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## Fitness trainers' use of need-supportive and need-thwarting behaviors: the role of gender, fitness activity, and professional experience



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### ABSTRACT

**Objective:** The assessment of interventions designed to improve communication skills of trainers has become an interesting research focus among the scholar community. Yet, literature is scarce on how trainer characteristics could influence behaviors expressed by fitness trainers when interacting with gym members. The present research aimed to examine the role of gender, fitness activity, and work experience of fitness trainers use of need-supportive and need-thwarting behaviors.

**Method:** In total, 468 trainers (female = 213; male = 255) aged between 19 and 46 years ( $M = 29.20$ ;  $SD = 4.39$ ) were recruited for the present study.

**Results:** The measurement model provided acceptable fit in each group under analysis. Additionally, the multigroup analysis revealed invariance between gender, fitness activities, and working experience.

**Conclusion:** Regarding the measurement of need-supportive and need-thwarting behaviors, the measure under analysis can be applied reliably to fitness trainers with different characteristics.

**Keywords:** Fitness trainers; Interpersonal behaviors; Basic psychological needs; Measurement invariance.

## Comportamientos de apoyo y frustración a las necesidades proporcionadas por los instructores de actividad física: El papel del género, la modalidad de actividad física y la experiencia profesional

### RESUMEN

**Objetivo:** La evaluación de las intervenciones diseñadas, para mejorar las habilidades de comunicación de los instructores, se ha convertido en un interesante foco de investigación entre la comunidad científica. Sin embargo, la literatura es escasa acerca de cómo las características de los instructores pueden influir en los comportamientos que estos expresan, cuando interactúan con los practicantes de ejercicio físico. El presente estudio tuvo como objetivo examinar el papel de las características de los instructores en el uso de comportamientos de apoyo y frustración.

**Método:** En total, se reclutaron 468 instructores de actividad física (mujeres = 213; hombres = 255) con edades comprendidas entre 19 y 46 años ( $M = 29.20$ ;  $DE = 4.39$ ).

**Resultados:** El modelo correlacionado de seis factores demostró un ajuste aceptable a los datos en cada grupo analizado. Además, el análisis multigrupo reveló invarianza basada en el género, actividad física y experiencia profesional.

**Conclusiones:** Con respecto a la medición de los comportamientos de apoyo y frustración, la escala analizada se puede aplicar de manera sólida a los instructores de actividad física de diferentes características.

**Palabras clave:** Instructores Actividad Física; Comportamientos interpersonales; Necesidades psicológicas básicas; Invarianza.

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## Comportamentos de suporte e de frustração às necessidades providos pelos instrutores de fitness: o papel do género, da modalidade fitness e da experiência profissional

### RESUMO

**Objetivo:** A avaliação de intervenções projetadas para melhorar as capacidades de comunicação dos instrutores tornou-se um foco interessante de pesquisa entre a comunidade científica. No entanto, a literatura ainda é escassa sobre como as características dos instrutores podem influenciar os comportamentos expressos pelos instrutores ao interagir com os praticantes de exercício físico. O presente estudo teve como objetivo examinar o papel das características dos instrutores no uso de comportamentos de suporte e de frustração por parte dos instrutores.

**Método:** No total foram recrutados 468 instrutores de fitness (mulheres = 213; homens = 255) com idades compreendidas entre 19 e 46 anos ( $M = 29.20$ ;  $DP = 4.39$ ).

**Resultados:** O modelo de seis fatores correlacionados demonstrou um ajustamento aceitável aos dados em cada grupo em análise. Além disso, a análise multi-grupos revelou invariância em função do género, atividades de fitness e experiência profissional.

**Conclusão:** No que diz respeito à medição de comportamentos de suporte e de frustração, a escala em análise pode ser aplicada com robustez a instrutores de fitness com características diferentes.

**Palavras-chave:** Instrutores de fitness; Comportamentos interpessoais; Necessidades psicológicas básicas; Invariância.

### Introduction

Fitness trainers have been pointed out as major influencers of gym member behaviors.<sup>1,2</sup> Additionally, trainers who express beliefs that every person is able to exercise and consequently achieve positive outcomes (e.g., longevity, increased strength and mobility) could encourage others to engage in exercise as well.<sup>3</sup> The use of positive feedback towards gym members can have the potential to increase self-determined motivation, which ultimately translates into higher rates of exercise persistence.<sup>2</sup> Measuring interpersonal behaviors may be very useful in work given the regularity fitness trainers engage and communicate with gym members.<sup>4</sup> Indications are that gym and health club members will better adhere to exercise when adequate amount of need-supportive behaviors is provided by the fitness trainer.<sup>5</sup>

### Theoretical Framework

Behavioral and motivational theories concerning human motivation have long been applied to the exercise context. Contemporary motivational frameworks such as Self-Determination Theory (SDT)<sup>6</sup> have given researchers and scholars useful insights on how to create interventions designed to improve communication skills of trainers on how to promote exercise participation.<sup>4</sup> SDT conceptualizes basic psychological needs, that can and must be continuously satisfied for optimal functioning and adaptive outcomes, such as well-being, vitality, and positive engagement with others.<sup>6</sup> These needs are: Autonomy, which refers to the alignment between self-controlled actions and personal values; Competence, that depicts feelings of effectiveness and mastering of skills; and, Relatedness, which represents the feeling of personal bounds and cared by others.

Correlational evidence suggests a positive relationship between needs satisfaction and positive behaviors.<sup>7</sup> That is, when the person experience needs fulfillment then the individual is able to assume adaptive behaviors being able to consciously refine their behaviors according to the social environment. Thus, people in key positions would be able to perceive themselves as need-supportive figures to others (e.g., gym members, clients), since they were already experiencing needs satisfaction.<sup>8</sup>

Recent research has shown that the need for autonomy, competence, and relatedness can also be neglected/thwarted.<sup>6</sup> If the individual perceives that his needs are being thwarted, then it is expected that the individual will experience needs frustration and other maladaptive outcomes.<sup>8,9</sup> Research has shown that when

coaches and trainers perceive that their needs are being frustrated, higher levels of controlled motivation and increased levels of endorsed need-thwarting behaviors are described.<sup>9</sup>

### Measurement of interpersonal behaviors and current research

Looking at past literature, the vast majority of past research has focused on gym member perception of fitness trainers' use of need-supportive behaviors, and few have considered how fitness trainers perceive their own behaviors.<sup>4,5</sup> Additionally, to the best of our knowledge, little has been done to examine the types of personal characteristics that could influence fitness trainers use of need-supportive and/or need-thwarting interpersonal behaviors.<sup>10</sup> The importance of examining need-supportive and need-thwarting behaviors is that it can identify potentially modifiable variables for interventions that may help fitness trainers endorse in more need-supportive behaviors and less in need-thwarting conducts.

Because fitness trainers and health professionals are typically regarded as highly relevant and credible role models for gym members, their personal features may influence how gym members look at them and encourage their adherence to exercise.<sup>9</sup> For instance, trainers' work experience has shown to influence their conducts towards gym members.<sup>3</sup> Thus, the present research aimed to measure fitness trainers' use of need-supportive and need-thwarting behaviors and to assess possible differences according to gender, fitness activities, and work experience. This study extends existing findings in several ways. First, this study expects to provide a replication of Rocchi et al.<sup>7</sup> and Rodrigues et al.<sup>10</sup> research on the assessment of coaches and trainers own perceptions of interpersonal behaviors. Second, current analysis examines the role of several trainer characteristics (i.e., gender, fitness activities, and working experience) by adopting a multigroup analysis approach. Finally, present study offers the opportunity to test the proposed associations of trainers needs satisfaction and needs frustration, an important aspect when evaluating why trainers engage in need-supportive and need-thwarting behaviors.

It was hypothesized that: a) the model of need-supportive and need-thwarting behaviors would provide acceptable fit in all groups under analysis;<sup>10</sup> b) the model assessing interpersonal behaviors would be invariant between gender;<sup>7</sup> c) trainers' need satisfaction would be positively and significantly associated with need-supportive behaviors whereas needs frustration would be negatively associated with need-supportive behaviors;<sup>9</sup> and, d)

needs satisfaction would be negatively and significantly associated with need-thwarting behaviors, whereas needs frustration would be positively associated with need-thwarting behaviors.<sup>10</sup>

## Method

### Participants

In total, 468 trainers (female = 213; male = 255) aged between 19 and 46 years ( $M = 29.20$ ;  $SD = 4.39$ ) with 6 to 120 months of work experience ( $M = 59.14$ ;  $SD = 11.74$ ) were recruited for analysis. Fitness trainers were grouped into “fitness group classes” ( $n = 199$ ) or “cardio-resistance” ( $n = 269$ ) group according to main work hours per week. As far as it concerns work experience, we used the 5-year cutoff ( $\leq 5$ -year experience = 251;  $< 5$ -year experience = 217) based on the national working system, in which fitness trainers have to update and validate their professional certificate every five years of service.<sup>11</sup>

### Procedures

Ethical Committee granted approval before initiating the process of data collection. Afterwards, fitness trainers were contacted via different social and professional networks and asked to partake on this research. The objectives of the study were explained and informed consent was obtained. Both the informed consent and the questionnaire were filled through an online survey. Expected time to complete the questionnaire was approximately 12.34 minutes ( $SD = 1.29$ ).

Concerning the assessment of the variables under analysis, the Basic Psychological Needs Satisfaction and Frustration Scale for exercise instructors was used to assesses how fitness trainers experience needs satisfaction and needs frustration at work.<sup>12</sup> Participants responded to the items using a 5-point scale ranging from 1 (“*totally disagree*”) to 5 (“*totally agree*”). Composite scores for needs satisfaction and needs frustration was done according to previous assumptions.<sup>2,10</sup>

The Interpersonal Behavior Questionnaire – Self was used to measure how fitness trainers perceive their own need-supportive and need-thwarting behaviors.<sup>10</sup> This measure consists of six subscales that measures the use of autonomy, competence, and relatedness need-supportive and need-thwarting behaviors. Participants responded using a 7-point scale ranging from 1 (“*do not agree at all*”) to 7 (“*totally agree*”).

### Statistical analysis

Analysis were conducted using the Robust Maximum Likelihood estimator in Mplus 7.4<sup>13</sup> since it is robust to non-normality and non-independence of observations. A preliminary examination of the data was conducted, specifically, mean, standard deviations, skewness, kurtosis, and correlations were calculated for each variable under analysis. Composite reliability coefficients were calculated and scores  $< 0.70$  were considered as acceptable.<sup>14</sup>

A confirmatory factor analysis was conducted to test the psychometric proprieties of the measurement model of the IBQ-Self. The measurement model specification was tested in each sample group to assess factor structure validity. Model suitability was verified by the traditional and incremental indexes, namely: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). For cutoffs scores of CFI and TLI  $\geq 0.90$ , and scores for RMSEA  $\leq 0.80$  were indicative of acceptable fit.<sup>15,16</sup> The qui-square test will be reported for transparency, but not interpreted as it is sensitive to sample size and model complexity.<sup>16</sup>

Multigroup analysis was conducted to test if the measurement model would sustain equivalence between groups with different characteristics.<sup>17</sup> For this study, the measurement model was examined across gender, fitness activities, and working

experience. Recommendations for measurement invariance analysis were followed according to previous assumptions,<sup>15,18</sup> specifically: i) measurement model should represent a good fit in each group; ii) the comparison of the unconstrained model with the constrained models in terms of metric invariance, scalar invariance, and residual invariance should be equivalent. Invariance assumptions were verified through the differences in CFI ( $\Delta CFI$ ) and TLI ( $\Delta TLI$ ) considering  $< 0.01$  as cutoffs.<sup>18</sup>

## Results

### Primarily analysis

Means for need-supportive behaviors were higher compared to need-thwarting behaviors. Univariate skewness and kurtosis were contained within cutoffs, representing normal distribution. Composite reliability coefficients were above cutoffs in all variables displaying acceptable internal consistency. According to the results of the bivariate correlations: i) needs satisfaction was positively associated with need-supportive behaviors; ii) needs satisfaction was negatively correlated with need-supportive behaviors; iii) needs frustration was negatively associated with perceived need-supportive behaviors; and, iv) needs frustration was negatively correlated with need-supportive behaviors. For more details see [Table 1](#).

### Factor structure analysis

The measurement model provided acceptable fit to the data in all groups as seen in see [Table 2](#). Specifically, the measurement model for female, male, fitness group classes, cardio-resistance instruction, and working experience groups displayed adequate fit. Regarding item loadings, all items significantly loaded their predefined latent factor ( $p < 0.001$ ), and no cross-loadings were detected in each tested model. Thus, we move forward on conducting multigroup analyses.

### Multigroup analysis

Configural invariance was tested to examine the fit of the measurement model across groups, which achieved acceptable fit. Metric invariance of the factor loadings across groups was tested by constraining the factor loadings between groups. Differences in CFI and TLI were  $< 0.01$ , moving ahead to examine scalar invariance. Scalar invariance was achieved since mean differences were captured and means shared the same variance. Last, item residuals were examined to test for residual invariance, which respected the proposed cutoff as seen in [Table 2](#).

## Discussion

The present research aimed to measure need-supportive and need-thwarting behaviors and to assess possible differences according to personal features. As hypothesized, needs satisfaction and needs frustration were significantly correlated with need-supportive and need-thwarting behaviors. Contrarily, higher levels of overall needs frustration were positively and significantly related to all forms of need-thwarting behaviors. These results support previous theoretical literature<sup>6</sup> and empirical evidence in the sport<sup>7,19</sup> and in exercise contexts.<sup>10</sup> These results also provide nomological validity, providing support to the relationships between needs satisfaction and needs frustration and interpersonal behaviors displayed by fitness trainers, according to the SDT framework.<sup>6</sup>

Current results suggest that the factor structure of the six-correlated factors model specification assessing three need-supportive and three need-thwarting interpersonal behaviors displayed adequate fit in all samples. Hence, current findings support previous literature analyzing interpersonal behaviors

**Table 1.** Descriptive statistics, composite reliability coefficients, and correlations

	M	SD	S	K	CR	1	2	3	4	5	6	7
1. Needs Satisfaction	4.88	0.86	-0.25	0.38	0.72							
2. Needs Frustration	1.36	0.58	-0.62	-0.03	0.70	-0.28**						
3. Autonomy Support	5.83	0.86	0.02	-0.31	0.80	0.39**	-0.50**					
4. Autonomy Thwarting	2.78	1.14	-0.04	-0.42	0.78	-0.37**	0.27**	-0.12**				
5. Competence Support	6.76	1.02	0.04	-0.69	0.88	0.26**	-0.19**	0.24**	-0.61**			
6. Competence Thwarting	1.94	1.06	-0.72	0.29	0.80	-0.28**	0.29**	-0.12**	0.43**	-0.83**		
7. Relatedness Support	5.71	0.67	1.10	1.45	0.70	0.24**	-0.32**	0.19**	-0.61**	0.57**	-0.60**	
8. Relatedness Thwarting	1.87	1.47	0.98	0.69	0.72	-0.31**	0.35**	-0.34**	0.39**	-0.51**	0.39**	-0.38**

M: Mean; SD: Standard Deviation; S: Skewness; K: Kurtosis; CR: Composite Reliability; \*\* p<0.01.

**Table 2.** Psychometric properties of the measurement model and invariance analysis.

Measurement analysis	$\chi^2$	df	CFI	$\Delta$ CFI	TLI	$\Delta$ TLI	SRMR	RMSEA
Total sample	2014.458*	237	0.937	-	0.909	-	0.059	0.064
Female	1949.713*	237	0.940	-	0.910	-	0.070	0.079
Male	2014.254*	237	0.935	-	0.909	-	0.066	0.080
Fitness group classes	1878.412*	237	0.936	-	0.921	-	0.062	0.063
Cardio-resistance instruction	1862.654*	237	0.913	-	0.903	-	0.071	0.074
≤ 5-year experience	1856.032*	237	0.934	-	0.916	-	0.059	0.080
> 5-year experience	1877.243*	237	0.908	-	0.909	-	0.081	0.079
Invariance analysis								
<i>Female - male</i>								
Configural	795.911	474	0.940	-	0.919	0.001	-	-
Metric Invariance	864.365	492	0.939	0.001	0.917	0.002	-	-
Scalar Invariance	898.569	513	0.936	0.004	0.912	0.006	-	-
Residual Invariance	919.599	537	0.931	0.009	0.910	0.010	-	-
<i>Fitness group classes - Cardio-resistance</i>								
Configural	833.518	474	0.942	-	0.937	-	-	-
Metric Invariance	871.284	492	0.943	0.001	0.936	0.001	-	-
Scalar Invariance	904.788	513	0.944	0.002	0.936	0.001	-	-
Residual Invariance	991.895	537	0.945	0.003	0.935	0.002	-	-
<i>≤ 5-year experience - &gt; 5-year experience</i>								
Configural	793.289	474	0.925	-	0.909	-	-	-
Metric Invariance	823.558	492	0.920	0.005	0.908	0.001	-	-
Scalar Invariance	819.873	513	0.928	0.003	0.905	0.004	-	-
Residual Invariance	840.412	537	0.928	0.003	0.900	0.009	-	-

$\chi^2$ : qui-square test; df: degrees of freedom; CFI: Comparative Fit Index; TLI: Tucker Lewis Index; SRMR: Standard Mean Root Square Residual; RMSEA: Root Mean Square Error of Approximation; \* p < 0.001.

using the IBQ-Self measure.<sup>7,10,19</sup> Hence, we moved forward on examining possible differences across groups.

Looking at multigroup analysis, the measurement invariance was established between all groups under analysis. This study included the assessment of four invariance criterion, which were met since differences between configural and nested models were below cutoffs. Researcher have found that item numbers, factor loadings, item intercepts, and item residuals were equivalent between groups according to previous assumptions.<sup>15,18</sup> In sum, this research established relatively strong evidence for measurement invariance of the IBQ-Self, thus, the multigroup analysis provided assurance that the observed items are attributable equally to each group. The present study supported the applicability of the IBQ-Self in different groups with different characteristics, as it has been shown in empirical studies.<sup>7,19</sup> Hence, this study extends existing findings by providing a replication of previous studies,<sup>7,19</sup> on the assessment of coaches and trainers own perceptions of interpersonal behaviors

The current research contributes to the extant literature by providing a reliable measure that may facilitate systematic research attempts to study the equivalence of interpersonal behaviors, and associated antecedents of basic psychological needs, in regard to fitness trainers. As Chen<sup>18</sup> has argued, measurement invariance research is important for clear theory and measure development given that it considers the role of differences across groups which could influence the measurement of constructs inherent in the motivational framework.

In terms of measurement of trainer use of need-supportive and need-thwarting behaviors using the IBQ-Self, current findings expand the currently scarce available evidence attesting the invariance of the IBQ-Self.<sup>7,10</sup> All in all, the IBQ-Self may appear useful in evaluations of the effectiveness of experimentally-induced exercise-coaching styles aiming to satisfy gym members' basic psychological needs and promote self-determined motivation and health-related outcomes such as exercise adherence.<sup>2</sup> Current study opens new avenues in self-

determination research related to the assessment of interpersonal behaviors in fitness trainers. The demonstrated invariance between gender, fitness activities, and coaching experience may facilitate further examinations of the universality of the effects of needs satisfaction and needs frustration on interpersonal behaviors, as well as the impact of need-supportive behaviors and need-thwarting behaviors from one source (e.g., trainers) on needs satisfaction and needs frustration in another group (e.g., exercisers). Future studies may conduct multigroup across groups cultures differing in the norms and values trainers endorse.

The cross-sectional design limits interpretations and consequently correlations cannot imply inference. Second, fitness trainers were requested to auto-report their perception of need-supportive and need-thwarting behaviors when interacting with gym members. Last, upcoming research should explore how the context involving fitness trainers influences their psychological needs. Rocchi and colleagues<sup>20</sup> suggested that contextual factors (e.g., administration, job security, time constraints) impact coaches feeling of needs satisfaction and frustration. Thus, more studies are paramount to explore the impact of contextual factors on interpersonal behaviors.

Regarding the measurement of need-supportive and need-thwarting behaviors, the measure under analysis can be applied reliably to fitness trainers with different characteristics. Overall, results of current research helped underscore the importance of examining the role of fitness trainers' characteristics and how they explain the use of need-supportive and need-thwarting behaviors. Therefore, it is crucial to assess their behaviors during labor to create interventions on adaptive conducts and self-awareness. Fitness trainers who adapt their behaviors according to gym members needs would arguably be more effective on promoting physical activity adherence on the long-term.<sup>2</sup> Additionally, these trainers should maintain high quality competence through continued study and research in preventive services and knowledge in health-related behaviors.

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