



Psychometric Properties of the Short Form of Role Ambiguity Scale in Tunisian Sports Team: A Validation Study

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Abstract: Role ambiguity represents a critical factor in sports teams that can significantly influence team dynamics and performance. To develop comprehensive understanding within Tunisian sport context, a validate measurement tool in standard Arabic should be validate 231 participants (M age = 17.11 ± 2.83 years) from various Tunisian sport team completed the Arabic translation of role ambiguity scale (short form) the Arabic version of cohesion scales for predictive validity. Back translation and expert method were used to translate this tool from the original version in English the Arabic languages. CFA confirms good fit for the three proposed models, with better fit indices for the four-factor model (CFI = 0.932, TLI = 0.922, RMSEA = 0.059, SRMR = 0.817). The alpha- Cronbach's analyses revealed adequate reliability ($\alpha = .89-.93$) suggesting that the Arabic version of the short form of role ambiguity scale is a validated tools to use in Tunisian context. Predictive validity was also established through significant correlation with task-cohesion measures, confirming the scale's theoretical coherence. This study provides a validate and robust instrument for measuring of role ambiguity in Tunisian sport context using Standard Arabic language. This scale supports empirical investigation of role of ambiguity influence on sport team process, dynamic and performance.

Keywords: Role ambiguity, Scale validation, Standard Arabic, Sports teams, Confirmatory factor analysis

1. Introduction

In the competitive sport field, team efficacy emerges as a fundamental objective, that depend principally on the relation between coaches and players. This relation significantly impacts team dynamic and overall performance outcomes especially when communication is effective, coaches precise each player's specific responsibility and provide clear feedback. In this case, athletes develop a comprehensive conception of their role and responsibilities, leading to enhanced confidence and better team coordination (Somoğlu *et al.*, 2023).

However, when this dynamic is interrupted, players feel uncertain, confused about their specific responsibility and unclear about the performance expectation. This phenomenon, named Role Ambiguity, is a psychological concept that has received considerable attention in both work organization and

sport teams. Role ambiguity refers to the absence of clarity, certainty and predictability that players could anticipate in relation to their behavior and function in the team (Eys *et al.*, 2006, Beauchamp *et al.*, 2002).

Previous research has established that role clarity and team dynamics were positively associated, which indicates that role ambiguity plays a critical role in sport team (Beauchamp *et al.*, 2005). A high level of role ambiguity negatively impacts team relation, communication, cohesion and efficacy (Boughattas & Kridis, 2023, Beauchamp *et al.*, 2002; Somoğlu *et al.*, 2023; Kim *et al.*, 2021). Conversely, low level of role ambiguity creates a positive team climate, improves communication between players and coach, roles are clearly defined, athletes gain more confidence, and coordinate better their effort to realize team's objectives.

Considering the critical importance of role ambiguity in team functioning and performance, the measurement of this concept began a necessity in sport psychology. In this context, Beauchamp and his colleagues (2002) developed the Role ambiguity Scale for sport (RAS). This tool permits assessing role clarity in 40 items for two contexts: defensive and offensive. The RAS was constituted based on Kahn's multidimensional model presenting the role ambiguity as a four dimensions model (role responsibilities, role behaviors, role evaluations and role consequences). This questionnaire demonstrates robust psychometric propriety and has been validated and adapted to different cultures and context (Bosselut *et al.* 2010; Leo *et al.*, 2017; Boughattas & Kridis, 2023).

Despite the importance of this tool in sport psychology, its use presents numerous challenges related to its practical application, especially with teams with large numbers of players, football for example. This long form requires significant resources for preparation, application, scoring and analyzing. From this perspective, the study of Eys, Carron (2001, Beauchamp, & Bray, (2003) develop the short form of the role's ambiguity scale. This tool addresses the practical limitation of the long form and develops a 20 items scale that maintains the original four-factors structure, with excellent fit indices. this scale was adapted to different context (French and Spanish). The study of Bosselut *et al.* (2010) have validate the French version, and reduce the number of items to 17, by deleting negatives items, to ameliorate its psychometric properties. Still, this French version supports the four first order model. In the opposite, the Spanish version (Leo *et al.*, 2017) proposes a totally different adaptation. Rather than reducing the number of items to 12 only, the researchers propose a new conception of roles ambiguity based in 3 factors only (behavior, responsibility, consequences). Most notably, the Spanish version supports a new conception of the role's ambiguity with a three first factor model, contrary to the French version, which modified the items number but maintain the same hierarchical model.

In Tunisian context, the long form of the role's ambiguity scales has been validated from the original version in English to the classic Arabic, by the study of Boughattas & Kridis (2023). In contradiction with the French and Spanish version, there is no medication in the RAS-T. This version preserves the same item's number, and the two-context used (offensive and defensive). More than, the Tunisian adaptation shows

better adjustment for the four first factor model then the other version, with satisfactory psychometric propriety. This invariance about the adjustment of different versions to the hierarchical model represents an important interrogation about the structure validity across contexts in relation to the item's number (Kim *et al.*, 2021, Leo *et al.*, 2017).

Indeed, another study of validation can provide a new perspective for the structural model of the role's ambiguity in sport, especially, that the previous study suggests a critical relation between the number of items (as the original version) and the validity of the scale. In the other hand, there is no RAS (short form) version validate in Arabic population speaking, which constitute an important research gap. In line of this consideration, this study emerges with two main objectives: first, to validation of the RAS (short form) in Tunisian context using standard Arabic language and second, to examine the adjustment of Tunisian context data to different hierarchical model advanced in literature.

This investigation addresses three principal hypotheses. First, we expect that the RAS-TN-SF demonstrates adequate psychometric property, including validity and reliability. Second, we hypothesis that the data relative to Tunisian sport team show superior adjustment to the four-first factor model (original model) then the other hierarchical model. Third, we predict that role's ambiguity in Tunisian sport team is correlate to the task-cohesion, confirming the predictive validity of the scale.

2. Methods

2.1 Participants

For this study involve 231 participants from various Tunisian sport team: basketball (n=30), rugby (n=24), football (n=87), handball (n=39), futsal (n=12), and volleyball (n=58). Participants' ages ranged from 17 to 28 years (M=17.11, SD=2.83), with average team experience of 4.69±2.93 years.

2.2 Measures

The measures utilized in this study included the Arabic version of the short-form RAS for assessing role ambiguity, along with standardized questionnaires to evaluate task cohesion and other relevant psychological constructs.

2.3 Role Ambiguity Scale-Short Form (RAS - SF)

The 20-item RAS short form (Eys, Carron, Beauchamp, & Bray, 2003) is a validated tool in English version, that measures four dimensions of role ambiguity: scope of responsibilities, behavioral responsibilities, role evaluation, and role consequences. Items are rated on a 9-point Likert scale from 1 (strongly disagree) to 9 (strongly agree). The Arabic version of this scale "RAS-AR-SF" used in this study is a direct translation of the original version in English language to standard Arabic languages followed the standard cross-cultural adaptation procedures.

2.4 Group Environment Questionnaire (GEQ-T)

The Tunisian Arabic version of the GEQ (GEQ-T, Boughattas & Kridis, 2016) was used to assess team cohesion for predictive validity. This 18 items scale comprise 4 subscales (group Integration–Social, Group Integration–Task, Group–Social, Group–Task). Participants rate how much they agree with each statement using a six-point scales ranging from 1 (strongly disagree) to 6 (strongly agree). This questionnaire excellent psychometric propriety in Tunisian sport context (Cronbach's alpha rate from .84 to .92).

2.5 Procedure

This study adopts a standard validation protocol following methodological guidelines of Vallerand & Halliwell (1983). Firstly, four independent bilingual specialists in sport psychology translate the RAS-ENG-SF from English to Standard Arabic following the back translation method. The primary version of the RAS-AR-SF was tested and then tested on a sample of 40 athletes to assess item comprehension and cultural appropriateness. Minor linguistic corrections were implemented to improve items' clarity.

The finalized Arabic version was tested with a Tunisian sport teams to evaluate its reliability and validity. The data collection process of this study was performed during the second half of the competitive season, when team dynamics were well-established and role perception was stabilized. A consistent administration protocol was used for all participants.

Once the data is collected, statistical steps were undertaken.

2.5 Statistical analysis

For this study, standard psychometric analyses were performed using SPSS and AMOS (version 26.0; IBM Corp., Armonk, NY, USA). Descriptive statistics and normality testing (skewness ± 2 , kurtosis ± 7) was done for all variables. Data adequacy for factor analyses was examined using Bartlett's sphericity test and the Kaiser-Meyer-Olkin index (KMO). The factor structure was evaluated through an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) using the maximum likelihood estimation with oblique rotation. Only items with factors loading > 0.40 were retained. Model fit was assessed via multiple indices (CFI, TLI $\geq .90$; RMSEA, SRMR $\leq .08$). The predictive validity was assessed using two complementary approaches: first the analyses of variance (Anova) to compare role ambiguity means scores between starters and substitutes players. The second approach involves the examination of correlations between role ambiguity dimensions and team cohesion measures. All analyses maintained a significance threshold of $p < .05$, with 95% confidence intervals reported for relevant parameter estimates.

3. Results

3.1 Preliminary Data Screening

All items demonstrated acceptable normality with skewness values ranging from -0.72 to -0.92 (within ± 2 criterion) and kurtosis values ranging from 0.85 to 1.02 (within ± 7 criterion). The data showed a slight negative skew, indicating a tendency toward higher scores (greater role clarity) across all dimensions. Response ranges utilized the full 9-point scale, suggesting adequate variability in participant responses.

3.2 Descriptive Statistics and Internal Consistency

The descriptive statistics and internal consistency analyses of the Arabic Short Form Role Ambiguity Scale (Table 1) revealed high mean scores across all dimensions (ranging from 7.01 to 7.50 on a 9-point scale), indicating generally high role clarity among participants. Standard deviations (0.50 to 0.90) showed moderate variability in responses, with Behavioral Responsibilities showing the most consistency.

Table 1. Descriptive Statistics and Normality Tests for RAS-AR-SF Items

Dimension/Items	Mean	SD	Skewness	Kurtosis	Range
Scope of Responsibilities					
Item 1	7,50	0,84	-0,86	0,92	1-9
Item 5	7,01	0,93	-0,78	0,88	1-9
Item 9	7,34	0,87	-0,92	1,02	1-9
Item 13	7,45	0,91	-0,84	1,02	1-9
Item 17	7,22	0,89	-0,88	0,97	1-9
Behavioral Responsibilities					
Item 2	7,01	0,50	-0,72	0,85	1-9
Item 6	7,15	0,88	-0,82	0,91	1-9
Item 10	6,98	0,92	-0,76	0,87	1-9
Item 14	7,08	0,86	-0,80	0,89	1-9
Item 18	6,95	0,91	-0,74	0,86	1-9
Role Evaluation					
Item 3	7,50	0,84	-0,88	0,96	1-9
Item 7	7,42	0,90	-0,86	0,94	1-9
Item 11	7,38	0,88	-0,84	0,93	1-9
Item 15	7,45	0,86	-0,87	0,95	1-9
Item 19	7,33	0,89	-0,83	0,92	1-9
Role Consequences					
Item 4	7,24	0,90	-0,82	0,91	1-9
Item 8	7,18	0,92	-0,80	0,89	1-9
Item 12	7,28	0,88	-0,84	0,93	1-9
Item 16	7,22	0,91	-0,81	0,90	1-9
Item 20	7,15	0,89	-0,79	0,88	1-9

Table 2. Descriptive Statistics, Internal Consistency, and Inter-Factor Correlations

	M	SD	α	Inter-Factor Correlations			
				1	2	3	4
1. Scope of Responsibilities	7,50	0,84	0,93	---	0,35	0,38	0,43
2. Behavioral Responsibilities	7,01	0,50	0,90	0,56	---	0,38	0,39
3. Role Evaluation	7,50	0,84	0,89	0,38	0,38	---	0,38
4. Role Consequences	7,24	0,9	0,91	0,43	0,37	0,38	---

Internal reliability was excellent across all dimensions (Cronbach's $\alpha = 0.89-0.93$), while inter-factor correlations ($r = 0.35-0.56$) demonstrated both the interrelatedness and distinctiveness of the four

Dimensions (Table 2). These results support the psychometric robustness of the RAS-AR-SF as a reliable measure of role ambiguity in team sports contexts.

3.3 Factor Structure Analysis

The factor structure analysis examined three competing models (Table 3) of the Arabic Short Form Role Ambiguity Scale (RAS-AR-SF): (1) a single-factor model representing role ambiguity as one global construct, (2) a four correlated first-order factors model encompassing scope of responsibilities, behavioral responsibilities, role evaluation, and role consequences, and (3) a hierarchical model with three first-order factors and one second-order factor. Confirmatory factor analysis revealed that the four correlated factors model (Figure 1) demonstrated superior fit indices (CFI = 0.932, TLI = 0.922, RMSEA = 0.059, SRMR = 0.817) compared to both the single-factor model (CFI = 0.868, TLI = 0.850, RMSEA = 0.082) and the hierarchical model (CFI = 0.914, TLI = 0.903, RMSEA = 0.066). All retained items showed significant factor loadings (ranging from 0.56 to 0.84, $p < .001$) on their respective factors. The Kmo index (0.89) and Bartlett's test of sphericity ($\chi^2 = 2847.83$, $p < .001$) confirmed the sampling adequacy and data suitability for factor analysis. During the validation

process, three items were eliminated due to low factor loadings (< 0.40) or cross-loadings, resulting in the final 20-item version. These results empirically support the conceptualization of role ambiguity as comprising four distinct but related dimensions in Tunisian team sports contexts.

3.4 Predictive Validity

The correlation analysis between role ambiguity dimensions and team cohesion (Table 4) revealed significant positive relationships primarily with task-oriented cohesion measures. Task-related cohesion (ATG-T and GI-T) showed strong correlations across all role ambiguity dimensions ($r = 0.41$ to 0.52 , $p < .01$), with Scope of Responsibilities demonstrating the strongest relationship with ATG-T ($r = 0.52$, $p < .01$). In contrast, social cohesion measures (ATG-S and GI-S) showed weak, non-significant correlations ($r = 0.08$ to 0.13 , $p > .05$), indicating that role clarity is more strongly associated with task-oriented team processes than social aspects of team cohesion.

Table 3. Model Fit Indices for the Three Factor Structure Models

Model	ddl	X ² /ddl	CFI	TLI	ECVI	RMSEA	SRMR
1	168	430,772	0,868	0,850	1,811	0,082	0,851
2	168	300,518	0,932	0,922	1,682	0,059	0,817
3	168	337,829	0,914	0,903	1,826	0,066	0,863

Table 4. Correlations Between Role Ambiguity Dimensions and Team Cohesion

Dimensions CEQS	Dimensions du QAG			
	ATG-S	ATG-T	GI-S	GI-T
Evaluation of Performance	0.11	0.48**	0.12	0.45**
Scope of Responsibilities	0.13	0.52**	0.10	0.49**
Behavioral Responsibilities	0.09	0.43**	0.08	0.41**
Consequence for not Fulfilling Responsibilities	0.12	0.47**	0.11	0.44**

Note: * $p < .05$; ** $p < .01$ ATG-S: Individual Attractions to Group-Social ATG-T: Individual Attractions to Group-Task GI-S: Group Integration-Social GI-T: Group Integration-Task

Table 5. Comparing role ambiguity dimensions between starters and substitutes

Dimension	Starters		Substitutes		F	P
	M	SD	M	SD		
Scope	6,73	0,802	7,50	1,876	0,956	0,003**
Behavior	7,09	0,507	7,05	0,513	0,369	0,544
Evaluation	6,84	0,729	6,81	0,784	0,085	0,771
Consequences	6,17	1,265	7,29	1,902	2,929	0,02*

Note: * $p < .05$; ** $p < .01$

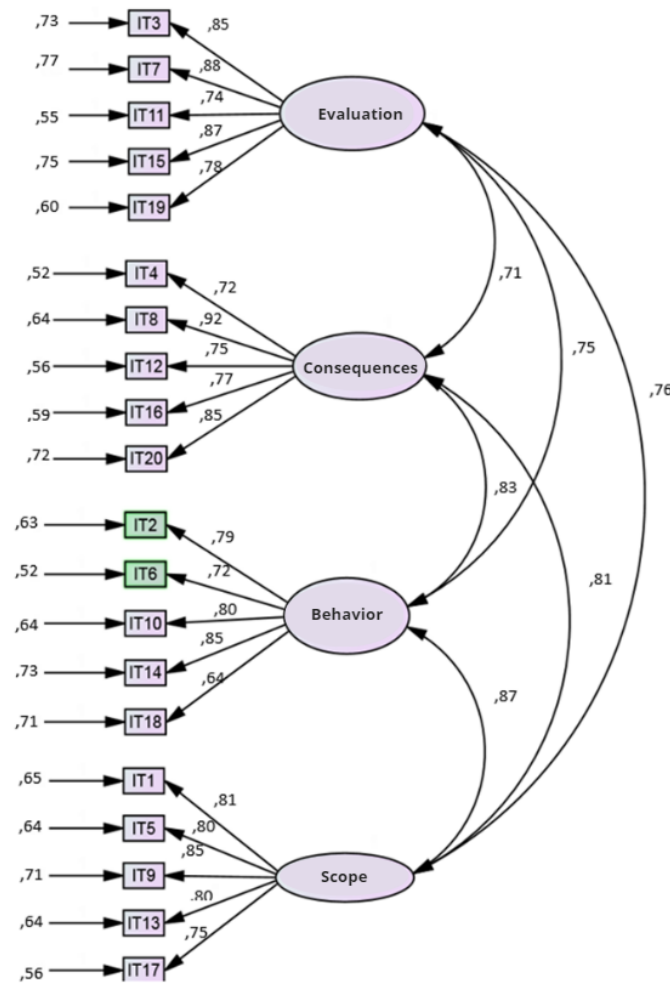


Figure 1. Four-Factor Measurement Model of the Role Ambiguity Scale with Standardized Parameter Estimates

However, ANOVA analysis comparing role ambiguity dimensions between starters and substitutes (Table 5) revealed significant differences in scope of responsibilities and role consequences. Substitutes reported significantly higher role clarity in scope ($M = 7.50$, $SD = 1.876$ vs. $M = 6.73$, $SD = 0.802$; $F = 0.956$, $p < .01$) and consequences ($M = 7.29$, $SD = 1.902$ vs. $M = 6.17$, $SD = 1.265$; $F = 2.929$, $p < .05$) compared to starters. No significant differences were found in behavioral responsibilities ($p = .544$) or role evaluation ($p = .771$), suggesting that while substitutes perceive clearer role limitations and consequences, possibly due to their more defined position within the team structure, both groups share similar understanding of role behaviors and evaluation processes.

4. Discussion

The primary objective of this study was to validate the short-form RAS-Ar and examine its psychometric properties in the Tunisian sports context. Our findings warrant discussion from two perspectives: first, comparing our short-form results with other

cultural adaptations of abbreviated RAS versions, and second, examining how the short form performs relative to the long-form RAS-T in the Tunisian context.

The psychometric properties of our 20-item short-form RAS-T demonstrate strong internal consistency ($\alpha = .89-.93$), comparable to other cultural adaptations. These reliability coefficients align with those reported for the French short form (EAR-17; Bosselut *et al.*, 2010) and exceed those found in the Spanish adaptation (Leo *et al.*, 2017). The factor structure analysis revealed superior fit for the four-factor model ($CFI = .932$, $TLI = .922$, $RMSEA = .059$), contrasting with the three-factor solution preferred in the French context (Bosselut *et al.*, 2010) and Spanish validation (Leo *et al.*, 2017). This divergence may reflect cultural differences in how role ambiguity is conceptualized across different sports contexts.

Regarding predictive validity, our short form's correlations with task cohesion ($r = 0.41$ to 0.52) are notably stronger than those reported in the French validation (Bosselut *et al.*, 2012) but similar to findings from the Greek adaptation (Theodorakis *et al.*, 2010).

These variations in predictive relationships might reflect cultural differences in how role clarity influences team dynamics, supporting the importance of cultural adaptation in sport psychology assessment (Kim *et al.*, 2021).

In the other hand, when comparing the Arabic short-form to the original 40-item RAS-T in the Tunisian context, several key findings emerge. While both versions demonstrate robust psychometric properties, the short form achieves better internal consistency (short form: $\alpha = .89-.93$; long form: $\alpha = .79-.86$) with half the items. This suggests successful item reduction without compromising reliability, bordering on findings reported in other validation studies (Beauchamp *et al.*, 2005). Concerning the structure of factors, both versions in Tunisian context (short and long) support the multidimensional conceptualization of roles ambiguity (three hierarchical models). However, the short form achieved better fit indices for the four-factor structure. This Result suggests that the item reduction process likely improve construct clarity (Morin *et al.*, 2016).

For predictive validity, both the scales have significant associations with task cohesion; especially on the task-in scope of duties and the task-role status dimensions. That the theoretical relationships are retained within the shortened scale confirms that the key predictive efficacy of the scale has, to some degree, been maintained through extensive minimal reduction.

Practical implications of the short form are important in sports context. It's reduce administration timeline and simplify his completion, especially when it's necessary to use this tool numerous several times in a one competitive season. This efficiency gain suggests that the short-form RAS-T represents an advancement in role ambiguity assessment in Tunisian sports settings.

These finding enhance our knowledge of role ambiguity measurement across different cultures and provide specific information about the refinement of measurement instruments in non-Western settings (Boughattas & Kridis, 2023). Further validation studies are needed to the scale's sensitivity to intervention effects and its invariance across sports and competitive levels in the Tunisian sport team population.

5. Conclusion

Our finding establishes the psychometric propriety of that the Arabic version of the role's

ambiguity scale, short form, (RAS-SF-Ar), as a validate measurement tool in Tunisian sport context. Our results confirm the scale's internal consistency with good reliability indices. Through the three theoretical models of role ambiguity, our data same having a good adjustment for the four-factor model better than the other model. The established predictive validity with task-cohesion measure supports the scale theoretical coherence and practical utility. The RAS-SF-Ar can significantly contribute to role's ambiguity assessment in Tunisian sport context making possible a more critical understanding of the sport group functioning of Arabic speaking athletes.

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Ethics Approval Statement

This study was approved by Institutional Review Board (IRB).

Conflict of Interest

The authors declare that there was no conflict of interest.

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Does this article pass screening for similarity?

Yes

Informed Consent

The consent form was signed before the commencement of the study.

Author Contribution Statement

Both the authors equally contributed, read and approved the final version of the work.