FEAR OF FAILURE IN ATHLETES: GENDER, AGE AND TYPE OF SPORT DIFFERENCES

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ABSTRACT: Fear of failure has been related to several maladaptive consequences on athletes, such as burnout, drop-out, and high levels of worry, stress and anxiety. This study aimed to discover the effects of fear of failure in sport contexts. An application of structural equation modeling was made, with 405 Portuguese athletes. A multigroup confirmatory factor analysis was conducted and significant differences were detected. Female athletes presented more fear of shame and embarrassment, fear of devaluating one's self estimate, and less fear of having an uncertain future, than male athletes. Fear of upsetting important others and fear of important others losing interest are more prevalent in team sports. Adolescent athletes presented more fear of important others losing interest than preadolescents. The results of this research provided evidence that fear of failure is appraised differently by athletes, concerning their gender, type of sport, and age.

KEYWORDS: Athletes, fear of failure, measurement invariance, sports.

MIEDO A FALLAR EN ATLETAS: DIFERENCIAS ENTRE SEXO, EDAD Y TIPO DE DEPORTE

RESUMEN: El miedo de fallar ha sido relacionado con variadas consecuencias negativas en los atletas, cómo el desgaste profesional, abandono deportivo, estrés y ansiedad. Este estudio tuve por objetivo revelar los efectos del miedo de fallar en el contexto deportivo. Fue realizada un análisis de ecuaciones estructurales en 405 atletas, donde fue detectada una diferenciación significativa. Las atletas del género femenino han presentado valores más grandes para el miedo de experimentar vergüenza y miedo a la devaluación de uno mismo y valores más bajos para el miedo de tener un futuro incierto, do qué los atletas del género masculino. El temor de perturbar a otros importantes y el miedo de perder el importante interés de los demás han sido más los más imperantes en los deportes colectivos. Los atletas jóvenes han presentado niveles más grandes para el miedo de perder el importante interés de los demás. Los resultados de esta investigación evidenciaron que el miedo a fallar es sentido por los atletas de forma distinta.

PALABRAS CLAVE: Atletas miedo a fallar, invariancia factorial, modalidades deportivas.

MEDO DE FALHAR EM ATLETAS: DIFERENÇAS ENTRE GÉNERO, IDADE E TIPO DE DESPORTO

RESUMO: O medo de falhar tem sido relacionado com variadas consequências negativas em atletas, como burnout, abandono desportivo, stress e ansiedade. Este estudo teve como objetivo desvendar os efeitos do medo de falhar no contexto desportivo. Foi realizada uma análise de equações estruturais, a 405 atletas Portugueses, onde foram detetadas diferenças significativas. Atletas femininas apresentaram maiores valores do medo de sentir vergonha e embaraço e do medo de desvalorizar a autoestima, e valores inferiores do medo de ter um futuro incerto, do que atletas masculinos. O medo de preocupar outros importantes e o medo que outros importantes percam interesse foram mais os mais prevalentes em desportos coletivos. Atletas adolescentes apresentaram maiores níveis do medo que outros importantes percam interesse. Os resultados desta investigação evidenciaram que o medo de falhar é percecionado pelos atletas de forma diferente.

PALAVRAS CHAVES: Atletas, medo de falhar, invariância factorial, modalidades desportivas.

Sport represents a significant achievement domain for children and adolescents (Treasure, 2001), being a highly competitive field, where concerns about performance failure and negative social evaluation are the most predominant sources of worry for young athletes (Passer, 1983, 1988). Fear of failure research in sport domain has been associated with cases of burnout (Rainey, 1995), youth drop out, barriers to sport participation (Orlick, 1974), drug abuse by athletes (Anshel, 1991), and athletic stress (Gould, Horn, & Spreeman, 1983).

Fear of failure is conceptualized as the tendency to appraise threat to the achievement of personally meaningful goals when one fails in the performance. Individuals high in fear of failure have learnt to associate failure with aversive consequences and typically perceive failure in evaluative situations as threatening, and believe that aversive consequences will occur after failure (Conroy, Willow, & Metzler, 2002). This recent multidimensional model of fear of failure was based on the cognitive-motivational-relational theory of emotion (Lazarus, 1991) and is generally consistent with other multidimensional models of fear of failure (e.g., Birney, Burdick, & Teevan, 1969).

Fear of failure is a motive deeply rooted in self-evaluative disposition that is socialized during childhood, specifically between the ages 5 and 10 years (Atkinson, 1957; McClelland, 1958). Scant research that has been conducted on fear of failure origins seems to suggest that it is rooted in parental socialization and parent-child relations (McGregor & Elliot, 2005).

Conroy, Kaye, and Fifer (2007), focused in their study on the establishment of a nomological network for interpreting fear of failure scores among children and youth. They found a small-to-moderate effect size between fear of failure and age, confirming the hypothesis that older children would tend to have a slightly higher fear of failure scores than younger children.

Sagar and Jowet's (2012) research, found that fear of devaluating one's self-estimate was found to be modified by athlete's age. Specifically, junior male athletes reported less fear of devaluating one's self-estimate than senior male athletes, and junior female athletes reported higher levels of this fear than their senior female counterparts.

Research conducted on gender differences following academic success or failure, pointed out that females tend to attribute their success to chance and their failure to poor aptitude, whereas males attribute success to ability and skill and their failure to luck (Levine, Reis, Sue, & Turner, 1976).

Sagar, Boardley, and Kavussanu (2011) examined sex differences in the levels of the five dimensions of fear of failure in university and sport contexts. Results pointed out that females reported higher levels of fear of devaluing one's self-estimate than males, whereas males reported higher levels of fear of important others losing interest than females. According to these results, the authors suggested that male student athletes have a stronger belief and anticipation than female student athletes that failure will lead to aversive relational consequences, such as losing social value and influence in the performance domain, as well as losing interest of others.

Therefore, male students perceived failure to be a threat to their relationships with important others and, consequently, fears it more than females.

Consistent with the research outlined previously, Ellison and Partridge (2012) presented significant sex differences for fear of failure and consistently revealed higher levels for females. Females reported fear of shame and embarrassment and fear of devaluing one's self-estimate to a greater degree than males.

Sagar and Jowett's research (2012) aimed to examine threat appraisal associated with fear of failure in relation to athletes' gender and testified that males reported less fear of devaluing one's self-estimate than their female counterparts. Thus, indicating that female athletes, more than males, appraised the devaluation of self-estimate after failure to be a threat, and fear it.

In sport, losing, failing to perform or failing to fill one's role on a team would potentially threaten relationships, as well as, risk the social status, approval, and recognition gained from sport.

According to Massey (2007), team sport athletes would have higher levels of fear of failure than individual sport athletes since they reported higher levels of fear of losing social influence. Team sport athletes were also significantly more likely to experience fear of losing social influence when failing in sport.

Failing in sport has the potential to elicit shame, and this emotion could potentially be magnified in a team setting, when approval and recognition from teammates is important to the dynamics of the team (Massey, 2007). Team sport athletes have the added pressure of not letting down members of their own team, even though individual sport athletes share the pressure of performing in front of coaches, parents and other fans. In a team sport setting, young athletes probably may feel an even greater pressure to be accepted by their peers.

In individual sports, mistakes and poor performances may exclusively and directly affect the athlete. Instead, when an athlete makes an error or has a poor performance in team sports, an entire team pays the price (Ellison & Partridge, 2012). Therefore, it is predictable that greater levels of athletes' fears of failure would be more prone to occur in team sports.

Knowledge about fear of failure in sport is limited as a result of the scant research in this domain. Thus, research on fear of failure in the sport domain is greatly needed to provide empirical findings and theoretical clarity. Therefore, our main goal in this research was to study athletes' fear of failure appraisals, regarding their gender, type of sport and age differences, using a multigroup analysis, through structural equation modeling.

METHOD

Participants

The sample used in this study consisted of 405 athletes. From them 99 (24.4%) were female and 306 (75.6%) were male. They competed in a variety of individual (e.g., athletics, climbing, surfing, tennis, orienteering, swimming; 40.7%) and team sports (e.g., soccer, volleyball, basketball; 59.3%). Participants' age ranged from 12 to 20 years (M = 15.26 years; SD = 2.51).

According to Eccles (1999) and Arnett (2000) participants were divided into two age groups: preadolescents (12-14 years old, n = 175) and adolescents (15-20 years old, n = 230) for multigroup analysis purposes, considering an early and a mid-late phase of adolescence.

Measures

Participants completed the Portuguese version of the Performance Failure Appraisal Inventory (PFAI – Conroy, Willow, & Metzler, 2002), translated and adapted by Correia, Rosado, and Serpa (2015). The PFAI is a multidimensional measure of cognitive-motivational-relational appraisals associated with fear of failure and has five subscales capturing fear of experiencing shame and embarrassment (7 items; e.g., "When I am failing, it is embarrassing if others are there to see it"), fear of having an uncertain future (4 items; e.g., "When I am failing, it upsets my 'plan' for the future"), fear of devaluing one's self-estimate (4 items; e.g., "When I am failing, I blame my lack of talent"), fear of important others losing interest (5 items; e.g., "When I am not succeeding, people are less interested in me"), and fear of upsetting important others (5 items; "When I am failing, people who are important to me are disappointed"). PFAI scores have demonstrated sound psychometric properties, including factorial invariance across groups and over time, internal consistency, external validity, and predictive validity. Scores have also exhibited evidence of differential stability (i.e., test-retest reliability > 0.80), and latent mean stability (Conroy et al., 2003). Participants answered to items on a five-point Likert scale from 1 (*do not believe at all*) to 5 (*truly believe*).

Procedures

The study was reviewed and approved by the University Ethics Board. After clubs and schools' authorizations, letters and parental consent forms (to parents for participants under the age of 18) were sent home informing them of the nature of the study. All participants (and their parents when appropriate) filled an informed consent. The questionnaires were self-administered before training and it was assured to all athletes that information gathered would remain confidential and would only be used for the investigation purposes.

Data Analysis

To analyse the data, a confirmatory factor analysis was used with AMOS 22.0 (SPSS an IBM Company, Chicago, IL).

The first step in our study, was to verify if the instrument (e.g., PFAI$_p$) measures the same psychological construct in all groups (i.e., measurement invariance testing). To do so, a multigroup confirmatory factor analysis (MGCFA) was performed, since the establishment of measurement invariance is a prerequisite for meaningful comparisons across groups (Byrne & Watkins, 2003; Reise, Widaman, & Pugh, 1993; Van de Vijver & Leung, 1997). The models' invariance was tested for both the first and second-order factors (Chen, Sousa, & West, 2005; Loehin, 2003). Factorial invariance tests were evaluated by examining qui-square difference tests and we complemented this information with changes in the values of comparative-of-fit-index (CFI; Chen, 2008; Cheung & Rensvold, 2002). A CFI increment of change (ΔCFI) of .01 or less between a more restricted model and the preceding one indicate that the invariance hypothesis should not be rejected.

In order to determine the degree to which the theoretical model as a whole is consistent with the empirical data, several goodness-of-fit indices were used. Specifically, the chi-square (χ^2) statistical test, the ratio of qui-square to its degrees of freedom (χ^2/df), comparative-of-fit-index (CFI), parsimony comparative-of-fit-index (PCFI), and root mean square error of approximation (RMSEA) were the fit indices utilized. Research practices using these indices state values for the χ^2/df should be less than 3, PCFI above .60, while values above .90 for the CFI, and below .06 for the RMSEA represents a good fit (Arbuckle, 2009; Bentler & Bonett, 1980; Blunch, 2008; Byrne, 2010; Kline, 2011; Marsh, 2007).

After testing the measurement invariance of the first and second-order models, across gender, type of sport (individual vs. team), and age groups (preadolescents vs. adolescents), latent mean comparisons were investigated and Cohen's d (1988) statistic was computed to obtain the correspondent effect sizes, following Kline´s (1998) recommendations.

RESULTS

Preliminary analysis

Preliminary analyses obtained, confirmed that the data was approximately univariately normal, since items with absolute values of skewness lower than 3 and kurtosis lower than 7 did not deviate enough from the normal distribution (Kline, 2004). Since Mardia's test presented violation of the multivariate normality (Bentler & Wu, 1993; Newsom, 2005), bootstrapping techniques were employed based on the recommendation of Bolen and Stine (1993), in order to adjust the p value of the chi-square statistic.

With Cronbach's alpha of .74 (fear of experiencing shame and embarrassment), .70 (fear of having an uncertain future), .75 (fear of devaluing one's self-estimate), .75 (fear of important others losing interest) and .77 (fear of upsetting important others), all scales displayed acceptable reliability (Nunnally & Bernstein, 1994).

In order to assess the psychometric properties of the measures for each of the group comparisons, first and second-order models were first examined separately for each group. The results of the first and second-order models showed acceptable fit to the data in all groups (Table 1).

Measurement Invariance

The results of the multi-group invariance testing strongly suggests that the factor structure underlying the PFAI$_p$ is consistent across boys and girls, individual sports and team sports, and preadolescent and adolescent athletes (see Appendix for detailed information about measurement invariance concerning the first and second order models of fear of failure, across gender, type of sport, and age groups). Therefore, a much stronger foundation was set for examining the latent mean differences between these specific groups, allowing appropriate and meaningful comparisons (Vandenberg & Lance, 2000).

Latent Mean Differences

One of the groups was chosen to serve as a reference group and its mean on the construct was fixed to zero, while the mean of the other group(s) were freely estimated (Sörbom, 1974). In this study, boys, team sports, and adolescents were chosen as reference groups, respectively. The comparison between latent means was based on the critical ratio (CR) index, which represents the parameter estimate divided by its standard error. It operates as a z-statistic in testing whether the estimate is statistically different from zero (Marôco, 2010). The test statistic needs to be > ±1.96 before the hypothesis that the estimate equals 0.0 can be rejected. Moreover, in case these values are negative, we interpret them as indicating that the comparison group has lower latent mean values than the reference group (Deng, & Yuan, 2015; Guillén, & Laborde, 2013; Liu et al., 2015).

Table 1

Fit Results of the 1st and 2nd Order Fear of Failure Model

GROUPS	χ^2	df	χ^2/df	B-S p	CFI	GFI	PCFI	RMSEA
1st Order Model								
Boys	151.695	67	2.264	< .001	.94	.93	.69	.064
Girls	83.017	67	1.239	< .05	.97	.90	.71	.049
Individual Sports	98.880	67	1.476	< .05	.96	.92	.70	.054
Team Sports	145.486	67	2.171	< .001	.94	.92	.69	.070
Preadolescents (12-14)	174.161	67	2.599	< .001	.90	.90	.64	.096
Adolescents (15-20)	108.538	67	1.620	< .01	.96	.94	.71	.052
2nd Order Model								
Boys	174.792	72	2.428	< .001	.93	.92	.74	.068
Girls	96.974	72	1.347	< .05	.95	.90	.75	.059
Individual Sports	116.020	72	1.611	< .01	.94	.91	.74	.061
Team Sports	160.411	72	2.228	< .001	.93	.91	.73	.072
Preadolescents (12-14)	186.708	72	2.593	< .001	.90	.90	.68	.096
Adolescents (15-20)	130.069	72	1.807	< .001	.95	.93	.75	.059

Note. χ^2 = chi-square; *df* = degrees of freedom; $\Delta\chi^2$ = chi-square difference; Δdf = degrees of freedom difference; B-S *p* = Bolen-Stine *p*-value; CFI = comparative fit index; PCFI = parsimony comparative fit index; GFI = goodness of fit index; RMSEA = root mean square error of approximation.

Comparison between boys and girls

The latent mean analysis demonstrated that there were no significant differences between boys and girls regarding the fear of failure construct (i.e., second-order model). However, considering each of the dimensions, integrated with the higher-order construct of fear of failure, significant differences were observed. The positive z-values presented in Figure 1 suggest that the comparison group (i.e., girls) has higher latent mean values than the reference group (i.e., boys). In addition, Cohen's *d* (1988) statistic for the fear of failure dimensions, where significant differences were observed between the two groups, revealed the following effect sizes: fear of experiencing shame and embarrassment (*d* = .25), fear of devaluing one's self-estimate (*d* = .59), and fear of having an uncertain future (*d* = .37).

Comparison between individual and team sports

The comparison between individual and team sports also revealed no statistical significant differences in fear of failure construct (second-order model). Nevertheless, significant differences in specific dimensions were detected (see Figure 2). The negative z-values presented in Figure 2 suggest that the reference group (i.e., team sports) has higher latent mean values than the comparison group (i.e., individual sports). Moreover, Cohen's *d* (1988) statistic for the fear of failure dimensions where significant differences were observed between the two groups revealed the following effect sizes: fear of important others losing interest (*d* = .33), and fear of upsetting important others (*d* = .36)
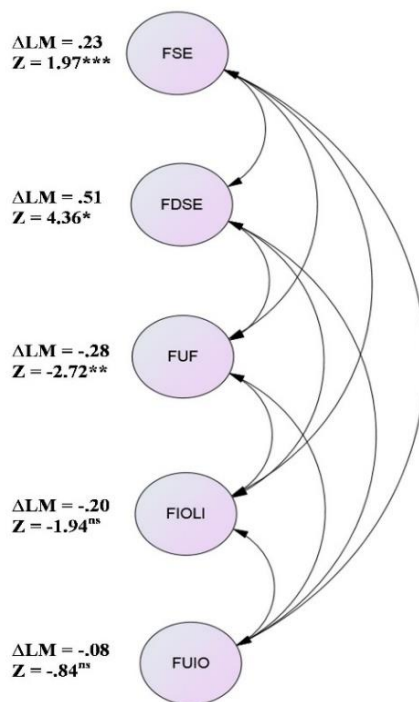

Figure 1. Latent mean comparison of fear of failure dimensions between boys and girls.

Note. FSE = fear of experiencing shame & embarrassment; FDSE = fear of devaluing one's self-estimate; FUF = fear of having an uncertain future; FIOLI = fear of important others losing interest; FUIO = fear of upsetting important others.

n.s = non-significant; *p < .05; **p < .01; ***p < .001. LM = latent mean.

Comparison between preadolescents and adolescents

Similar with previous comparisons, no significant differences were found in fear of failure construct (second-order model). Yet, significant differences between preadolescents and adolescents were obtained, regarding fear of important others losing interest dimension. The negative z-value presented in Figure 3 suggest that the reference group (i.e., adolescents) has higher latent mean values than the comparison group (i.e., preadolescents). Additionally, Cohen's *d* (1988) statistic for the fear of important others losing interest dimension between the two groups was calculated providing a value of .30.
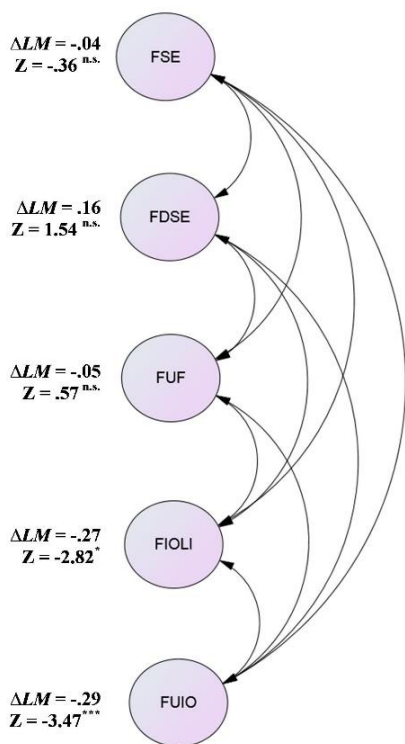

$\Delta LM = -.04$
$Z = -.36$ n.s.

$\Delta LM = .16$
$Z = 1.54$ n.s.

$\Delta LM = -.05$
$Z = .57$ n.s.

$\Delta LM = -.27$
$Z = -2.82$ *

$\Delta LM = -.29$
$Z = -3.47$ ***

Figure 2. Latent mean comparasion of fear of failure dimensions between individual and team sports.
FSE = fear of experiencing shame & embarrassment; FDSE = fear of devaluing one's self-estimate; FUF = fear of having an uncertain future; FIOLI = fear of important others losing interest; FUIO = fear of upsetting important others.
n.s = non-significant; *p < .05; **p < .01; ***p < .001. LM = latent mean.

DISCUSSION

The main aim of this study was to examine whether athletes with different personal and contextual factors such as gender, type of sport and age, differed regarding their fear of failure

appraisals. The higher-order of fear of failure construct was investigated, as well as their five specific dimensions. The present study contributes to the sport psychology literature in two main ways. The first contribution, regards in the evidence of fair to good psychometric proprieties of the fear of failure construct, being a valid and reliable tool to use in sport settings.
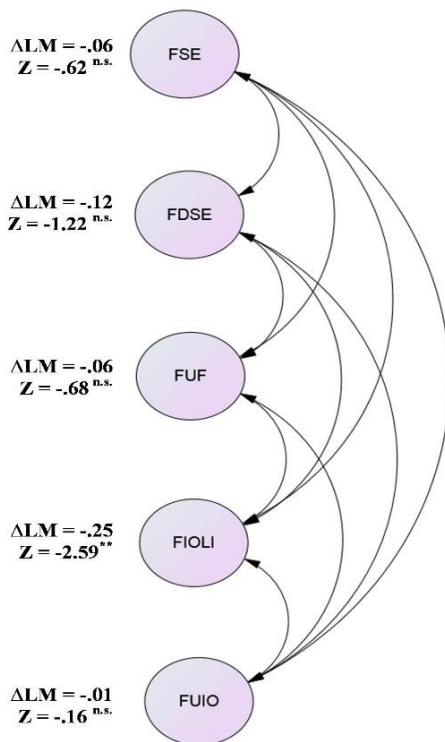

$\Delta LM = -.06$
$Z = -.62$ n.s.

$\Delta LM = -.12$
$Z = -1.22$ n.s.

$\Delta LM = -.06$
$Z = -.68$ n.s.

$\Delta LM = -.25$
$Z = -2.59$ **

$\Delta LM = -.01$
$Z = -.16$ n.s.

Figure 3. Latent mean comparison of fear of failure dimensions between preadolescents and adolescents
Note. FSE = fear of experiencing shame & embarrassment; FDSE = fear of devaluing one's self-estimate; FUF = fear of having an uncertain future; FIOLI = fear of important others losing interest; FUIO = fear of upsetting important others.
n.s = non-significant; *p < .05; **p < .01; ***p < .001. LM = latent mean

Measurement invariance was accepted from all groups in comparison, providing evidence that the instrument of measurement is operating exactly in the same way, and that the underlying construct has the same theoretical structure for each group under study. Only after this critically important assumption is tested statistically, it is possible to attain meaningful group comparisons (Byrne, 2010; Chen et al., 2005). The second contribution is to provide valuable information regarding the distinctive appraisals of fear of failure among different athletes' age, type of sport, and gender. The analyses of the latent mean differences between boys and girls, individual and team sports, and preadolescents and adolescents, revealed that there were no significative

differences for the second-order construct of fear of failure (i.e., general fear of failure). This result is similar with Sagar et al.'s (2011) study, where they reported no differences between males and females in the overall fear of failure. However, considering each fear of failure specific dimensions, differences between groups were observed.The analyses of the latent mean differences between boys and girls revealed that girls had more fear of shame and embarrassment, more fear of devaluing one's self-estimate, and less fear of having an uncertain future than their male counterparts. Sex differences concerning shame have been pointed out by several authors. According to Lewis (1976), women tend to be more prone to "shamelike" experiences, since they are more focused on relationships. Miller (1985) provides similar statement, asserting that women tend to be more "embarrassable" than men. Therefore, female athletes would be disposed to have more fear of shame and embarrassment than male athletes. Similar to Sagar et al. (2011) research, sex differences were verified in fear of important others losing interest and in fear of devaluating one's self-estimate. Male athletes perceived failure to be a threat and fear it more than female athletes. This outcome indicates that failure will have serious consequences to their future in sport. The highest latent mean difference was obtained on the dimension of fear of devaluating one's self-estimate. This result is consistent with previous studies, suggesting that female athletes appraised the devaluation of self-estimate after failure to be a threat, fearing it (Sagar & Jowett, 2012; Sagar et al., 2011). Several works regarding self-esteem, during the middle childhood years and through adolescence, has produced some interesting findings. By the early adolescence years, girls tend to report lower self-esteem levels than boys. Besides general self-esteem rises as children move through adolescence, gender difference remains between boys and girls (Kling, Hyde, Showers, & Buswell, 1999). Furthermore, girls tend to develop more serious negative self-evaluations during the adolescent years (see Eisenberg, Martin, & Fabes, 1996; Harter, 1998). Regarding these acknowledgements, it is somehow clarified why girls tend to have more fear of devaluating one's self-estimate than boys. Moreover, girls tend to "internalise" problems to a greater extend. In contrast, boys tend to handle difficulties by engaging in "externalizing" behaviour, such as aggression (Eisenberg et al., 1996).

Results obtained from the latent mean analyses between individual and team sports revealed that athletes in team sports presented more fears regarding fear of important others losing interest and more fear of upsetting important others. These results are in line with former studies, suggesting that athletes in team sports are more likely to experience greater fears of failure (Massey, 2007; Sagar & Jowett, 2012). Therefore, our expectations that athletes in team sports would experience more fears of failure than athletes in individual sports were confirmed. Besides spectators, parents, and coaches, team-members are constantly judging and evaluating each other's performance and contribution to the teams' success and failure. Good performances will enhance the acceptance and approval by team-members leading to positive interpersonal relationships (Turman, 2003). As a result, this added pressure will probably prompt appraisals of fear of failure, particularly

fear of important others losing interest and fear of upsetting important others.

The analysis of the latent mean differences, between preadolescents and adolescents, revealed that adolescents presented more fear of important others losing interest than preadolescents. This result may be due to the bigger importance attributed by adolescents concerning their social value and their sense of worth, since it is recognised an age-related increase of social evaluation fear (Westenberg, Drewes, Goedhart, Siebelink, & Treffers, 2004). Achievement situations in sport settings typically involve social evaluation that can be threatening if a child anticipates failing and receives negative appraisals from important others or simply when they receive less attention (Scanlan, 1984).

Taken together, these findings represent an important initial effort in order to understand how the appraisals of general fear of failure and his dimensions vary between gender, sport type and age. The results indicate that there are no differences in general fear of failure concerning gender, type of sport and age. However, considering each dimension of fear of failure construct, significant differences were perceived.

There are several limitations in this study that deserves to be mentioned, since it may have influenced the results and should be accounted for future research. Firstly, it is perceived a noteworthy disproportion between the number of male and female athletes. In this regard, it should be expected some influence in the accuracy of estimated parameters. Secondly, the findings were based on data from a relatively small convenience sample of participants, thus limiting the generalization of results. A replication of the current study of a lengthier sample of athletes is required.

Thirdly, choosing a cross-sectional study rather than a longitudinal study, any causal inferences from our study cannot be done. Although we have been able to identify specific differences between boys and girls, individual and team sports, and preadolescents and adolescents, future research should study fear of failure from a developmental perspective. Researchers may also consider investigating fear of failure in relation to interpersonal variables (e.g., coach-athlete, parent-athlete, and peer relationships).

This research provided an extended knowledge of the fear of failure construct in the sport context, giving valuable information for researchers, coaches and sport practitioners who work on a daily basis with athletes. The findings enlighten, not only general fear of failure, but also shed light on the unique meaning of specific lower order dimensions of fear of failure in sport domain. The consequences of failure may be appraised differently by athletes, regarding their gender, age and the type of sport practiced. Therefore, a true understanding of fear of failure among athletes is vital for enhancing their well-being, quality of engagement, sporting performance and social development.

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Appendix. Results of the Multi-Group Analysis of the 1st and 2nd order models of fear of failure across the Unconstrained Model and the Constrained Models (Gender, Type of Sport, and Age´s Invariance).

Model	χ^2	df	$\Delta\chi^2$	Δ df	χ^2/df	B-S p	CFI	GFI	PCFI	RMSEA	ΔCFI
1st Order Model (Gender)											
Model 1	234.891	134	-	-	1.75	<0.01	.95	.93	.70	.043	-
Model 2(Measurement Weights)	240.482	143	5.591*	9	1.68	<0.01	.95	.94	.75	.041	.00
Model 3(StructuralCovariances)	266.813	158	31.922*	24	1.69	<0.01	.94	.95	.82	.041	.01
Model 4 (Measurements Residuals)	287.056	172	52.165*	38	1.67	<0.01	.94	.93	.89	.041	.01
1st Order Model (Type of Sport)											
Model 1	244.365	134	-	-	1.82	<0.01	.94	.92	.70	.045	-
Model 2(Measurement Weights)	257.316	143	12.951*	9	1.80	<0.01	.94	.92	.74	.045	.00
Model 3(StructuralCovariances)	275.201	158	30.836*	24	1.74	<0.01	.94	.91	.82	.043	.00
Model 4 (Measurements Residuals)	297.990	172	53.625*	38	1.73	<0.01	.94	.91	.88	.043	.00
1st Order Model (Age)											
Model 1	282.770	134	-	-	2.11	<0.01	.93	.91	.68	.052	-
Model 2(Measurement Weights)	291.562	148	8.792*	9	2.04	<0.01	.93	.91	.75	.051	.00
Model 3(StructuralCovariances)	310.256	158	27.486*	24	1.96	<0.01	.92	.90	.80	.049	.01
Model 4 (Measurements Residuals)	322.376	172	39.605*	38	1.87	<0.01	.92	.90	.87	.047	.01
2nd Order Model (Gender)											
Model 1	271.979	144	-	-	1.89	-	.93	.91	.74	.047	-
Model 2(Measurement Weights)	278.861	153	6.883*	9	1.82	<0.01	.94	.91	.79	.045	.01
Model 3(StructuralWeights)	285.554	158	13.575*	14	1.81	<0.01	.93	.91	.81	.045	.00
Model 4 (Structural Residuals)	297.673	163	25.695*	19	1.83	<0.01	.93	.91	.83	.045	.00
Model 5 (Measurement Residuals)	317.390	177	45.411*	33	1.79	<0.01	.93	.91	.90	.044	.00
2nd Order Model (Type of Sport)											
Model 1	276.438	144	-	-	1.920	-	.93	.91	.74	.048	-
Model 2(Measurement Weights)	287.314	153	10.876*	9	1.878	<0.01	.93	.91	.78	.047	.00
Model 3(StructuralWeights)	290.970	158	14.532*	14	1.842	<0.01	.93	.91	.81	.046	.00
Model 4 (Structural Residuals)	299.916	163	23.477*	19	1.840	<0.01	.93	.90	.83	.046	.00
Model 5 (Measurement Residuals)	323.205	177	46.766*	33	1.826	<0.01	.93	.90	.90	.045	.00
2nd Order Model (Age)											
Model 1	316.845	144	-	-	2.200	-	.91	.90	.72	.055	-
Model 2(Measurement Weights)	326.682	153	9.836*	9	2.135	<0.01	.91	.90	.77	.053	.00
Model 3(StructuralWeights)	330.271	158	13.425*	14	2.090	<0.01	.91	.90	.80	.052	.00
Model 4 (Structural Residuals)	342.273	163	25.427*	19	2.100	<0.01	.91	.90	.81	.052	.00
Model 5 (Measurement Residuals)	354.644	177	37.798*	33	2.004	<0.01	.91	.90	.89	.050	.00

Note. χ^2 = chi-square; df = degrees of freedom; $\Delta\chi^2$ = chi-square difference; df = degrees of freedom difference; B-S p = Bolen-Stine p-value; CFI = comparative fit index; PCFI = parsimony comparative fit index; GFI = goodness of fit index; PGFI = parsimony goodness of fit index; RMSEA = root mean square error of approximation; ΔCFI = comparative fit index difference.

* $p > .05$