MEASURING IDENTIFICATION WITH A SPORT TEAM: AN EMPIRICAL COMPARISON OF THE SPORT TEAM IDENTIFICATION SCALE WITH THE SPORT SPECTATOR IDENTIFICATION SCALE

Nikolaos Tsigilis
Yannis Lianopoulos
Nicholas D. Theodorakis

The Sport Team Identification Scale (STIS) has been recently developed as a response to raising criticism and shortcomings related to most of the existing scales used to measure fans' identification with sport teams. However, this instrument has been tested only in one study and has not been empirically compared with any of the existing well-established scales. The purpose of the present study was to further examine the STIS within the Item Response Theory framework and to compare it with the Sport Spectator Identification Scale (SSIS), in terms of psychometric properties and predictive ability. Data were collected from a Greek sporting website (n=4,851). Findings showed that not only STIS is a psychometrically sound instrument, but it also outperformed SSIS in all conducted analyses. The implications of the study were discussed.
Keywords: sport team identification scale; sport spectator identification scale; item response theory; social identity theory; sport fan behavior

INTRODUCTION

The investigation of sport consumer behavior within the context of spectator sports has gained the attention of a great number of scholars from the field of sport management and marketing (Paek et al., 2021; Yim and Byon, 2020, 2021). Academic researchers have been focused on understanding why sport consumers behave the way they do and, also, what they are getting from their decision to support sport teams (Cho et al., 2019; Lianopoulos et al., 2020; Mastromartino et al., 2020). For these reasons, a variety of conceptualizations have been studied, such as brand involvement (Su et al., 2022), fan engagement (McDonald et al., 2022), and team performance (Koenig-Lewis et al., 2018), with the construct of sport team identification to be probably the most researched one (Kwon et al., 2022). The identification with a sport team is related to the psychological bond that can be created between an individual and a sport team (Wann & Branscombe, 1993).

The interest in sport team identification research can be attributed to its ability to predict important constructs. One of the major outcomes of this concept pertains its positive relationship with individuals' consumption responses. In fact, the link between team identification and several consumption behaviors (e.g., word-of-mouth, in-person attendance, media-based attendance, and purchase of team's merchandise) has found to be stronger when compared to other variables, such as sport involvement (Stevens & Rosenberg III, 2012), online community identification (Kim & Manoli, 2023), place identification (Lee et al., 2020), satisfaction with the team's performance (Grey & Wert-Grey, 2012), overall satisfaction (Koenig-Lewis et al., 2018), and positive affect (Yoshida et al., 2014). Elsewhere, sport team identification has been found to be positively associated with concepts such as subjective well-being, and life satisfaction (Cho et al., 2021; Inoue et al., 2017). Wann et al. (2008) also reported that team identification increases the levels of individuals' social well-being to a greater extent compared to the effect of game attendance.

Inevitably, the popularity of sport team identification in explaining individuals' reactions resulted in the development of several unidimensional and multidimensional research instruments aimed to capture the levels of identification between an individual and his or her favorite team. However, scholars have reported several issues with most of the instruments that have been extensively used in sport consumer behavior research, either with respect to the scales' psychometric properties or because of their poor connection to theory (see Heere & James, 2007; Kim et al., 2020; Lock et al., 2014; Lock & Heere, 2017; Theodorakis et al., 2016; Tsigilis et al., 2022). For instance, Lock and Heere (2017) have pointed out that the development of some of the well-used scales has not been based on a specific theoretical background, an issue that may result in misinterpreting the studies' findings (e.g., in terms of the variance explained in behaviors resulting from team connection, as different theories focus on a different level of analysis). Given the substantial presence of team identification in sport consumer behavior research, the appropriate measurement of this construct becomes a challenging task. A psychometrically sound instrument with a clear theoretical basis could assist researchers to be more confident when interpreting their findings, achieve better segmentation of the population, and hence, differentiate their recommended strategies for practitioners accordingly.

To address the shortcomings reported in the literature, Tsigilis et al. (2022) developed the unidimensional Sport Team Identification Scale (STIS) by using the social identity theory (SIT; Tajfel and Turner, 1979) as a theoretical framework and the item response theory (IRT; Embretson & Reise, 2000) as an analytical framework. Initial examination of STIS psychometric properties showed that it can assess a wide range of sport team identification levels with high precision. However, the STIS has been tested only in one study, and also, it has not been empirically compared with prior

measures of sport team identification to verify its appropriateness. Such a comparison is of scientific merit because it is a meaningful way to demonstrate the need for another team identification scale. The purpose of the present study was to further replicate the psychometric properties of the STIS and to compare this new scale with the SSIS in terms of psychometric properties and predictive ability. Although many authors have used modified versions of the SSIS (e.g., with respect to item content, item number, response option name, and response option number; see Kim et al., 2020), this scale was selected because is, by far, the most widely used instrument to assess sport team identification (Theodorakis et al., 2016) and has been preferred in studies employing SIT as their theoretical background. The results of the present study can further support the usefulness of the STIS as an instrument that can accurately reflect the levels of fans' identification with a sport team in order to be employed in future research efforts.

THEORETICAL BACKGROUND

Social identity theory

For Fink et al. (2002), sport teams represent social categories with which individuals tend to be strongly identified. SIT is the theoretical pillar around which the majority of research has attempted to explain the connection individuals feel with their favorite sport team (Lock & Heere, 2017). According to SIT people's personal identity is influenced by their memberships in several social categories (Jetten et al., 2001). Quite differently from identity theory (Stryker, 1968), which posits that the self is comprised of the different roles an individual plays (i.e., mother, student, fan) and is referred to those attributes (i.e., abilities, interests) that differentiate the self from other individuals, SIT argues that the self is formed through one's identification with social groups (i.e., political parties, religious groups, sport teams) (Hogg, 2003; Stets & Burke, 2000). Social identity is defined as "the individual's knowledge that he [sic] belongs to certain social groups together with some emotional and value significance to him [sic] of the group membership" (Tajfel, 1972, p. 272).

Tajfel (1974) argued that people operate as social group members, rather than as individuals, and they also see others as members of social groups. People align their attitudes, feelings, and behaviors with the group's norms and define themselves, at least in part, by the defining characteristics of social categories (Tajfel & Turner, 1979). As such, being a member of a social group denotes that an individual acknowledges and positively evaluates this membership, feels emotionally connected to the group, and behaves in ways that demonstrate his or her group support (Ashmore et al., 2004; Ellemers et al., 1999).

Sport team identification

Mastromartino and Zhang (2020) claimed that the level of identification between an individual and a sport team cannot be achieved with respect to other

products or services. With respect to the current state of research, studies have employed the SIT framework to explain the relationships among sport team identification and motives (Clarke et al., 2022), post-game identity management strategies (Bernache-Assollant et al., 2021), brand equity (Kim & Manoli, 2022), and religious identification (Statz et al., 2022). Other scholars have supported the durability of sport team identification. Although the social identity afforded by team connection can be painful for some individuals, in cases where their favorite team does not yield the expected results (Hirt et al.,1992), several studies have highlighted that the level of team identification is not affected by the team's on-field performance (Koenig-Lewis et al., 2018; Sutton et al., 1997).

Conceptualization and measurement of sport team identification

Even though a great number of investigations associated with sport team identification reveals the importance that has been placed on this concept, there is a mixture of evidence regarding the conceptualization of the construct. In reviewing the sport management literature, Welzmueller and Schmidt (2022) detected 44 definitions of team identification where most of them (25) provide a unidimensional description of the construct. According to these authors, many of the early approaches to team identification focused on the cognitive viewpoint of the concept, meaning that an individual cognitively realizes his or her sense of team belongingness (c.f., Lock & Heere, 2017). Lock and Heere (2017) outlined that most of the initial conceptualizations of sport team identification suffer from poor theory connection. Subsequent scholars, by employing the SIT tenets, attempted to fully capture the latent construct (Dimmock et al., 2005; Madrigal, 1995). As such, this stream of research followed a tripartite approach which supports that the social identity derived from team association includes cognitive, affective (i.e., emotional connection with the team), and evaluative (i.e., the value attached to the team connection) components. In line with the multidimensional perspective of the concept and based on the work of Ashmore et al. (2004), Heere and James (2007) conceptualized team identification by also incorporating the behavioral element (denotes "the degree to which the person engages in actions that directly implicate the collective identity category in question"; Ashmore et al. 2004, pp. 92-93) as an inherent part of one's sport team identity.

Because of the different conceptualizations of team identification, several unidimensional and multidimensional instruments have been developed to measure this concept. However, researchers raised some concerns recently regarding the existing scales of sport team identification (Kim et al., 2020; Lock & Heere, 2017; Theodorakis et al., 2016; Tsigilis et al., 2022). Among them, the two prominent instruments commonly used in the literature are the Team Identification Index (TII; Trail, Robinson, et al., 2003) and the Sport Spectator Identification Scale (SSIS; Wann & Branscombe, 1993) (Lock

& Heere, 2017; Welzmueller & Schmidt, 2022). Although the parsimonious three-item TII has been preferred in a wide body of research, authors outlined that this instrument is not able to cover the complexity of the construct (Lock & Heere, 2017; Welzmueller & Schmidt, 2022). In addition, even though the TII has been employed in studies adopting the SIT framework (e.g., James & Trail, 2008; Kim & Kim, 2020), the scale's developers highlighted that its items correspond to the identity theory premises (Trail et al., 2017).

With respect to the SSIS, this instrument is by far the most widely used measurement of sport team identification and has received psychological validation in a vast amount of studies (Theodorakis et al., 2016). According to James et al. (2019), the SSIS has helped researchers to understand how to measure the construct. Studies conducted under the SIT framework have used the SSIS to estimate the sport team identification's antecedents (Brown-Devlin et al., 2020; Lianopoulos et al., 2021) and consequences (e.g., Bernache-Assollant et al., 2021; Pradhan et al., 2021), and to comprehend more complex relationships, as studies have used this scale to investigate the mediating or moderating role of identification (e.g., Theodorakis et al., 2009; Yim & Byon, 2018). The SSIS is a unidimensional, seven-item, multiple eight-point Likert scale that has been translated into several cultures and languages, including Chinese (Menefee & Casper, 2011), Greek (Theodorakis et al., 2006), Portuguese (Theodorakis et al., 2010), and Finnish (Karjaluoto et al., 2016).

Recent studies, however, by using the item response theory approach, question some of the SSIS psychometric properties and its relation to the theory employed. For instance, findings indicated that some of the scale's items have low discriminant ability and offer less information than other items (Kim et al., 2020; Theodorakis et al., 2016). Theodorakis et al. (2016) reported that SSIS items could not "capture high identification levels" (p. 190). In the same vein, Kim et al. (2020) found that the use of eight response options may be problematic. The presented items' characteristics and information curves (p. 660) clearly suggest that most SSIS items assess identification levels above the average with low precision (Kim et al., 2020).

Lock and Heere (2017) also outlined that while some of the SSIS items are associated with SIT (e.g., "How much do you dislike the greatest rivals of your team?"), others are related to identity theory (e.g., "How strongly do you see yourself as a fan of your team?"). Although sport consumers' behaviors can be a result of either team or fan identification (Kwon et al., 2022; Lock & Heere, 2017), the use of an instrument that blends the two theories, which although share similarities, they approach the fan/team bond quite differently (Hogg et al., 1995; Lock & Heere, 2017), may lead to findings misinterpretation. Lock and Heere also stressed that to obtain firm conclusions, researchers, depending on the situation, need to apply the appropriate theoretical framework, accompanied by the corresponding measurement of identification. As such, it seems to be

of great importance for researchers to utilize instruments whose development has been based on a specific theory.

It should be noted that in a recent study, James et al. (2019) recommended a modified version of the SSIS (named Sport Spectator Identification Scale–Revised; SSIS-R) in an attempt to distinguish not-identified individuals from those with low identification levels. For James et al. the issue of blending the low with not-identified individuals concerns all existing identification scales. However, although the SSIS-R has been indeed preferred in subsequent studies (e.g., Clarke et al. 2022; Monaghan & Read, 2022; Statzb et al., 2022), it has not been addressed to some of the scale's weaknesses reported above (e.g., theory connection or the low discriminant ability of some items).

To overcome the shortcomings associated with the SSIS and other instruments (see Tsigilis et al., 2022), Tsigilis and his colleagues developed the Sport Team Identification Scale (STIS), based on SIT. The results of their study showed that sport team identification can be regarded as a unidimensional construct. In addition, IRT analysis revealed that the STIS can estimate a wide range of sport team identification levels with high precision. Also, in terms of predictive ability, the STIS was found to account for a larger of variance of major identification outcomes (such Basking in the Reflected Glory and attendance intentions) when compared with findings of prior studies. However, the STIS has been tested only in one study and has not been empirically compared with existing well-established scales. Therefore, the purpose of the current study was to further examine the psychometric properties of the STIS and to contrast it with a widely used and accepted scale, namely SSIS.

Advantages of Item Response Theory

In an effort to acquire more in-depth information concerning the behavior and the comparison of the two identification instruments, the current study employed the IRT procedures. This psychometric theory has started gaining the attention of scholars, including those in the area of sport fan behavior (Kim et al., 2020; Theodorakis et al., 2016; Tsigilis et al., 2022). Several authors have pointed out the advantages of IRT over the classical test theory when it comes to the examination of instruments' psychometric characteristics (e.g., DeMars, 2010; Edwards, 2009; Embretson & Reise, 2000; Toland, 2014). In brief, IRT (a) can distinguish between participants' latent traits and items' difficulty, (b) models the relationship between an item, measured in an ordinal or dichotomous scale, and the latent trait in a non-linear way, (c) evaluates the range of the latent trait in which items or the test score is more precise, and (d) creates a more sensitive test score because items characteristics (e.g., difficulty, discrimination) for each response pattern are taken into account (DeMars, 2010; Edwards, 2009; Embretson & Reise, 2000; Toland, 2014). Consequently, the IRT procedures were employed as they deemed more appropriate in order to obtain more in-depth information concern-

ing the behavior and the comparison of the two identification scales.

METHOD

Participants

Participants were visitors to a Greek sporting website of high visibility. Of the 5,832 responses which were returned, 981 were removed from further analysis due to incomplete responses or straight lining (Ng et al., 2022; Kim et al., 2020). The final sample consisted of 4,851 football (i.e., soccer) supporters. Their mean age was 32.33 years (*SD* = 11.12) and the vast majority were males (95.2%). This gender breakdown was expected as it was in accordance with prior studies investigating Greek football fandom (Lianopoulos et al., 2020, 2021; Theodorakis et al., 2013; Tsigilis et al., 2022).

Instrument

For estimating the levels of sport team identification, we used the STIS (Tsigilis et al., 2022) (see Appendix A) and the Greek version of SSIS (SSIS-G; Theodorakis et al., 2006). The STIS is a 10-item five-point Likert-type scale with anchor statements of "not at all" (1) and "to a great extent" (5). Similar to the original version of SSIS (Wann & Branscombe, 1993) (see Appendix B), the SSIS-G is a 7-item, multiple eight-point Likert-type scale (with anchor statements from not at all to very and from not important to very important), and its psychometric properties have been examined a number of times in the Greek population (e.g., Lianopoulos et al., 2020; Theodorakis et al., 2012). Apart from the two instruments of sport team identification, the 3-item scale of Trail, Fink, et al. (2003) was used to estimate Basking in the Reflected Glory (BIRG), which refers to individuals' tendency to publicly announce their team connection (Cialdini et al., 1976). The answers were given on a seven-point Likert-type scale spanning from 1 (strongly disagree) to 7 (strongly agree).

Procedure

Data were collected during the football season, from February to March 2021. The study employed an unrestricted, self-selected Internet based survey (Fricker, 2008). This type of web-based survey can be applied to convenience samples by posting or uploading an electronic questionnaire on websites, social media, blogs, etc. Fricker (2008) noted that there are no restrictions in such surveys, where individuals can voluntarily participate (e.g., because of their interest in sports or research in general). A Greek sporting website was recruited to collect the data. The choice of using a sporting website to gather responses was based on the speculation that people who visit such sites have, at least, some interest in sports. The website contained a hyperlink directing participants to an online questionnaire hosted by the SurveyMonkey platform. The survey appeared in the website's news feed and was uploaded several times for one-month period, accompanied by the caption "How much do you identify with your favorite football team?". Initially, after participants were informed about the anonym-

ity of their responses and targeted their favorite football (i.e., soccer) team, they completed the STIS. Next, participants completed the SSIS and, in the subsequent section, the scale regarding the identification's outcome (namely, BIRGing). No incentive was given to the participants. The data were password protected and accessible only to researchers.

Statistical analyses

Prior to the main analysis, the possible issue of common method bias was addressed. Both methodological and statistical criteria were used. In terms of methodological criteria, administered scales had different range of responses options with different anchoring statements. In addition, participants were informed that their responses would be anonymous and there are no right or wrong answers. Thus, an effort was made to meet some of the methodological separation criteria proposed by Podsakoff et al. (2003). With regard to statistical criteria Harman's single-factor test was employed as a diagnostic technique to examine the degree to which common method variance might be an issue (Podsakoff et al., 2003). Confirmatory factor analysis was used to study Harman's single-factor test. A model was postulated in which all items were loaded on the same factor (10 for STIS, 7 for SSIS, and 3 for BIRGing). Results showed an ill-fit, since all goodness of fit measures were far from the accepted cut off values (χ^2 = 14018.5, *df* = 170, CFI = .745, RMSEA = .130, SRMR = .081). This finding along with the methodological separation actions suggest that common method bias might not be a concern in the present study.

The *mirt* package for the R environment ver. 1.33.2 (Chalmers, 2012) was employed to study the psychometric properties of the two scales within the IRT framework. The sample was randomly divided into two unequal groups (25% and 75%). The first group (groupA, n = 1,202) was used to examine the dimensionality and the second group (groupB, n = 3,649) to calibrate the items of the two scales. Parallel analysis based on 500 random samples was used to examine the dimensionality of the scales. Authors seem to agree that parallel analysis (Horn, 1965) can reliably indicate the number of the underlying factors to be retained (Hayton et al., 2004; Lance et al., 2006). The *fa.parallel* function of the *psych* package ver. 2.2.9 in the R environment was employed, in which the polychoric correlation matrix was entered for analysis (*cor* = *"poly"* argument). Based on the existing body of the literature two different IRT models were fitted to the data, the Graded Response Model (GRM) (Theodorakis et al., 2016; Tsigilis et al., 2022) and the General Partial Credit Model (GPCM) (Kim et al., 2020). In both models the *a* parameter is allowed to vary across items. Their difference is on how the *b* parameter (thresholds) is defined. In GRM the *b* parameter for a category threshold represents the location on the latent trait continuum at which the probability of endorsing the specific category or higher is 50%. On the other hand, in GPCM the *b* parameter for a cat-

egory threshold is the location on the latent trait continuum at which the probabilities of two adjacent categories are equal (DeMars, 2010).

RESULTS

Parallel analysis for both scales showed that one only factor underlies participants' responses (Figure 1). Item loadings for both scales were above .50. Next, STIS items were calibrated using the GRM and the GPCM (Table 1). Results showed that the GRM had better fit to the data than the GPCM. In particular, the AIC and BIC indices clearly suggested the retention of the GRM model. The same pattern of results emerged for the SSIS scale. Based on the above findings comparison of the two scales continued using the unidimensional GRM.

Examination of model fit at the items level using the Orlando and Thissen's (2003) S-χ^2 showed no statistical significance for the eight out of the ten STIS

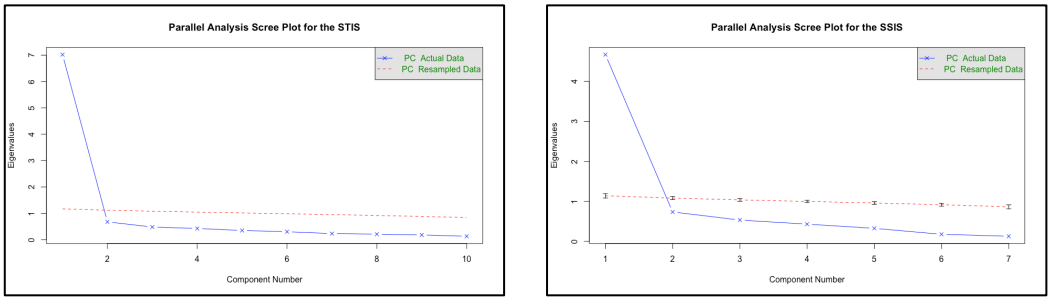

Figure 1. Parallel Analysis Results for the STIS and the SSIS

Table 1
Fit Indices of the Examined IRT Models for the STIS and SSIS

	-2LL	AIC	BIC
STIS GRM	77192.2	77292.2	77602.3
STIS GPCM	77477.7	77577.7	77887.8
SSIS GRM	63449.3	63561.3	63908.6
SSIS GPCM	64090.2	64202.2	64549.6

Note: GRM = Graded Response Model, GPCM = General Partial Credit Model

Table 2
Items' fit of the STIS and SSIS scales

STIS	S-B χ^2	*p*-adjusted	SSIS	S-B χ^2	*p*-adjusted
Item 1	92.78 (64)	.087	Item 1	174.05 (155)	.189
Item 2	69.59 (73)	.707	Item 2	233.38 (102)	.001*
Item 3	86.61 (65)	.216	Item 3	206.74 (118)	.001*
Item 4	91.76 (85)	.707	Item 4	164.26 (138)	.189
Item 5	160.18 (80)	.001*	Item 5	168.20 (132)	.073
Item 6	106.18 (70)	.031*	Item 6	219.18 (192)	.189
Item 7	83.47 (75)	.707	Item 7	213.35 (158)	.011*
Item 8	127.46 (96)	.123	-	-	-
Item 9	120.17 (102)	.436	-	-	-
Item 10	113.31 (88)	.216	-	-	-

items (Table 2). This result suggests that these items are adequately described by the proposed model. On the other hand, only four out of the seven SSIS items yielded no statistical significance. It should be noted that the *p*-values were adjusted using the Holm's sequential procedure due to multiple chi-square tests.

Items calibration for both scales are presented in Table 3. With regard to STIS items, discrimination values were satisfactory, ranging from 1.63 to 3.44. Examination of the difficulty values showed that STIS items capture a wide range of the underlying trait. In particular, there are items assessing low levels of team identification (e.g., #item3 and #item5), average levels (e.g., #item4 and #item9) and high levels (e.g., #item2 and #item10). Moreover, within each item there is equal spread of the probability curves with satisfactory heights and absence of overlapping. (Figure 2, upper panel). The test information function suggests that STIS measures the latent trait with adequate precision between -2.5 to 2.0 units along the continuum (Figure 3, left panel). Finally, for those who prefer a single number instead of a function the marginal reliability (Green et al., 1984) was excellent, yielding a value of .925.

With regard to SSIS, items *a* values ranged from 1.22 to 4.13 suggesting adequate discrimination. Difficulty values for the SSIS indicate that the majority of its items assess rather low levels of team identification (e.g., #item 1 and #item5). One only item (#item 7) can measure par-

Table 3
Discrimination and Difficulty Values of the STIS and SSIS Items

STIS	*a*	*b1*	*b4*	*θ range*	*SSIS*	*a*	*b1*	*b7*	*θ range*
Item 1	3.44	-2.61	0.28	2.89	Item 1	1.99	-3.36	-0.18	3.16
Item 2	2.96	-1.47	1.40	2.87	Item 2	4.13	-2.95	0.07	3.02
Item 3	3.41	-2.66	-0.03	2.63	Item 3	3.64	-2.83	-0.01	2.82
Item 4	3.43	-2.28	0.85	3.13	Item 4	2.42	-3.63	-0.43	3.20
Item 5	2.38	-2.89	0.01	2.90	Item 5	3.05	-2.91	-0.20	2.71
Item 6	3.07	-2.60	-0.06	2.54	Item 6	1.22	-3.09	0.15	3.24
Item 7	2.59	-2.35	1.15	3.50	Item 7	1.38	-2.17	0.74	2.91
Item 8	1.97	-2.19	0.52	2.71	-	-	-		
Item 9	1.63	-1.49	0.91	2.40	-	-	-		
Item 10	1.81	-1.11	1.63	2.74	-	-	-		

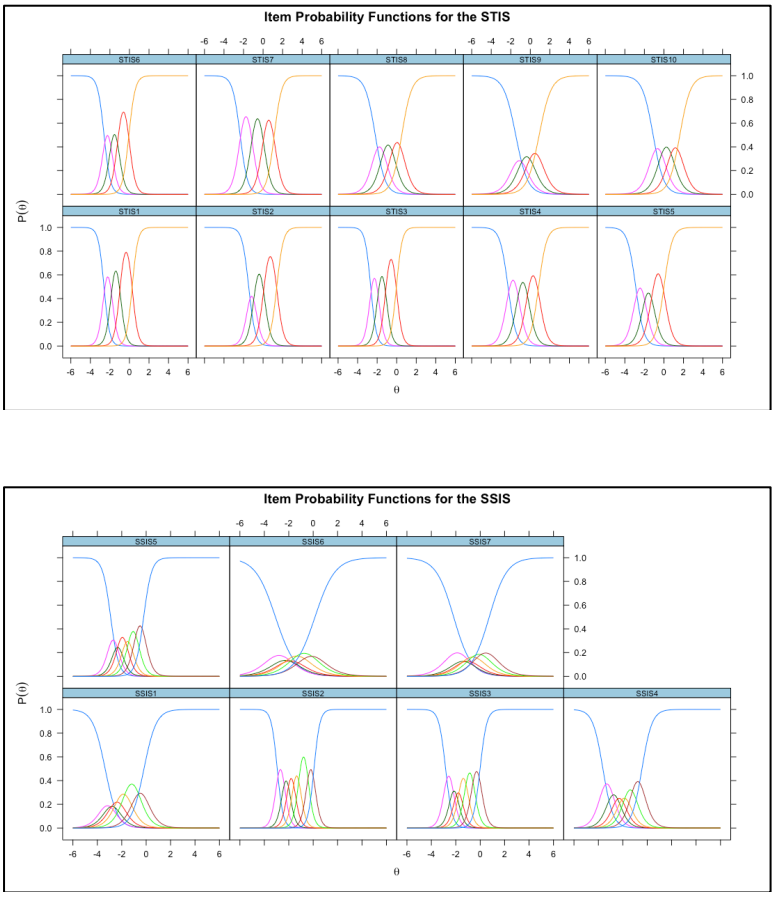

Figure 2. Item Probability Functions for the STIS (upper panel) and SSIS (lower panel)

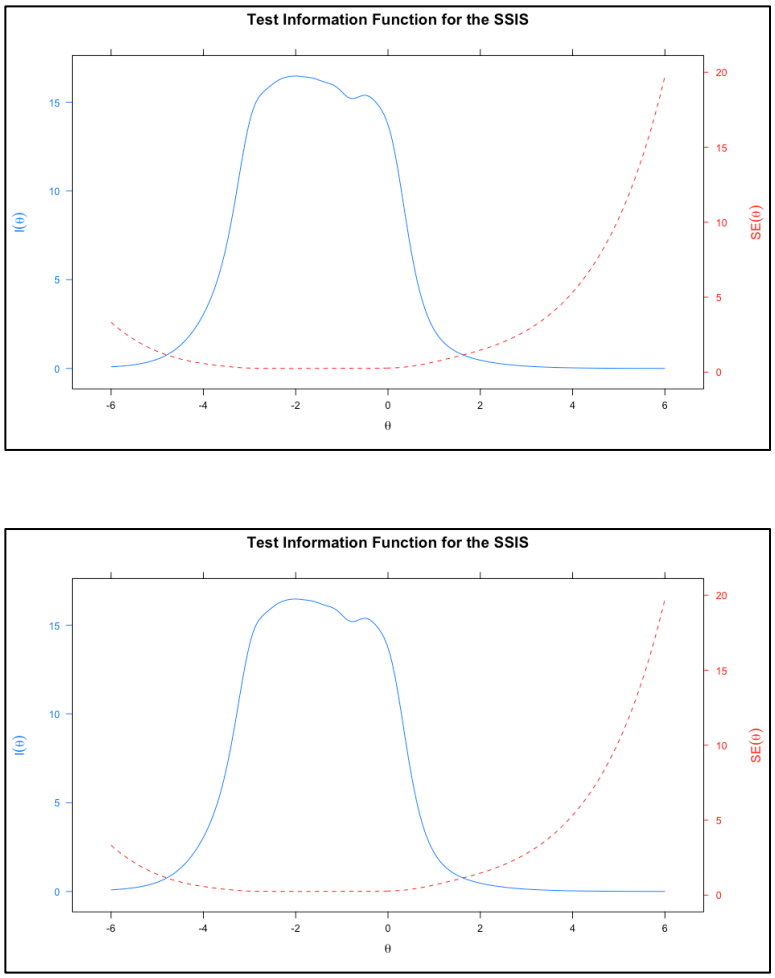

Figure 3. Test Information Function for the STIS (top panel) and the SSIS (bottom panel)

Table 4
Multiple Regression Analysis Results predicting BIRG from STIS and SSIS

	b	*B*	*95% CI*	*Semi-partial correlation*
Intercept	.004	-	-	-
STIS	.409	.409*	.367-.452	.223
SSIS	.183	.176*	.139-.227	.096

ticipants team identification levels above half standard deviation from the average. The lower panel of Figure 2 presents the probability curves within each item (Figure 2, lower panel). Contrary to STIS, the majority of SSIS items probability curves are not equal spread, they tend to yield low heights and for some items there seems to be overlapping among the curves (e.g., items 6 and items 7). The test information function revealed that SSIS measures the latent trait with adequate precision between -3.5 to .5 units along the continuum (Figure 3, right panel). Finally, the marginal reliability for the SSIS was obviously lower than the STIS, with a value of .839.

Next, multiple linear regression analysis was employed to examine the ability of the two scales to predict an important fans' outcome, namely BIRG. The selection of BIRGing tactics was based on the fact that a number of prior studies have supported the predictive role of sport team identification on this concept (e.g., Lianopoulos et al., 2020; Trail et al., 2012). Scales' factor scores were derived using the Expected A Posteriori (EAP) estimator. The two samples size were combined into one, and the total number of participants used for this analysis (n = 4.851). Initial analysis did not reveal any collinearity issue (VIF = 3.368, Tolerance = .297). Results showed that STIS and SSIS accounted for the 31.9% of the BIRG variance (p < .001). Both regression coefficients were positive and statistically significant (Table 4). However, the standardized beta coefficient for STIS was much higher than for the SSIS. In addition, the 95% CI for the standardized beta coefficients did not overlap. Finally, based on the semi-partial correlation coefficients it is evident that STIS's unique contribution was substantially larger than for the SSIS. The above findings clearly suggest that STIS is a better predictor of BIGR than SSIS is.

Discussion

For over 30 years theory and research have advanced the knowledge regarding peoples' inclination to identify with sport teams. James et al. (2019) highlighted that although the psychological bond between individuals and sport teams has been thoroughly investigated, there is still much to learn about this connection. Recently Tsigilis et al. (2022) developed a new and theoretically driven instrument, based on social identity theory, for measuring sport team identification as a response to raising criticism and shortcomings of the existing instruments found in the literature (Lock & Heere, 2017; Kim et al., 2020; Theodorakis et al., 2016). It is known that the establishment of the psychometric properties of an instrument is a strenuous and ongoing procedure. After the development and the initial validation of STIS the logical next step was to verify its psychometric properties in another independent sample and possibly to compare it with an existing one. Thus, the present study was set out to further validate the STIS and to empirically compare it with one of the most popular scales for measuring sport team identification, namely, the SSIS. Findings showed that not only STIS is a psychometrically sound instrument, but

it also outperformed SSIS in all conducted analyses.

Results of the present study tend to support the strong psychometric characteristics of the newly developed STIS. In particular, analysis within the IRT framework showed that items' *a* parameter yielded satisfactory discrimination ability. Estimated thresholds clearly captured a different segment of the latent trait, with no overlapping, suggesting the usefulness of each response category. Moreover, the scale's information curve was relatively high and stable across a considerable area of fans' identification, indicating adequate precision. Finally, STIS accounted for a significant percentage of the examined outcome. Overall, STIS items performed in a comparable way to Tsigilis et al.'s (2022) study, in terms of its dimensionality, the derived GRM parameters, estimated level of precision, and predictive ability. The latter suggests that the current findings successfully replicate those of Tsigilis et al.'s (2022) research, as both studies were conducted in the same context, used a similar sample and method of data collection, and employed the same statistical analysis (Hensel, 2021). Authors stressed the importance of replicating prior results in the fields of management and sport consumer behavior, where such research efforts are scarce, since replication studies contribute to the reliability and trustworthiness of published results (Hensel, 2021; Jensen et al., 2016). Consequently, although it is early to draw firm conclusions, the similar performance of STIS items in the two studies combined with the large sample size of the present study allows us to suggest the robustness of the STIS behavior, at least in the Greek cultural context.

With respect to the comparison of the STIS with the SSIS, two aspects are worthy of attention. First, the results clearly showed that the STIS can capture a wider range of the construct compared to the SSIS. In particular, the analysis within the IRT framework indicated that the items of the STIS can assess low, medium, and high levels of team identification, whereas the SSIS items were found to be more able to capture low to medium-identified individuals. Moreover, STIS not only measured various levels of fans' identification but also with higher precision than SSIS. This was evident both at the items' level as well as at the scale's level. James et al. (2019) raised concerns about sport identification instruments' ability to discriminate between not-identified with low-identified individuals. The focus of STIS was to assess team identification levels across the latent trait continuum, which to a certain extent was achieved. According to Toland (2014) although it is expected that the majority of participants will have latent trait values ranging from -2 to 2 it is not uncommon to observe values between -3 and 3. Thus, trait scores in the area of -3 or below are considered as very low, suggesting trivial levels of the characteristic. Thus, if an additional purpose of a scale is to discriminate between the above two types of individuals, then additional items are needed with high discrimination values at that area of the latent trait continuum (Toland, 2014).

The breadth of the latent trait that an instrument targets, combined with its precision, presents an important psychometric characteristic. The present findings, as well as those of Tsigilis et al. (2022) seem to favor the STIS, as it can offer a more complete and accurate view of fans' team identification levels, which can be subsequently utilized by scholars and practitioners. For instance, many researchers are looking for differences among groups of fans with varying levels of identification in regard to their behaviors, and attitudes (James et al., 2019). From a managerial perspective, a proper segmentation of fans (in this case, based on team identification levels) can result in more appropriate strategies for targeting each group.

Another valuable aspect of a research instrument pertains to its ability to predict important outcomes, and this also holds to the field of fans' behavior. Regression analysis showed that STIS explained a larger and significant amount of BIRGing variance in comparison to SSIS. In addition, the contribution of STIS apart from being significant was also more meaningful than SSIS, as indicated by the semi-partial correlation. Thus, STIS has a higher predictive ability on fans' willingness to externalize their team connection. The fact that the STIS items were developed within a specific theoretical framework combined with their sound psychometric properties might offer a possible explanation for their predicted valence. In more detail, during STIS items' development, a deliberate effort has been made to comply with tenets of social identity theory. On the other hand, in the influential study of Lock and Heere (2017), it has been highlighted that the SSIS includes items deriving from two similar, yet distinct theories (i.e., social identity theory and identity theory), an issue that can cause problems when interpreting results.

Two major conclusions can be drawn from the current study. First, the promising psychometric properties of the STIS reported by Tsigilis et al. (2022) were replicated using an independent relatively large sample size, which best guarantees the stability of the estimated parameters. Second, the STIS items performed better when compared to SSIS items and predicted a larger amount of variance of a widely used outcome. Of course, the behavior of the STIS items should continue to be examined before they gain researchers' confidence. The utilization of the STIS is proposed for future scholars that wish to apply the principles of the social identity theory, by using a precise, short, and unidimensional measure of sport team identification.

Limitations and directions for future research

This study acknowledges some limitations that ought to be discussed. First, both the current and Tsigilis et al. (2022) study were conducted in the Greek cultural context by focusing only on football (i.e., soccer) fans. As such, future research efforts should try to apply the STIS in different cultures and team sports to test its appropriateness. Such research endeavors would explore its generalizability. Also, although it was noted that the fact that participants were predomi-

nantly males was in accordance with prior studies on football fandom in Greece (Lianopoulos et al., 2020, 2021; Tsigilis et al., 2022), this finding might be also a potential result of self-selection bias.

Furthermore, the STIS has been tested only in established local sport teams. It has been suggested that current instruments might not be entirely suitable for other types of team fans. For instance, Kerr and Wijeratne (2021) argued that the SSIS should be modified when studying fans of new teams, since some of its items do not seem relevant to this fan category. In addition, Lock and Heere (2017) maintained that an instrument which is based on social identity theory is more applicable for measuring distant team identification. Hence, we encourage scholars to also examine the applicability of STIS in other types of sport teams, such as distant (i.e., foreign), newly formed, or national ones.

So far, the predictive ability of STIS in the present and in Tsigilis et al. (2022) study was tested using two different outcomes, namely BIRGing tactics and attendance intentions. Despite that literature systematically reported the connection between sport team identification and the above two consequences, future research should try to focus on other important and theoretically meaningful outcomes. Certain authors seem to agree that the association with social groups can result in improving one's well-being on a collective rather than on a personal level (Rubin & Hewstone, 1998; Wann, 2006). Thus, it might be of scientific merit to investigate the role of various social psychological benefits afforded by team connection (e.g., satisfaction with social life, collective self-esteem), which seem to be more closely related to a scale that has been developed within the SIT framework.

Finally, it would be intriguing to continue empirically comparing the STIS with other well-used unidimensional or multidimensional scales of team identification that have been developed through the lens of social identity theory, such as the organizational identification scale (Mael & Ashforth, 1992) or the TEAM*ID scale (Heere & James, 2007). Such comparisons may shed light on the pros and cons of the existing instruments, and assist researchers to select the most appropriate one, which in turn would provide a deeper understanding of the important and valuable concept of fan's identification with their teams.

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Dr. Nikolaos Tsigilis isan Associate Professor in the Department of Journalism and Mass Media Communication at Aristotle University of Thessaloniki, Greece.
Dr. Yannis Lianopoulos is an Adjunct Lecturer in the School of Physical Education and Sport Science (SERESS) at Aristotle University of Thessaloniki, Greece.
Dr. Niicholas D. Theodorakis is Professor in the School of Physical Education and Sport Science (SERESS) at Aristotle University of Thessaloniki, Greece.

APPENDIX A

SPORT TEAM IDENTIFICATION SCALE (TSIGILIS ET AL., 2022)

Items
1. My team is an important part of who I am
2. I put my team above everything else
3. I am passionate about my team
4. When my team loses, I feel terrible
5. I am devoted to my team
6. It is very important for me to support my team
7. I talk about my team all the time
8. At every opportunity, I show to others that I support my team
9. I wear my team's insignia when I watch their games (e.g., either at the stadium or at a sports café or via TV, radio, or the Internet)
10. I often overreact when it comes to the performance of my team

APPENDIX B

SPORT SPECTATOR IDENTIFICATION SCALE (WANN & BRANCOMBE, 1993)

Items
1. How important to you is it that your team wins?
2. How strongly do you see yourself as a fan of your team?
3. How strongly do your friends see you as a fan your team?
4. During the season, how closely do you follow your team via any of the following: a) in person or on television, b) on the radio, c) television news or a newspaper, or d) the Internet?
5. How important is being a fan of your team to you?
6. How much do you dislike the greatest rivals of your team?
7. How often do you display the team's name or insignia at your place of work, where you live, or on your clothing?