TASK AND EGO GOAL ORIENTATIONS IN COMPETITIVE SPORT: A QUANTITATIVE REVIEW OF THE LITERATURE FROM 1989 TO 2016

Marc Lochbaum[1], Zişan Kazak Çetinkalp[2], Kara-Aretha Graham[3], Taylor Wright[4], and Ricardo Zazo[5]

[1]Department of Kinesiology and Sport Management, Texas Tech University, Lubbock, USA
[2]Faculty of Sport Science, Department of Physical Education and Sports Teaching, Ege University, Izmir, Turkey
[3]Department of Curriculum and Instruction, Texas Tech University, Lubbock, USA
[4]College of Arts & Sciences, Texas Tech University, Lubbock, USA
[5]Department of Health Psychology, Miguel Hernández University of Elche, Elche, Spain

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Abstract:

Achievement goal theory (AGT) is a dominant theoretical framework. The purposes of this review were (1) to provide a summary of the task and ego goal orientations literature in competitive sport as measured by the Task and Ego Orientations in Sport Questionnaire (TEOSQ) or the Perceptions of Success in Sport Questionnaire (POSQ), (2) to test the interdependence of the two goal orientations, and (3) to provide the estimated means for both orientations across a number of historically examined moderator variables. 260 studies met inclusion criteria totaling 80,959 unique participants across 39 countries and 32 sports. Youth samples were nearly 50% of all included studies. The meta-analyzed intercorrelations (r_w=.18, z=9.96, p<.000) supported the conceptualized interdependence of the two goal orientations. The estimated mean values were 4.15±.30 (task) and 3.04±.51 (ego). However, differences, POSQ compared to TEOSQ, existed in the estimated means (g=.92 task; g=1.09 ego). Thus, the TEOSQ and POSQ samples for the moderator variables (i.e. sex, sport level, sport type, and collective/individualistic countries) were examined separately. Results both supported and refuted the hypotheses and also differed by measure. Because of TEOSQ and POSQ inconsistencies, an additional analysis was undertaken to examine whether the TEOSQ and POSQ differed to a common correlate motivation climate. This analysis revealed measurement differences in the ego to ego climate relationships. In conclusion, AGT has been extensively researched in competitive sport. The inconsistent pattern of results raises a number of future research questions.

Key words: *achievement goal theory, Task and Ego Orientation in Sport Questionnaire, Perception of Success Questionnaire, motivation, achievement goals*

Introduction

Since the late 1970s, social-cognitive models have dominated the achievement motivation research literature. One dominant social-cognitive model that was adopted in sport psychology from a number of independent and collaborative efforts in education (Ames, 1987; Dweck & Elliot, 1983; Maeher, 1984; Nicholls, 1980, 1984, 1989) is collectively referred to as achievement goal theory (AGT). Since the initial inception of the dichotomous framework, the subject of this review, achievement goal theory has been expanded upon in various forms such as the trichotomous framework (Elliot, 1997), the 2 x 2 framework (Elliot & Church, 1997), and the 3 x 2 framework (Elliot, Murayama, & Pekrun, 2011).

Though certainly the 2 x 2 framework has resulted in a fairly significant body of literature in sport, exercise, and physical education contexts (for meta-analytic reviews see Lochbaum & Gottardy, 2015; Lochbaum, Jean-Noel, Pinar, & Gilson, 2015), quantitative reviews of the dichotomous framework have included a large body of literature as well (Ntoumanis & Biddle, 1999; Biddle, Wang, Kavussanu, & Spray, 2003). Given the global zeal for competitive sport and achievement motivation

research, a review of the dichotomous framework in competitive sport appears long overdue. Hence, this review focused specifically on the dichotomous framework in the competitive sport context with the aim of providing researchers as well as practitioners invaluable information to guide the study and practice of task and ego orientations in competitive sport for years to come. To achieve this overall goal, the body of literature was presented and summarized, the interdependence of the two goal orientations was meta-analyzed, and the estimated mean values for both goal orientations were calculated and examined across commonly investigated categorical variables in the literature.

History of the Nicholls' achievement goal framework

The sport psychology literature quickly grasped on to Nicholls conceptual framework in the mid to late 1980s (Duda, 1989; Duda & Nicholls, 1992; Roberts, 1992). Given Nicholls' conceptual framework has been covered extensively and eloquently in the sport psychology literature (Roberts, 1992; Roberts, Treasure, & Balague, 1998), his conceptual framework will only be summarized here. Nicholls' framework is built upon the following two main assumptions: individuals operate in a rational manner and the adopted achievement goal or goals guide future achievement reference decisions and behaviors. The number one goal of action in Nicholls' and all achievement goal frameworks is the demonstration of competence. Thus, perceptions of ability are a central and perhaps *the* central variable in achievement goal research. Nicholls theorized that the two conceptions of ability are differentiated and undifferentiated. These two conceptions of ability define the two orthogonal and implicit achievement goal orientations as task and ego. These two implicit orientations are theorized to determine achievement beliefs and behaviors. Also, they are theorized to reflect ways in which success and failure are defined and ways in which one infers demonstrated competence.

The task orientation operates when the athlete's actions are primarily motivated by personal mastery, improvement, and achievement of higher ability. Success and failure are defined subjectively by the athlete's self-referenced perceptions of his or her performance. An ego orientation is characterized by an athlete whose actions are primarily motivated to demonstrate normative competence such as beating an opponent, demonstrating superior ability, and/or showing off. Thus, success and failure are most generally judged by the ego motivated athlete by comparisons with the performance of other competitors.

By the mid-90s, a fairly substantial body of literature had grown as evidenced by two qualitative literature reviews (Duda, 1992; Roberts & Treasure, 1995). Both reviews concluded that the two orthogonal orientations existed in the sport context and were very relevant to achievement behaviors. After the initial reviews, three more reviews were published two of which were meta-analyses of the dichotomous goal frameworks (Biddle, Wang, Kavussanu, & Spray, 2003; Duda & Ntoumanis, 2003; Ntoumanis & Biddle, 1999). All three reviews confirmed the presence and usefulness of the two goal orientations in sport, physical activity, and physical education contexts. In brief, the two meta-analytic reviews (Biddle, et al., 2003; Ntoumanis & Biddle, 1999) indicated conceptual coherence for the task goal orientation as it was meaningfully correlated with what were considered adaptive achievement motivated outcomes such as positive emotions, motives of skill development and team membership, and belief that effort lead to success. In contrast, the ego goal orientation results meta-analytically are not as strong conceptually as are task results. Though the ego goal orientation has been historically paired with maladaptive or less desirable achievement behaviors, cognitions, and emotions, it seems more unrelated to any achievement behaviors except unsportspersonlike attitudes and aggressive behaviors.

Measures of the task and ego goal orientations

Of course, to build a substantial and meaningful body of literature, reliable and valid measures of the two goal orientations were required. Thus, survey questionnaires were developed that were assumed to accurately assess the task and ego orientations. Initially, Gill and Deeter (1988) developed a scale to measure constructs similar to that of the task and ego orientations. However, their measure, the Sport Orientation Questionnaire (SOQ), was not designed based on achievement goal theory. In addition, Marsh (1994) provided evidence that the SOQ constructs did not conform to achievement goal constructs. Around the same time, Duda (1989) and Roberts and Balague (1989) reported development of scales to measure the task and ego orientation constructs based on Nicholls' work. Duda (1989) and Duda and Nicholls (1992) converted Nicholls' (1985) measure from the academic domain to the sport domain to produce the TEOSQ. The TEOSQ has demonstrated acceptable psychometric properties and has been used in the sport context since the late 1980s. Roberts and his colleagues (Roberts & Balague, 1989, 1991; Treasure & Roberts, 1994; Roberts, et al., 1998) developed the POSQ over a longer period of time. Roberts et al. (1998) maintain that the POSQ development was theoretically guided whereas the TEOSQ was not. In short, the TEOSQ and POSQ have been well received in the sport, physical activity, and physical education literature as valid and reliable measures of the task and ego orientation constructs.

Study purposes

To date, researchers in the competitive sport testing have not tested the interdependence of the two goal orientations and provided the estimated means across a number of often investigated moderator variables. Thus, three purposes guided this review. Purpose 1 was to provide a comprehensive descriptive summary of studies in the competitive sport context using the TEOSQ and/or POSQ. Purpose 2 was to test the hypothesized interdependence of the two goal orientations by conducting a meta-analysis of the correlation between the two goal orientations. Purpose 3 was to examine the following historically investigated hypotheses: (a) females endorse the task goal orientation more and ego orientation less than males (Duda, 1989); (b) elite athletes endorse the task goal orientation more and ego goal orientation less than sub-elite athletes (Ericsson, Krampe, & Tesch-Römer, 1993); (c) individual sport athletes endorse the ego goal orientation more so than team sport athletes (Van-Yperen & Duda, 1999); and (d) more collectivistic countries (e.g. Asian countries) endorse the ego goal orientation more and task orientation less than more individualistic cultures (Kim, Williams, & Gill, 2003).

Methods

Search strategy

As seen in Figure 1, the literature search was systematic and comprehensive based on the PRISMA flowchart (Moher, 2009). Over 1,000 abstracts were initially screened. The screening included electronic databases, reviewing reference lists of past published meta-analyses, and search of references from retrieved articles. The electronic database search was conducted in EBSCO with individual databases specific to sport (SPORTDiscus),

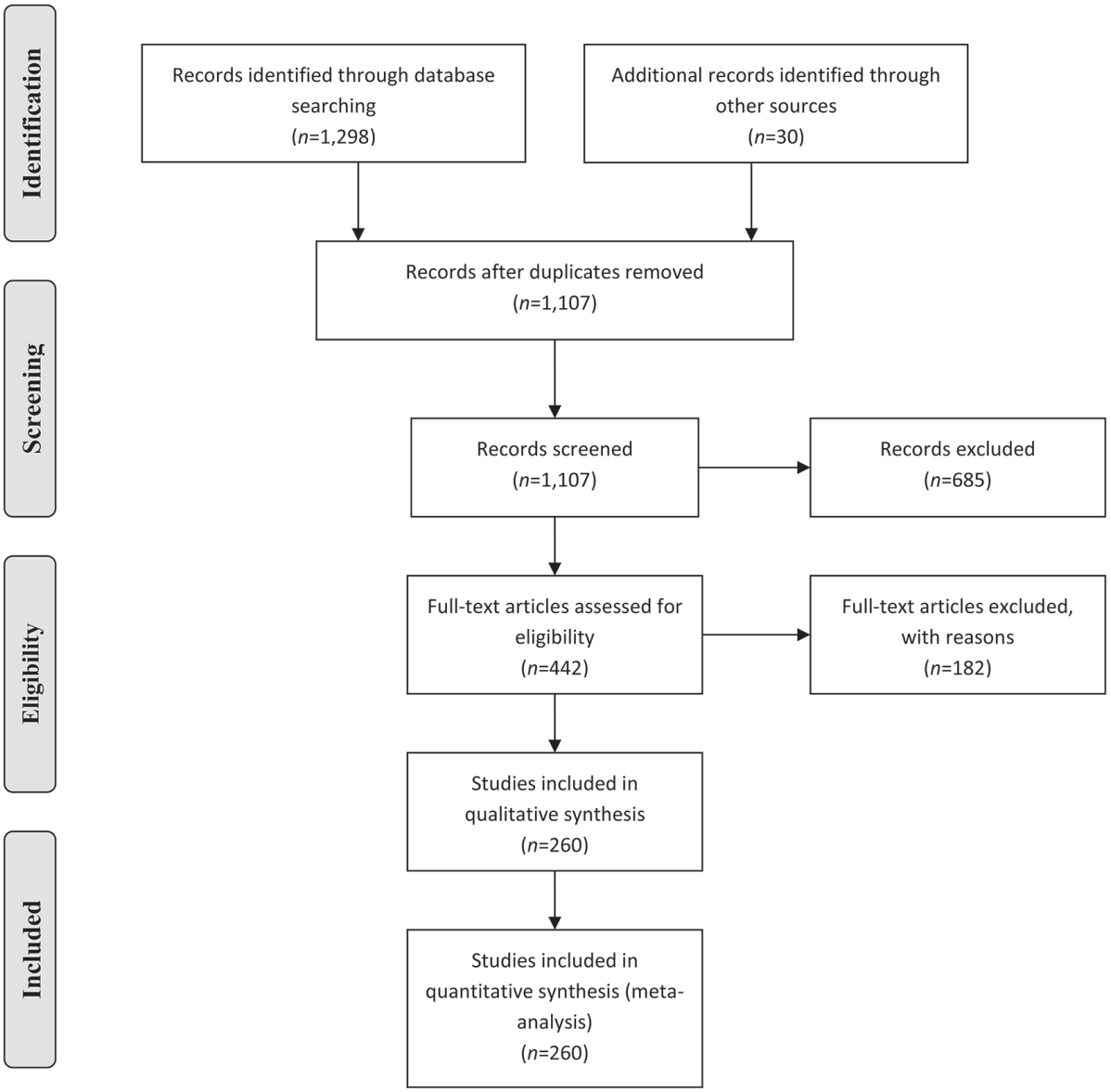

Figure 1. PRISMA flow diagram of search strategy.

psychology (PsycINFO), and education (ERIC). Key word combinations to locate published studies were based on the following terms: goal orientations and sport, goal orientations and competitive sport, task orientation and sport, task orientation and competitive sport, ego orientation and sport, and ego orientation and competitive sport.

Inclusion and exclusion criteria

Articles retained for purpose one of this review met the following inclusion criteria: (a) papers must be published in a language that the authors were fluent in and, if not fluent, could obtain assistance from a native speaker and/or translate via Google Translate (https://translate.google.com/); (b) papers must be published up to April 7, 2016; (c) papers must be original data published in peer-reviewed journals, and not theses, book chapters, or conference proceedings; (d) the participants and setting must have been in a competitive sport context; and (e) papers must contain either the TEOSQ or POSQ. Articles that were included for both purpose two and three of this review met the following additional criteria: (f) papers must report sufficient statistical information to test the interdependence of the two orientations (i.e. correlation between the two goal orientations and sample size) and/or to quantitatively estimate the task and ego orientation means (i.e. sample sizes or means, standard deviations and sample sizes).

Articles excluded met the following criteria: (a) participants were in university run recreational sport programs; (b) participants were in university based physical activity classes; (c) participants were in secondary school physical education class; (d) participants in categories a-c were mixed within participants that fell within the inclusion criteria and thus the competitive sport participant data could not be separated; and (e) the task and ego goal orientation data were repeated from a subsequent included publication (e.g. published in English in one publication and then in Spanish in another; published with correlates and then with another set of correlates).

Data analysis procedures

Given the first purpose of this review was to provide a comprehensive reference guide, descriptive data were provided for the following categories: authors, year published, country of participants, mean age of participants, total sample size, sex makeup of sample, level of sport competition, the sport itself, the TEOSQ and POSQ context reference, and the data extracted from each study. Of the coded study characteristics, all were straightforward except level of competition. There was at times great specificity in the sample description and at times very little specifics. After extensive discussion amongst the authors, the following six categories were coded: youth, university, adult, elite, masters, and mixed. Youth refers to samples of participants whose mean age was less than 18 were non-elite. University refers to samples that were clearly described as university athletes. Elite refers to samples that were described as elite, Olympic, professional, world class, and such descriptive terms. Masters refers to samples that were specifically described as adults that were competing in Masters level competitions. Last, mixed refers to samples that were impossible to pull apart into one of the above categories.

IBM SPSS version 22 (IBM Corp., 2013) and Comprehensive Meta-Analysis (CMA) version-2 software (version 2.2.064, (Biostat, Inc., July 27, 2011) was used for the statistical portions of this review. To provide the basic descriptive information, IBM SPSS was used. To provide the estimated means, standard deviations, and 95% confidence intervals (CI), CMA was used. Within CMA, the estimate of means option was chosen for continuous mean data. Means, standard deviations, and sample sizes were inputted for the studies that provided those data. To examine the purported interdependence of the two goal orientations as measured by the TEOSQ and POSQ (purpose two), the overall correlation between the two goal orientations was determined. The mean weight correlation (r_w) was chosen as the measure of effect size as all extracted data correlations (Hedges & Olkin, 1985). Given both orientations are scored on the same scale (1=low to 5=high) for both the POSQ and TEOSQ, interpretation of r_w was straightforward and Cohen's (1990) criteria were used for interpretation of each r_w as follows: .10 to .30 as small, .30 to .50 as medium, and >.50 as large. For the estimated means and r_w, funnel plots were examined to determine if the entered studies were dispersed equally on either side of the overall effect. Symmetry theoretically represents that the entered studies captured the essence of all relevant studies. To assess symmetry, Duval and Tweedie's (2000) trim and fill analysis was used.

Statistical assumptions of error

Given two primary models are used to determine statistical assumptions of error, one must be logically chosen. The fixed effects model assumes that all of the gathered studies share a common effect and differences are a result of within study error or sampling error. The random effects model assumes both within study error and between-study variation. Given the extensive variety of studies, cultures, sports, level of competition, and adapted versions of the original measures, the random effects model was chosen as logically both within study error and between-study variations most likely exist. When necessary, effect size differences between levels within the moderator varia-

bles were calculated with Hedges' *g* (1981). Cohen's (1988) interpretation for computed effect size differences criteria were used with 0.20 as small, 0.50 as medium, 0.80 as large, and 1.30 as very large.

Results

Purpose 1, sample summary

Tables 1 (TEOSQ studies) and 2 (POSQ studies) provide specifics concerning author, year, country, mean age, sample size, sex makeup of sample, level of sport competition, and the sport category. The data extracted for each study are available from the first author. A total of 260 studies from 1989 until the search process stopped (April 7, 2016) were included in this review out of which 189 used the TEOSQ and 71 the POSQ. The popularity of the dichotomous framework in sport psychology has endured over time as 45 studies were retained from 1989-1999, 117 studies from 2000-2009, and 97 studies from 2010 until the search stopped. The studies came from 39 different countries; USA (25.2%), UK (12.2%), and Spain (11.5%) were the most represented countries. Not surprisingly most of the studies were written in English (85.1%) and the rest in Spanish (7.3%), Korean (5.0%), Portuguese (1.5%), and Greek (1.1%). There were 32 different sports with a mixed sample of at least one individual and one team sport (33.7%) and soccer (16.4%) accounting for nearly half of the sports samples. Much greater variety in countries and sports represented were found in the TEOSQ studies than in the POSQ studies.

The total sample size was 80,959 with majority (n = 58,393) coming from the TEOSQ studies. The sample sizes varied from 7 to 2486 (M=252.01) with a great deal of variability (SD=350.83). The studies were dominated by youth sport (49.20%) and mixed sex samples (61.90%). Not surprisingly, the samples on average endorsed the task orientation more so than the ego orientation (g=2.66). Duval and Tweedie's (2000) trim and fill analysis results are also found in Table 1. Though the task orientation samples were not symmetrical, the changes in mean values were minimal. The ego orientation data were nearly symmetrical as based on Duval and Tweedie's trim and fill analysis. The POSQ average mean values for both orientations are meaningfully greater than those of the TEOSQ (task g=0.92; ego g =1.09).

Table 1. Characteristics for TEOSQ studies

Study	Year	Country	M_{Age}	N	Sex	Level	Sport	Data
Allen et al.	2015	Scotland	23.29	177	MG	Elite	Mixed	TE, r
	2015	USA	13.80	205	M	Youth	Mixed	TE
Atkins et al.	2015	USA	13.40	200	M	Youth	Mixed	T
Baek	2015	South Korea		73	M	Youth	Wrestling	TE
		South Korea		139	M	Youth	Wrestling	TE
		South Korea		50	M	University	Wrestling	TE
		South Korea		262	M	Mixed	Wrestling	r
Brinkman-Majewski & Weiss	2015	USA	20.00	180	MG	University	Mixed	TE, r
Calmeiro et al.	2015	Portugal	16.93	77	MG	Youth	Mixed	
Elferink-Gemser et al.	2015	The Netherlands	15.73	63	MG	Mixed	Speed skating	TE, r
Farkhondeh & Moghaddam	2015	Iran	NS	150	M	Youth	Wrestling	
Garcia-Mas et al.	2015	Spain	14.67	270	MG	Youth	Team	
Lu & Hsu	2015	Taiwan	20.91	252	MG	University	Mixed	TE, r
Monacis et al.	2015	Italy	29.53	366	MG	Mixed	Martial arts	TE
Pineda-Espejel et al.	2015	Mexico	19.97	211	MG	University	Mixed	TE, r
Rebelo-Gonçalves et al.	2015	Portugal	13.84	76	M	Youth	Soccer	TE
		Portugal	16.46	69	M	Youth	Soccer	TE
Sari	2015	Turkey	13.13	393	MG	Youth	Mixed	TE, r
Stavrou et al.	2015	Greece	19.47	272	MG	Elite	Individual	
Stuntz & Weiss	2015	USA	12.65	181	MG	Youth	Team	TE, r
Tsutsui & Fujiwara	2015	Japan	18.80	247	M	Mixed	Soccer	
Vieira et al.	2015	Brazil	22.11	185	MG	Elite	Mixed	
Bullard et al.	2014	USA	NS	76	F	University	Mixed	TE
Duică et al.	2014	Romania	16.00	116	MG	Elite	Team	TE, r
Feichtinger & Höner	2014	Germany	11.90	1804	M	Youth	Soccer	TE, r

Fernande Perez et al.	2014	Chile	16.60	183	M	Youth	Soccer	r
Kizildag et al.	2014	Turkey	18.70	62	MG	Elite	Track & field	
Lameiras et al.	2014	Portugal	24.10	158	M	Mixed	Team	TE, r
Lee	2014	South Korea		1375	MG	Youth	Mixed	TE
Trinidade Vaz et al.	2014	Portugal	14.68	118	MG	Youth	Soccer	TE, r
Alfermann et al.	2013	Germany	13.20	56	MG	Mixed	Swimming	TE
		Japan	14.10	117	MG	Mixed	Swimming	TE
Álvarez et al.	2013	Spain	18.00	7	F	Masters	Gymnastics	TE
Asghar et al.	2013	Germany	14.91	248	M	Youth	Soccer	r
		China	15.83	274	M	Youth	Soccer	r
		Pakistan	16.18	144	M	Youth	Field hockey	r
		Germany	14.40	127	M	Youth	Field hockey	r
Evdoxia et al.	2013	Greece	19.82	258	F	Mixed	Mixed	TE, r
Garyfallos et al.	2013	Greece	11.70	300	MG	Youth	Tennis	r
Hutzler et al.	2013	Israel	20.35	63	MG	Mixed	Mixed (SO)	r
		Israel	18.80	59	MG	Mixed	Mixed	r
Kim & Yang	2013	South Korea		225	MG	Mixed	Mixed	TE, r
Pelletier et al.	2013	Canada	40.44	412	MG	Mixed	Mixed	
Sari et al.	2013	Turkey	13.91	77	M	Youth	Basketball	TE
		Montenegro	13.78	64	M	Youth	Basketball	TE
Vasconcelos-Raposo et al.	2013	Portugal	NS	57	M	Mixed	Handball	TE
Bortoli et al.	2012	Italy	14.90	382	M	Youth	Soccer	TE, r
Cheung, et al.	2012	China	46.20	160	MG	Masters	Mixed	TE
Chin et al.	2012	Malaysia	15.10	632	MG	Youth	Track & field	r
Fernandes et al.	2012	Brazil	31.70	169	MG	Mixed	Mixed	TE, r
Hutzler & Shemesh	2012	Israel	35.20	57	M	Mixed	Basketball (WC)	TE
		Israel	23.40	70	M	Mixed	Basketball	TE
Machida et al.	2012	USA	19.62	206	MG	University	Mixed	TE, r
Medic et al.	2012	Mixed	57.20	71	MG	Masters	Track & field	
Saotome et al.	2012	Japan	16.80	146	M	Youth	Ice hockey	TE, r
Sarmento et al.	2012	Portugal	21.71	577	M	Mixed	Soccer	TE
Balaguer et al.	2011	Spain	11.07	94	F	Elite	Tennis	TE
Bortoli et al.	2011	Italy	13.40	320	MG	Youth	Team	TE, r
Gershgoren et al.	2011	Israel	12.06	81	M	Youth	Soccer	TE
Golby & Meggs	2011	UK	NS	23	MG	Mixed	Mixed	TE
		UK	NS	43	MG	University	Mixed	TE
Gomes et al.	2011	Portugal	17.80	290	MG	Mixed	Mixed	
Gutiérrez et al.	2011	Spain	17.50	80	MG	Mixed	Swimming	TE, r
		Spain	15.00	93	MG	Youth	Swimming	TE, r
Hirota et al.	2011	Brazil	NS	20	MG	Youth	Tennis	TE
Kavussanu et al.	2011	UK	13.93	69	M	Elite	Soccer	TE
		UK	13.90	49	M	Mixed	Soccer	TE
Kim et al.	2011	Korea	20.28	404	MG	University	Mixed	TE, r
López-Walle et al.	2011a	Mexico	14.56	239	MG	Youth	Mixed	r
López-Walle et al.	2011b	Mexico	13.90	553	MG	Youth	Mixed	TE
		Spain	13.80	563	MG	Youth	Mixed	TE
Matthys et al.	2011	Belgium	13.00	17	M	Elite	Handball	TE
		Belgium	12.80	153	M	Youth	Handball	TE
		Belgium	14.70	30	M	Elite	Handball	TE
		Belgium	14.80	107	M	Youth	Handball	TE
		Belgium	16.80	15	M	Elite	Handball	TE
		Belgium	16.60	68	M	Youth	Handball	TE
McCarthy	2011	USA	19.76	52	MG	University	Team	r
Núñez et al.	2011	Spain	21.02	399	MG	Mixed	Team	T
Silva et al.	2011	Spain	18.20	299	MG	Mixed	Mixed	

Vesković &Milanović	2011	Serbia	16.24	227	MG	Mixed	Mixed	TE
Castillo et al.	2010	Spain	15.40	2473	MG	Youth	NS	TE, r
		Portugal	15.40	2486	MG	Youth	NS	TE, r
Coelho et al.	2010	Portugal	13.60	69	M	Youth	Soccer	TE
		Portugal	13.70	45	M	Elite	Soccer	TE
Elbe & Madsen	2010	Denmark	24.30	96	MG	Elite	Running	TE
		Kenya	24.30	139	MG	Elite	Running	TE
Figueiredo et al.	2010	Portugal	11.50	32	M	Youth	Soccer	TE
		Portugal	13.50	32	M	Youth	Soccer	TE
Gencer	2010	Turkey	18.78	56	NS	Mixed	Badminton	
Gomes	2010	Portugal	14.10	213	MG	Youth	Mixed	TE
Gonçalves	2010	Portugal	14.28	482	MG	Youth	Mixed	TE
Potgieter & Steyn	2010	South Africa	NS	80	NS	Mixed	Mixed	r
Tello et al.	2010	Spain	22.87	511	MG	Mixed	Mixed	r
Vazou	2010	UK	14.00	483	MG	Mixed	Mixed	TE, r
Barić & Bucik	2009	Croatia	15.60	577	M	Youth	Mixed	TE
Bortoli et al.	2009	Italy	13.40	473	MG	Youth	Mixed	TE, r
Bossio	2009	Peru	NS	111	M	Elite	Soccer	r
de Bruin et al.	2009	The Netherlands	15.10	94	F	Youth	Mixed	TE, r
Figueiredo et al.	2009	Portugal	11.80	54	M	Youth	Soccer	TE
		Portugal	12.10	12	M	Elite	Soccer	TE
Hanrahan & Cerin	2009	Australia	34.93	139	MG	Adult	Dance	TE
Park et al.	2009	South Korea		63	MG	Youth	Badminton	TE
		South Korea		114	MG	University	Badminton	TE
Rodrigues et al.	2009	Portugal	33.91	45	MG	Adult	Mountain	TE, r
Stuntz & Weiss	2009	USA	12.57	303	MG	Youth	Mixed	TE, r
Camargo et al.	2008	Brazil	12.00	31	M	Youth	Futsal	TE
Chian & Wang	2008	Singapore	17.46	306	MG	University	Mixed	TE, r
Dorogi et al.	2008	Hungary	32.90	59	MG	Elite	Mixed	TE
		Hungary	22.40	58	MG	Mixed	Mixed	TE
Gano-Overway	2008	USA	18.62	34	MG	University	Mixed	TE
Garcia-Mas & Gimeno	2008	Spain	21.25	72	MG	University	NS	
Han	2008	South Korea		194	M	Youth	Wrestling	TE
Han	2008	South Korea		165	M	University	Wrestling	TE
Han	2008	South Korea		50	M	Elite	Wrestling	TE
Han	2008	South Korea		409	M	Mixed	Wrestling	r
LaVoi et al	2008	USA	12.74	259	M	Youth	Ice hockey	TE, r
McCarthy et al.	2008	UK	NS	152	MG	Youth	Mixed	
Proios & Balasas	2008	Greece	21.40	295	MG	Mixed	Team	TE
Boyd & Kim	2007	USA	20.84	68	MG	Adult	Skateboarding	TE, r
Hall et al.	2007	UK	34.60	246	MG	Adult	Track & field	TE, r
Hirota & Tragueta	2007	Brazil		31	F	University	Futsal	
Kim	2007	South Korea	17.20	375	MG	Youth	Mixed	
	2007	South Korea	21.40	328	MG	University	Mixed	
Li & Chi	2007	China	16.20	109	MG	Youth	Handball	TE, r
Mouratidou et al.	2007	Greece	15.71	170	MG	Mixed	Mixed	T, r
Chen et al.	2007	China	22.36	115	MG	Elite	Team	TE
Sit & Linder	2007	Hong Kong	16.43	1214	MG	Youth	Team	TE, r
Tsang	2007	Hong Kong	13.55	2202	MG	Youth	Sport school	r
Barić & Horga	2006	Croatia	15.60	388	M	Youth	Mixed	TE, r
Hirota et al.	2006	Brazil	NS	19	F	University	Soccer	
Malete	2006	Botswana	16.00	716	MG	Youth	Mixed	TE, r
Smith et al.	2006	Spain	10.90	223	M	Youth	Soccer	TE, r
Wells et al.	2006	USA	NS	158	MG	Youth	Basketball	TE
Bortoli & Robazza	2005	Italy	10.10	220	M	Youth	Mixed	TE

		Italy	9.60	131	F	Youth	Mixed	TE
		Italy	12.90	167	M	Youth	Mixed	TE
		Italy	12.80	167	M	Youth	Mixed	TE
		Italy	13.10	117	F	Youth	Mixed	TE
Collins & Barber	2005	USA	16.40	416	F	Elite	Field hockey	TE
Digelidis et al.	2005	Greece	NS	191	MG	Youth	Mixed	r
Hanrahan & Gross	2005	Australia	NS	79	MG	Masters	Individual	r
Lane et al.	2005	USA	NS	213	MG	Youth	Soccer	
Papaiannou et al.	2005	Greece	25.90	100	MG	Elite	Climbing	
Tsang et al.	2005	China	13.15	236	MG	Youth	Mixed	TE
		UK	14.24	214	MG	Youth	Mixed	TE
		Hungary	13.03	252	MG	Youth	Mixed	TE
		Romania	13.08	381	MG	Youth	Mixed	TE
Waldron & Krane	2005	USA	14.97	62	F	Youth	Softball	TE
Bergin & Habusta	2004	USA	11.25	123	M	Youth	Ice hockey	TE, r
Magyar et al.	2004	USA	16.19	154	MG	Youth	Rowing	TE, r
McArdle & Duda	2004	USA	14.00	196	MG	Mixed	Individual	TE, r
Prois et al.	2004	Greece	20.15	325	MG	Mixed	Mixed	TE
Ryska	2004	USA	15.43	702	MG	Youth	Mixed	TE
Ryska & Vestal	2004	USA	15.96	323	MG	Youth	Mixed	
Wakayama et al.	2004	Japan	16.70	2415	MG	Mixed	Mixed	
White et al.	2004	USA	NS	183	MG	Youth	Mixed	TE, r
Carr & Wyon	2003	UK	18.50	181	MG	Mixed	Dance	TE, r
Chun & Jun	2003	South Korea		69	MG	Youth	Judo	TE
		South Korea		38	MG	Youth	Judo	TE
Cresswell et al.	2003	New Zealand	10.87	107	MG	Youth	Soccer	
Fliess-Douer et al.	2003	Belgium	33.90	59	MG	Elite	Basketball (WC)	TE
Jung	2003	South Korea		160	MG	Youth	Taekwondo	TE
Kim et al.	2003	USA	12.58	101	MG	Youth	Mixed	TE, r
		Korea	13.92	298	MG	Youth	Mixed	TE, r
Magyar & Feltz	2003	USA	14.80	180	F	Youth	Volleyball	TE, r
Stephens & Kavanagh	2003	Canada	13.10	330	M	Youth	Ice hockey	TE
Balaguer et al.	2002	Spain	21.75	181	F	Elite	Handball	TE
Barić et al.	2002	Croatia	12.95	246	MG	Youth	Track & field	TE, r
Cumming et al.	2002	USA	14.20	105	MG	Youth	Swimming	TE
Dunn et al.	2002	Canada	18.24	174	M	Youth	Football	r
Hanrahan & Biddle	2002	Australia	29.90	399	MG	Mixed	Mixed	r
Harwood	2002	UK	20.90	179	MG	Mixed	Mixed	TE
Hatzigeorgiadis	2002	UK	23.07	71	MG	University	Volleyball	TE, r
Petherick & Weigand	2002	USA	NS	177	MG	Youth	Swimming	
Wakayama et al.	2002	Japan	18.60	1781	M	Youth	Mixed	T
		Japan	18.60	421	F	Youth	Mixed	T
Yoo & Kim	2002	South Korea	13.90	334	MG	Youth	Mixed	r
Baek	2001	South Korea	16.50	10	MG	Youth	Gymnastics	TE
	2001	South Korea	16.50	10	MG	Youth	Gymnastics	TE
Georgiadis et al.	2001	UK	27.72	72	M	Youth	Cricket	TE
Givvin et al	2001	USA	13.78	90	MG	Youth	Swimming	TE, r
Guest & White	2001	USA	13.09	171	MG	Youth	Mixed	TE
Hung et al.	2001	South Korea		196	MG	Youth	Archery	TE, r
Ntoumanis et al	2001	UK	20.40	268	MG	University	NS	TE
Perez et al.	2001	Spain	16.09	349	M	Youth	Soccer	
Porém	2001	Portugal	15.40	11	M	Youth	Soccer	TE
Skordilis et al.	2001	USA	NS	243	MG	Adult	Mixed	TE
Steinberg et al.	2001	USA	NS	34	M	University	Mixed	TE
		USA	NS	37	F	University	Mixed	TE

		USA	NS	66	M	Elite	Mixed	TE
		USA	NS	56	F	Elite	Mixed	TE
Castillo et al.	2000	Spain	NS	408	M	Youth	NS	T
		Spain	NS	232	F	Youth	NS	T
Hodge & Petlichkoff	2000	New Zealand	20.62	257	M	Mixed	Rugby	TE, r
Magyar et al.	2000	USA	19.72	40	MG	University	Mixed	TE
Reilly at al.	2000	UK	16.40	16	M	Elite	Soccer	TE
		UK	16.40	15	M	Youth	Soccer	TE
Stephens et al.	2000	USA	13.54	136	F	Youth	Basketball	TE
Voight et al.	2000	USA	15.72	196	F	Elite	Volleyball	TE, r
Balaguer et al.	1999	Spain	15.60	219	MG	Youth	Tennis	TE
Dunn & Dunn	1999	Canada	13.08	173	M	Elite	Ice hockey	T, r
Gano-Overway & Duda	1999	USA	16.49	171	MG	Youth	Track & field	TE, r
Hatzigeorgiadis & Biddle	1999	UK	30.40	182	MG	Mixed	Snooker	TE, r
Newton & Duda	1999	USA	15.16	385	F	Youth	Volleyball	TE
Ntoumanis et al.	1999	UK	20.83	356	MG	University	Mixed	TE, r
Tenenbaum et al.	1999	Australia	14.60	28	F	Youth	Runners	
Van-Yperen & Duda	1999	Holland	16.40	75	M	Elite	Soccer	TE, r
Mills	1998	USA	19.72	93	MG	University	Basketball	TE
Newton & Fry	1998	USA	64.47	137	MG	Masters	Individual	TE
Ntoumanis & Biddle	1998	UK	21.00	146	MG	University	Team	TE, r
Stephens	1998	USA	11.47	212	F	Youth	Soccer	TE, r
White	1998a	USA	14.41	279	MG	Youth	Team	TE, r
White	1998b	USA	14.74	581	F	Youth	Volleyball	r
Carpenter & Yates	1997	UK	NS	66	M	Elite	Soccer	TE
		UK	NS	66	M	Mixed	Soccer	TE
Hall & Kerr	1997	UK	12.80	111	MG	Youth	Fencing	
Kim & Gill	1997	South Korea	13.94	344	MG	Youth	Mixed	TE, r
Li et al.	1997	Thailand	21.21	218	M	University	Mixed	TE
		Thailand	20.72	203	F	University	Mixed	TE
Boyd & Yin	1996	USA	15.04	215	M	Youth	NS	TE, r
White	1996	USA	15.40	204	F	Youth	Volleyball	TE
White & Zellner	1996	USA	15.88	65	MG	Mixed	NS	TE
		USA	20.10	91	MG	University	NS	TE
Boyd & Callaghan	1994	USA	11.34	91	M	Youth	Baseball	TE
Ebbeck	1994	USA	32.50	115	MG	Mixed	Tennis	
Ebbeck & Becker	1994	USA	12.00	166	MG	Youth	Soccer	TE
White & Duda	1994	USA	10.80	61	MG	Youth	Mixed	TE
		USA	16.30	63	MG	University	Mixed	TE
		USA	20.20	62	MG	University	Mixed	TE
Williams	1994	USA	15.86	152	MG	Youth	Mixed	TE
Duda & Hom	1993	USA	11.07	77	MG	Youth	Basketball	TE
Lochbaum & Roberts	1993	USA	15.94	296	MG	Youth	Mixed	r
Newton & Duda	1993	USA	12.68	80	M	Youth	Tennis	TE
		USA	12.77	41	F	Youth	Tennis	TE
White & Duda	1993	Canada	NS	59	MG	Youth	Basketball (WC)	TE, r
Duda & White	1992	USA	21.40	143	MG	University	Skiing	
Seifriz et al.	1992	USA	16.50	105	M	Youth	Basketball	
Duda et al.	1991	USA	16.60	123	MG	Youth	Basketball	
Duda	1989	USA	17.80	128	M	Youth	Mixed	TE
		USA	17.10	193	F	Youth	Mixed	TE

Note: USA=United States of America; UK=United Kingdom; WC=Wheelchair; SO=Special Olympics; NS=not stated; M=male; F=female; MG=mixed gender; T=study provided mean task orientation data; E=study provided mean ego orientation data; r=study provided task ego intercorrelation.

Table 2. Characteristics for POSQ studies

Study	Year	Country	Mage	N	Sex	Level	Sport	Data
Domínguez -Escribano et al.	2015	Spain	17.00	117	F	Mixed	Soccer	r
Granero-Gallegos et al.	2015	Spain	21.87	247	F	Elite	Soccer	TE, r
Jooste et al.	2015	South Africa	33.70	16	MG	Elite	Rugby	TE
Rottensteiner et al.	2015	Finland	NS	1517	M	Youth	Mixed	TE
Shields et al.	2015	USA	19.66	238	MG	University	Mixed	TE, r
Granero-Gallegos et al.	2014	Spain	21.60	615	F	Mixed	Mixed	r
Lochbaum & Podlog	2014	USA	14.42	112	M	Youth	Football	TE, r
Saies et al.	2014	Mixed	NS	105	M	Elite	Canoeing	TE
		Mixed	NS	99	M	Elite	Canoeing	TE
		Mixed	NS	143	M	Elite	Canoeing	TE
Kavussanu, Boardley, et al.	2013	UK	19.82	372	MG	University	Mixed	
Kavussanu, Stanger, et al.	2013	UK	19.63	89	MG	University	Team	
Kuczek	2013	Mixed	25.00	65	M	Elite	Basketball	TE, r
			22.66	47	M	Elite	Basketball	TE, r
Ruiz-Juan & Zarauz	2013	Spain	NS	401	MG	Masters	Track & field	TE
Kazak Çetinkalp	2012	Turkey	21.40	396	MG	Mixed	Mixed	
Granero-Gallegos et al.	2012	Spain	16.75	316	MG	Youth	Handball	r
Kristiansen et al.	2012	Norway	25.17	82	M	Elite	Soccer	TE, r
van de Pol & Kavussanu	2012	UK	19.78	348	MG	University	Mixed	TE, r
van de Pol et al.	2012	UK	21.11	410	MG	Mixed	Soccer	
Kazak Çetinkalp & Turksoy	2011	Turkey	13.43	159	M	Elite	Soccer	TE
Heng et al.	2011	Malaysia	14.79	80	MG	Youth	Mixed	TE
Krouse et al.	2011	USA	40.00	344	F	Mixed	Ultrarunners	TE
van de Pol & Kavussanu	2011	UK	19.99	116	MG	Mixed	Tennis	TE, r
Boardley & Kavussanu	2010	UK	21.39	307	M	Mixed	Soccer	TE, r
Calvo et al.	2010	Spain	15.70	528	M	Youth	Soccer	
Holgado et al.	2010	Spain	22.87	511	MG	Elite	Mixed	
Moreno et al.	2010	Spain	13.74	413	MG	Youth	Mixed	r
Walker et al.	2010	Mixed	NS	558	MG	Masters	Mixed	TE
Greenwood & Kanter	2009	USA	16.00	230	M	Youth	Football	
Kavussanu & Boardley	2009	UK	19.61	106	MG	Mixed	Team	TE, r
Abrahamsen et al.	2008	Norway	17.80	101	M	Elite	Mixed	TE, r
	2008	Norway	17.80	89	F	Elite	Mixed	TE, r
Cecchini-Estrada et al.	2008	Spain	22.90	255	MG	Mixed	Team	TE, r
Kristiansen et al.	2008	Mixed	21.80	82	MG	Elite	Wrestling	TE
Lee et al.	2008	UK	13.89	892	MG	Mixed	Mixed	r
Lemyre et al.	2008	Norway	20.10	141	MG	Elite	Individual	r
Sage & Kavussanu	2008	UK	14.1	180	MG	Youth	Team	TE, r
Sas-Nowosielski & Swiatkowska	2008	Poland	20.02	830	MG	Mixed	Mixed	TE, r
Cervelló et al.	2007	Spain	13.70	151	MG	Youth	Tennis	r
Cecchini Estrada et al.	2007	Spain	21.70	131	MG	Mixed	Mixed	TE, r
Grossbard et al.	2007	USA	12.10	181	MG	Youth	Basketball	
Moreno Murcia et al.	2007	Spain	13.74	413	MG	Youth	Team	r
Sage & Kavussanu	2007	UK	13.40	365	MG	Youth	Soccer	TE, r
Veligekas et al.	2007	Greece	19.70	449	MG	Mixed	Track & field	r
D'Arripe-Longueville et al.	2006	France	8.70	163	M	Youth	Judo	TE, r
		France	14.30	158	M	Youth	Judo	TE, r
Kavussanu	2006	UK	14.58	325	M	Youth	Soccer	TE, r
Cecchini et al.	2005	Spain	15.10	82	M	Youth	Soccer	
Ommundsen et al.	2005	Norway	14.00	1735	MG	Youth	Soccer	TE, r

Cecchini et al.	2004	Spain	NS	96	MG	Youth	Mixed	TE
Harwood et al.	2004	UK	17.60	573	MG	Elite	Mixed	TE
Harwood et al.	2003	UK	16.60	290	MG	Elite	Mixed	TE
Kavussanu & Ntoumanis	2003	UK	20.00	222	MG	University	Mixed	TE, r
Pensgaard & Roberts	2003	Norway	25.20	69	MG	Elite	Mixed	
Rascle & Coulomb	2003	France	13.60	109	M	Youth	Handball	TE
Hanrahan & Biddle	2002	Australia	29.90	399	MG	Mixed	Mixed	r
Harwood	2002	UK	20.90	179	MG	Mixed	Mixed	TE
Lemyre et al.	2002	Norway	NS	511	M	Youth	Soccer	TE
Pensgaard & Roberts	2002	Norway	24.60	7	MG	Elite	Skiing	TE
Ryska et al.	2002	USA	19.69	186	MG	University	Soccer	TE, r
Cervello & Santa-Rosa	2001	Spain	16.30	323	MG	Youth	Mixed	TE
Kavussanu & Roberts	2001	USA	19.58	199	MG	University	Basketball	TE, r
Gernigon & le Bars	2000	USA	NS	38	MG	Youth	Aikido	TE
		USA	NS	43	MG	Adult	Aikido	TE
		USA	NS	42	MG	Youth	Judo	TE
		USA	NS	41	MG	Adult	Judo	TE
Kavussanu & Harnisch	2000	USA	12.50	907	MG	Youth	Mixed	TE, r
Treasure et al.	2000	UK	24.92	73	M	Elite	Rugby	TE
		UK	29.58	106	M	Adult	Rugby	TE
Escartí et al.	1999	Spain	15.23	134	MG	Youth	Track & field	r
Liukkonen & Leskinen	1999	Finland	14.00	557	M	Youth	Soccer	r
Ommundsen & Pedersen	1999	Norway	13.80	136	F	Youth	NS	TE, r
Pensgaard	1999	Norway	NS	18	F	Elite	Soccer	TE, r
Ryska & Yin	1999	USA	12.50	103	MG	Youth	Soccer	TE
Jackson et al.	1998	Multiple	46.10	398	MG	Masters	Individual	
Rascle et al.	1998	France	15.30	80	M	Youth	Handball	TE
		France	15.20	80	M	Youth	Handball	TE
Treasure & Roberts	1998	USA	14.01	274	F	Youth	Basketball	TE
Ommundsen & Roberts	1996	Norway	NS	230	MG	Elite	Mixed	
Roberts et al.	1996	USA	20.97	333	MG	University	NS	TE, r

Note: USA=United States of America; UK=United Kingdom; NS=not stated; M=male; F=female; MG=mixed gender; T=study provided mean task orientation data; E=study provided mean ego orientation data; r=study provided task ego intercorrelation.

Purpose 2, interdependence of the goal orientations

The interdependence of the two goal orientations (k=130) was small, r_w=.18 (95% CI lower limit=.15; upper limit=.21). This random effects model correlation was significantly different than zero, *z*=9.96, p<.000. The Duval and Tweedie's (2000) trim and fill analysis indicated no change or trimming or filling required; thus, the sample of studies theoretically is representative even if studies were missed in the search process. For the TEOSQ (k=89), the random effects analysis revealed another small correlation between the task and ego goal orientations, r_w=.14 (95% CI lower limit=.10; upper limit=.19) that was significantly different than zero, *z*=6.37, p<.000. The Duval and Tweedie's trim and fill analysis indicated no change or trimming or filling required. For the POSQ (*k*=41), the random effects analysis revealed a small correlation, r_w=.25 (95% CI lower limit=.20; upper limit=.31) that was significantly different than zero, *z*=8.99, p<.000. The Duval and Tweedie's trim and fill analysis again indicated no change or trimming or filling required. True interdependence would be a correlation of 0, but the small in magnitude results supported the notion of the basic interdependence of the two goal orientations.

Purpose 3, historic hypotheses

Tables 4 and 5 contain the mean data and summary for the tested hypotheses. For the task orientation (see Table 4), only the individualistic/collectivistic hypothesis was supported in that the general pattern for task goal orientation differences of the collectivistic countries (i.e. Central Europe, East Asia, and the Middle East) was lower than that of the more individualistic countries (i.e. Africa, Latin/South America, English Speaking, and Western Europe). Effect size differences for many of the comparisons were large to very large. The sex difference and athlete ability level hypotheses had marginal to no support across the TEOSQ and POSQ.

Table 3. Characteristics for all TEOSQ and POSQ studies

Characteristic	All	TEOSQ	POSQ
Number of studies	260	189	71
Total sample	80,959	58,393	22,566
M sample size ± SD	252.01±350.83	243.04±368.25	278.59±293.66
Min, max	7, 2486	7, 2486	7, 1735
Countries represented	39	35	12
Specific sports represented	32	31	12
Sport samples (%)			
Individual	23.10	24.30	19.70
Team	41.20	39.20	46.50
Mix of individual and team	32.70	33.30	31.00
Not able to discern	3.10	3.20	2.8
Sport level (%)			
Youth	49.20	52.90	39.40
University	11.20	11.10	11.30
Adult	1.90	2.60	0.00
Elite	14.60	11.10	23.90
Masters	3.10	2.60	4.20
Mixed	20.00	19.60	21.10
Sex makeup of sample (%)			
Female	10.00	10.10	9.90
Male	27.30	27.50	26.80
Mixed	61.90	61.40	63.4
Not stated	.80	1.10	---
Task orientation specifics			
M ± SD, *k*	4.15±.30, 249	4.09±.28, 190	4.35±.28, 59
95% CI	4.11, 4.19	4.05, 4.13,	4.27, 4.42
Trimmed M, *n*	4.06, 51	4.01, 34	4.24, 18
Trimmed 95% CI	4.02, 4.09	3.97, 4.06	4.17, 4.30
Ego orientation specifics			
M ± SD, *k*	3.04±.51, 239	2.92±.48, 181	3.43±.41, 58
95% CI	2.98, 3.11	2.84, 2.99	3.32, 3.54
Trimmed M, *n*	3.04, 0	2.91, 0	3.32, 9
Trimmed 95% CI	2.98, 3.11	2.83, 2.98	3.21, 3.43

Note: k = data samples; CI = confidence interval.

For the ego orientation hypotheses, there was strong support (i.e. large to very large effect size values) though inconsistent across the TEOSQ and POSQ for the sex and individual/team sport hypotheses. There was no support, inconsistent support, and insufficient data for the other hypotheses.

Additional analyses

Given the difference in mean values of the two goal orientations between the POSQ and TEOSQ as well as the lack of consistent findings concerning the tested hypotheses, a question arose as to whether the two dominant goal orientation measures, especially for the ego orientation, are measuring the same orientations. A thorough examination of the TEOSQ and POSQ in the same study with multiple variables and samples is completely absent in the literature. Thus, to begin to investigate whether a deeper problem exists between the TEOQ and POSQ, the measures were examined with a common correlate motivation climate, as measured by the Perception of Motivation Climate in Sport Questionnaire (PMCSQ: Seifriz, Duda, & Chi, 1992) and the second version of the PMCSQ (PMCSQ-2: Newton, Duda, & Yin, 2000).

Random effects meta-analytic procedures were followed. The results, as found in Table 6, strongly suggest that the task goal orientation, regardless of measure, was very consistent. In contrast, differences in correlation meaningfulness existed between the ego orientation measure and the ego climate. Specifically, the POSQ ego and ego/performance climate correlation was medium in meaningfulness, whereas the TEOSQ ego and ego/performance climate was small in meaningfulness. Though few in sample, these also appears to be a difference in the correlation pattern by climate measure using the TEOSQ ego orientation.

Table 4. TEOSQ and POSQ samples (k), means, standard deviations, and state of support for the historic hypotheses for the task orientation

	TEOSQ			POSQ			Support	
	k	M	SD	*k*	M	SD	TEOSQ	POSQ
Females > males in task orientation								
Female	26	4.17	.36	7	4.32	.59	Marginal	None
Male	64	4.06	.25	21	4.42	.20		
More elite > less elite in task orientation								
Elite	24	4.14	.28	17	4.53	.11	None	Marginal
University	25	4.01	.28	8	4.42	.22		
Adult	5	4.30	.12	3	4.40	.13		
Masters	3	3.94	.27	2	3.69	.71		
Youth	104	4.13	.27	21	4.25	.24		
Individualistic countries > collectivistic countries in task orientation								
English speaking	79	4.20	.26	29	4.41	.19	Moderate To Strong	Strong
West Europe	52	4.18	.19	20	4.28	.35		
Central Europe	14	3.96	.26	1	3.86	.62		
Latin/South Am.	4	4.26	.04	---	---	---		
Middle East	5	3.84	.40	1	4.47	.58		
Africa	2	4.36	.14	---	---	---		
East Asia	34	3.77	.27	1	3.68	.58		

Note: p<.000 for all corresponding Z statistics for all reported estimated means in the table except those with *k*=1.

Table 5. TEOSQ and POSQ samples (k), means, standard deviations, and state of support for the historic hypotheses for the ego orientation

	TEOSQ			POSQ			Support	
	k	M	SD	*k*	M	SD	TEOSQ	POSQ
Males > females in ego orientation								
Female	24	2.82	.28	7	3.20	.44	None	Strong
Male	59	2.82	.44	21	3.66	.32		
More elite < less elite in ego orientation								
Elite	23	2.89	.54	17	3.64	.31	None	Inconsistent
University	25	3.08	.33	8	3.63	.26		
Adult	5	2.53	.31	3	3.04	1.00		
Masters	3	3.51	.76	2	2.92	.30		
Youth	98	2.88	.50	21	3.29	.32		
Individual sport athletes > team sport athletes in ego orientation								
Individual	42	3.12	.54	17	3.29	.48	Strong	None
Team	71	2.69	.40	25	3.60	.32		
Individualistic countries < collectivistic countries in ego orientation								
English speaking	76	2.86	.33	28	3.47	.36	None	Insufficient data
West Europe	49	2.70	.41	20	3.44	.29		
Central Europe	13	2.82	.29	1	3.01	.75		
Latin/South Am.	4	2.73	.53	---	---	---		
Middle East	5	2.97	.88	1	4.13	.65		
Africa	2	3.76	.21	---	---	---		
East Asia	32	3.37	.31	1	2.17	.70		

Note: p<.000 for all corresponding Z statistics for all reported estimated means in the table except those with *k*=1.

Table 6. Correlations (k) TEOSQ and POSQ studies by orientation and climate measures

Variables			Orientation			
			Task		Ego	
			TEOSQ	POSQ	TEOSQ	POSQ
Climate	Task	PMCSQ	.39 (14)	.36 (10)		
		PMCSQ-2	.35 (11)	.38 (4)		
	Task	PMCSQ			-.03 (13)	.01 (10)
		PMCSQ-2			.03 (8)	.01 (4)
	Ego	PMCSQ			.27 (14)	.37 (10)
		PMCSQ-2			.17 (8)	.32 (4)
	Ego	PMCSQ	.02 (13)	.07 (9)		
		PMCSQ-2	-.01 (8)	.01 (4)		

Discussion

The overall aim of this review was to summarize the task and ego goal orientations in the competitive sport literature. To best achieve this overall aim, the basic characteristics of all literature meeting inclusion criteria were first summarized. The interdependence of the two goal orientations was examined and a number of commonly investigated moderator variables were examined. Given the differences in results by the TEOSQ and POSQ, an additional analysis was conducted with an often examined correlate motivation climate, to determine if the TEOSQ and POSQ may differ in their relationship to this correlate.

The description of the literature provided a great deal of information the least being the number of published studies (N = 260) in only the competitive sport domain given Biddle and colleagues' (2003) meta-analysis of the dichotomous goals included only 98 published studies using the TEOSQ and POSQ in sport and physical activity domains. The descriptive review of the 260 studies provided invaluable information by summarizing the basic characteristics of the TEOSQ and POSQ literature. For instance, if a researcher is interested in whether the TEOSQ and POSQ have been studied with soccer players, the answer is a resounding yes! This review also provided confidence that the two goal orientations are suitably independent; thus, forming task and ego orientation groups as often found in the literature (i.e. high task/high ego, high task/low ego, etc.) is an appropriate manner in which to utilize the two orientations.

The two dominant goal orientation measures differed based on the overall means, some of the tested hypotheses, and the additional correlate analysis with motivation climate. These surprising findings certainly will require future research attention. The differences between the TEOSQ and POSQ seem of most concern for the ego goal orientation. A number of important questions must be asked. For instance, what level of ego goal orientation endorsement in competitive sport should one expect? Which measure of the dichotomous goals, the TEOSQ or POSQ, is to be used when also investigating motivation climate?

Searching for concrete reasons for the differing TEOSQ and POSQ results is difficult. It could be that the differences exist because the POSQ was extensively developed and the TEOSQ was a word substitution adaption from the education literature. This certainly is a reason to consider. Unfortunately, past research with both goals is very limited (Hanrahan & Biddle, 2002; Harwood, 2002). Hanrahan and Biddle (2002) stated that the TEOSQ was the better measure based on confirmatory factor analyses, though certainly their work was only with one sample and past research had demonstrated the suitability of the POSQ (Roberts, et al., 1998). Harwood (2002) did not examine the factor structure of the two measures. Question by question examination of the TEOSQ and POSQ scales with a number of samples seems to be the only way to tease out reasons for their differing results. An examination of both scales points to obvious differences. For instance, the TEOSQ task scale queries about fun and learning of skills. The POSQ does not have such wording. The TEOSQ ego scale queries about "doing better than friends" and "scoring the most points/goals" both of which are clearly more specific than the more general "outperform opponents" and no one question is specific to a sport with points or goals. Certainly not all sports are based on points or goals such as golf.

Although this was a comprehensive and what seemed an exhaustive search of the TEOSQ and POSQ competitive sport literature, a few limitations exist. Though certainly as many articles that could be found were included in languages other than English, it could be that additional published manuscripts in other languages were not found. Another limitation is the unknown reasons for the differing patterns of TEOSQ and POSQ results. In addition, as discussed by Biddle and colleagues (2003), the study of the task and ego goal orientations is nearly

always Category C evidence defined as uncontrolled or nonrandom dominant trials (Bouchard & Blair, 1999). Thus, the overall impact on policy makers is limited with the two goal orientations. It is more in the realm of the achievement goal climate literature to impact policy making (e.g. youth sport coaching programs). But even with these limitations, the present review greatly advanced the TEOSQ and POSQ literature in the competitive sport domain. Most certainly, future research inquiry will emerge from the present review.

In conclusion, this review is unique to the task and ego goal orientation literature as overall estimated mean values were calculated and examined across a number of historically examined categorical variables. The TEOSQ and POSQ results differed too often. These differences were previously unknown. Such knowledge provides in certain instances vastly different conclusions and/or research/practical directions. Thus, researchers and practitioners must be very careful in using the provided information. For instance, from a practical standpoint, the POSQ literature would suggest endorsement of the ego goal orientation to develop elite athletes whereas the TEOSQ literature would not. In summary, it is clear that the TEOSQ and POSQ literature have thrived and spanned the globe since the mid-1980s when sport psychology researchers took hold of Nicholls' framework. Researchers are encouraged to grow and enrich this literature by examining the TEOSQ and POSQ simultaneously. By doing so, researchers will be able to help advance the use of the TEOSQ and POSQ in competitive sport settings as the world's zeal for competitive sport shows no sign of slowing down.

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**Studies included in Table 1 and Table 2. **Studies also included in additional analysis with motivation climate.*

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Correspondence to:
Marc Lochbaum, Ph.D.,
Texas Tech University, Department of Kinesiology and Sport Management
Box 43011, Lubbock, TX 79409-3011
Fax: 806-742-1688
E-mail marc.lochbaum@ttu.edu

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