

An investigation into the development of mental toughness in the British Army

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Introduction

This study examines the development of mental toughness through the experience of 'tough' environments and reward/punishment regimes. It has long been recognised that success on the battle field is dependent on the 'human element' as well as tactics and physical equipment superiority (ARTD, 2009). Screening, developing and testing for physical aptitude is relatively straight forward; however the measurement and development of mental robustness is less well understood (Jones, Hanton and Connaughton, 2002). Military discipline is a 'bedrock' where discipline highlights and eradicates undesirable behaviour and (crucial to this paper) is believed to contribute to the development of mental toughness (Director General Leadership, 2014) through coping with the threat of punishment. This study seeks a closer understanding of the relationship between punishment and mental toughness in the British Army.

The Literature

Competitive sport holds a large proportion of focused mental toughness research. Mental toughness has been described as one of the most used, but least understood phrases in sport psychology (Jones, Hanton and Connaughton, 2002). Although no agreed definition of mental toughness exists, there is consensus that it is a dispositional construct enabling individuals to deal with obstacles, distractions, pressure and adversity from a wide range of stressors (Clough & Strycharczyk, 2012). Hardy, Bell and Beattie (2013: 1) defined it as "the ability to achieve personal goals in the face of pressure from a wide range of different stressors" which is adopted for this study.

Within sports, mental toughness is rated as one of the most important psychological characteristics in determining competitive success, e.g. Sheard, 2010; McGraw *et al.*, 2012. Research has found mental toughness is related to coping with testing circumstances (Kaiseler, Polman and Nicholls, 2009), greater pain tolerance (Crust and Clough, 2005) and achievement (Bell *et al.*, 2013). A number of qualitative studies have attempted to understand how mental toughness develops, e.g. Bull, Shambrook, James and Brooks (2005). Whilst genetics may play a part, social environmental influences have a role (Crust and Clough, 2011). Given the apparent benefits, the discovery of techniques for mental toughness development is attractive.

Repeatedly practicing tasks whilst subjected to mild levels of anxiety can help prevent mistakes when levels of anxiety are increased (Oudejans and Pijpers, 2010). Systematic desensitization training is a behavioural therapy technique used to help individuals cope in stressful and anxiety related conditions (Deffenbacher and Suinn, 1988). Exposure to the threat of negative consequences and the development of strategies to avoid such consequences is central. In order for the negative threat to be credible, a genuine negative consequence attached to poor performance is needed (*ibid*) and this might be punishment (Hardy *et al.* 2013).

Kazadin (1975) conceives punishment as the presentation of something undesirable or the removal of positive outcomes such as a restriction of privilege. Podsakoff, Bommer, Podsakoff and MacKenzie (2006) conducted a meta-analysis into the relationship between leader operant behaviours and subordinate attitudes, role perceptions and performance. Noncontingent reward held no effect. Contingent reward had the strongest relationship with subordinate satisfaction. Non-contingent punishment had the strongest negative relationship. It is agreed that punishment can elicit negative emotions in subordinates and that administering punishment contingently and fairly by those that are trusted can mitigate these effects (Podsakoff *et al.*, 2006). Research continues, for example Rubin, Bommer, and Bachrach, (2010) found that contingent punishment had a positive effect on subordinate trust and OCB, while non-contingent punishment had a negative effect on both trust and OCB.

In the military, Attwater, Cambreco, Dionne, Avolio and Lau (1997: 147) reported the effects of reward and punishment in an all male military college. Perceptions of leader effectiveness were highly correlated with contingent reward. Then (as now) “non-contingent punishment is regarded as being useful for building stress and frustration tolerance”, but they found a significantly higher emotional response (mainly anger) by subordinates experiencing noncontingent punishment. Links to performance were unclear, and mental toughness untested. We seek to explore these issues as the practice of non-contingent punishment continues to exist within the British Army.

Study design

There are limited empirical studies on mental toughness (Gucciardi, Gordon and Dimmock, 2009) or valid measurement tools. The invalidity of self-reporting mental toughness is convincing (Hardy *et al.*, 2013). The recently developed Military Training Mental Toughness Inventory (Arthur, Fitzwater, Hardy, Beattie, & Bell, under review) provides a useful tool for measurement of mental toughness by an independent person.

We were fortunate to gain access to the Infantry Battle School which delivers rank-specific courses in order to acclimatise personnel for leadership in arduous field conditions. Physically and mentally demanding, successful course completion is a prerequisite for promotion. The arduous nature of the training presents instructors with the opportunity to practice punishment and reward combinations. These factors helped set the conditions for a unique and challenging academic opportunity.

Resource constraints (time and access to a sample group) meant that a cross-sectional design was required. This investigation sought to explore associations between experience, performance, punishment/reward and mental toughness to provide pointers for future research.

Specifically, this research aimed to establish:

1. The relationship between mental toughness, contingent/ non-contingent punishment
2. and performance.
3. The effect of operational deployment on mental toughness.

Measures

Determination of mental toughness in The British Army employs the Military Training Mental Toughness Inventory (MTMTI). The questionnaire consists of 6 items using a 7 point scale: 1 (never), through 4 (sometimes), to 7 (always).

Punishment and reward were measured using the Leadership Reward and Punishment Questionnaire (LRPQ; Podsakoff and Todor, 1984). The non-contingent reward items were removed as previous research has consistently revealed that non-contingent reward neither positively or negatively contributes to performance or satisfaction (e.g. Rubin *et al.*, 2010). Without the non-contingent reward items the questionnaire comprised 20 questions using a scale anchored at 1 (never) to 5 (always). Performance during the course was measured using the final course grade awarded by an independent panel of directing staff and is based on a range of competencies tested throughout the course.

Procedure and participants

This research employed an observer-rated mental toughness inventory to examine the relationship between (non) contingent punishment, reward and mental toughness. Cohorts of officers, sergeants and corporals ($N=316$) undergoing training at the British Army's Infantry Battle School undertook testing at the end of their 7-12 week courses. An observer-rated mental toughness inventory MTMTI) was employed to examine the relationship between (non) contingent punishment, reward and mental toughness. Cohorts of officers, sergeants and corporals ($N=316$) undergoing training at the British Army's Infantry Battle School undertook testing at the end of their 7-12 week courses. Involvement was voluntary and 87% of trainees agreed to participate: 316 male Army infantry officers, sergeants and corporals ($M_{age} = 26.3$,

$SD = 3.1$). Courses were rank-specific; officers, sergeants and corporals and cohorts are described below.

The officer cohort ($n = 90$, $M_{age} = 24.3$, $SD = 1.7$) averaged 1.4 years ($SD = 1.1$) in the Army and most had recently passed basic officer training. Most (92%) had degree education.

The sergeant cohort ($n = 126$, $M_{age} = 28.4$, $SD = 2.9$) averaged 10 years service ($SD = 2.1$) and were the most operationally seasoned of the cohorts having led sections (8 men) or platoons (26 men) whilst on operations. They will have completed the corporals' course.

The corporals cohort ($n = 100$, $M_{age} = 25.5$, $SD = 2.3$) averaged 6.3 years service ($SD = 1.9$). Holding some experience of operational deployment, most tasks would have been undertaken with close supervision and with limited leadership opportunities. The corporals were the most junior rank of the three cohorts.

Findings

Although the measures used in the study had all been validated during previous research, CFA was conducted. The MTMTI demonstrated an excellent factor structure ($\chi^2(9) = 19.54$, $RMSEA = 0.03$, $SRMR = 0.02$, $NNFI = 1.0$, $CFI = 1.0$). After removing 3 items, contingent reward (LRPQ) resulted in a satisfactory factor structure ($\chi^2(14) = 38.10$, $RMSEA = 0.06$, $SRMR = 0.03$, $NNFI = 0.99$, $CFI = 0.99$). One item was removed in contingent punishment resulting in a good factor structure ($\chi^2(2) = 1.71$, $RMSEA = 0.00$, $SRMR = 0.02$, $NNFI = 1.0$, $CFI = 1.0$). Non-contingent punishment demonstrated a very good factor structure ($\chi^2(2) = 0.23$, $RMSEA = 0.00$, $SRMR = 0.00$, $NNFI = 1.0$, $CFI = 1.0$). Descriptives, correlations and alpha coefficients are displayed in Table 1.

Table 1 Means, standard deviations, zero order correlations and alpha coefficients (diagonal)

Scale	Mean	SD	1	2	3	4	5
1 Performance	3.91	1.18					
2 Mental Toughness	4.79	1.2	.57**	(.93)			
3 Contingent Reward	3.47	0.89	.20**	.13*	(0.9)		
4 Contingent Punishment	3.35	0.84	-0.05	-0.09	-0.02	(.68)	
5 Non-Contingent Punishment	2.12	0.91	-0.22**	-0.19**	-.46**	.33**	(.78)

$N = 316$, ** $p < .01$, * $p < .05$

Bivariate correlation analysis revealed a significant positive relationship between mental toughness and performance in all three cohorts (corporals: $r = .58$, $p > .01$; sergeants: $r = .48$, $p > .01$; officers: $r = .69$, $p > .01$). Analysis of variance revealed no significant differences in mental toughness between ranks ($F = 1.72$, $p = .181$).

Correlations and moderated hierarchical regression revealed no significant effects for

contingent punishment in the whole group or any cohort. Non-contingent punishment had a significant negative correlation with course performance and mental toughness.

Independent sample t-test also revealed significant differences in observer-rated mental toughness between high performing students who achieved a distinction, instructor recommendation, or both ($n=41$) and those who performed satisfactorily and achieved a generic pass ($n=275$) ($t(60.18) = 9.39, p > .01$).

Independent sample t-test revealed significant differences in mental toughness between those who had served in Afghanistan ($n=208$) and those who had not ($n=108$) ($t(314) = 2.27, p = .02$). However, no significant differences were revealed between those who had served in Iraq ($n=110$) and those who had not ($n=206$) ($t(314) = .30, p = .23$).

When all of the data were simultaneously entered into the analysis, stepwise regression revealed that the behaviour exhibiting the greatest variance in performance was noncontingent punishment in the corporal ($r^2 = .05, \beta = -.23, p = .02$) and sergeant cohorts ($r^2 = .05, \beta = -.23, p = .01$).

Discussion

Results revealed significant correlations between mental toughness and performance in a British Army context which confirms the importance of mental toughness as a construct of value. Consistent with previous research in other contexts was the significant negative effect of non-contingent punishment. This finding is important for the British Army which embeds non-contingent punishment within Military Discipline practice, and these findings would suggest such practices are reviewed as to their purpose as their effect on performance and mental toughness appears to be negative. Including non-contingent punishment in military discipline may be counterproductive for a fighting force. With a future dependence on Reservists, punishment regimes in such difficult-to-recruit groups could be critical to their success.

The second of the specific requirements of this study was to analyse the effect of operational deployment on mental toughness. Deployment to Afghanistan is recognised as a stressful operation and those who had deployed scored significantly higher on the MTMTI than those who had not. Deployment to Iraq did not reveal any significant difference in mental toughness. It is possible that the contribution of experience to mental toughness degrades over time, or the nature of the deployment was different or both (Mulder, 2008). However recent deployment into a hostile environment remains a primary indicator for mental toughness and aligns with previous research. Given the lack of difference between the ranks in mental toughness scores, and that sample officers will have had limited deployment experience, further research is needed as the officers achieved a mental toughness score without deployment. Social background and education (Crust and Clough, 2011) officer training and other variables may have complex bearing on an individual's level of mental toughness. It is possible officer selection and basic training embeds useful components not present in corporal and sergeant training, or other demographic factors are involved.

Given the statistical robustness of the MTMTI, its use earlier in the course as well as on exit may detect if mental toughness develops during training at the Battle School. Longitudinal studies could be straightforward to administer at various officer and other rank training establishments. With women taking a prominent position on the front line, gender specific research is needed to understand differences in mental toughness development. Greater reliance on Reservists would indicate a need to explore how mental toughness can be developed in those who only conduct a comparatively short period of time in training.

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