Belbin's Team Role Model: Development, Validity and Applications for Team Building*

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ABSTRACT   This paper brings together research into and using the team role model developed by Belbin (1981, 1993a) in an attempt to provide an exhaustive assessment of construct validity in light of the conflicting evidence so far produced. Role theory is used to contextualize the origins of the model. The psychometric properties of the Team Role Self-Perception Inventory used to assess a person's likely behaviour in a team are examined along with 43 empirical studies that have tested theoretical associations between team roles and other cognitive or behavioural traits. While the evidence is mixed, we conclude that, on balance, the model and its accompanying Inventory have adequate convergent validity. However, strong associations between some team roles are observed, indicating weak discriminant validity among some scales in the Inventory. Through its coverage of important areas of teamworking, the paper contributes to the practitioner and research communities by providing fresh insights into aspects of teamworking and by suggesting new research agendas.

INTRODUCTION

Effective teamworking has become a basic concern for most organizations. While many factors influence a team's performance, considerable attention has been given to the influence of team member diversity in terms of roles played in a team. The team role model made popular by Meredith Belbin in relation to management teams (Belbin, 1981, 1993a) and available commercially through Belbin Associates (1988) is widely used in practice and has featured extensively in research on teams at work. The model is used by many organizations including FTSE-100 companies, multinational agencies, government bodies and consultants and has been translated into 16 languages.

Studies of the psychometric properties of the instruments used to measure team roles have produced mixed results (e.g. Broucek and Randell, 1996; Furnham et al., 1993a, 1993b; Swailes and McIntyre-Bhatty, 2002, 2003) as have studies associating team roles with variables such as cognitive styles (Aritzeta et al., 2005b; Fisher et al., 1998b) and personality traits (Dulewicz, 1995; Fisher et al., 2001a). Thus there is a need to bring

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together and contrast the evidence, and specifically to contrast psychometric evidence and empirical evidence in order to offer a definitive assessment of the theoretical and empirical foundations of Belbin's team role model.

This paper therefore reviews the published research and assesses to what extent the model is supported by the available evidence. Through its coverage of important areas of teamworking (conflict management, personality traits, team performance, control and power) the paper contributes to the practitioner and research communities by providing fresh insights into aspects of teamworking and by suggesting new research agendas. We first consider the theoretical context for the team role model. Second, all substantive studies that provide psychometric evidence, relationships to personality factors and evidence for predictive validity are summarized, evaluated and contrasted. Finally, we discuss the validity of the model and consider the wider implications of our findings.

ROLE THEORIES

Prior to the development of Belbin's team role model (1981, 1993a) other role theories had been put forward (Benne and Sheats, 1948; Graen, 1976; Graen and Scandura, 1987; Holland, 1985) although the model's links to these and other role classifications (e.g. Davis et al., 1992; Margerison and McCann, 1990; Parker, 1990; Spencer and Pruss, 1992; Woodcock, 1989) are unclear. While a comprehensive theoretical examination of the many alternative role theories and models is beyond the scope of this paper, it is important to establish a theoretical context for the team role model.

The role concept can be viewed from two different perspectives. From an anthropological-sociological perspective it can be defined as a combination of values, attitudes and behaviour assigned to an individual who occupies a social position (a location in a social network) associated with a specific social status (the functions assigned to that person). From this perspective, a role can be defined as the behaviour that a person displays in relation to his/her social position and social status (Linton, 1945). Secondly, from a psychosocial perspective, a role can be defined as the behaviour expected from an individual occupying a specific position (Biddle, 1979) such that the cognition and expected behaviour associated with the position are fundamentally important to success in the role (Katz and Kahn, 1978). This psychosocial perspective is adopted for the purposes of this review.

Since Lewin created the Research Centre for Group Dynamics in 1944, two types of groups have been studied: groups created to solve problems and groups preoccupied with individual development. This duality has brought about a distinction between so-called 'task roles' and 'socio-emotional roles'. In this light, Bales and Slater (1955) studied laboratory groups and concluded that there were significant differences between individuals concerned with solving tasks and individuals concerned with the social and emotional needs of group members. People concerned with solving tasks were called 'task leaders' whereas those concerned with emotional needs were called 'maintenance or socio-emotional leaders'. Similarly, Benne and Sheats (1948) proposed a role behaviour classification describing 12 task roles and seven maintenance roles. Task-centred roles were concerned with the coordination of group problem solving activities, whereas

maintenance roles were concerned with promoting group-centred behaviour. Both role types were thought necessary for a team to perform well. These theoretical antecedents formed the pillars of the development of the team role model (Belbin, 1981) as its general framework and the names of some team roles connect to these and other theories (Fisher et al., 2001a).

Among theoretical models explaining how roles are acquired, a two-part classification can be made (Ilgen and Hollenbeck, 1991). First, there are 'role taking' models that consider individuals as passive acceptors of the roles assigned to them by others (Graen, 1976). An example is the 'role episode model' (Katz and Kahn, 1978) where the role is defined by an interaction process between two people; the person performing the role (the focal person) and another who holds a set of beliefs that constitute the role (the role sender). The role sender communicates a set of beliefs and the focal person assumes them. The second classification of role models sees subjects actively participating in the definition and development of their role. These models assume that individuals are much more active and motivated to possess roles that they can perform successfully. They are called 'role making' models because the focal person actively attempts to influence the role sender as they try to build a role that will be acceptable to both of them. Graen and Scandura (1987) proposed the 'theory of dyadic organizing' which integrated and extended Graen's first proposal (1976). This theory describes how members of a team coordinate their activities to accomplish tasks that are not prescribed in their positions but fundamental for the effective functioning of the team.

When a job role involves very predictable tasks, assigning individuals to roles is relatively easy. However, as work becomes more complex then so do the abilities required by individuals. The question is no longer about the abilities and knowledge a person should have for a specific job but is about predicting how a person will behave in the work unit where the work will be performed. In this sense, Holland (1985) proposed one of the first models that accounted for this individual context adjustment, suggesting that individuals and job environments can be classified into six different types: 'realistic', 'conventional', 'entrepreneur', 'social', 'artistic' and 'intellectual'. Each type is associated with specific activities and abilities possessed by individuals. A set of adjectives characterizes each type. For example, the intellectual type is described as *analytical*, *cautious*, *critical*, *inquisitive*, *independent*, *pessimistic* and *reserved*. For individuals to be successful and satisfied in a job, their personal abilities, interests and personality traits should adjust with the requirements, rewards and interpersonal relations offered by the job consistent with individual job adjustment theory. Holland (1985) proposed that an individual may display attributes of more than one type and also that there are compatible and incompatible types; for example, 'intellectual' and 'artistic' types are more compatible than 'artistic' and 'conventional' types. Belbin's team role model can be linked to these role theories and role classifications.

We now turn to review the literature on the team role model, drawing upon studies using the Team Role Self Perception Inventory (TRSPI) through which it is operationalized. We also review team role assessment using personality questionnaires and empirical studies that have explored the theoretical network of team role constructs in an attempt to better understand how individual team role preference is related to the behavioural definition of team roles as well as to other areas of teamwork behaviour.

THE TEAM ROLE MODEL

As with most role theories, Belbin's model is not preoccupied with the roles (behavioural patterns) *per se* but with the ways in which the roles develop, change and interact with other patterns of behaviour over time. The model was proposed after a nine-year study of team building and team effectiveness with management teams taking part in an executive management exercise (Lawrence, 1974). Prior to participating in the exercise, individuals completed Cattell's 16PF personality questionnaire and Watson Glaser's Critical Thinking Appraisal. For each management team an observer recorded group processes based upon Bales' (1950) interactive process analysis and reported their observations. Successful and less successful teams were analysed in terms of their members' personalities and in terms of their critical thinking abilities. Analyses were then cross-referenced with observers' reports and, as a result, eight team roles were proposed. The initial categorization of team roles was therefore based on assessments of team members' personalities, critical thinking abilities and a behavioural checklist. The only empirical evidence of the early analysis showed a positive correlation between performance predictions based on team role composition and actual performance across 22 teams (Belbin et al., 1976, p. 26).

The eight role model was introduced (Belbin, 1981) and a team role was defined as a pattern of behaviour characteristic of the way in which one team member interacts with another in order to facilitate the progress of the team as a whole. Names and descriptive adjectives for each of the eight team roles were also included. In 1993 some team roles were renamed and a ninth role added. Descriptions of each role are given in Appendix 1.

In this model a role is defined by six factors: personality, mental ability, current values and motivation, field constraints, experience, and role learning. However, Belbin did not show how much of the variance in a team role is explained by each factor. In keeping with others (Benne and Sheats, 1948; Torrington et al., 1985), Belbin defends the idea that high performing teams need to have a balanced representation of all team roles. The team role balance hypothesis assumes that if all team roles are present in a team then it will perform better than other teams without the balance. Belbin also considers that the team role concept (a preference to behave in a particular way with other team members while performing tasks) should be distinguished from the concept of functional role which refers to the technical skills and operational knowledge relevant to the job. Consequently, several people may have the same functional role but vary greatly in their natural team role(s).

Belbin also stresses the link between the stages of a team's development and the need for different team roles to dominate at different stages. Six different stages of development are proposed: (1) identifying needs; (2) finding ideas; (3) formulating plans; (4) making ideas; (5) establishing team organization; and (6) following through. In the early stages team roles like Shaper and Co-ordinator will be most needed, whereas in the later stages Completer-Finishers and Implementers make higher contributions.

Operationalizing the Model

The team role model is ideally operationalized through a self-perception inventory and through observers' assessments to give a rounded assessment of a person's team role. The

original Team Role Self Perception Inventory (TRSPI-8R) was hand-scored such that respondents computed their own profile. This version was later modified to embody the nine role model (TRSPI-9R) and for this version respondents' profiles are generated by the *Interplace* computer package. Since it was never intended that the TRSPI should be the only input to exploring a person's team role, an Observer Assessment Sheet (OAS) was also designed to be used by work colleagues who could make an informed judgement based on their knowledge of the person. The OAS should be used alongside the TRSPI although in many situations only the inventory is used. Details of the scoring procedures for these instruments are given in Appendix 2.

The second way of assessing team roles is derived from personality questionnaires; equations to derive team roles have been developed in conjunction with personality questionnaire publishers. In particular, Cattell's Sixteen Personality Factor Questionnaire (16PF; Cattell et al., 1970) and the Occupational Personality Questionnaire (OPQ; Saville et al., 1992) have been used (see Dulewicz, 1995).

Reviewing the Evidence

This review draws upon 43 substantive studies of the team role model using the TRSPI, OAS and personality inventories. A table showing the purpose of each study, its aims, instruments and sample used along with the key findings is available from the first author.

Psychometric evidence. Eight studies have analysed the psychometric properties of the TRSPI and two have reported results from the OAS. Initial evaluations were critical (Furnham et al., 1993a, 1993b; Broucek and Randell, 1996) and one study arrived at mixed conclusions (Beck et al., 1999). Recent studies have been more supportive of the TRSPI's reliability and structure (Swailes and McIntyre-Bhatty, 2002, 2003). Since the first criticism of the TRSPI (Furnham et al., 1993a), other researchers have raised concerns about the statistical properties of the original inventories as well as their theoretical basis (Broucek and Randell, 1996). An important issue affecting psychometric evaluation of the TRSPI stems from its ipsative nature which is outlined in Appendix 2.

Evidence for the TRSPI. Furnham et al. (1993a) reported low reliability values for three different versions of the TRSPI. Correlations between team roles were different for a normatively scored (Likert scale) version (M = 0.36) and the original ipsative version (M = −0.29). Factor structures were also different for normative values (two well-defined task and socioemotional factors) and for ipsative scoring (four bipolar factors). Both Senior (1998) and Beck et al. (1999), in their respective exploratory factor analyses, also reported an underlying four factor structure for the ipsative version of the TRSPI. However, the ipsative design of the TRSPI was deliberate and any comparison of forms should recognize that transforming the ipsative structure of the instrument may alter its nature. (See Belbin (1993b) for a rebuke of the normative version.) In the ipsative form the average interscale correlation will be negative (Meade, 2004) whereas in a normative form scales are allowed to correlate freely. In this context, Furnham et al. (1993a) raised concerns about the theoretical basis of the inventory and a lack of evidence for its psychometric properties, noting that the test was 'neither theoretically nor empirically derived as Belbin developed his team role typology based on observatory and inductive,

rather than theoretically deductive means' (p. 247) with a limited sample of 78 managers.

Similarly, Broucek and Randell (1996) raised concerns about the internal consistency and discriminant validity of the TRSPI and the OAS. They also noted that both tests could not be considered as parallel forms of the same construct. The average correlation between team roles was 0.27 for ipsative scoring and 0.42 for normative scoring; higher correlations were expected from the self-reported data collected by both tests. Similarly, Senior and Swailes (1998) also reported that both TRSPI and OAS did not show high convergent validity as only five team roles showed significant correlations with an average of 0.27. Broucek and Randell (1996) also reported that different correlations were found between the normative and ipsative versions of the TRSPI and the NEO-PI-(R) personality scale although 8 out of 19 predictions for the ipsative version and 14 out of 19 for the normative version were correctly hypothesized. Different correlation values were taken as 'dramatic evidence of the type of distortion which use of an ipsative instrument produces' (p. 401). Similarly, Fisher et al. (1996) looked at the correspondence between the TRSPI and 16PF and found low correlation values on the validity diagonal. Broucek and Randell also tested the discriminant validity of the OAS against the NEO-PI (R) Big Five personality factors, although Fisher et al. (2001a, pp. 125–6) noted that such analysis was dependent on the orthogonality of the personality factors and, as far as the factors have been found to be oblique (Costa and McCrae, 1992), any conclusion regarding the discriminant validity of the OAS should be taken cautiously.

Swailes and McIntyre-Bhatty (2002, 2003) reported more positive assessments of the TRSPI. They noted that estimating reliability from small TRSPI data sets required the conversion of blank scores to zero. By design, about half of the TRSPI's items remain unscored and so the correlation matrices from which reliability had been estimated were heavily influenced by replacement of 'missing' data. It is unclear whether missing data replacement is appropriate in this case and, even if it is, replacement with zero may not be correct. Using a data set of 5003 managers and relying upon average inter-item correlations among scored items only, internal consistency estimates were close to or above the 0.70 threshold except for the Implementer role. Similarly, analyses of scored items showed a unifactorial structure for six scales with Completer-Finisher, Implementer and Shaper showing a better fit to a two factor solution. Both sets of analysis show stronger support than any previous studies for the reliability of the TRSPI.

Evidence from personality measures of team roles. Three studies have analysed the psychometric properties of team role measures derived from personality inventories. This line of research, mainly led by Fisher and colleagues and the early work of Dulewicz (1995), occurs for two reasons. First, initial analysis indicated that both the TRSPI and OAS had poor reliability, poor construct and convergent validity and the use of personality questionnaires to derive team roles overcomes these limitations (Broucek and Randell, 1996; Furnham et al., 1993a). Second, it is argued that Belbin worked closely with personality questionnaire publishers at different times to develop equations to derive his team role measures. Although not explicitly stated, this line of research assumes that personality traits are the basic components underlying team roles constructs.

The first of these studies (Dulewicz, 1995) intended to offer valid and reliable measures of team roles. After showing the importance of personality measures in Belbin's early work, Dulewicz correlated and factor structured team roles using 16PF and OPQ measures. Based on the correlations between team roles, low discrimination between roles was reported. He argued that poor discriminant validity between team roles was due to some personality factors contributing to many of the team role equations for both 16PF and OPQ (Dulewicz, 1995, p. 94). He also found that previous classifications of pairs of roles (Belbin, 1988) and exploratory factor analysis of the TRSPI (Beck et al., 1999; Furnham et al., 1993a; Senior, 1997) were not supported. Dulewicz argues that much of the confusion about team role pairings is due to a lack of differentiation between the tasks and functions that a role holder performs and the personality characteristics that define the role. If Plants and Monitor-Evaluators are considered intellectuals, but both display two different intellectual roles, they will also have different personality traits. 'Therefore, it seems inappropriate for Furnham et al. (1993a) to test the team role theory by seeking significant correlations between the four pairs of roles' (p. 95).

The factor structures observed by Dulewicz shared some similarities between both personality measures; thus some support for the construct validity of the team role model is claimed. Similarly, correlations between team roles derived from both questionnaires show high inter-method/equivalent form reliability and construct validity, though the average correlation on the validity diagonal (0.35) is taken by Fisher et al. (2001a, p. 125) as a signal of poor 'inter-method/equivalent form reliability'.

Fisher and colleagues generated a stream of research on team roles using personality questionnaires. Three of their studies have been concerned with the validity and reliability of team roles derived from 16PF (Fisher et al., 1996, 1998a, 2001a). Fisher et al. (1998a), using a multidimensional scaling technique, showed that team roles were grouped into two distinct factors that clustered Co-ordinator, Team Worker, Resource Investigator and Implementer in a 'relationship' cluster and Plant, Monitor Evaluator, Shaper and Completer-Finisher in a 'task' dimension. Again, these results have little in common with results reported by Dulewicz (1995) but seem to partially echo those of Furnham et al. (1993a) from their normative version of the TRSPI (see Table I).

The work of Fisher et al. (2001a) is one of the most rigorous validation studies in terms of combining different methods to derive team roles. Besides the 16PF and OPQ, an independent observational methodology was used in a business simulation exercise. These measurements were analysed using a multitrait-multimethod approach followed by confirmatory factor analysis. The multitrait-multimethod matrix analysis provided support for convergent validity but less support for the discriminant validity of team roles (discriminant validity in this case means clear discrimination among the nine roles). However, the convergent and discriminant validity of the team role model could not be confirmed by confirmatory factor analysis as too many similar personality traits were shared by different team roles – an aspect previously noted by Dulewicz (1995).

Fisher et al. (2001a) reduced trait multicollinearity by combining pairs of team roles and their average scores in a step-by-step method. A meaningful factor structure was

found only after six team roles were put into three pairs (Implementer and Resource Investigator; Co-ordinator and Team Worker; Completer-Finisher and Shaper) and two others were unpaired (Plant and Monitor Evaluator). These groupings fitted with the NEO-PI-R five factor model of extraversion, conscientiousness, openness, agreeableness and neuroticism respectively, which was taken as evidence for convergent validity. Broucek and Randell (1996, p. 400) also found Resource Investigator positively related with extraversion, Monitor Evaluator with conscientiousness, Plant with openness, Team Worker with agreeableness and Completer-Finisher with neuroticism although the correlations were clearer for the normative version of the TRSPI than the ipsative version. Fisher et al. (2001a) concluded that Belbin had probably been unwittingly identifying the 'Big Five' personality traits while observing his teams and that the evidence for the predictive power of the Big Five model might help to develop a team role model with a clearer theoretical grounding.

Factor structures. It should be pointed out that the bi-polar factor structure reported previously (Furnham et al., 1993a) and those reported by Senior (1998) and Beck et al. (1999) have no obvious counterparts within the structures of the 16PF or the OPQ. These results, in light of Dulewicz (1995, p. 96), do not lend support for the TRSPI. However, while reliability and factor structures of within-scale scores (e.g. Swailes and McIntyre-Bhatty, 2002, 2003) can be justified as within-scale ipsativity is low, factor analysis of between-scale scores is of limited use at best given the higher levels of ipsativity. This arises from the nature of ipsative data in which correlations are 'forced' due to scores for one variable influencing the scores for another (see Baron, 1996; Meade, 2004; Saville and Wilson, 1991). With that caveat, Table I summarizes factor structures

Table I. Exploratory factor analysis of team roles, using both TRSPI and personality questionnaires

Studies	Factor 1	Factor 2	Factor 3	Factor 4
Furnham et al. (1993a) TRSPI-8R	PL vs. IMP	SH vs. TW	ME vs. RI	CO vs. CF
Senior (1998) TRSPI-9R	SH+RI vs. TW+SP	PL vs. IMP+CF	CO vs. SP	ME vs. RI
Beck et al. (1999) TRSPI-9R	PL vs. IMP	CO vs. SP	SH vs. TW	ME vs. DR
Dulewicz (1995) 16PF	CF vs. RI	PL vs. TW	CO+IMP	SH vs. ME
Furnham et al. (1993) Normative TRSPI-8R	SH+RI+ME+ PL+CO	TW+CF+ IMP+CO		
Furnham et al. (1993) Normative TRSPI-9R	ME+SH+CF+ CO+IMP+RI	TW+SP+ CF+IMP	PL+RI	
Dulewicz (1995) OPQ	IMP+CF+ME	CO+RI+TW	PL+SH vs. TW	

Note: Threshold for factor loading contribution was 0.50.

found by using ipsative and normative versions of the TRSPI and personality question-
naires. Three different result patterns can be observed.

From the eight and nine role versions of the TRSPI some predictable results have
appeared. For example, the imaginative and unorthodox Plant contrasts with the more
controlled and disciplined Implementer. Similarly, the dominant and competitive
Shaper contrasts with the submissive and uncompetitive Team Worker. Beck et al.
(1999) and Senior (1997) show that Co-ordinator opposes Specialist which is logical since
Co-ordinators are defined as mature chairpersons, whereas Specialists are less interested
in others and tend to be single-minded. Finally, Monitor Evaluator contrasts with
Resource Investigator (Furnham et al., 1993a; Senior, 1997) although Senior argued that
Resource Investigator has little standing as a role in its own right. Both of these team
roles have contrasting adjectives, for example, Monitor Evaluators are defined as
dependable and unambitious, whereas Resource Investigators are persuasive and domi-
nant. These three studies have thus reported two similar bipolar factors where Plant and
Implementer, Shaper and Team Worker were seen as opposing team roles. Belbin
(Belbin Associates, 1988, p. 123) proposed a classification of role pairings in which
Resource Investigator and Team Worker are seen as negotiators, Implementer and
Completer-Finisher are seen as managers/workers, Monitor Evaluator and Plant as
intellectuals and Coordinators and Shapers as leaders. However, although the factor
structure of the TRSPI appears stable across studies, none of the results supported the
four higher-order team role classification probably because it was based on characteris-
tics rather than opposing traits.

The second group of results refers to normative versions of the TRSPI (Furnham et al.,
1993a). In the eight role version two factors were identified. Factor one was composed of
mainly task oriented roles whereas factor two loaded team roles concerned with others.
In the nine role version a similar result was observed with the exception that Plant and
Resource Investigator appeared grouped on a third factor. These factor structures do not
differ much from the classical task and socioemotional role differentiation mentioned
earlier (Bales, 1950). It is important to appreciate, however, that in creating a norma-
tively scored version of the TRSPI, and thus data suited to factor analysis, the instrument
loses its intended structure and it is arguable whether like is being compared to like (see
Belbin, 1993b).

Finally, Dulewicz (1995) reported the factor structures of the 16PF and the OPQ. The
16PF showed a four factor structure of which three factors were bipolar. No counterparts
could be found with any of the previous studies, though the structure appeared theo-
retically consistent with factors loading Plant and Team Worker, Shaper and Monitor
Evaluator, Completer-Finisher and Resource Investigator. On the other hand, the factor
structure of the OPQ was different from the 16PF, being closer to the normative version's
factor structure (Furnham et al., 1993a).

The fact that the 16PF factor structure has no correspondence with other bipolar
structures previously reported raises the next question: are both TRSPI and the person-
ality inventories measuring the same constructs? Fisher et al. (1996) showed that test-
retest reliabilities of team roles measured by the TRSPI were lower than for measures
derived from 16PF. These results can be considered as a sign that team roles measured
by the TRSPI reveal a more dynamic structure and show higher context dependency

than personality traits which are considered to be stable over time. Pre-test/post-test studies on team role ambiguity have shown that after time working in teams, individuals show higher team role clarity (Aritzeta and Ayestaran, 2003; Aritzeta et al., 2005a). Similarly, Watkins and Gibson-Sweet (1997) showed that team members were able to display non-natural team roles to supply the team with team roles that were needed. This evidence suggests that TRSPI and personality measures of team roles may be measuring different constructs.

Taken overall, the evidence from the psychometric properties of different measures used to analyse team roles is far from uniform. Independently of the method used, a common result is that there are strong associations between pairings of team roles such that discrimination between some roles is low. Therefore we raise the question about the real existence of nine well-differentiated team roles and whether these team roles, in fact, are better differentiated using some other grouping suggested in the literature.

Empirical studies. The team role model has been associated with both teamworking and the prediction of team performance. The 'team role balance hypothesis' states that high performing teams need to display all the functions represented by the nine team roles, acknowledging that an individual may display two or three natural roles. Thus, balanced teams are those where all team roles are present. Other studies have observed the team role model in relation to the role preferences of women and men, type of organization, the cognitive styles of team members and links between team roles and conflict management.

Twenty seven studies have empirically or conceptually tested the team role model using either the TRSPI or personality inventories. Of these, five have reported negative evidence. These related to a potential gender bias of the instrument (Anderson and Sleap, 2004), to the prediction of team performance (Jackson, 2002; Partington and Harris, 1999), to associations between team roles and a physiological measure of brain dominance (Sommerville and Dalziel, 1998) and to relationships with the Team Management System role model (Rushmer, 1996). Eighteen studies have reported positive evidence including team roles in relation to management styles (Lessem and Baruch, 2000), to team performance (Aritzeta and Ayestaran, 2003; Senior, 1998), to cognitive styles (Aritzeta et al., 2005b) and to the exercise of power and control (Fisher et al., 2001b). A summary of empirical studies is now provided.

The balanced team performance hypothesis. Senior (1997) studied 11 management teams using the repertory grid technique. Team roles were identified using both the TRSPI and the OAS. In her study each team member participated in a one-to-one interview so that their perception of team performance could be classified (see also Senior and Swailes, 2004). Senior showed that performance was related to measures of team role balance. Similarly, Prichard and Stanton (1999) also showed that teams with a diverse combination of team roles perform better than teams mainly composed of Shapers – evidence partially supporting the team role balance hypothesis. Jackson (2002) studied the capacity of team roles to predict team performance compared to the Learning Styles Questionnaire and found no evidence to support team roles using the TRSPI.

Aritzeta and Ayestaran (2003) observed positive evidence for the team role balance hypothesis as 56 per cent of their mainly female work teams were balanced (all team roles

were present in the team). However, using the same criteria, Park and Bang (2002) found that only 4 per cent of their mainly male dominated work teams were balanced and could not find evidence to support the team role balance hypothesis. Gender differences between both studies could explain differences observed with respect to team role balance.

Balderson and Broderick (1996) found differences between men and women only on the Monitor Evaluator and Plant roles which were higher for women. Sommerville and Dalziel (1998) showed a higher predominance of Team Workers among women and both Implementers and Co-ordinators among men. Similarly, Anderson and Sleap (2004) showed that women scored significantly higher on Team Worker and men on Shaper, Plant and Monitor Evaluator roles, contradicting Balderson and Broderick's findings. Anderson and Sleap reported that the TRSPI-8R tends to favour males on leadership roles (Coordinator and Shaper) and in this sense, team role measurement using the TRSPI has been considered to be excessively task oriented (Beck et al., 1999). Future research should focus on gender composition of groups, its influence on role adjustment and the effects on team role balance and performance (O'Doherty, 2005).

Type of management and organization. Lessem and Baruch (2000) found that managers prioritizing change and development showed preferences for Co-ordinator, Plant and Shaper roles. These results are reinforced by the idea that in heterogeneous and change-oriented organizations a higher predominance of Plant and Resource Investigator roles is found (Shi and Tang, 1997). On the other hand, organizations that are relatively homogeneous and stable showed a higher preference for Implementer and Completer-Finisher team roles. Arroba and Wedgwood-Oppenheim (1994) indicated that Shaper and Implementer roles occurred more among senior managers in local government than in private sectors where Plant, Team Worker and Completer-Finisher occurred more frequently. Hence, there are indications of a differential attraction between team role types and broad organizational type. Shaper, Plant, Resource Investigator and Co-ordinator seem to readily fit dynamic and changing contexts. Implementer and Completer-Finisher seem better adjusted to more stable contexts. This finding is reinforced by studies analysing the association between individual cognitive styles and team role preferences that show an isomorphic pattern between organizational and individual level analysis and which are discussed below.

Cognitive styles and conflict management. The convergent validity of the TRSPI and Kirton's (1989) adaption-innovation cognitive styles was first addressed by Fisher et al. (1998b). Using the 16PF questionnaire, they found a positive correlation between Resource Investigator and Shaper and innovative cognitive style. A high innovator is defined as an undisciplined thinker, tangentially approaching tasks from unsuspected angles and someone that searches for alternative ways to solve problems. High innovators manipulate problems and are able to catalyse and settle groups, though sometimes being irreverent about their consensual views. In contrast, Completer-Finisher, Implementer and Monitor Evaluator were associated with an adaptive cognitive style. A typical Adaptor is characterized by precision, reliability, efficiency, prudence, discipline and conformity. He/she is concerned with resolving problems thrown up by the current paradigm, approaching them through continuity and stability and seeking solutions in

tried and understood ways. Finally, Co-ordinators were seen as displaying mediating, bridging, behaviour between Adaptors and Innovators that moderates tension between high Adaptors and Innovators.

Fisher et al. (1998b) concluded that correlations between the Kirton Adaptor-Innovator (KAI) subscales and team roles were disappointing. However, more recent work (Aritzeta et al., 2005b) has shown that the disappointing results were due to a misinterpretation of KAI sub-scale scores (scoring direction was reversed) with inevitable adverse consequences for coherent subscale correlations. With this correction, in both studies, the correlations between team role scores and innovation were almost identical. Shaper and Resource Investigator (also Plant in the study by Aritzeta et al., 2005b) were related to the innovative cognitive style and Implementer, Team Worker and Completer-Finisher to the adaptive style. Both Co-ordinator and Monitor Evaluator were seen as bridging roles. Similarly, recent work found that team roles were related to conflict management behaviour, showing that Plant and Shaper were positively related to dominating behaviours, and Implementer, Completer-Finisher and Team Worker with avoiding behaviour (Aritzeta et al., 2005a). In this study, Co-ordinator and Resource Investigator showed a positive correlation with compromising behaviour after four months of teamworking. These three studies are consistent. Team roles are coherently associated with cognitive styles and conflict managing behaviour, which constitutes positive evidence for the validity of the team role model.

Control, power and Machiavellianism. Other studies using the 16PF showed evidence supporting the construct validity of the team role model. For example, Fisher et al. (2001b) analysed whether control and power operated in Belbin's team roles and found that Co-ordinator, Resource Investigator and Shaper expressed higher levels of control or tried to exert control over others rather than accepting control from them. Moreover, Macrosson and Hemphill (2001) argued that some of the definitions of team roles could be hiding Machiavellian behaviour. In their study, Shaper and Plant were positively related to Machiavellian behaviour and Co-ordinator, Implementer and Team Worker appeared negatively related to it.

Management team roles for non-managers? Some evidence has shown that Belbin's model should not be limited to management teams, as 'the behaviours which each of the team roles bring to the process of making decisions are needed universally, irrespective of the level of the organization in which that activity occurs' (Fisher et al., 2002, p. 15). They found no differences between managers and non-management teams in terms of team role frequencies and team performance, reinforcing the idea that the model can also be applied to non-managerial roles. This, more universal, nature of team roles has also been addressed by Fisher and Macrosson (1995) who predicted team role preferences from an individual's family environment. They reported that the cohesion subscale of the family environment survey (commitment and help and support among family members) was predictive of Implementer, Co-ordinator and Team Worker roles. On the other hand, conflict and achievement orientation were predictive of the Shaper role.

In an expanded application of team roles, Dulewicz and Higgs (1999) correlated dimensions of a new questionnaire to measure emotional intelligence with 16PF measures of team roles. They found that Co-ordinator and Resource Investigator showed similar correlation patterns with an emotional intelligence subscale (Self-awareness,

resilience, motivation, influence) sharing with Implementer two positive subscale correlations. Shaper and Completer-Finisher showed a negative correlation with total emotional intelligence.

Summary of empirical studies.

Taking the empirical studies together, there is sufficient evidence that definitions of team roles are valid and that independently of the instrument used to measure team roles, results are consistent with other theoretical models. The team role model shows evidence for validity that cannot be disregarded and this is presented in Table II. Knowing the type of association that a team role shows with individual cognitive styles, conflict managing behaviour and the other areas explored will help to better understand team dynamics and facilitate team building activities. Table II shows the theoretical commonalities among team roles and other constructs.

If the associations in Table II are cross-referenced with the factorial structures shown in Table I, a global picture of the team role model emerges. First, both the empirical associations between team roles and other theoretical constructs and factorial structures of the TRSPI show similar patterns. For example, Plant is related to an innovative cognitive style, dominating conflict management behaviour and Machiavellianism. In contrast Implementer is related to an adaptive cognitive style, avoiding conflict management behaviour, high moral values and family cohesion.

Similarly, Shaper is associated with innovative cognitive style, dominating and controlling behaviour and achievement as opposed to Team Worker which is related to an

Table II. Theoretical commonalities among team roles

Team role	Theoretical association
Completer-Finisher	Adaptive cognitive style; Tries to avoid conflict; Low emotional intelligence; High moral values
Implementer	Adaptive cognitive style; Tries to avoid conflict; Low Machiavellianism; Cohesion; Low intellectual orientation; High moral values
Team Worker	Bridge/Adaptive cognitive style; Tries to avoid conflict; Low Machiavellianism; Cohesion
Specialist	Adaptive cognitive style; In conflicts will try to dominate or use avoiding behaviour
Monitor Evaluator	Bridge/Adaptive cognitive style
Co-ordinator	Bridge; Attempts to control; In conflicts tries to find a compromise; Low Machiavellian; High emotional intelligence; Cohesion
Resource Investigator	Innovative cognitive style; Attempts to control; In conflicts tries to find a compromise; High emotional intelligence; Low conflict
Plant	Innovative cognitive style; In conflicts tries to dominate; Shows Machiavellian behaviour; Low Cohesion; Intellectual orientation
Shaper	Innovative cognitive style; Attempts to control; In conflicts tries to dominate; Shows Machiavellian behaviour; Achievement orientation; Low emotional intelligence; Conflict

Note: Only constructs shared by at least two team roles have been included.

adaptive cognitive style and avoiding behaviour in conflicts. Finally, other coherent though less clear pairings appear. One refers to Resource Investigator which is related to Innovative cognitive style, attempting to control and seeking compromising behaviour in contrast to Monitor Evaluator which is associated with a bridging/adaptive cognitive style. Co-ordinators are observed as displaying bridging behaviour and attempts to control others while using compromising behaviour when dealing with conflict. Conversely, Specialists are related to an adaptive cognitive style and both dominating and avoiding behaviour (not caring about others). The factor structure of the 16PF (Dulewicz, 1995) also shows a bipolar structure with pairs of team roles that have been found to be differentially related to other theoretical constructs. Again, the innovative and dominating Plant contrasts with the adaptive and avoiding Team Worker. The same can be said for Shaper and Monitor Evaluator and for Completer-Finisher and Resource Investigator.

Similarities can also be observed between theoretical team role associations and factor structures of the normative versions of the TRSPI and the OPQ. The only difference from the classification made above is that in these two cases the factorial structure shows two or three unipolar factors. For example, in the normative versions of the eight role TRSPI, Furnham et al. (1993a) reported that Shaper, Plant and Resource Investigator contrasted with Team Worker, Completer-Finisher and Implementer. As shown in Table II, these first three team roles share the same cognitive style; Resource Investigator and Shaper share their attempts to control and Plant and Shaper share a dominating conflict managing style. Similarly, in the nine role version, though the first factor is less clear, Team Worker, Completer-Finisher and Implementer appear together in the second factor and Plant and Resource Investigator in the third. Finally, in the factor structure reported by Dulewicz (1995), Implementer, Completer-Finisher and Monitor Evaluator appear together, linked by a bridging/adaptive cognitive style, and Plant and Shaper appear as opposing the Team Worker role.

Team roles can, therefore, be classified as opposing two-by-two pairings or in two well-differentiated groups. In the two-by-two classifications, Plant contrasts with Team Worker or Implementer, and Shaper contrasts with Team Worker or Monitor Evaluator. Less clear are distinctions between Co-ordinator and Specialist and between Monitor Evaluator and Resource Investigator. If two clusters are proposed, then Team Worker, Implementer and Completer-Finisher (and in part Monitor Evaluator) appear together, whereas Shaper and Plant (and in some aspects Resource Investigator) appear in another cluster. The Specialist role does not have a clear theoretical association with these clusters. These theoretical and empirical comparisons are taken as supportive of the construct validity of the team role model as the empirical association between team roles and other theoretical constructs generally reveals positive evidence and role clusters support those empirical associations (see Table I and Table II).

DISCUSSION

Despite some negative criticism of the model we do not think it is justifiable to suggest that the 'team role theory is itself flawed' (Broucek and Randell, 1996, p. 403). Even

acknowledging that the model's theoretical foundations are not explicit, its empirical formulation can be linked to a well-established role theory base. Neither is it reasonable to state that 'Belbin's study of team performance is supported by anecdote alone' (Broucek and Randell, 1996, p. 403), as nine years of studying team building and effectiveness using standardized personality questionnaires and observational methodology constitute far more than just anecdotal evidence (see Dulewicz, 1995). Moreover, it is premature to conclude that the TRSPI lacks psychometric support although the less frequently used OAS is less well supported. While Furnham et al. (1993a) recognized that their results do not necessarily invalidate the model, Broucek and Randell (1996) invited researchers to avoid using the related inventories and focus on the role of personality traits in team roles and team performance.

Differences in the interpretation of effect sizes are evident in the literature. For example, similar results (a correlation of 0.30) have been interpreted as providing a lack of support for convergent validity (Broucek and Randell, 1996, p. 396), while others have considered such values as indicators of convergent validity (Beck et al., 1999; Lessem and Baruch, 2000). This inconsistency has led to mixed claims about validity. We suggest that when non-experimental designs are used, statistical results should take into account average meta-analysis values to conclude whether an effect size is acceptable or not because effect sizes should be interpreted considering the knowledge field of the research (Cohen, 1988). Correlation values, strictly speaking, can be considered as effect sizes and we computed the average and standard deviation of correlations from psychometric and empirical studies following the common rule of ±1 standard deviation to establish low, medium and high effect sizes. Based on correlations extracted from the literature reviewed here, we suggest that for psychometric studies and for studies contrasting the team role model with other team role measures (OAS, normative vs. ipsative tests, personality measures vs. TRSPI), values below 0.20 can be considered low, between 0.20 and 0.34 medium, and above 0.34 high. On the other hand, for empirical studies, (i.e. those that correlate team roles with other theoretical constructs), average effect sizes suggest that correlations below 0.21 can be considered low, between 0.21 and 0.45 medium, and above 0.45 high. Taking this position, a correlation of 0.30 should not be considered as an evidence of lack of support for convergent validity.

Having reviewed psychometric studies it is clear that neither the eight role nor the nine role version of the TRSPI has unequivocal psychometric support and most of the studies show low or at best average effect sizes indicating only partial psychometric support. However, concerns about reliability identified in initial studies have been challenged by more recent studies using large samples of management team members. In some cases, normative statistical procedures have been used on highly ipsative data (Furnham et al., 1993a) and small or inappropriate samples have been used (Rushmer, 1996; Sommerville and Dalziel, 1998), which increases the likelihood of Type I and Type II errors. Future psychometric analysis will benefit from large samples of managers, especially in relation to the OAS on which little evidence exists. Such studies could usefully control for the types of organization studied and the management level of participants.

Given that the model contains nine roles we would have expected stronger evidence for the existence of nine distinct roles and yet this is one property that neither the TRSPI

nor personality measures have satisfied. The nine team roles cannot be clearly differentiated from each other. When empirical evidence was cross-referenced with factorial structures comprehensible dimensions appeared. These results showed the possibility of creating new groupings that may better discriminate between team roles, for example, opposing two by two pairings, Plant vs. Team Worker or Implementer, and Shaper vs. Team Worker or Monitor Evaluator. Alternatively, two groups can be proposed: Team Worker, Implementer and Completer-Finisher (and in part Monitor Evaluator); and Shaper and Plant (and in some aspects Resource Investigator). Fisher et al. (2001a) also proposed five pairings which fitted with NEO-PI-R five factor model.

The dynamic configuration of team roles measured by the TRSPI and the relative stability of traits measured by personality questionnaires leads to the conclusion that traits measured by the latter are different from those measured by the TRSPI. Thus, both instruments may be tapping different but complementary constructs. Even so, and although factor structures of both the TRSPI and the 16PF have little in common, it is reasonable to use personality questionnaires to derive team roles. It is worth remembering that Belbin identified managers who fulfil similar functions as sharing similar personality and ability characteristics, which were translated into equations based upon 16PF factors which defined team roles (Belbin and Life, 1983). If revisions are made to the TRSPI then it could benefit from stronger methodological support from personality dimensions and from evidence for the predictive power of personality theories which might help to develop a measure that can more clearly differentiate one team role from another.

As we have shown, most of the empirical studies have shown average or high size effects and this leads us to conclude that the team role model has acceptable convergent validity. Factor structures for the TRSPI are coherent in its ipsative and normative forms as well as with personality measures. From this perspective we suggest that there is substantial evidence for the construct validity of the model. The model is therefore useful for measuring individual preferences towards contributing and interacting with other team members. High performing teams are those defined by team member complementarity and real interaction (rather than addition). Identifying individual preferences and matching those preferences to the functions performed in a team allows team members to make useful and valuable contributions towards the team's goals and to other team members. Individual contributions supplement the contributions of other team members, thus engendering real interaction and higher levels of team performance.

Since the model allows the combination of self-perception with the perceptions of others, these perceptions can be contrasted. This technique provides insights into how others are perceived which opens prospective new areas for discussion among team members. As team roles are defined through interactions with others, the discussion can embrace the tasks performed as well as the emotions that arise in the interactions that occur. When task and emotional processes are jointly considered in a team it should become easier to solve problems and ensure healthy work team development.

In sum, the practical implications of the model for the measurement of team roles are substantial. Two clear examples are those concerning conflict in a team and styles of creative thinking. For example, when conflict in a team threatens to hinder progress,

team role preferences related to integrating and collaborating behaviour should come into play (Aritzeta et al., 2005a). In relation to team roles and cognitive styles (Aritzeta et al., 2005b; Fisher et al., 1998b) interesting applications are also evident. For example, an innovative style (see definition above) is needed in any organization that is to survive. Consequently, continuous organizational change (Weick and Quinn, 1999) is better suited to a higher proportion of team roles associated with the innovative style in management teams. The more that organizational change is episodic, in terms of Weick and Quinn, the more suited it is to team roles that are related to adaptive cognitive style in a management team. From a broader point of view, it has been suggested that people with team roles displaying an adaptive style will more easily work in clan and hierarchical cultures, while people with innovative team roles will feel comfortable in market and adhocracy cultures (Cameron and Quinn, 1999).

Challenging future research opportunities have been proposed throughout this review. Aritzeta and Ayestaran (2003) and Park and Bang (2002) indicate that team role balance could be moderated by the gender composition of teams. In this regard, future research should focus on how gender composition may affect interpersonal adjustment within teams which may help the team to be balanced in terms of the number of natural roles present with implications for overall team performance. Recently, Hales (2005) has argued that in times of radical organizational change, where a common performance orientation exists, the first line manager's role remains part of a hierarchical system of individual managerial responsibility. Hence, future research could also focus on those team role preferences that are, together with cognitive styles and conflict management approaches, conducive to the adaptability of first line managers with a team leadership expectation and yet who experience high individual accountability.

Another area for future research concerns the implementation of organizational strategies by top management teams. As team role composition may relate to organizational structure (Jarzabkowski and Wilson, 2002) and the nature and characteristics of these patterns can be related to how strategy is put into practice, to understand how strategy is practised future research needs to focus on how patterns of action are associated with the characteristics of both the team role composition and the wider organization. Researchers have argued that top management team changes are an important force triggering change in declining firms. However, there is little systematic evidence that replacing top managers leads to substantial organizational change at declining firms (Barker et al., 2001). Future research should focus on how team role composition affects top management team replacement and which particular team role configuration fits best with the existing organizational-level forces emanating from culture and structure.

A further area of research concerns the assessment of team performance itself. While objective criteria can be used for this purpose they represent only the outcomes of team functioning and they are not always available. A more general measure that assesses the state of management team processes (teamwork) would assist researchers seeking to explore this domain more widely.

Some limitations of the present study need comment. Although we systematically searched electronic databases some relevant material may have been overlooked. This review did not follow a meta-analysis technique because the research covers different

themes and the number of empirical papers dealing with a particular discrete dependent variable is small. As team role research expands, meta-analytical techniques will be more suitable to explore the association between team roles, cognitive styles and conflict management behaviour. A model that combines these two constructs with team roles will be valuable in helping to build high performing teams.

CONCLUSIONS

The dominant psychological approach to understanding teamworking needs to be complemented by socio-technical considerations (for example, see the special issue of the *Journal of Management Studies*, volume 16, number 2, 2005). Better understanding of phenomena is more likely to occur when findings from differing perspectives are integrated. Psychological approaches require robust measurement instruments and this paper moves forward our understanding in the important area of team role assessment.

    The team role model is used on an international scale and this review will be useful for managers, consultants and trainers engaged in team building processes. From an organizational perspective, since team roles appear differentially related to leadership styles and to change processes in organizations, organizations emphasizing continuous change (Weick and Quinn, 1999) may be better led by managers displaying the innovative characteristics of Plant, Shaper and Resource Investigator team roles. We recognize of course that many other factors must be considered.

    The relationships between team roles and other constructs (see Table II) should help to develop more robust and rigorous methods for determining the structure and composition of teamworking, as well as to better understand team dynamics. The review will help practitioners to design organizational interventions and to determine how the model can be applied to aspects of a team environment. The ways in which an individual interacts with other team members can be now associated with cognitive style, conflict managing behaviour, power and control or Machiavellian behaviour and this will help to solve problems inside the team and therefore to create effective teamworking, team building, recruitment activities and team training. As Prichard and Stanton (1999, p. 664) underlined, 'If teams are to be formed on the basis of team role profiles, then the dynamics of the interaction of these roles with the environment, the task and experience need to be better understood'. We hope this review has helped to achieve such a goal.

NOTE

APPENDIX 1: TEAM ROLE DESCRIPTORS, STRENGTHS AND ALLOWED WEAKNESSES

Team role	Descriptors	Strengths	Allowed weaknesses
Completer-Finisher (CF)	Anxious, conscientious, introvert, self-controlled, self-disciplined, submissive and worrisome.	Painstaking, conscientious, searches out errors and omissions, delivers on time.	Inclined to worry unduly. Reluctant to delegate.
Implementer (IMP)	Conservative, controlled, disciplined, efficient, inflexible, methodical, sincere, stable and systematic.	Disciplined, reliable, conservative and efficient, turns ideas into practical actions.	Somewhat inflexible. Slow to respond to new possibilities.
Team Worker (TW)	Extrovert, likeable, loyal, stable, submissive, supportive, unassertive, and uncompetitive.	Co-operative, mild, perceptive and diplomatic, listens, builds, averts friction, calms the waters.	Indecisive in crunch situations.
Specialist (SP)	Expert, defendant, not interested in others, serious, self-disciplined, efficient.	Single-minded, self-starting, dedicated; provides knowledge and skills in rare supply.	Contributes on a narrow front only. Dwells on technicalities.
Monitor Evaluator (ME)	Dependable, fair-minded, introvert, low drive, open to change, serious, stable and unambitious.	Sober, strategic and discerning, sees all options, judges accurately.	Lacks drive and ability to inspire others.
Co-ordinator (CO)	Dominant, trusting, extrovert, mature, positive, self-controlled, self-disciplined and stable.	Mature, confident, a good chairperson, clarifies goals, promotes decision making, delegates well.	Can be seen as manipulative. Offloads personal work.
Plant (PL)	Dominant, imaginative, introvert, original, radical-minded, trustful and uninhibited.	Creative, unorthodox, solves difficult problems.	Too preoccupied to communicate effectively.
Shaper (SH)	Abrasive, anxious, arrogant, competitive, dominant, edgy, emotional, extrovert, impatient, impulsive, outgoing and self-confident.	Challenging, dynamic, thrives on pressure, has drive and courage to overcome obstacles.	Prone to provocation. Offends people's feelings.
Resource Investigator (RI)	Diplomatic, dominant, enthusiastic, extrovert, flexible, inquisitive, optimistic, persuasive, positive, relaxed, social and stable.	Extrovert, communicative, explores opportunities, develops contacts.	Over-optimistic. Loses interest after initial enthusiasm.

Source: Belbin (1993a, p. 22).

APPENDIX 2: SUMMARY OF TRSPI-9R AND OAS SCORING

The nine role TRSPI contains seven sections each containing ten statements (items), e.g. 'I can work well with a very wide range of people'. Each section contains one item per team role plus one item measuring social desirability. Items in one section are independent of items in other sections. Respondents are asked to distribute ten points between the ten items in each section according to the strength of their belief that the items most accurately reflect their behaviour. Thus, at extremes, ten points could be given to one item or one point to each of ten items. Usually, two to four items are scored.

The scoring of each scale (team role) is achieved by summing the scores given to each of the relevant seven items. The total raw score achieved is always 70 and hence it is an ipsative measure overall. Since the items are dispersed throughout sections such that there is one item for each role in each section, the scores given to items for any team role are not 'fully' ipsative as they do not sum to a constant value. However, while the scores for items in the same scale are independent of each other, they are partly dependent on the scores given to other scales. Thus, the TRSPI is ipsative within its sections (since scores always sum to 10), but not between its sections.

The OAS is used by co-workers who know an individual well. It is a 72 item peer-rater checklist divided into two parts. Part 1 contains 45 positive adjectives which are possible descriptors of the individual being observed. Part 2 contains 27 negative adjectives or phrases. Observers select the words or phrases that they think describe the individual. Each team role is scored with five positive and three negative adjectives. The OAS produces a ranking of team roles for each individual observed.

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