

Article

The Coach–Athlete Relationship and Self-Talk in Turkish Athletes

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Abstract: Background: The first purpose of the study was to evaluate the validity and reliability of the Automatic Self-Talk Questionnaire for Sports (ASTQS) in the Turkish language and the secondary purpose was to examine the relationship between the quality of the coach–athlete relationship and athletes’ self-talk. Methods: 477 athletes (females = 252, males = 225) completed the Turkish versions of the Coach–Athlete Relationship Questionnaire (CART-Q) and the ASTQS. Results: ASTQS showed good psychometric properties in the Turkish language. Findings on the construct validity of the scale were consistent with the original scale’s 8-factor structure. The Cronbach’s alpha coefficients ranged from 0.65 to 0.91. Furthermore, path analysis results showed that closeness had a direct effect on disengagement, psych-up, and anxiety control. The commitment had a direct effect on somatic fatigue, and complementarity had a direct effect on worry, confidence, and instruction. Conclusions: Finally, the results from the present study indicated that the Automatic Self-Talk Questionnaire provided a reliable and valid measure for Turkish athletes. The results revealed the importance of the coach–athlete relationship in sport and its’ role in shaping athletes’ self-talk.

Keywords: self-talk; coach–athlete relationship; sport; validation

Citation: Ada, E.N.; Comoutos, N.; Ahmad, H.; Yıldız, R.; Jowett, S.; Kazak, Z. The Coach–Athlete Relationship and Self-Talk in Turkish Athletes. *Sustainability* **2021**, *13*, 5764. <https://doi.org/10.3390/su13115764>

Academic Editor: Marc A. Rosen

Received: 10 March 2021

Accepted: 10 May 2021

Published: 21 May 2021

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1. Introduction

In sport psychology, one of the most frequently used psychological techniques is self-talk [1]. Reducing the use of negative self-talk through cognitive restructuring or thought-stopping can alter the negative effects on athletic performance [2]. Therefore, the effectiveness of self-talk strategies in sport but also in physical education settings has been increasingly examined in recent years [3,4]. Various terms have been used to refer to self-talk, including inner speech, internal dialogue, private speech, and egocentric speech [5–7]. However, self-talk has been criticized for its lack of robust theoretical background [8,9]. In the past, many theories have been proposed to explain the effectiveness of self-talk interventions [5,8,10,11] such as the self-efficacy theory [12], Vygotsky’s theory of cognitive development [13], the self-fulfilling prophecy [14], and the self-determination theory [15]. However, recently, two theoretical frameworks have been introduced to explain the effectiveness of self-talk in sport [16–18]. Latinjak et al. [17], and Van Raalte et al.’s [18] theoretical frameworks mutually attempted to explain self-talk in sport.

Both frameworks emphasized the need to improve the existing structure of athletes’ self-talk. However, Van Raalte et al. [18] brought some criticism, claiming that the classifications made by Latinjak et al. [17] were problematic. Van Raalte et al. [18] claimed that Latinjak et al.’s [17] explanations about self-talk categorization and definition showed inconsistencies. Furthermore, Van Raalte et al. [18] indicated that Latinjak et al.’s [17] studies

have no solid empirical proof. Therefore, Van Raalte et al. [18] suggested that there is a historical two-factor theory, namely, System 1 (In Latinjak et al.'s categorization is specified as "spontaneous" self-talk) and System 2 (In Latinjak et al.'s categorization is specified as "goal-directed" self-talk). According to Van Raalte et al. [18], System 1 and System 2 theory represents athletes' self-talk more precisely than Latinjak et al.'s conceptualization.

In response to Van Raalte et al.'s [18] commentary, Latinjak et al. [16] defined self-talk as organic self-talk (related to psychological and cognitive processes) and strategic self-talk (related to behavioral rules). Although both theoretical frameworks conclude that there are many similarities in their examination of athletes' self-talk, Latinjak et al. [16] insist that their terminology (organic and strategic) is different and provides a better understanding and that Van Raalte et al.'s [18] framework lacks data-driven studies in sport. Furthermore, there was another comment about the assessment of self-talk. Latinjak et al. [17] provided a sensible explanation for this commentary. Other researchers [18] had preferred to explain the concern of assessment via their method (descriptive experience sampling-DES), but Latinjak et al. [17] gave preference to the retrospective self-report measures like the Automatic Self-Talk Questionnaire for Sports (ASTQS).

ASTQS, at the moment, is the only reliable and valid self-report questionnaire for assessing athletes' structure of self-talk. Zourbanos et al. [19] noticed that "identifying the structure of athletes' self-talk can help to enhance our understanding regarding the role of thoughts athletes experience during sport competition and advance self-talk research" (p. 249). However, new self-talk models have emerged, such as Latinjak et al.'s model [11] and Van Raalte et al.'s model [20] but still, there is no instrument based on the above models that assess athletes' positive and negative self-talk. An issue that should be discussed is the retrospective self-report. Zourbanos et al. [19] also noticed that cognitive processes cannot be accurately assessed through external measures and the use of self-reports provide us with 'metacognitive knowledge' which can help us understand perceptions, motives, and generally what someone is thinking [21].

ASTQS has been administered in different populations and contexts [19,22–25]. More specifically, ASTQS has been administered in athletes ranging from amateur to experts but also university athletes. An adapted version has been also used in PE to examine students' thoughts during the PE class [3]. Zourbanos et al. [19] supported the multidimensionality of athletes' self-talk and revealed eight distinct self-talk dimensions, four positives (psych up, confidence, anxiety control, and instruction), and four negatives (worry, disengagement, somatic fatigue, and irrelevant thoughts). Based on confirmatory factor analysis, ASTQS is best represented by the 8-factor model (the four positive and the four negative) and the second-order 10-factor model suggesting that the eight factors assess different self-talk dimensions, which, however, represents two broader positive and negative self-talk dimensions. Zourbanos et al. [19] suggested that irrelevant thoughts included thoughts that were irrelevant to match-play, this factor was merged with the broader negative self-talk dimension because previous research has shown a correlation between negative and irrelevant thoughts [26]. Nevertheless, when ASTQS was translated into other languages such as Spanish [27], Dutch [28], and German [29], the researchers noticed problems with the irrelevant thoughts factor when included with the negative self-talk dimensions [27].

Self-Determination Theory (SDT) has been also used in self-talk studies. SDT focuses on the social-contextual conditions [15] and refers to the experience of volition and self-endorsement of one's activity [30]. Jowett, Adie, Bartholomew, Yang, Gustafsson, and Lopez-Jiménez [31] have also mentioned that self-determination theory has been applied in sport research to study the social influences associated with the motivational process underpinning athletes' well-being. Self-talk is not only related to athletes' self but also their coaches. Therefore, a different line of research focused on the antecedents of self-talk in sport and exercise context (i.e., [32–34]). Zourbanos et al. [33] found that coaches' negative activation behaviors, including behaving inappropriately or in a distracting manner, were directly related to athletes' thoughts of failure and negative self-talk [33]. This is because remarks made by others sometimes can influence our way of thinking

or talking to ourselves [32]. Zourbanos et al. [19,22] have examined the relationship between coaches' behavior and statements and athletes' self-talk, and they found that coaches' behavior affects athletes' self-talk. There is a considerable study about coaches' behavior and athletes' inherent self-talk that was researched by Zourbanos et al. [22], which revealed that supportive coaching behavior was positively related to positive self-talk and negative coaching behavior was negatively related to negative self-talk. In another study, Zourbanos et al. [33], found that there is a relationship between coaches' behavior and athletes' thinking. Finally, Zourbanos et al. [22] added to the definition of ST another element, besides the already known characteristics, that self-talk has shown to be "malleable to perceptions and interpretations of stimuli from the social environment". Thoughts are affected by the social environment [35]. In the sport context, success is beyond the individual [36]. The relationship between the athlete and the coach or other team members and significant others can be the most important determinant for sport performance and success. The most important relationship components are mutual trust, respect, belief, support, cooperation, communication, and understanding. These components contribute to performance success and satisfaction [37,38]. The coach–athlete relationship has been viewed as a key component to effective coaching [39] and the key element for performance [37].

There are many different approaches about the coach–athlete relationship conceptualization. The most popular one is Jowett's conceptual model, which presents an integrated model of the coach–athlete relationship. The model has defined the coach–athlete relationship as being the situation in which coaches and athletes' feelings, thoughts, and behaviors are mutually and causally interconnected [40]. Closeness, commitment, and complementarity (3Cs) factors define multidimensional situational constructs of the coach–athlete relationship [41]. Jowett, Kanakoglou, and Passmore [38] have defined the terms as follows: "Closeness describes the level and degree of affective connectedness that develops among the members of the relationship. It includes qualities such as trust, respect, appreciation, and liking among others. Commitment reflects both members' intention to remain in a close relationship that lasts over time. It refers to the long-term orientation toward the bond or connection. Complementarity reflects members' reciprocal and corresponding cooperation" [38]. Another study [42] showed that the coach–athlete relationship plays a central role in the physical, motor, and psychosocial development of athletes. Additionally, Olympiou, Jowett, and Duda [43] found that the coach–athlete relationship is important for the motivation of athletes participating in team sports. Perceived task-involving has been seen relatively experiencing higher levels of closeness, commitment, and complementarity with the coach. In addition, some studies supported the link between the quality of the relationship and performance success [44–46].

To measure the coach–athlete relationship's constructs of closeness, commitment, and complementarity, The Coach–Athlete Relationship Questionnaire (CART-Q) was developed to measure the direct perspective [47]. The CART-Q provides us to explore that the nature of the coach–athlete relationship is not unidimensional. The studies showed that culture plays an important role in interpersonal relationships in sport [48,49]. Jowett and Ntoumanis [50] also examined the Greek CART-Q version in that particular culture. The study showed that the coach–athlete relationship were different meanings in Greek culture which is considered to be collectivism, but cultural-related differences did not affect interpersonal constructs, which are considered to be fundamental and robust. The CART-Q has been achieved by being a worldwide measurement tool. The British [47], Greek [50], Arabic [51], Chinese [52], Brazilian [53], Belgian [54], and Turkish [55] versions have been adapted to these cultures. Furthermore, the construct of the CART-Q has been demonstrated to be a useful tool for measuring the coach–athlete relationship in all these cultures.

Taking into consideration the above and most importantly that there is no study in the self-talk literature examining Jowett's model, thus the purpose of this study was to determine athletes' self-talk by examining the quality of the coach–athlete relationship amongst Turkish elite athletes who come from a collectivist culture. Since we know that

positive self-perception is a key characteristic of individuals from an individualistic culture (e.g., European and Americans), self-critical orientation is a cardinal characteristic of individuals from collectivist cultures (e.g., [56,57]). This is why the use of self-talk can be differentiated from culture to culture. It has also been shown that self-talk facilitates the interpretation and internalization of social messages [58]. Teachers' positive statements were directly related to positive self-talk in their students [59]. Self-talk can cause changes in motivation and affective states [6]. If the effects of the regulation of behavior on interpersonal communications are taken into consideration [6], the relationship between athlete's thoughts about coaches and their self-talk styles should be studied. The study has provided evidence that coaches' talking style, such as positive or negative statements, was found as a mediator between coaches' behavior and athletes' self-talk [32].

Dumludag et al. [60] have stated that in Individualist societies, people are supposed to look after themselves and their direct family only. In Collectivist societies, people belong to 'in groups' that take care of them in exchange for loyalty. According to the individualism–collectivism measure of Hofstede [61], Turkey, with a score of 37, is a collectivistic society. In Turkey, although both Western and urban in terms of society all around the country, various cross-cultural studies [62–64] show that Turkish cultural orientation is collectivistic.

From this point of view, the current study aims to discover the reliability and validity of ASTQ-S as the first for Turkish culture which is considered to be collectivism. Secondly, it aimed to explore the coach–athlete relationship and self-talk in that particular culture. More specifically, the present study also tried to examine whether athletes' self-talk would be associated with the coach–athlete relationship. We hypothesized that the structure of the ASTQS and CART-Q fit well within Turkish athlete samples, and the coach–athlete relationship quality positively predicts athletes' positive self-talk and negatively predicts athletes' negative self-talk.

2. Materials and Methods

2.1. Participants

A total of 477 Turkish athletes (252 women, 225 men; $M_{\text{age}} = 19.24$; $SD = 4.12$ years) participated in this study. Athletes were from individual sports (56.81%, athletics, badminton, gymnastic, wrestling, and tennis) and team sports (43.19%, football, basketball, handball, and volleyball). Athletes ranged in competitive level from local to the professional league. In particular, 28.3% were competing at the international level ($n = 134$), 71.7% of athletes were competing at the national level ($n = 104$), regional ($n = 118$), or county level ($n = 121$). The participants, on average, self-reported having approximately eight years of sport experience ($M_{\text{sport experience}} = 7.34$; $SD = 4.68$ years). All data were collected from the European part of Turkey.

2.2. Measures

2.2.1. The Automatic Self-Talk Questionnaire for Sports (ASTQS)

The Automatic Self-Talk Questionnaire for Sports (ASTQS; [19]) was administered to assess athletes' self-talk. The original instrument [19] consisted of 40 items assessing four positive self-talk dimensions (psych up, anxiety control, confidence, instruction) using 19 items (e.g., "I believe in myself") and four negative self-talk dimensions (worry, disengagement, somatic fatigue, irrelevant thoughts) using 21 items (e.g., "I will lose"). Participants were asked to indicate how frequently they experienced the thoughts that were listed during the last 3 to 4 weeks, in training and competitions. The participants responded on a four-point Likert-type scale, ranging from 0 (never) to 4 (very often). The overall score in each subscale was obtained by calculating the mean of the items' scores. In a series of studies, Zourbanos et al. [19,22–24] have supported the psychometric integrity of the ASTQS. In this study, the validity and reliability of this questionnaire for Turkish athletes will be evaluated.

2.2.2. Coach–Athlete Relationship Questionnaire (CART-Q)

The Turkish version [55] of the Coach–Athlete Relationship Questionnaire (CART-Q) developed by Jowett and Ntoumanis [47] was used in this study. The questionnaire contains 11 items that form 3 subscales: closeness (4 items; e.g., “I trust my coach”), commitment (3 items; e.g., “I am committed to my coach”), and complementarity (4 items; e.g., “When I am coached by my coach, I am at ease”). For this study, the direct perspective of the coach–athlete relationship was used. Each item is rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) with a mid-point of 4 (half-way). Higher scores representing more favorable perceptions of the quality of the coach–athlete relationship. The factor structure of the CART-Q was also supported. The indices of fit were RMSEA = 0.08, SRMR = 0.05, NFI = 0.98, NNFI = 0.98 and CFI = 0.99. Cronbach’s alpha scores for the Turkish version change from 0.84 to 0.88 [55]. In this study, the reliability values of CART-Q were 0.93 for closeness, 0.88 for commitment, and 0.82 for complementarity.

2.3. Procedure

The translation and cultural adaptation of the ASTQS have been done by six professionals (three English teachers and three Ph.D. graduates in physical education and sport science), who accepted to develop the process of back translation adaptation and validation of the ASTQS content. Within the scope of the ASTQS, the linguistic and cultural appropriateness of the target form (Turkish) was evaluated by three sport science experts, who are very familiar with back-translation. This intervention aimed to increase the validity of the final form of the questionnaire in the target culture (Turkish). As it is known, “bias” in studies of cultural adaptation of a measurement tool threatens the construct validity. Therefore, such a situation where validity is degraded is grouped under two factors: linguistic and semantic. Particularly in adaptation studies, it is essential to control both the linguistic and semantic factors (the logical meaning of the translation) in order to establish cultural equivalence [65]. In this context, experts were given item pairs written according to the target (Turkish) and source (English) language, as well as linguistic, semantic, and cultural congruity. An evaluation form, which included the items in both Turkish and English, was also given. The experts noted down their ideas on whether the items had good congruity or not. A final decision was then given for each item. The process was made to ensure the cultural equivalence (linguistic and semantic factors) of the items in the final form of the questionnaire. Furthermore, the experts were presented with the sub-dimensions and items from the source language and were asked to assess which sub-dimension the item could belong to. Thus, it was decided that the items in the target language had the same meaning as that of the source language. The forms containing the items of the target (Turkish) and source (English) languages containing 40 items were given to the experts. Sub-dimensions were also written on the forms, but no sub-dimensions were specified; this was left for the experts to do. Thus, both linguistic, cultural, and theoretical structures were finalized. The items from the original form were also set in the target language in the same way, however, they were rewritten so that they could be better understood in Turkish. Data was collected from the participants with this rewritten form. It was concluded that all sub-dimensions for the items reported by the three experts, were the same as those of the source language. This finding can be considered as proof of the construct validity in a rational framework.

An information sheet that explains the aims of the study was given to the participants. Athletes were also informed that participation was voluntary and the questionnaires were anonymous. The participants responded to the questionnaires via mail. The questionnaires were sent to them during the training season. The questionnaires were completed when athletes were in the final season. Permission to conduct the study has been given by the institution’s research ethics committee. All potential male and female volunteer participants were presented and signed an informed consent form to follow the Declaration of Helsinki. The forms were completed by the participants within an average of 15–20 min.

2.4. Data Analysis

There were no missing values or outliers in the data. Firstly, all data were checked for entry errors. Descriptive statistics were calculated for all items of the study including means, standard deviations, skewness, and kurtosis values. As the main aim of this study was to examine the psychometric properties of the ASTQS, the higher-order Confirmatory Factor Analysis (CFA) was used to confirm the factor structure of the scale. In this study, a multivariate normality test was implemented to select the appropriate method of analysis. CFA based on a robust maximum likelihood (RML) approach was used to analyze the non-normally distributed continuous data, while the Satorra–Bentler scaled statistic (S-B χ^2) which was used because S-B χ^2 provides a correction for the test statistics and standard errors when data are non-normally distributed, the Root Mean Square Error of Approximation (RMSEA), the Standardised Root Mean Square Residual (SRMR), the Comparative Fit Index (CFI), and the Non-normed Fit Index (NNFI) were used to assess model fit. To indicate a good fit, values of 0.95 or greater have been suggested for the CFI, TLI, and IFI [66,67]. SRMR values close to or less than 0.08 indicate close fit. Additionally, the RMSEA value of 0.05 or lower indicates perfect model fit, while values up to 0.08 indicate an acceptable fit [68]. Next, the scales were scored. Internal consistency and correlations among all variables were calculated. Furthermore, path analysis was used to examine the effects of the coach–athlete relationship quality (3Cs) on athlete’s self-talk, which is the second aim of this study. The data were analyzed using the SPSS Statistics V23.0 (SPSS Inc., Chicago, IL, USA) and LISREL 8.5 statistical packages.

3. Results

3.1. Descriptive Statistics

Descriptive statistics were calculated to assess the mean, standard deviation, skewness, and kurtosis for the 40 items belonging to eight subscales for the ASTQS (Table 1). Before conducting CFA to test the factorial structure of the ASTQS, we assessed the multivariate normality of the data as well as skewness and kurtosis values for each item. In this initial data examination, we found evidence of multivariate non-normality in the data ($z = 81.54$; $p < 0.001$ for skewness; $z = 33.03$; $p < 0.001$ for kurtosis). Due to the non-normality of some indicators, latent variable analyses were conducted using the robust maximum likelihood approach.

Table 1. Mean (M), Standard Deviation (SD), Skewness, and Kurtosis for the Automatic Self-Talk Questionnaire for Sports (ASTQS) items.

Sub-Scales	Item	Content	M	SD	Skewness	Kurtosis
Negative self-talk	Worry	I am going to lose	0.77	0.97	1.085	0.464
		I am wrong again	1.03	1.06	0.823	0.050
		I am not as good as the others	0.81	1.07	1.254	0.785
		I am not going to reach my goal	0.74	1.11	1.522	1.411
		I cannot concentrate	1.08	1.09	0.777	−0.194
		I am not going to make it	0.72	1.09	1.481	1.230
		What will others think of my poor performance	1.45	1.28	0.498	−0.786
	Disengagement	I want to stop	0.71	1.01	1.386	1.264
		I want to get out of here	0.70	1.13	1.578	1.462
		I think I will stop trying	0.62	1.03	1.705	2.181
		I cannot keep going	0.46	0.88	2.177	4.451
	Somatic fatigue	I am fed-up	0.71	1.07	1.427	1.130
		My body is not in good condition	1.01	1.11	0.894	−0.028
		I am tired	1.21	1.11	0.751	−0.041

Table 1. Cont.

Sub-Scales	Item	Content	M	SD	Skewness	Kurtosis
Irrelevant thoughts		Today I 'suck'	0.89	1.01	0.943	0.222
		My legs/arms are shaking from tiredness	0.98	1.13	1.116	0.511
		My body does not help me today	1.18	1.06	0.684	−0.129
		I am thirsty	1.60	1.25	0.273	−0.883
		What will I do later tonight	0.93	1.16	1.189	0.595
		I am hungry	0.96	1.18	1.154	0.451
		I want to take a shower	1.39	1.48	0.586	−1.116
Positive self-talk	Psych-up	Let us go	2.56	1.36	−0.620	−0.796
		Power	3.08	1.18	−1.210	0.545
		Give 100%	3.11	1.14	−1.233	0.651
		Do your best	3.17	1.13	−1.365	1.090
	Anxiety control	Strong	3.15	1.08	−1.262	0.983
		Relax	2.57	1.29	−0.565	−0.725
		Do not get upset	2.85	1.27	−0.898	−0.239
	Confidence	Calm down	3.00	1.16	−1.015	0.206
		No stress	2.80	1.21	−0.808	−0.225
		I believe in me	2.99	1.22	−1.062	0.101
		I am very well prepared	2.95	1.14	−0.892	−0.026
		I feel strong	3.05	1.14	−1.143	0.471
		I can make it	3.06	1.18	−1.149	0.432
	Instruction	I believe in my abilities	3.17	1.12	−1.281	0.794
Concentrate on your goal		3.09	1.15	−1.253	0.733	
Focus on what you need to do now		3.04	1.11	−1.078	0.455	
Concentrate on your game		3.00	1.17	−1.066	0.319	
Focus on your technique		3.13	1.12	−1.240	0.764	
	Concentrate	3.22	1.09	−1.414	1.319	

Note. M: Mean; SD: Standard deviation.

3.2. Confirmatory Factor Analysis (CFA)

The theoretical model, which is predicted to consist of 40 items and eight subscales, was analyzed using LISREL 8.54. In other words, to what extent the 40 items in the original scale were collected under eight subscales in the same way or not was evaluated by confirmatory factor analysis. In this analysis, a total of parameters were examined (inter-factor covariances, factor loadings, and error variances), it was evaluated whether the parameters reflecting the one-way linear relationship between the observed variables and the latent variable were statistically significant or not (Figure 1).

Eight-factor constructs and a second-order model (Figure 1) exhibits an acceptable fit to the data. CFA results support the model ($\chi^2/df = 2.65; p < 0.00$) for the eight-factor model fit significantly for Turkish athlete samples. The RMSEA value was 0.059, indicating an acceptable fit for the eight-factor model. The SRMR value was 0.061. The TLI, CFI, and IFI for this analysis were 0.97, 0.97, and 0.97, respectively (Table 2). All standardized factor loadings were, in general, large and statistically significant for negative self-talk (ranging from 0.50 to 0.80) and positive self-talk (ranging from 0.64 to 0.99). Standardized factor loadings and error variances confirmed the model regarding the loading of items onto their expected subscale. The squared multiple correlations (R^2) are the proportion of variance in the observed variable that is accounted for by the latent variable(s) for which it is an indicator [69]. In the present study results, R^2 values ranged from 0.21 to 0.73.

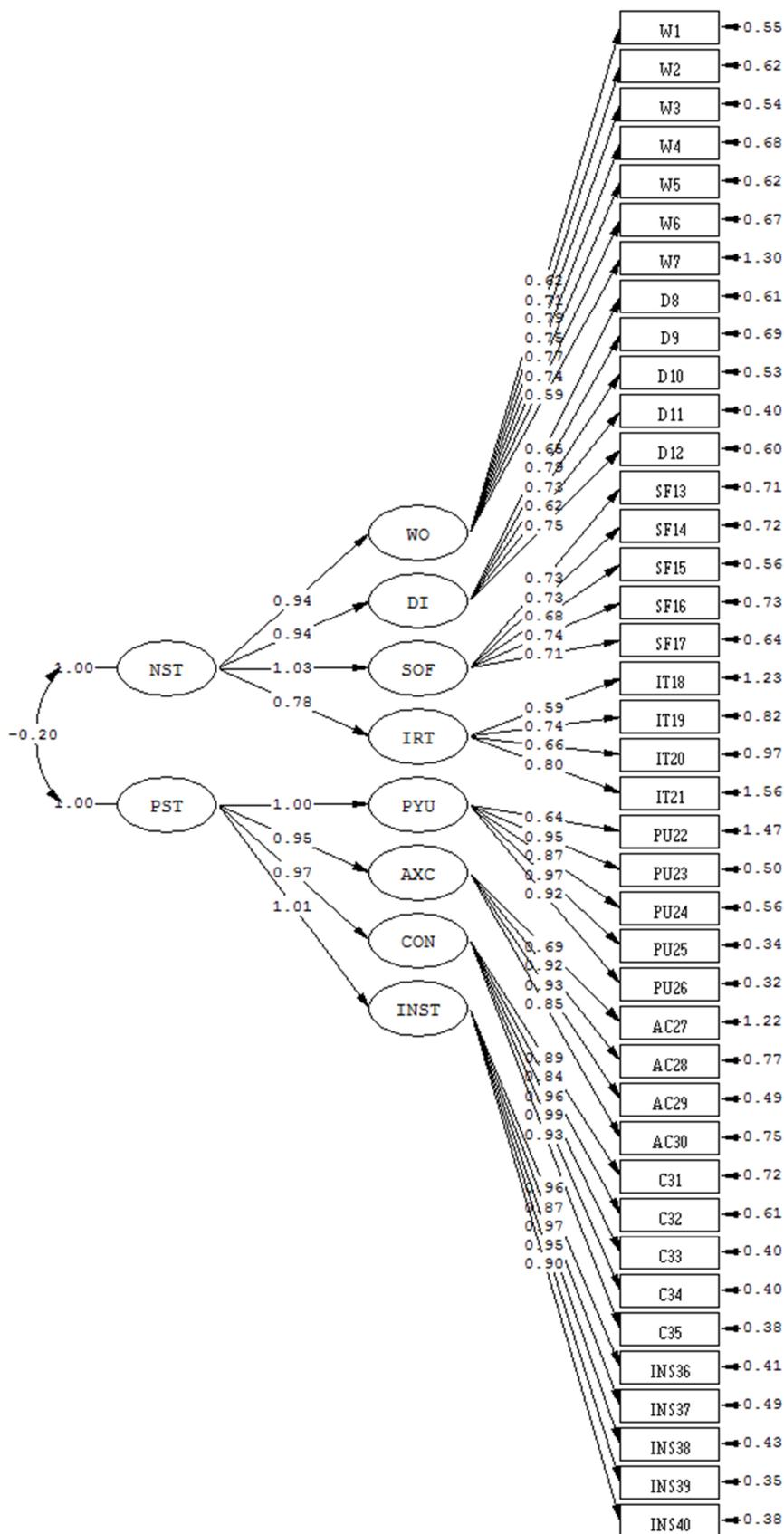


Figure 1. Eight-factor construct and second-order model of ASTQS for Turkish athlete samples (NGT = Negative Self-talk, PST = Positive Self-talk, WO = Worry, DI = Disengagement, SOF = Somatic Fatigue, IRT = Irrelevant Thoughts, PYU = Psych-Up, AXC = Anxiety Control, CON = Confidence, INST = Instruction).

Table 2. Fit indices for the 8 factor model of the ASTQS in the study.

<i>n</i>	df	SB- χ^2	χ^2/df	RMSEA	SRMR	TLI	CFI	IFI
477	731	1934.64	2.65	0.059	0.061	0.97	0.97	0.97

Note. SB- χ^2 : Sattora–Bentler scaled Chi-Square; χ^2/df : dividing Sattora–Bentler scaled Chi-Square by degrees of freedom; RMSEA: Root Mean Square Error of Approximation, SRMR: Standardised Root Mean Square Residual, TLI: Tucker–Lewis index; CFI: Comparative Fit Index, and IFI: Incremental Fit Index.

3.3. Internal Consistency

Internal consistency is usually measured with Cronbach’s alpha, which is a statistic based on pair-wise correlations between items. Internal consistencies were satisfactory with Cronbach’s alphas of 0.85 for worry, 0.82 for disengagement, 0.80 for somatic fatigue, 0.65 for irrelevant thoughts, 0.86 for psych-up, 0.78 for anxiety control, 0.89 for confidence, and 0.91 for instruction.

3.4. Correlations among the Eight-Subscales of the ASTQS

As it can be seen in Table 3, besides all descriptive statistics for all variables, negative self-talk factors (worry, disengagement, and somatic fatigue) were negatively correlated with closeness, commitment, and complementarity (3C) while positive self-talk factors (psych-up, anxiety control, confidence, and instruction) were positively correlated with the 3Cs. However, irrelevant thought factor was not correlated with any 3Cs. Pearson correlations revealed low to moderate negative relationships between negative self-talk subscales (worry, disengagement, somatic fatigue) and 3Cs (ranging from $r = -0.11$, $p < 0.001$ to $r = -0.23$, $p < 0.001$), and low to moderate but positive relationships between positive self-talk subscales and 3Cs (ranging from $r = 0.17$, $p < 0.001$ to $r = 0.30$, $p < 0.001$).

Table 3. Descriptive statistics and Pearson’s correlations for all variables.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1-CL	6.03	1.42	1									
2-CO	5.66	1.56	0.88 **	1								
3-COP	5.69	1.42	0.88 **	0.81 **	1							
4-WO	0.95	0.78	-0.11 *	-0.12 **	-0.13 **	1						
5-DI	0.64	0.79	-0.23 **	-0.19 **	-0.21 **	0.75 **	1					
6-SOF	1.06	0.81	-0.14 **	-0.14 **	-0.13 **	0.79 **	0.76 **	1				
7-IRT	1.22	0.88	-0.07	-0.08	-0.07	0.43 **	0.53 **	0.63 **	1			
8-PYU	3.02	0.94	0.28 **	0.26 **	0.27 **	-0.12 *	-0.21 **	-0.09	0.01	1		
9-AXC	1.41	0.63	0.16 **	0.17 **	0.16 **	-0.04	-0.06	-0.06	-0.01	0.65 **	1	
10-CON	3.04	0.97	0.29 **	0.27 **	0.29 **	-0.29 **	-0.31 **	-0.23 **	-0.03	0.85 **	0.58 **	1
11-INST	3.09	0.97	0.26 **	0.25 **	0.26 **	-0.17 **	-0.20 **	-0.14 **	-0.03	0.89 **	0.63 **	0.89 **

Note. * $p < 0.05$; ** $p < 0.01$; M: Mean; SD: Standard deviation; CL = Closeness, CO = Commitment, COP = Complementarity, WO = Worry, DI = Disengagement, SOF = Somatic Fatigue, IRT = Irrelevant Thoughts, PYU = Psych-Up, AXC = Anxiety Control, CON = Confidence, INST = Instruction.

3.5. Path Analysis

We were interested in determining whether athletes’ self-talk subscales had a direct effect on multidimensional coach–athlete relationship dimensions. We produced path analysis in order to investigate these multivariate relationships. In this analysis, relationships have been defined between all variables. After non-significant paths were removed from the model, the analysis was repeated. The model (Figure 2) showed that closeness had a direct effect on disengagement, psych-up, and anxiety control. Closeness was positively related to psych-up, and anxiety control ($\beta = 0.16$; t -value = 4.83; $p < 0.05$ and $\beta = 0.10$; t -value = 2.82; $p < 0.05$, respectively), but was negatively related to disengagement ($\beta = -0.21$; t -value = -5.82; $p < 0.05$). However, the commitment had a direct effect on somatic fatigue. Commitment was negatively related to somatic fatigue ($\beta = -0.12$; t -value = -3.31; $p < 0.05$). Complementarity had a direct effect on worry, confidence, and

instruction. Complementarity was negatively related to worry ($\beta = -0.10$; t -value = -2.78 ; $p < 0.05$), but was positively related to confidence, and instruction ($\beta = 0.18$; t -value = 5.43 ; $p < 0.05$ and $\beta = 0.14$; t -value = 4.34 ; $p < 0.05$, respectively). The model demonstrated excellent fit ($\chi^2 = 130.89$, $df = 26$, $p = 0.000$, $GFI = 0.95$, $CFI = 0.98$, $NFI = 0.97$, $RMSEA = 0.092$) according to recommended cut-off values for fit indexes [70,71].

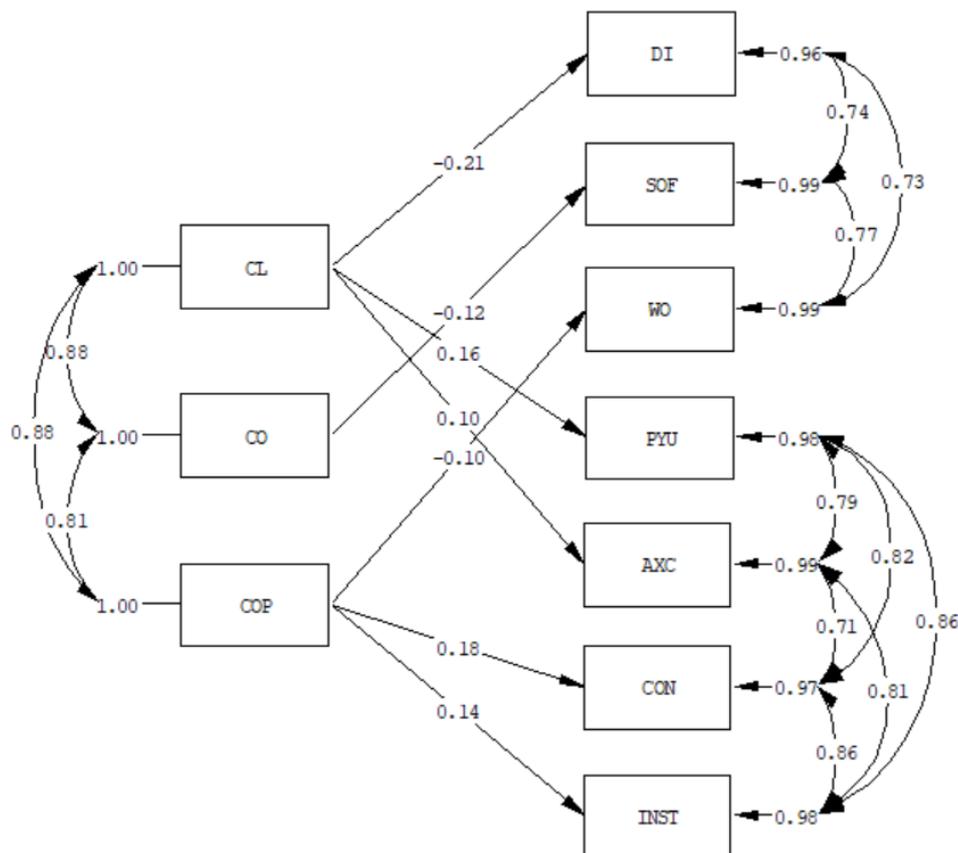


Figure 2. Path analysis among self-talk and the coach–athlete relationship subscales ($n = 477$). Note. CL = Closeness, CO = Commitment, COP = Complementarity, DI = Disengagement, SOF = Somatic Fatigue, WO = Worry, PYU = Psych-Up, AXC = Anxiety Control, CON = Confidence, INST = Instruction.

4. Discussion

Understanding predictors of sport performance, in a variety of contexts and under a variety of conditions, is undoubtedly a goal of sport psychology research [72]. In a recent study [73], self-talk has been emphasized as a factor that greatly affects sports performance. The study was conducted to explore and confirm the structure of ASTQS for Turkish athlete samples using CFA, as well as to examine whether the coach–athlete relationship would correlate with athletes' self-talk. The results showed acceptable levels of internal consistency and supported the eight-factor model. The ASTQS has been adapted and used in many different languages (e.g., German, Persian, Spanish, Indonesian, and Turkish) [27,74] as well as in other contexts [3,61]. In other cultural versions of ASTQS, the researchers have tried some different models to obtain the best fit indices. For example, in the Spanish version [27] accepted 8-factor model consisted of eight correlated first-order factors rather than the original second-order factor model (positive and negative self-talk) accounted for the relations among the first-order factors. Nevertheless, the fit indices of the Spanish version of ASTQS better than the Turkish version. Due to obtaining different results than the original ASTQS [19], it needs further studies on the structure of automatic self-talk.

Based on Zourbanos' studies (e.g., [22,60]), the seven-factor model could have been used in this study, excluding the irrelevant thoughts factor, while the eight-factor model

fitted better with the Turkish athlete samples. As a result, it was proven that a scale is a useful tool in helping researchers and sport psychologists to identify an athlete's self-talk during training or competition.

The original version of the self-talk questionnaire has an eight-factor model which has positive categories (psych up, confidence, instruction, and anxiety control), negative categories (worry, disengagement, and somatic fatigue), and the neutral category (irrelevant thoughts), which has been unclear, even though it showed high correlations with negative self-talk [19]. It has been found that there is no relationship between irrelevant thoughts and the 3Cs. As stated before, Zourbanos' studies (e.g., [22,60]) found low internal consistencies for irrelevant thoughts. Due to these results, it is recommended that when this dimension is used, it should be used carefully, and the reasons behind the results should be understood.

Correlation-related findings have resulted following the existing literature. For instance, positive self-talk dimensions are positively related to positive outcomes while negative self-talk dimensions have negatively related to negative outcomes in many studies (e.g., [3,22,60,75]). Similarly, for the CART-Q factors, the coach–athlete relationship quality has a positive relationship with adaptive outcomes, as well as a positive relationship with maladaptive outcomes (e.g., [42,76,77]). Closeness was found to be negative and low correlated with the disengagement of self-talk in the present study. Closeness and disengagement dimensions are completely dissimilar. Closeness refers to the emotional attachment between group members [78] while disengagement (e.g., depression, anxiety, and tension) refers to burnout and dropout as “cannot keep going” in sport psychology [79]. This correlation has already had basic assumptions in terms of conceptualization, as was mentioned above. This is why this discovery is not surprising. The finding suggests that those that are closer to their coach are less likely to disengage from self-talk, while those that are less close to their coach are more likely to disengage from self-talk. As the need to belong (closeness) has been conceptualized as a fundamental human need [80]. It also has been discovered people that thwarting of the need to belong (closeness) can be have undesirable dispositions like depression, anxiety, and tension [81,82]. We can also take into consideration that culture might play a role in the different effects of the predictors of self-talk. The commitment was found to be negative and low correlated with somatic fatigue. Commitment refers to the long-term orientation toward the bond or connection. Somatic fatigue is related to feeling physically exhausted. The athletes who have physically fatigue might not have defined any commitment intention. Commitment orientation could be related to total well-being. Complementarity reflects members' reciprocal and corresponding cooperation. However, if the athlete considers him/herself inadequate compared to others and is worried about it, this feeling may have been harmful in terms of complementarity. These findings make sense when the athletes' feelings and relationship with their coaches. However, as mentioned before, the future studies need to understand the correlation between self-talk and the coach–athlete relationship in Turkish culture.

The studies [83,84] emphasized that stated that Turkey, with 95–98% of the population being considered Muslim, has witnessed a highly dramatic declaration of the state as secular and officially separate from religion. Although there is not clear cultural pattern (Individualism and Collectivism/I-C) for the Turkish population [83,85], it is accepted that Turkish culture is linked to collectivist tendencies [60,83] and the highest correlated factors were closeness and complementarity. It also has been implicated that culture plays a role to influence perceived closeness to others, with people from collectivist cultures [85]. When closeness in the context has been taken into consideration as a psychological experience, McCullough, Kurzban, and Tabak [86] showed that closeness can be a way to reach goals. When the relationship between coach and athlete is harmonious, it can also lead to the improvement of sportive performance. The literature above makes sense of the connection between closeness and disengagement. In order to explore better the effect of self-talk and the coach–athlete relationship, it needs to be thoroughly investigated in wider socio-cultural contexts. Yang and Jowett [87] have investigated the conceptual and measurement issues of the complementarity dimension of the coach–athlete relationship between collectivist and

individualistic cultures. As coaches' dominant behavior and athletes' submissive behavior align well with the conceptualization of complementarity [88], Yang and Jowett [88] have added a new dimension called reciprocal complementarity for the Chinese, which is accepted as a collectivist culture. This interdependent and hierarchical [49] relationship between coach and athlete in China, it may have appeared in Turkish culture as well. However, more research is warranted to replicate this finding in Turkish culture.

5. Conclusions

In conclusion, we hypothesized that the coach–athlete relationship quality positively predicts athletes' positive self-talk and negatively predicts athletes' negative self-talk, the results have supported our hypothesis. The path analysis results made a clear contribution to the literature.

It was discovered that the coach–athlete relationship can effect athletes' self-talk. The relationship climate which is created by the coach is very important, in terms of athletes' thoughts. Therefore, the importance of the coach–athlete relationship is clear. Zourbanos et al. [19] has stated that positive and negative self-talk dimensions had correlations with negatively or positively balanced scales. The current study has shown similar correlations with athletes' relationship quality and self-talk.

The Turkish version of ASTQ-S (can be used as a reliable measurement tool to define the self-talk in sport contexts for the athletes. The Turkish version of ASTQ-S has an eight-factor structure and 40 items (19 positive self-talk and 21 negative self-talk) in total. However, the irrelevant thoughts should be read because this factor could be independent of the negative self-talk dimension. The athletes can obtain both positive and negative self-talk scores. Does this score show what the athlete's self-talk tendencies are? If the athletes can obtain higher scores from the positive self-talk, it is understood that the athlete has adaptive outputs. On the contrary, if the athletes can obtain higher scores from the negative self-talk, it is understood that the athlete has maladaptive outputs. Additionally, the present study revealed a relationship between the factors of closeness and disengagement. It means if the relationship of the coach and athlete is harmonious, close, and confident, it can help to have more adaptive outputs for the athletes. This finding could be related to the particular culture. To understand more deeply the effect of the culture, there is a need for more studies in different cultures. Finally, the longitudinal and experimental research could give us a deeper understanding of the relationships between self-talk and the coach–athlete relationship. The long-term and short-term relationships between coaches and athletes can lead to differences in both the relationship and the self-talk. In the literature, there is no study exploring the relationship in this way. Furthermore, qualitative research or mixed-methods are recommended to obtain further information about the different culture types. In addition, measuring the invariance of scales can be operationalized to the obtained results. It could be that clarification, in terms of reliability, is the most important point in cross-cultural studies. The current study was limited to investigating athletes' inherent self-talk and perceived athletes' relationships. Different variables and experimental studies could help us obtain detailed information about the nature of the concepts mentioned in this study.

Author Contributions: Conceptualization, E.N.A., N.C. and Z.K.; methodology, E.N.A., N.C., S.J. and Z.K.; software, E.N.A., N.C. and Z.K.; validation, E.N.A., N.C. and Z.K.; formal analysis, E.N.A., N.C. and Z.K.; investigation, E.N.A., N.C., H.A., R.Y., S.J. and Z.K.; resources, E.N.A. and Z.K.; writing—original draft preparation, E.N.A., N.C. and Z.K.; writing—review and editing, E.N.A., N.C., H.A., S.J. and Z.K.; visualization, Z.K.; supervision, N.C., S.J. and Z.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Ethical review and approval were waived for this study, as the First author's College does not require Ethical approval.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Conflicts of Interest: The author declares no conflict of interest.

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