

## The design and development of the MTQ48

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Mental toughness is a term that is often used but rarely fully explained. It is usually used as a ‘short hand’ way of explaining why some people cope well under pressure and others seem to falter.

In an attempt to operationalise the term Clough , Earle and Sewelll (2002) developed both a model and , perhaps more importantly, a measure of mental toughness. Rather than basing their model solely on psychological skills they attempted to build on the existing and well validated model: Hardiness, as described by Kobassa (1979). Kobasa proposed three components of Hardiness (control, challenge and commitment). These components are briefly summarised as follows; Control is “expressed as a tendency to feel and act as if one is influential (rather than helpful) in the face of the varied contingencies of life”. Commitment is the “tendency to involve oneself in an activity. The final factor is Challenge, which is expressed as the belief that change rather than stability is normal in life and that the anticipation of change provides incentives to grow rather than threats to security (Kobasa *et al*, 1982).

Clough et al , building on the work of Kobassa , identified a 4<sup>th</sup> component as being central to mental toughness: Confidence. They therefore characterised mental toughness as having 4 interrelated but independent factors: (1) control: Individuals who score high on this scale feel that they are in control of their work and of the environment in which they work. They are capable of exerting more influence on

their working environment and are more confident about working in complex or multi-tasked situations. Ongoing development of MTQ48 has enabled the identification of 2 subscales to this scale; Control (emotion) Individuals scoring highly on this scale are better able to control their emotions. They are able to keep anxieties in check and are less likely to reveal their emotional state to other people& Control (life) Individuals scoring higher on this scale are more likely to believe that they control their lives; (2) Challenge: this describes the extent to which individuals see challenges as opportunities. Individuals who see them as opportunities will actively seek them out and will identify problems as ways for self-development (3) Commitment: Sometimes described as "stickability", this describes the ability for an individual to carry out tasks successfully despite any problems or obstacles that arise whilst achieving the goal and (4) Confidence Individuals who are high in confidence have the self-belief to successfully complete tasks, which may be considered too difficult by individuals with similar abilities but with lower confidence. Less confident individuals are also likely to be less persistent and may make more errors. Again this scale has two subscales; Confidence (Abilities) Individuals scoring highly on this scale are more likely to believe that they are a truly worthwhile person and Confidence (Interpersonal) Individuals scoring highly on this scale tend to be more assertive. They are less likely to be intimidated in social settings and are more likely to push themselves forward in groups. They are also better able to cope with difficult or awkward people.

Clough et al (2002) describe the mental tough individual as

*“ tending to be sociable and outgoing as they are able to remain calm and relaxed, they are competitive in many situations and have lower anxiety levels than others. With a high sense of self-belief and an unshakeable faith that they control their own destiny, these individuals can remain relatively unaffected by competition or adversity.” pp 38..*

Clough et al (2002) developed a 48 item, self report questionnaire to assess the overall mental toughness and the 4 underpinning scales; the MTQ. The MTQ has been shown to have both acceptable reliabilities (Clough et al, 2002; Nicholls et al ) and validity. Construct validity has been shown by Clough et al (2002) and by Horsburgh, Schermer, Veselka, and Vernon (2009) who carried out both exploratory and confirmatory factor analyses.

### *Research using the MTQ48*

Horn (2002) argued that validity is shown by an accumulation of evidence that the construct the questionnaire claims to measure is related to other theoretical constructs in the predicted direction.

Well over 2000 athletes have completed the MTQ48 which has allowed assessment of the psychometric properties of the questionnaire (cf. Clough, Earle & Sewell, 2002; Horsburgh, Schermer, Veselka & Vernon, 2009). Typically, overall Cronbach Alpha for the MTQ48 is reported as 0.9 or above (i.e. Kaiseler, Polman, & Nicholls, 2009) and the psychometric properties have been at least satisfactory.

In most cases, researchers have focused upon the correlates of mental toughness by asking athletes to complete the MTQ48 and other inventories.

A number of studies have used the MTQ48 to investigate relationships between mental toughness and coping. In a relatively large study employing 677 athletes, from a variety of sports and different levels of performance, Nicholls, Polman, Levy, and Backhouse (2008) found a number of significant relationships between mental toughness and use of coping strategies. Consistent with theoretical predictions, mental toughness was found to be associated with more problem or approach coping strategies (mental imagery, effort expenditure, thought control, and logical analysis) but less use of avoidance coping strategies such as distancing, mental distraction or resignation.

Building on this work, Kaiseler et al. (2009) used the MTQ48 and assessed stress appraisal, coping, and coping effectiveness in a study where 482 athletes reported how they coped with a self-selected intense stressor experienced within a two-week period. Consistent with *a priori* hypotheses, these researchers reported higher levels of mental toughness to be significantly related to experiencing less stress and more control. The findings also supported Nicholls, Polman, Levy & Backhouse (2008) with higher mental toughness associated with more problem-focused coping strategies and less emotion-focused coping strategies. The results were also the first to offer support to the notion that mentally tough athletes cope more effectively. Higher levels of mental toughness predicted increased self-ratings of coping effectiveness when using problem-focused coping strategies and less effectiveness for emotion-focused coping.

Numerous theorists have proposed controlling ones emotions to be an important part of being mentally tough (Clough et al., 2002; Gucciardi et al., 2008). While research concerning mental toughness and coping has shown high levels of mental toughness tends to be characterised by greater use of problem-focused strategies and less use of emotion-focused strategies, this line of research did not rule out the possibility that participants with higher or lower levels of mental toughness experienced more or less intense emotions. Thus the ability to remain relatively unaffected by competition or adversity (Clough et al., 2002) might relate to experiencing emotions less intensely (i.e. being less emotionally reactive) rather than through exerting specific coping strategies to control emotions.

To investigate this issue, Crust (2009) had 112 regular sports participants complete the MTQ48 to measure mental toughness and the Affect Intensity Measure (Larsen, 1984) as a measure of typical responses to emotion-provoking stimuli. Previous research (Larsen, Diener, & Cropanzano, 1987) had shown individuals with high affect intensity tended to engage in more personalizing (i.e., absorbed in personal meaning), generalizing (i.e. blowing things out of proportion) and selective abstraction (i.e. focus on emotional aspects of events). No relationships were found between affect intensity, total mental toughness or the six sub-scales of the MTQ48. Thus there was no evidence to suggest that being able to remain calm and in control under pressure reflects mentally tough athletes being less emotionally reactive. As such it appears that differences in coping strategies are perhaps more likely to explain different reactions of athletes with higher or lower mental toughness when facing adverse or pressure situations.

Many theorists and researchers have suggested or implied relationships between mental toughness and performance although few have objectively tested these relationships. Crust and Clough (2005) used the MTQ48 and did find some support for a significant, yet relatively small relationship ( $r = .34$ ) between total mental toughness and performance in an isometric weight-holding task (pain tolerance). Additionally, the subscales of control and confidence, but not challenge and commitment were associated with greater endurance.

Crust and Azadi (in press) hypothesised a positive relationship between use of psychological strategies and mental toughness. Mental toughness (as measured by the MTQ48) and use of a number of psychological performance strategies (as measured by the Test of Performance Strategies; Thomas, Murphy, & Hardy, 1999) were found to be significantly related in terms of practice and competitive contexts. Three performance strategies were found to be significantly and positively related to mental toughness in both practice and competition; these were relaxation strategies, self-talk and emotional control. The small to moderate correlations found by Crust and Azadi appear similar to those reported for mental toughness and coping (Nicholls et al., 2008) and are in line with trait conceptualisations of mental toughness. Perhaps most noteworthy were relationships between the subscales of the MTQ48 and the use of psychological strategies. Specifically, commitment was found to be the subscale most frequently related to use of psychological strategies, which the authors speculated could reflect being deeply committed to ones chosen sport and thus seeking out alternative ways of enhancing performance.

A number of other studies have used the conceptualisation and measures of mental toughness developed by Clough et al. (2002), and these studies have further

enabled findings to be used to assess the initial work of Clough et al. As would be expected, positive psychological constructs such as optimism have been found to be significantly related to self-reported mental toughness (Nicholls et al., 2008).

While investigating the relationships between mental toughness and sports injury rehabilitation, Levy et al. (2006) found higher levels of self-reported mental toughness were significantly related to more positive threat appraisals, greater pain tolerance, and higher levels of attendance at clinic-based sessions. Furthermore, Crust and Azadi (2009) assessed the leadership preferences of mentally tough athletes using the MTQ48, and the Leadership Scale for Sports (Chelladurai & Saleh, 1980). Consistent with theoretical predictions, higher levels of mental toughness was significantly and positively ( $r = 0.4$ ) associated with a preference for training and instructive behaviours.

The MTQ 48 has been shown clear criterion related validity. It has been found to relate to pain tolerance (Crust and Clough, 2005), perceived exertion (Clough and Earle, 2001) injury rehabilitation (Levy, Polman, Clough, Marchant & Earle, 2006), Managerial success (Marchant, Polman, Clough, Jackson, & Nicholls (2009) , Leadership preferences of athletes (Crust & Azadi, 2009), sporting experience (Nicholls, Polman, Levy and Backhouse, 2009b), recovery from setback (Clough et al, 2002) and coping (, Nicholls et al, 2008, Nicholls et al 2009; Crust & Azadi, 2009) . Additionally it has also been shown to relate to the 'big 5' personality dimensions (Horsburgh et al), as well as more specific constructs such as optimism Clough et al, 2002; Nicholls et al. 2009), life satisfaction and self efficacy (Clough et al, 2002). Clough, P. J., Earle, K., & Sewell, D. (2002) Mental toughness: the concept and its measurement. In I. Cockerill (Ed.), *Solutions in Sport Psychology* (pp. 32-43). London: Thomson.

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