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A Cross-Sectional Analysis of Mental Toughness in a Professional Football Academy

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Abstract

This study investigated mental toughness in an English Premier League football academy. 112 football players aged between 12 and 18 years of age completed the Mental Toughness Questionnaire 18 (Clough, Earle, & Sewell, 2002) as a measure of mental toughness. A cross-sectional design was used to test for differences in mental toughness across age groups, and data concerning players who were either retained or released by the club was also compared. A one-way ANOVA showed no differences in mental toughness between age groups, and an independent t-test also found no differences in the mental toughness of players who were either retained or released. These results suggest that older and more experienced academy football players do not possess higher levels of mental toughness than younger, less experienced players. Qualitative research involving academy staff and players is encouraged to provide a more detailed evaluation.

Introduction

A significant body of emerging research suggests that mental toughness is an important psychological construct that is related to successful sport performance (Bull, Shambrook, James, & Brooks, 2005; Clough, et al., 2002; Connaughton, Wadey, Hanton, & Jones, 2008; Jones, Hanton, & Connaughton, 2007). Clough et al. (p.38) suggested that mentally tough athletes possessed "a high level of self-belief and an unshakeable faith that they can control their own destiny, these individuals can remain relatively unaffected by competition and adversity." These researchers also proposed the 4C's model of mental toughness that is represented by: (1) control (emotional and life), which concerns a tendency to feel and act as if one is influential, (2) commitment, which reflects deep involvement with whatever one is doing, as opposed to alienation, (3) challenge, the extent to which individuals see problems as opportunities for self-development, (4) confidence (in abilities and interpersonal), reflecting a high sense of self belief and an unshakeable faith in having the ability to achieve success.

Recent research into mental toughness has focused on the identification of associated attributes, and more clearly conceptualising the construct. However, from an applied perspective, one of the most important questions concerning practitioners is how mental toughness develops, and consequently whether interventions can be used to enhance mental toughness in performers. Relatively few scientific investigations have attempted to examine how mental toughness develops, although some recent studies have begun this important task.

Bull et al. (2005) studied the development of mental toughness through retrospective interviews of twelve elite English cricketers. The most significant outcome of this research was the emphasis that participants attributed to environmental factors such as upbringing (i.e. parental influence, childhood background) and transition into an

appropriate cricket environment (early part of a junior playing career). These researchers suggested the environment sets a base from which tough character, tough attitudes and tough thinking develop. Interestingly Bull et al. (2005) suggested that performers might need to experience alternative, challenging environments to develop mental toughness and that failure is an important aspect that enables learning from experience.

Recently, Connaughton et al. (2008) investigated how mental toughness might develop and be maintained in elite athletes. To facilitate a developmental approach, semi-structured interviews were organised in relation to Bloom's (1985) career phases: early, first involvement (*M* age = 8.3 years, *SD* = 1.7), middle, structured competitions (*M* age = 11.1 years, *SD* = 1.9), and later, higher level competitions (*M* = 13.7 years, *SD* = 2.1). While the early years were found to set a foundation for the development of mental toughness, the middle years were characterised by greater pressures and setbacks; providing an opportunity to learn from mistakes and bounce back after failure. The later years were seen to be very important in relation to the use of basic and more advanced psychological skills and strategies. However, the retrospective nature of this investigation, which required athletes (*M* age = 33 years), to accurately recall information from their childhood must be considered a serious limitation given that memory is likely to degrade over time.

Work concerning the development of mental toughness (Bull et al., 2005; Connaughton et al., 2008), and the emphasis on environmental factors, appears to be consistent with previous talent development research (Durand-Bush, & Salmela, 2002; Gould, Dieffenbach, & Moffett, 2002). In studying individuals from a wide variety of performance settings (athletic, mathematics, music, science etc.), Csikszentmihalyi, Ruthunde, and Whalen (1993) identified the teenage years as crucial in the development

of talent. Specifically, these researchers pinpointed the importance of acquiring a mature personality during the teenage years, in allowing individuals to cope with all the obstacles and opportunities that are likely to occur. Other developmental theorists such as Erikson (1963) also highlight the importance of the early teenage years and puberty. To Erikson, puberty sets off an identity crisis as individuals search for direction; what to be, and what to strive for. From many different perspectives, researchers and theorists emphasize the importance of the teenage years in relation to psychological development.

More recently, Nicholls, Polman, Levy, and Backhouse (2009) examined how age and experience related to mental toughness using the MTQ48 (Clough et al., 2002). These researchers found that increased age and experience predicted higher levels of mental toughness in a mixed sample of 677 athletes. Furthermore, in developing their own measurement instrument, Sheard, Golby, and Van Wersch (2009) reported significantly higher levels of mental toughness in athletes who were aged 25 years or older, when compared to younger athletes (16-18 years). Despite this, it is not known whether specific time-periods are more crucial than others in relation to the development of mental toughness and little attention has been given to understanding mental toughness in youth sports participants.

Using a cross-sectional design, Gucciardi (2009) has recently examined the development of mental toughness in a sample of aspiring Australian Football players aged between 13 and 18 years. Significant differences in mental toughness scores were found between participants who had begun to specialize in their sport (aged 13-15), and older youths who had invested considerable time in deliberate practice (aged 16-18). If the development of mental toughness reflects an ongoing (additive) process, then it might be expected that indices of mental toughness would be seen to increase as

individuals experience more challenging environments, overcome setbacks, and successfully demonstrate competence. Gucciardi stresses the importance of feedback and self-reflection in the development of mental toughness and it is likely that progressing through a youth academy system would allow significant opportunities for personal growth.

One environment that appears to be particularly suited to the study of mental toughness is that of elite professional football academies. Children ranging from below 10 years to 18 years of age, regularly attend academies on a part-time basis, and are given elite coaching and experience competitive football. The academies tend to act as a natural filter, with more participants at the younger end of the age range, and fewer older individuals. Towards the end of each season, decisions are made whether to retain or release players with fewer players progressing to the older age groupings. As such, the older participants tend to have experienced, and withstood the challenges of the academy and have been deemed to possess the requisite qualities necessary to progress to higher levels of competition.

Although coaches appear to consider psychological factors to be important in relation to the decision whether players are retained or released (Gilbourne, & Richardson, 2006; Littlewood, 2005), other predominant factors are physique, technique, and tactical awareness. Harwood (2008) recently highlighted the importance of concentration, commitment, emotional control, confidence and communication as part of his consultancy work in a professional football academy. Harwood's research appears closely related to the work of Clough et al., and suggests that football coaches acknowledge the importance of several factors that appear central to Clough et al.'s 4 C's model of mental toughness (commitment, control, challenge and confidence). If mental toughness is related to success as most research appears to suggest, then it might

be expected that the older, more experienced participants, would have further developed mental toughness through varied experiences, achievements, and being retained rather than released.

The following study aimed to assess mental toughness in an English Premier League football academy. A cross-sectional design was used to determine if any differences in mental toughness exist across different age groups. On the basis of recent research (Nicholls et al., 2009; Sheard et al., 2009) it was hypothesised that older, more experienced players would report higher levels of mental toughness. This study also evaluates whether players who were released or retained at the end of the season, differed in mental toughness.

Method

Participants

Participants were 112 male football players aged between 12 and 18 years. All participants were attending an elite professional football academy (English Premier League). The sample consisted of participants from the following age ranges: Under 13 (U13) years of age (n = 22), U14 (n = 26), U15 (n = 26), U16 (n = 15), U19 (n = 13), and participants on the football scholarship scheme who were 16-18 years of age (n = 10). Informed consent was achieved through the club's established procedures for data collection and analysis within the sports science department of the academy. This involved providing a detailed explanation of the proposed research to the Director of the academy, the academy sport psychologists and relevant coaches, and confirmation that data confidentiality and anonymity of subjects would be maintained throughout.

Instruments

The MTQ18 (Clough et al., 2002) was used to assess mental toughness. This inventory contains 18 statements that are self-rated using a five-point Likert scale ranging from 1 (strongly disagree), to 5 (strongly agree). Example items include “I tend to worry about things well before they actually happen”, and “When I am feeling tired I find it difficult to get going.” The MTQ18 is a shorter version of the MTQ48; the longer instrument has previously been shown to have acceptable psychometric properties (Horsburgh, Schermer, Veselka, & Vernon, 2009) and to be a valid and reliable measure of mental toughness (cf. Clough et al., 2002; Crust & Clough, 2005; Nicholls, Polman, Levy, & Backhouse, 2008).

Recently, the MTQ18 has been used to assess the relationship between mental toughness and sports injury rehabilitation (Levy, Polman, Clough, Marchant, & Earle, 2006), with higher levels of mental toughness found to correlate with greater pain tolerance and attendance at rehabilitation sessions. With a relatively small sample, Levy et al. reported Cronbach’s alpha for the MTQ18 to be 0.65. In the present study Cronbach’s alpha was found to be 0.69. Test-retest reliability has not previously been reported for the MTQ18, although in subsequent testing using a sample of 21 academy football players, the present authors found the inventory to be highly stable following a three-month interval (intraclass correlation > 0.95). The MTQ18 correlates strongly (r = 0.87) with the MTQ48 (Clough *et al.*, 2002). According to Clough et al. (2002, p.39), the MTQ18 was designed to be “more accessible and usable for the end-user (sports people)”. Given the potential problems with collecting data from younger participants (shorter attention spans, distractions etc.) a decision was made to use the shorter version of the questionnaire.

Procedures

MTQ18 questionnaires were administered by coaching staff midway through the competitive season. Each participant completed the questionnaire following training sessions. Given that the MTQ18 was developed for adult populations, the coaching staff remained available to help any participants who needed clarification on the meaning of any item of the questionnaire. Players reported few difficulties in comprehending the meaning of items. Although the MTQ18 has not previously been used with youth samples, the language used in the questionnaire is not considered complex, and a similar questionnaire, specific to Australian football, has been successfully employed to measure mental toughness in players aged 13 to 18 years (Gucciardi, 2009). The Australian football Mental Toughness Inventory (AfMTI; Gucciardi, Gordon, & Dimmock, 2009) contains items that appear to use comparable language to the MTQ18 but the aforementioned inventory is only applicable to Australian football. Participants were asked to read the instructions before completing the questionnaires, and to then respond truthfully, reflecting how they are generally, not how they would like to be. In order to reduce the likelihood of socially desirable responding, assurances were given to all participants that the data would be treated confidentially, would not be analysed by coaching staff, or used in relation to the decision to retain or release players.

Data Analysis

Descriptive statistics and one-way analysis of variance were conducted to evaluate differences in mental toughness across age groups. Tukey HSD tests were selected for any post-hoc comparisons. At the conclusion of the competitive season, the academy provided the authors with information concerning whether players had been retained for the following season or released. Data was made available for 80 of the

original 112 participants, with 43 retained, and 37 released. An independent t-test was used to determine if the mental toughness of retained and released players was significantly different. Measures of skewness and kurtosis were computed in order to assess the normality of distribution for dependent variables.

Results

The mental toughness data for the 112 participants was found to be normally distributed (M = 3.62, SD = 0.38). Descriptive data detailing age related comparisons (see table 1) found that the largest differences in mental toughness were between the under 14 (M = 3.72, SD = 0.4) and the under 15 academy football players (M = 3.51, SD = 0.4). However, a one-way ANOVA found no significant differences in mental toughness across age groups ($F_{2,106} = 0.98$; $p > .05$). To provide a broader analysis of age-groupings, the data sets were collapsed into three groups by combining the under 13 and under 14 year olds; the under 15 and under 16 year olds; and the under 19 and football scholarship players. A one-way ANOVA found no significant differences in mental toughness between these three age groupings ($F_{2,109} = 1.31$; $p > .05$). Furthermore, an independent t-test, used to evaluate differences in mental toughness between players who were retained (M = 3.57, SD = 0.34) and released (M = 3.64, SD = 0.4) also found no significant differences ($t_{78} = -0.82$; $p > .05$).

Discussion

This study tested for age related differences in mental toughness in an English Premier League football academy. The present research used a cross-sectional design in an attempt to pinpoint crucial age-related developments. No significant differences were found in mental toughness between different age groups. Further statistical analyses

also found no significant differences in mental toughness between players that were released or retained at the end of the competitive season. These results appear to be at odds with recent research (Gucciardi, 2009) that found significant differences in mental toughness related to age in a youth sample of aspiring Australian football players. The present findings also differ from the results of Nicholls et al. (2009) who found mental toughness related to both age and experience (Nicholls et al., 2009). However, it should be noted that Nicholls et al. reported that age and experience only accounted for a small amount of variance in mental toughness. Also, Nicholls et al. used a mixed sample from a variety of different sports, with participants likely to have been exposed to vastly different experiences in terms of organisational culture, support and transitions.

Both talent development literature (Csikszentmihalyi et al., 1993) and mental toughness literature (Connaughton et al., 2008) has highlighted the importance of the early teenage years in terms of psychological development. Other researchers (Bull et al., 2005) have suggested that transition periods, during participants formative years (which are likely to include time spent at training academies) are also crucial in the development of mental toughness. Given that the academy environment appears to act as a filter, with only players who are deemed to meet stringent performance standards (including psychological factors) being retained, then it was expected that players lacking in mental toughness would be released. If mental toughness does develop during childhood, and can be nurtured, it would have been expected to develop during time spent in an elite, competitive environment.

A number of plausible explanations are evident for the non significant findings in this study. It is possible that the MTQ18 was not a precise enough instrument to detect subtle differences in mental toughness. There are clearly limitations to utilising a psychological inventory that reduces a complex and multi-faceted construct to a single

numerical score. It is also important to be cognisant of the descriptive nature of this research and the potential ‘cohorts’ problem that characterise cross-sectional research designs.

A further issue with research of this type is a failure to control for differences between chronological and biological age. It has been reported (Malina et al., 2000; Morris, 2000; Williams, & Reilly, 2000) that even within the same age cohorts there are very significant differences physically, cognitively and emotionally, and that this situation impacts on the growth and development of young athletes in elite sport settings. It may be that mental toughness is more related to emotional maturity. It could also be that individuals lacking this will struggle to identify their levels of mental toughness, especially within studies that utilise quantitative methods of data collection such as the MTQ18.

Previous work by Littlewood (2005) presents a convincing case that academy football is an environment where only the most mentally tough young players will progress. However, it is legitimate to consider whether the environment in the present academy, and in most other training academies, is suitable for nurturing mental toughness. It may be that future studies need to look at whether academy life serves to undermine the development of mental toughness by being at times excessively stressful, and at others not sufficiently challenging.

Moreover, Gucciardi (2009) also suggests that developmental differences in mental toughness are likely to be related to the number and variety of experiences that athletes are presented with. Thus, consistent with the work of Bull et al. (2005), the organisational structure and environment might play a key role in challenging aspiring players in ways that allow for personal growth. As such, future researchers might evaluate the role of motivational climates in the development of mental toughness (i.e.

mastery versus performance). Qualitative investigations involving players and coaches are likely to enable a more fine-grained assessment of whether academies are facilitating or obstructing the development of mental toughness.

Future researchers examining the development of mental toughness should be encouraged to employ prospective, longitudinal designs to determine if mental toughness changes over time. Retrospective studies (i.e. Connaughton et al., 2008) are reliant on retrospective recall, which can call into question the accuracy of such accounts given the limitations of memory. Perhaps the best way forward would incorporate a mixed methodology that combines the use of quantitative (questionnaires) and qualitative methods such as the completion of daily diaries. In depth, longitudinal and individualised methods of data collection such as daily diaries could be employed to get a more valid and reliable assessment of mental toughness over a season or more. Daily diaries have previously been used to provide both quantitative and qualitative data within professional sport with elite level referees (Nesti & Sewell, 1999) in relation to anxiety and performance. Future researchers might also consider examining the differences between youth sport participants in relation to those offered places on an academy program, those considered but not offered a place, and participants not considered but who play the sport.

A number of potential explanations are available for the lack of difference found in the mental toughness of players who were retained or released. It is possible that a number of academy players who were released will achieve professional status elsewhere. It is also possible that players who were released were as mentally tough as retained players, but were lacking in other areas (i.e. physically or technically). However, with released and retained players being found to have similar levels of mental toughness it is perhaps appropriate to put the potential importance of mental

toughness into perspective. As research into mental toughness increases there is a danger that researchers are ignoring the importance of other non-psychological factors that relate to success and talent development. Each individual possesses a unique and complex blend of physical and psychological attributes that makes success more or less likely; mental toughness is just one of these variables.

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Table 1 – Mean mental toughness self-ratings of academy football players.

Age	*N*	*M*	*SD*
U13	22	3.62	0.31
U14	26	3.72	0.39
U15	26	3.51	0.40
U16	15	3.61	0.34
U19	13	3.56	0.50
FS	10	3.70	0.36

U13 = under 13 years of age etc. FS = football scholarship.