International Journal of Coaching Science
Vol. 4 No. 1
January 2010. pp.-

Should coaches use personality assessments in the talent identification process? A 15 year predictive study on professional hockey players

Chris J. Gee* *University of Toronto, Canada*
John C. Marshall & Jared F. King *Self Management Group, Canada*

Abstract

Making an accurate and valid prediction about an athlete's long term success in professional sport is likely a difficult aspect of a professional coach's role. Therefore, to aid them in this evaluative process coaches routinely employ a battery of tests, all of which are intended to inform their eventual selection decision. To date however, personality inventories have yet to become common place within this evaluative process; and thus, their predictive utility within the talent identification process has not yet been adequately tested (Aidman, 2007). Those research efforts that have been concerned with personality's role in predicting athletic success have been overwhelmingly cross-sectional and descriptive in nature, and therefore do not mirror the applied use (e.g., longitudinal prediction) of these instruments by coaches. Consequently, the purpose of the current investigation was to address these previous limitations by employing a normative measure of personality (SportsPro™; Marshall, 1979) and assessing its relationship to athletic performance over a 15 year time period. Potential draft choices of a Canadian National Hockey League team (N=124) were profiled prior to the 1991-92 entry draft and were followed until the end of the 2005-06 NHL season. The proposed selection model was found to be a significant

* Please direct all correspondence to ***Chris Gee***, Department of Exercise Sciences, University of Toronto, Toronto, Ontario, Canada, M5S 2W6 or via e-mail to [Telephone(416)746-0444ext246:Fax(416)7466757]

predictor of a player's total NHL goals, NHL assists, and their overall NHL points. Overall, when performance is assessed longitudinally within a relatively homogenous sample of athletes, personality measures appear to add to a coach's ability to predict an athlete's longitudinal athletic attainment.

Keywords:

Introduction

It is a widely held belief within competitive sport circles that successful teams, especially those that become legacies, are built through the draft (Sabino, 2009). Teams that are not only able to identify the stars of today, but also the stars of the future, appear to build a solid foundation of players upon which a winning team can be constructed. As such, talent identification appears to be a paramount ingredient in a team's long term success.

Current scouting and talent identification procedures are becoming increasingly more multidimensional, comprised of a variety of anthropometric (e.g., height, weight, VO_{2max}, lactic acid threshold), psychological and interpersonal assessments. This movement towards a more robust and comprehensive evaluative process within the professional ranks can likely be attributed to the increased importance being placed on the draft process as a result of league imposed salary cap restrictions. Moreover, this trend reflects the importance and breadth of knowledge being generated within the sport sciences, and our current conceptualization of athleticism as a multifactoral construct. Consequently, teams are looking for pieces of information that can add predictive value to their selection considerations, while simultaneously helping them to avoid draft blunders [e.g., Ryan Leaf (NFL), Todd Van Popple (MLB), Jason Bonsignore (NHL), Darco Milicic (NBA)].

The influence of personality on athletic performance has been a widely researched and heavily contested topic since the inception of sport psychology as an academic discipline (Deaner & Silva, 2002). Previous research endeavors have been concerned with examining personality differences between athletes and non-athletes (Eagleton, McKelvie, & de Man, 2007; Reiss, Wiltz, & Sherman, 2001), athletes who occupy various positions within a sport (Greenwood & Simpson, 1994; Newcombe & Boyle, 1995; Singer, 1969), athletes from different sports (Eagleton et al., 2007; McKelvie, Lemieux, Stout, 2003), and most importantly, top performing athletes and the rest of the field (Beedie, Terry, & Lane, 2000; Gat & McWhirter, 1998; Piedmont, Hill, & Blanco, 1999). Overwhelmingly, the applied angle of these studies has been to support the use of personality testing in the talent identification process, and thus, highlight the utility of

understanding an athlete's personality composition when attempting to predict their future athletic attainment. Unfortunately, due to a variety of methodological shortcomings (e.g., heterogeneous sample, cross-sectional analyses, ipsative tools) these studies have fallen significantly short in this pursuit, which has led many sport scientists and coaches to view the hypothesized relationship between personality and athletic performance in a cynical and pessimistic manner (Eysenck, Nias, & Cox, 1982; Vealey, 1992).

One of the most frequently levied criticisms against academic studies of personality and sport performance has been the pervasive use of ipsative inventories. Ipsative tests, as described by Baron (1996), "are force-choice questionnaire formats, where respondents order sets of items loading on different scales" (p.1). Due to this structural design, "ipsative scores not only fail to meet the assumptions of classical psychometric analysis (especially the assumption of error independence), they also constitute an essentially ordinal level of measurement" (Baron, 1996; p.1). In applied sense, Ipsative personality tests (e.g., MBTI, DISC, TAP) provide a very descriptive overview of a particular individual, and thus can be used for coaching and intra-individual purposes, but due to their design properties cannot be used to make valid and reliable interpersonal comparisons (Mead, 1994). On the other hand, normatively scored personality tests are those instruments that employ a Likert scale format (e.g., 1 = strongly disagree; 5 = strongly agree) and use the unrestricted sum of each scale to represent a subject's score on a given construct. This questionnaire format allows for the establishment of norms and interpersonal comparisons, minimizes scale and item inter-correlations, and has been shown to have much stronger psychometric properties (Meade, 1994). As such, it has been the recommendation of several behavioral scientists that normative personality inventories be considered "best practices" in the prediction of an individual's future success (Cattell & Brennan, 1994; Heggestad, Morrison, Reeve, & McCloy, 2006; Johnson, Wood, & Blinkhorn, 1989; Meade, 1994). Unfortunately, these suggestions and recommendations have not yet been adopted by talent identifiers or academics.

Another major limitation associated with the personality literature in sport, as well as a major disconnect from the applied use of these tools, has been its descriptive and cross sectional nature (Aidman, 2007; Vealey, 1989). Previous studies have routinely employed research designs where athletes are grouped by gender, position, sport, and sometimes current performance ranking, and then tested and compared according to a personality inventory. As Aidman (2007; p.3) points out, "sport psychologists' brave but often simplistic pursuit of personality seems to have largely ignored the fundamental developments in mainstream personality research." Consequently, these early studies concerned with personality and sport performance provided such varied results, much of which was simply descriptive, that making external generalizations was deemed almost impossible (Aidman, 2007; Aidman & Schofield, 2004; Van Auweele, Nys, Rzewnicki, & van

Mele, 2001). As such, these results have fuelled the skeptical argument against the utility of personality tests in the prediction of athletic performance and are least partially responsible for the limited adoption of these instruments in the talent identification process (Deaner & Silva, 2002).

One of the "fundamental developments" in mainstream personality research that Aidman (2007) was referring to is the longitudinal manner in which personality is able to predict desired outcome variables (e.g., athletic performance). Therefore, rather than being a strong predictor of within competition or short-term performance metrics (e.g., daily or weekly performance), personality's predictive contributions are believed to be much more valid and reliable when assessed long-term (Hogan, 1998; Hogan & Shelton, 1998). For example, Aidman (2007) found that personality constructs were not effective predictors of junior level performance among a sample of Australian Rules Football players; however, these same constructs were found to be extremely predictive of who ultimately succeeded at the senior level of competition when assessed seven years later. This operational shift towards a life-span approach to the study of personality and athletic performance requires the use of longitudinal research designs, which although called for in the area of sport psychology (Morris, 1995), have yet to become common practice. Therefore, the purpose of the current investigation was to test the predictive contribution of a normative personality profile on athletic success over a 15 year time period. Not only does this address a current methodological shortcoming in the sport sciences, but also tests the utility of personality assessments in a way that mirrors their current application in professional sport.

Methods

Subjects were 124 amateur hockey players attending an evaluation camp for a National Hockey League team prior to the 1991-92 entry draft. Players were asked to complete a normative personality profile (i.e., SportsPro^{TM}) by the team psychologist prior to arriving at camp. Administration of the profile was done before the talent identification camp to minimize social desirability bias and interpersonal comparisons, as these are both criticisms that have been levied against self report measures of personality in the past (Vealey, 1992).

Only players who competed in at least 82 regular season games (N=49) were included in the regression analysis [of the 124 players who completed the assessment, 110 were drafted into the NHL, 27 of these draftees never played a game, and 34 played less than 82 games]. The 82 game criterion was established in an attempt to isolate "true" NHL players, and thus omit "call ups" whose performance would reflect a lack of opportunity and not necessarily their inherent potential.

The SportsPro ™

The SportsPro™ (Marshall, 1979) is a self-report normative personality inventory that is comprised of 168 adjective and 96 attitudinal items, all of which are scored on a 5-point Likert scale. The SportsPro™ measures athletes on the following attributes: competitiveness, need for achievement, independence, people orientation, analytical disposition, comfort with conflict, coachability, self-confidence, pre-competitive anxiety, athletic identity, sportspersonship and finally, their attitudes towards athletics.

The items and constructs that comprise the SportsPro™ have been extensively validated in a variety of achievement contexts; most notably competitive sales cultures (King & Gee, 2009; Marshall, 1979; Marshall & McHardy, 1997; Marshall & McHardy, 1999; McHardy & Marshall, 2003). For instance, using a sample of 30,393 commission-based sales representatives the internal reliability of the scales ranged from .76 to .91. Moreover, test-retest reliability co-efficients ranged from .90 to .97 for a subset of these individuals (N=25) who were tested again after a month (Marshall, 1979). These test-retest results highlight the stable and dispositional nature of the SportsPro's personality constructs.

Previous research employing the SportsPro's items and constructs in non-sporting achievement contexts (e.g., business, academics) has provided a fairly stable personality profile associated with "top performers" (Marshall, 1979; Marshall & McHardy, 1997; Marshall & McHardy, 1999; McHardy & Marshall, 2003). Moreover, this "top performer" profile also closely resembles many of the findings already present within the broader psychological literature on personality and performance (Lamont & Lundstrom, 1977; Nicholson, 1998; Warr, Bartram, & Martin, 1995) The stability and consistency of these attributes across different achievement contexts appears to support their hypothesized relationship with performance. As such, the five independent characteristics (i.e., competitiveness, need for achievement, independence potential, self confidence, and coachability) associated with this "top performer" profile were synthesized to create a composite personality score (0=not ideal, 5=top performer). Therefore, players who possessed all five of these personality traits were given a score of 5, with those possessing none of these attributes receiving a score of zero. This composite personality score was subsequently entered as the predictor variable in the current regression design.

Performance

Players' cumulative statistics were compiled after the 2005-2006 NHL season. Games played, goals, assists, penalty minutes, and the number of NHL teams they played for were included in the analyses. Goaltenders were omitted from the investigation because of the

performance metrics being used.

Information pertaining to the draft (e.g., whether or not the players were drafted, which round, which pick) was not included in this study, because the personality information was not used by teams during the selection process. As such, selection decisions during the 1991 – 1992 entry draft were based on internal scouting metrics, and therefore the personality data could only be validly used in this study to predict future athletic performance.

Data Cleaning

As per Tabachinick and Fidell's (1996) recommendations for multiple regression analyses, univariate statistics were computed for all variables being entered into the models with no extreme skewness or kurtosis observed. As only one predictor variable was being entered into the regression designs, multicollinearity and multivariate outliers were a non-issue.

Results

In order to control for inflated Type I statistical error, regressions were only computed on those variables that displayed a significant correlation with the composite personality score (Tabachinick & Fidell, 1996). A total of three simultaneous regression models were computed. Players' composite personality scores were found to significantly predict the number of goals [R^2=.084; $F(1, 47)=4.31$, $p<.05$], assists [R^2=.087; $F(1, 47)=4.67$, $p<.05$], and total points [R^2=.087; $F(1, 47)=4.65$, $p<.05$] that players' accumulated over this 15 time period. Interestingly, when height and weight (both commonly cited anthropometric indices used when scouting amateur hockey players) were entered into each of the previously mentioned regression models, they failed to significantly increase the amount of variance accounted for. This is likely due to a lack of variability in these metrics among this homogeneous sample of draft-age hockey players.

Additional exploratory analyses uncovered a potential relationship between the comfort with conflict scale and total penalty minutes (r=.22, $p<.05$), whereas the coachability attribute and the number of times a player was traded were found to negatively correlate, but failed to reach statistical significance (r=-.25, $p<.08$).

Discussion

The purpose of the current investigation was to assess the predictive potential of a normative personality inventory on the long term success of a sample of junior hockey players. In doing so, this study addresses a fundamental criticism levied against earlier personality research (i.e., cross-sectional), while also assessing the utility of these instruments in an ecologically valid manner.

The prediction of athletic achievement from personality traits was one of the earliest, and continues to be one of the most attractive, applications of applied sport psychology (Aidman, 2007; Cooper, 1969; Griffith, 1928). However, the academic literature supporting the utility of this practice has been equivocal at best, leading many coaches and sport teams to be skeptical of its predictive potential (Deaner & Silva, 2002). Nevertheless, the use of personality-based assessment tools is currently becoming more common among professional sports teams, as they search for any advantage in the identification and prediction of an athlete's likelihood for long term success.

The results of the current study provide preliminary support for the use of normative personality profiles in the prediction of athletic success when measured longitudinally in the form of a career. Athletes who possessed the "top performer" profile on the SportsPro™ significantly outperformed those athletes who lacked in one or more of these attributes over the 15 year time period under evaluation. When entered into a regression model this composite personality profile explained roughly 10% of the variance comprising the criterion performance metrics (i.e., goals, assists, total points). As such, personality profiles do appear to significantly contribute to the talent identification process; however, should not likely be used in an independent manner. Therefore, when employed in conjunction with other commonly cited scouting (e.g., junior-level performance, height, weight, strength, aerobic capacity) and psychological metrics (e.g., Mental Skills Inventory, CSAI), personality profiles may help coaches, scouts and psychologists more accurately separate the "best" from the "rest" (Humara, 2000; Spieler, Czech, Joyner, Munkasy, Getner & Long, 2007). Future studies should look to regress personality traits simultaneously with these other commonly cited scouting metrics in order to quantify their independent contribution to the prediction of long term performance. Doing so will not only identify which constructs are the most important predictors of athletic performance, but will also allow teams to put forth the most parsimonious and predictive selection model possible.

The current study also reinforced the "top performer" profile that has emerged consistently when the items and constructs comprising the SportsPro™ have been examined in achievement contexts (Marshall, 1979; Marshall & McHardy, 1997; Marshall & McHardy, 1999; McHardy & Marshall, 2003). Top performers possess an above average competitive disposition, are motivated by challenge and reward, confident in their ability to succeed, are open to coaching and feedback, and can operate both independently and as part of a group. Interestingly, it appears to

be the interaction of these traits, and thus the entire package that ultimately influences performance as the removal of any one of these characteristics was shown to have a negative impact on a player's likelihood to succeed. This in turn reinforces the idea of assessing each player in the most holistic manner possible in order to maximize the predictive validity of the selection decision. This differs from previous studies, and in some cases the applied use of personality and psychological assessments, where single constructs (e.g., mental toughness) have been the sole focus of the evaluative process (e.g., mental toughness, emotional stability).

Applied Contribution

The results of this research endeavor have significant implications in the coaching sciences and overall talent identification process. Most, if not all, professional sport teams place a great deal of importance on talent identification and draft selection. As such, coaches and sporting administrators now have empirical support for the utility of employing normative personality tests in the prediction of athletic success and a better understanding of how these instruments should be employed and ultimately interpreted (i.e., long term, not short-term predictions).

Personality inventories such as the SportsPro™ can also be used effectively as coaching and development tools. These profiles provide a very thorough top-to-bottom description of each athlete, which can inform the unique strategies that coaches and psychologists employ as part of the athlete's development. Moreover, as personality is a strong driver of behavior (i.e., typical responses), understanding an athlete's inherent disposition will allow coaches to more accurately predict how athletes will respond in various competitive situations (e.g., failure, big game, clutch situation, fame). As a result, coaches can proactively work on developing athletes in these various areas and providing them with strategies and/or techniques to address these potential growth opportunities.

Normative assessments like the SportsPro™ may also be useful in understanding, managing, and ultimately modifying team dynamics. In situations where there is coach-athlete conflict, helping the coach better understand how their natural style may be in contrast to the athlete's inherent preference for leadership may help the coach customize and tailor their style to suit this particular athlete's needs. This individualized approach to coaching should facilitate stronger coach-athlete relationships while also having an indirect impact on athlete performance (Chelladurai, 1978). Consequently, by using the personality inventories to gain additional insight into their players, coaches can increase their likelihood of achieving both their social and task-oriented objectives.

Overall, personality profiles should help coaches not only select higher probability for success players in the future, but also maximize their ability to understand and relate to each

individual athlete.

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