reactions, much information is lost by dichotomizing samples into groups of individuals with or without PTSD. In a similar manner, population averages of PTSD symptoms do not capture the apparent heterogeneity in symptoms following deployment. In the current study, we seek to overcome these limitations by identifying the level of community reintegration difficulties across trajectories of PTSD symptoms which have manifested over time from before deployment to three years post deployment.

In this study, we aim to address 1) the prevalence of community reintegration difficulties in a representative sample of Danish soldiers 2.5 years after home coming from deployment to Afghanistan and 2) if and how these reintegration difficulties differ across populations with distinct trajectories of PTSD symptom severity and course over time. For the second of these aims, we hypothesized that PTSD trajectories with higher symptom levels entail greater reintegration difficulties.

Subjects and methods

Participants and attrition

The current study is part of a longitudinal investigation of psychological reactions to war deployment in a nationally representative sample of Danish soldiers who deployed to Afghanistan from January through August 2009 (the USPER study). The soldiers deployed to the Helmand province where they participated in operations with the joint forces of the International Security
Assistance Force (ISAF). The participants were followed longitudinally in six assessments: immediately before deployment, during deployment, at return, and 2 months, 7 months, and 2.5 years after return. Participation was voluntary and informed written consent was obtained from all participants. The study was approved by the Danish Data Protection Agency.

In total, 743 soldiers deployed to Afghanistan in January 2009, of which 602 provided pre-deployment data (see Figure 1). Of these, three died in combat and 37 were not deployed. Finally, one soldier was excluded due to outlying scores on the PTSD-measure, leaving 561 (81.4%) who provided full data at the first assessment. The main outcome measure of this study, difficulties in community reintegration, was assessed 2.5 years after homecoming. At this time point, 454 participated, corresponding to a response rate of 61% of the total study population. In this final sample, 429 (94.3%) were male, 206 (45.0%) were single, and the mean age was 26.65 (SD=7.32). Furthermore, 310 (68.6%) were constables, 96 (21.2%) were sergeants, and 46 (10.2%) were officers. Finally, 124 (27.4%) were employed on a short term contract (one year of pre-deployment military educational training, one or two deployments followed by an exit from the military and return to civilian life), while 328 (72.1%) were permanently employed on a long-term contract.

We conducted a range of comparisons between responders and non-responders at the last post deployment assessment (2.5 years post deployment) to evaluate the potential bias of attrition. Responders were significantly older than non-responders (responders: 26.6 years, non-responders: 24.6 years, \(p=.001\)), however, we found no differences in gender distribution, marital status, length of deployment, military rank, or having received psychological or psychiatric help before deployment. Non-responders showed a trend towards higher mean pre-deployment PCL-scores, but this difference exactly failed to reach significance (\(p=.05\)).

Measures
Adjustment to civilian life was assessed via the Military to Civilian questionnaire [M2C; 13]. M2C consists of 16 items, all addressing difficulties with community reintegration after war zone deployment (sample item: over the past 30 days, have you had difficulty keeping up friendships with people who have no military experience?). Response options were 0=No difficulties, 1=A little difficulty, 2=Some difficulty, 3=A lot of difficulty, 4=Extreme difficulty. The M2C was translated and back translated to assure consistency in the Danish version of the measure. M2C has been developed and initially tested in a national stratified sample of American Iraq and Afghanistan veterans and found to have high internal consistency (α=.95). Factor analysis suggested that a single total score provided the best-fitting model [13]. Hence, we calculated a total score to represent an overall measure of difficulties adjusting to the community after homecoming (range: 0-64). Note that four items on the questionnaire can be answered “does not apply”. For these items, we used mean replacement to be able to calculate a total score for these individuals as well. Furthermore, in line with the scoring method applied by Sayer et al [13], we estimated the prevalence of each individual reintegration item by dichotomizing so that responses of some, a lot, or extreme difficulty (scores 2-4) reflected reintegration issues on that particular item.

Symptoms of posttraumatic stress were assessed with the PTSD Checklist, civilian version [PCL-C; 20]. The PCL-C is a questionnaire addressing the symptom criteria for PTSD as defined in DSM-IV. Each item has five response options, indicating the degree to which the symptom has been present within the last month (1=not at all, 5=extremely). The PCL was applied at each assessment. For this study, a total score of the 17 DSM-IV criteria was calculated (range=17-85), indicating overall symptom severity. Validation studies have demonstrated high internal consistency of the scale [α=.94; 21], which was also found in our sample (α=.94).

Modeling approach and post hoc analyses

The main analysis was conducted in Mplus version 7.1 [22], while descriptive and post hoc analyses were conducted in SPSS version 20. Trajectories of PTSD symptoms were identified in an
earlier study through Latent Growth Mixture Modeling (LGMM). Details of the LGMM analysis as well as fit indices of the model are described in the supplementary material of this paper and in Andersen et al (in press). The resulting trajectories and their prevalence can be seen in Figure 2. The majority of the sample (78.1%) belonged to the resilient-low-stable trajectory, while the remaining 21.9% was distributed on five trajectories of varying symptomatology: mild symptoms before and after deployment (low-fluctuating, 7.5%); low symptoms before deployment followed by moderate increase after deployment (mild distress, 4.1%); late onset of symptoms (late onset, 5.7%), moderate symptoms before deployment that decreased after deployment (distressed-improving, 2.7%); and moderate initial symptom level that decreased somewhat during deployment and then increased drastically after deployment (relied-worsening, 2.0%).

To estimate if reintegration difficulties 2.5 years after deployment differed across these trajectories, we tested equality of M2C group means across latent classes using pseudo-class-based multiple imputations in Mplus [23]. This approach takes errors related to estimation of latent class membership into account by making several random draws from distributions of individuals’ posterior probability of class membership. These pseudo-class draws are similar to the procedure of multiple imputation in missing data analysis, and provides unbiased estimates when entropy of the model is high (> .80 [24]). To test differences across classes, a Wald test of mean equality is calculated based on the random draws [23].

Since tests of mean equality based on trajectory membership as described above does not include potential confounders, we conducted a series of post hoc analyses to control for the influence of relevant covariates. For this purpose, we saved the most likely class membership variable from the LGMM, and included this as dummy coded independent variables in a linear regression with M2C as the dependent variable and additional covariates as independent variables. Before entering variables in this multivariate model, we investigated the relations between theoretically relevant covariates (all variables can be seen in Table 3) and M2C in a series of univariate analyses. Only
covariates that were significantly related to M2C in the univariate analyses were entered in the multivariate linear regression model.

**Results**

Endorsement of individual community reintegration difficulty items is listed in Table 1. Between 15-20% of the sample reported having some to extreme difficulties taking care of his or her own health (18.0%), confiding or sharing personal thoughts and feelings (17.8%), taking care of chores at home (17.4%), getting along with spouse or partner (17.0%), keeping up non-military friendships (15.6%), and feeling like belonging in the civilian society (15.2%). From 10-15% experienced some to extreme difficulties making new friends (14.5%), taking part in community activities (14.5%), making good use of free time (12.5%), keeping up military friendships (12.3%), performing tasks for work or school (11.3%), and dealing with new people (11.0%). Less than 10% experienced difficulties finding meaning or purpose in life (9.9%), getting along with relatives (7.3%), difficulties finding or keeping a job (6.9%), and getting along with one’s children (3.6%).

The overall mean score on the M2C was 8.54 (SD=8.91), and the mean M2C score differed significantly across the six PTSD trajectories (see Table 2). The resilient-low-stable class was found to have the lowest average score on M2C ($M=6.35$), implying that they had very few reintegration problems. The low-fluctuation and the mild distress classes both had mean M2C scores just above 10 (low-fluctuating=$10.09$, mild distress, $11.86$), while the distressed-improving group displayed a mean M2C score of 14.55. For the late-onset group, the mean M2C score was 20.74, while the highest M2C score was found in the relieve-worsening group ($M=36.00$). The M2C score in the resilient-low-stable group was significantly lower than all other groups, while the M2C score for the relieved-worsening group was significantly higher than for all other groups. All other group differences can be seen in Table 2.

For the post hoc analyses, we initially ran a series of univariate analysis to assess the associations between potentially relevant covariates and community reintegration difficulties (see Table 3). Age,
education level, years in the military, number of international deployments, short- or long-term military contract, parents’ divorce, childhood antisocial behavior (getting into fights, cutting school, being suspended, and having trouble with the police), pre-deployment trauma exposure, and post-deployment trauma exposure were significantly related to M2C, and were hence included as covariates in the final regression model along with the most likely trajectory membership and M2C total mean score as outcome. We found that each of the symptomatic PTSD trajectories were significantly related to M2C in this analysis ($\beta$s ranging from .10 (low-fluctuating) to .43 (relieved-worsening), all $p$’s < .05, see Table 3). Childhood antisocial behavior was the only additional covariate that remained significant. The linear regression model as a whole accounted for 41% of the variance ($r^2=.41, p<.001$).

Discussion

In this study of community reintegration difficulties and their relation to trajectories of PTSD symptoms, we found that between 3.6 and 18.0% experienced some, a lot, or extreme difficulties across multiple domains of community reintegration. Most prevalent were difficulties relating to close or social relationships (getting along with spouse or partner: 17.0%; confiding or sharing personal thoughts and feelings: 17.8%), and in the self-care domain (taking care of chores at home: 17.4%, taking care of one’s health: 18.0%). Least prevalent were difficulties of getting along with children (3.6%) and of finding or keeping a job (6.9%). We also found that six previously identified trajectories of PTSD symptoms (resilient-low-stable, mild benefit, mild distress, homecoming relieved, late-onset, and relieved-worsening) differed in levels of community reintegration difficulties, with all symptomatic trajectories showing somewhat higher levels of community reintegration problems. Most pronounced were the inflated levels of reintegration difficulties in the late-onset group and the relieved-worsening group; groups that also displayed very high levels of PTSD-symptoms at the last time point. These differences across PTSD-trajectories remained
significant when background-variables were included along trajectory membership in a linear regression model.

Overall, our findings show that in no domain of reintegration does the prevalence of experiencing some, a lot, or extreme difficulties exceed 20%, suggesting that most of the Danish soldiers have dealt reasonably well with the transition from military to civilian life 2 years after the return from Afghanistan. For comparison, a recent study investigating reintegration difficulties in a sample of American veterans receiving VA medical care applying the same measure that we used, found a prevalence of 25-56% experiencing some, a lot or extreme reintegration difficulties [14]. It is, however, not surprising that the proportion with reintegration difficulties in a sample of soldiers in VA medical treatment is higher than in a nationally representative sample of deployed soldiers. Furthermore, Sayer et al. [14] also found that 96% of the sample expressed interest in services to help reintegrate into civilian life, illustrating that reintegration difficulties were indeed perceived as troubling for the soldiers. Whereas this interest for treatment would probably be lower in our sample compared to a sample already receiving VA medical care, it does suggest that for soldiers already seeking treatment, targeting reintegration difficulties is of great relevance.

While the overall prevalence of reintegration difficulties was relatively low in our sample, there were significant differences in level of reintegration difficulties across PTSD symptom trajectories. Soldiers who belonged to the symptomatic PTSD trajectories experienced greater reintegration difficulties in our sample, which is not surprising and very much in line with the literature [3,9,14]. However, earlier studies have looked at PTSD diagnosis, which provide only a crude distinction between two groups based on a specific combination of symptoms at one time point. By empirically deriving heterogeneous trajectories, we have identified a number of distinct populations that are defined by symptom level as well as symptom course, hence decreasing the intragroup variance and increasing the intergroup differences. Our findings show that these different trajectories entail very different levels of community reintegration difficulties. More specifically, all symptomatic trajectories have significantly higher levels of reintegration difficulties than the resilient-low-stable
The association between PTSD-symptom trajectory membership and level of reintegration difficulties also held true when controlling for pre-and post-deployment variables such as age, childhood antisocial behavior, pre-deployment trauma exposure, and post-deployment trauma exposure. Most drastic are the levels of reintegration difficulties in the late-onset and the relieved-worsening groups (20.74 and 36.00, respectively), indicating that high levels of PTSD symptomatology 2.5 years after deployment are accompanied by high levels of reintegration difficulties. From a clinical point of view, relieving symptoms of PTSD might therefore also relieve community reintegration difficulties, and hence increase quality of everyday life of the soldier.

However, since we can in this study not detangle the causal relations between PTSD-symptoms and reintegration difficulties, another scenario might be just as possible: namely that relieving community reintegration difficulties might also relieve PTSD-symptoms. Either way, a clinical focus on both seems supported.

The current study has some important limitations. First, we did not collect data on pre-deployment community (re)integration difficulties. Clearly, it would be very informative to determine how integrated participants felt in their community prior to deployment, since this would allow us to determine if integration difficulties were pre-existing or developed as a result of deployment. Future studies should address this limitation by including a pre-deployment measure of community integration difficulties. Second, the measure of community reintegration applied in this study, the M2C, is a relatively new measure, and has only been applied in a sample of American soldiers receiving VA medical care. Hence, we do not have any reliable estimates of rates of community integration difficulties in the background population or in other representative military samples. Therefore, from the total mean scores of the M2C, it is difficult to interpret the military-specific level of community reintegration difficulties in a meaningful way, and to address whether this is different from the background population. Third, we assessed community reintegration 2.5 years after return from deployment, and assessed only difficulties within the last 30 days. Assessment of reintegration closer to the deployment would obviously reveal different, and perhaps more accurate,
estimates of reintegration difficulties as a direct result of the deployment. Finally, while the sample in this study resembles other OEF samples from the US and the UK in terms of combat exposure [see 25 for details], there are major differences between Denmark and other countries in for example availability of heath care and access to social benefits. These factors might influence reintegration difficulties, and hence limit the generalizability of our findings to other military samples.

Conclusion

Despite of these limitations, this study provides valuable information on the prevalence of reintegration difficulties in a nationally representative sample of Danish OEF veterans, and on how the level of reintegration difficulties differs across trajectories of PTSD symptoms. In conclusion, the majority of Danish OEF veterans seem to readjust well into civilian society, but for a significant minority of individuals, who also experience fluctuating and high PTSD-symptomatology, reintegration difficulties are very present. For these individuals, targeting reintegration problems might be a central theme in treatment.

Conflicts of interest: On behalf of all authors, the corresponding author states that there is no conflict of interest.
References


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