Re-evaluation of the Factor Structure of Motivations of Marathoners Scales (MOMS)

I. T. Heazlewood, J. Walsh and M. Climstein

Abstract The Motivations of Marathoners Scales (MOMS) was developed by Masters et al. (1993) to assess participant motivation in marathon runners. It contained 56 stem generic items or questions using a seven-point Likert response scale, which represented nine first-order factors or motives to participate in marathons using male and female pooled data. The nine first-order factors represented four second-order factors as follows: general health orientation and weight concern (second-order factor physical health motives); affiliation and recognition (second-order factor social motives); competition and personal goal achievement (second-order factor achievement motives); and psychological coping, self-esteem and life meaning (second-order factor psychological motives). The psychometric instrument displayed internal consistency, test-retest reliability and factorial validity of scales. The instrument has been applied at international multisport events to evaluate differences in participant motivation in different genders, ages and different sports. The research aim was to re-evaluate the first- and second-order factor structure of the MOMS instrument with a different sport cohort of male and female athletes competing at the 2009 World Masters Games (WMG). The study was approved by a university human research ethics committee. Male and female athletes competing at the 2009 World Masters Games volunteered to participate in the research project (male $n = 2522$; female $n = 2428$). Athletes completed an online survey using the Limesurvey™ interactive survey system. Factor analysis was completed via SPSS version 23 using principal component analysis, orthogonal and oblimin rotations. The results using non-constrained first-order factor analysis produced eight factors with the majority of items loading significantly on factor 1.

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The constrained (n = 9) first-order factor analysis produced a similar result with most items loading on factor 1. Varimax rotations resulted in loadings on other factors but not consistent with the original instrument. Second-order factor analysis following a similar approach produced only one significant factor instead of the expected four using the non-constrained approach. When the solution was constrained to four factors, once again, the majority of nine first-order factors loaded on factor 1. In conclusion, the factor structure identified in the original MOMS instrument was not reproduced with the WMG male and female cohort. Initial solutions for first-order factors (explained variance 38%) and second-order factors (explained variance 57.8%) the majority of items loaded on a significant factor 1, which explained most of the variance in the correlation matrix. Constraining models to the original nine first-order factors and four second-order factors slightly improved the solution when mapped with the original instrument factor structure. However, based on these results with the WMG cohort suggests one significant underpinning factor that of participant motivation for competition at this level.

Keywords Re-evaluation · Factor structure · Motivations of Marathoners Scales (MOMS) · Participant motivation · Masters athletes

1 Paper Preparation

1.1 Motivations of Marathoners Scales (MOMS)

The Motivations of Marathoners Scale (MOMS) is a self-report sport psychological instrument that measures factors to participate in sport Masters, Ogles, and Jolton (1993). Motivating people to be physically active has been identified as the most important factor to engage people in and to get them to adhere to physical activity (Marcus & Forsyth, 2009; Weinberg & Gould, 2015). The original MOMS instrument was developed by Masters, Ogles and Jolton to evaluate these factors in marathon athletes (Masters et al., 1993). However, the instrument has been applied to masters' sports athletes of both genders competing at international competitions across different sports events (Adams et al., 2011; Heazlewood et al., 2011, 2012, 2015).

The MOMS instrument consists of 56-item stem questions related to nine first-order motivating factors with a seven-point Likert scale response for each item. The spectrum of responses exists from 1 = least important through to 7 = most important reason. The MOMS instrument was developed based on nine first-order participant motivation factors, which are health orientation, weight concern, personal goal achievement, competition, recognition, affiliation, psychological coping, life meaning and self-esteem. The original instrument evaluated for factor validity, internal reliability and test-retest reliability utilized marathon runners of both genders, specifically 387 males and 95 females (mean = 37.5; SD = ±9.21 years; age range = 16–63 years), indicating masters-age athletes were represented in the

original instrument development sample. A second sample was analysed and utilized marathon runners of genders, specifically 601 males and 111 females (age range = 16–79 years), and again, indicating masters-age athletes were represented in the original instrument. The MOMS instrument was assessed for reliability and validity analysis and displayed high internal consistency (Cronbach's alpha range 0.80–0.93), good test-retest reliability (intraclass correlations, R range 0.71–0.90), factor validity, construct validity, convergent validity and discriminant validity (Masters et al., 1993; Ogles & Masters, 2000). The theoretical model for the secondary factors was substantiated using structural equation modelling (SEM). The nine first-order factors were theorized to represent and then theoretically collapsed into four second-order factors as follows.

1. Physical Health Motives
Based on first-order factors of general health orientation representing concepts such as to improve my health, to prolong my life, to become more physically fit, to reduce my chance of having a heart attack and to stay in physical condition; and weight concern representing concepts such as to look leaner, to help control my weight and to reduce my weight. The standardized statistical weights for the primary factors based on the structural equation model were 0.705–0.954.

2. Social Motives
Based on first-order factors affiliation representing concepts such as to socialize with other runners, to meet people, to visit with friends and to share a group identity with runners; and recognition representing concepts such as to earn respect of peers, people look up to me, brings me recognition and to make my family or friends proud of me. The standardized statistical weights for the primary factors based on the structural equation model were 0.687–0.743.

3. Achievement Motives
Based on first-order factors competition representing concepts such as to compete with others, to see how high I can place, to get a faster time than my friends and to beat someone I've never beaten before; and personal goal achievement representing concepts such as to improve my running speed, to compete with myself, to push myself, to beat a certain time and to try to run faster. The standardized statistical weights for the primary factors based on the structural equation model were 0.701–0.998.

4. Psychological Motives
Based on first-order factors psychological coping representing concepts such as to become less anxious, to distract myself from daily worries, to improve my mood, to concentrate on my thoughts and to solve problems; self-esteem representing concepts such as to improve my self-esteem, to feel more confident, to feel proud of myself, to feel a sense of achievement and to feel mentally in control of my body; and life meaning representing concepts such as to make my life more purposeful, to make myself feel whole, to feel a sense of belonging with nature and to feel at peace with the world. The standardized statistical weights for the primary factors based on the structural equation model were 0.758–0.989.

Oglesand Masters (2000) applied the MOMS instrument to assess participant motives in younger and older; however, in this context, the instrument was applied and not re-evaluated for reliability and validity as this was thought to have been established in the MOMS original instrument.

Zach et al. (2015) retested and developed upon the Motivation of Marathoners Scale (MOMS) model instrument based on their attempt to assess cross-cultural validation of MOMS. The original 56-item instrument was applied in a different cultural context where the MOMS instrument was translated from English to Hebrew using back translation and the committee approach and applied to 233 men, 58 women marathon athletes (age ranging 20–77 years; mean = 41.87; SD = ±8.58 years) who completed the Hebrew version of the MOMS questionnaire. They applied confirmatory factor analysis to re-evaluate the initial first-order factor structure of the original Masters et al., instrument and failed to confirm the nine first-order factors of health orientation, weight concern, personal goal achievement, competition, recognition, affiliation, psychological coping, life meaning and self-esteem. They subsequently applied exploratory factor analysis to the MOMS 56-item data set. The final factor solution accepted and based on this method consisted of eleven factors and supported by the significant factor loadings, which were redefined as psychological coping 1 (emotional-related coping); psychological coping 2 (everyday-life management); life meaning; self-esteem; recognition; affiliation; weight concerns; general health orientation 1 (reduced disease prevalence and longevity); general health orientation 2 (keep fit); competition; and personal goal achievement. A final confirmatory SEM model was applied to the new eleven-factor model to confirm the new theoretical model.

Ruiz and Sancho (2011) translated the MOMS to a Spanish version based on the original 56-item instrument developed by Masters et al. (1993). Using the 56-item instrument and two samples of Spanish running athletes, they derived a seven first-order factor model to represent the correlations between the stem items as compared to the original nine as derived by Masters, Ogles, and Jolton (1993) and the eleven derived by Zach et al. (2015). The seven first-order factors derived and linked to second-order factors were health orientation and weight concern (second-order health and physical activity motivation); personal achievement and competition (second-order achievement motivation); recognition and affiliation (second-order social motivation); and psychological goals and self-esteem (second-order psychological motivations). The number of stem items in the Spanish version of MOMS was reduced to 34 items to better reflect this new seven first-order factor model. A path analysis was then conducted on the 34 item instrument with the seven first-order factors linked to the four second-order factors for confirmation of the new Spanish version representing the MOMS instrument. Internal reliability was also conducted on the revised instrument, and the items with the new seven factors displayed good Cronbach's alpha values from 0.80 to 0.90.

To summarize, where the original MOMS instrument was subjected to cross-cultural testing and cross-cultural validation, the results were different in terms of the factors derived. The original instrument that displayed nine first-order

and four second-order factors, and the Hebrew version that displayed eleven first-order and second-order factors were not analysed in this study, and finally, Ruiz and Sancho's Spanish version generated seven first-order and four second-order factors, although the second-order factors in this research were similar to those of the original instrument. This indicates the instrument factor structure both theoretical and empirical is dependent upon the unique responses from athletes in different cultures with different languages and questions the generalizability of the instrument across different cultural sport settings.

1.2 Research Aim

The research aim was to re-evaluate the generalizability of the first- and second-order factor structure of the MOMS instrument with a different sport cohort of male and female athletes, with athletes from different sport cultures (nations) and with masters' age athletes participating across a variety of sports and competing at the 2009 World Masters Games (WMG).

1.3 Research Design

The research design consisted of action research to re-evaluate both first- and second-order factor of the original MOMS instrument Masters et al. (1993) by applying both confirmatory factor analysis and exploratory factor analysis to the data set generated from the 2009 World Masters Games, which is a multisport and multination international sporting event. Exploratory factor analysis was applied without constraints in terms of the number of factors expected and allowed the statistical criteria of eigenvalues greater than one as the initial criterion for the selection and identification of significant factors (Hair et al., 2006, 2010). An open-ended approach suggested by the diverse research findings in the introduction. Confirmatory factor analysis (Hair et al., 2006, 2010) was applied to evaluate if the nine first-order factors of health orientation, weight concern, personal goal achievement, competition, recognition, affiliation, psychological coping, life meaning and self-esteem could be derived and replicated from the 51 item instrument and if four second-order factors of (1) physical health motives, (2) social motives, (3) achievement motives and (4) psychological motives could be derived and replicated from the nine first-order factors representing the theoretical and actual factor structure presented by Masters et al. (1993). In this context, the researcher defined nine factors for the first-order factors and four factors for the second-order factors.

2 Methods

2.1 Sample

The study was approved by a university human research ethics committee. Male and female athletes competing at the 2009 World Masters Games, Sydney, Australia, volunteered to participate in the research project (male $n = 2522$, mean = 53.72, SD = 10.05 years, range = 25–91 years; female $n = 2428$, mean = 49.39, SD = 9.15 years, range = 26–91 years). Athletes completed the self-report instrument via an online survey using the Limesurvey™ interactive survey system liked to the World Masters Games Web page. The athlete sample represented 84 nations and competed in 28 different sports at this international level competition, essentially analogous to the Olympic Games for masters' age athletes.

2.2 Psychometric Instrument

The Motivations of Marathoners Scale (MOMS) (Masters et al., 1993) was the self-report sport psychological instrument evaluated based on the instruments theorized and empirically pre-validated factor structure by applying both exploratory and confirmatory factor analyses methods that measures the different factors that determine participant motivation of athletes to compete 2009 World Masters Games at the in sport. The instrument competed prior to competing and during competition at the games. The structure of the instrument is explained in detail in the introduction section. The seven-point Likert scale used was on a spectrum from 1 to 7 as in the following example. Table 1 lists the 56-item stems.

Not a reason						A most important reason
1	2	3	4	5	6	7

The MOMS scoring instructions and coding for the instrument for items loaded with first-order and second-order factors in the original instrument are:

Step 1—Average the items for each of the following nine scales.
Step 2—No items are reverse scored.
Step 3—First-order factor loadings for each item.
Health orientation—8, 14, 17, 26, 37, 44
Weight concern—1, 4, 21, 42
Personal goal achievement—5, 9, 22, 35, 46, 51
Competition—2, 40, 43, 52
Recognition—3, 6, 19, 45, 48, 54
Affiliation—7, 12, 16, 24, 30, 33
Psychological coping—10, 15, 18, 28, 36, 38, 39, 47, 50

Table 1 Original items in the 56-item instrument

Items	
1	To help control my weight
2	To compete with others
3	To earn respect of peers
4	To reduce my weight
5	To improve my running speed
6	To earn the respect of people in general
7	To socialize with other runners
8	To improve my health
9	To compete with myself
10	To become less anxious
11	To improve my self-esteem
12	To have something in common with other people
13	To add a sense of meaning to life
14	To prolong my life
15	To become less depressed
16	To meet people
17	To become more physically fit
18	To distract myself from daily worries
19	To make my family or friends proud of me
20	To make my life more purposeful
21	To look leaner
22	To try to run faster
23	To feel more confident about myself
24	To participate with my family or friends
25	To make myself feel whole
26	To reduce my chance of having a heart attack
27	To make my life more complete
28	To improve my mood
29	To improve my sense of self-worth
30	To share a group identity with other runners
31	It is a positive emotional experience
32	To feel proud of myself
33	To visit with friends
34	To feel a sense of achievement
35	To push myself beyond my current limits
36	To have time alone to sort things out
37	To stay in physical condition
38	To concentrate on my thoughts
39	To solve problems
40	To see how high I can place in races
41	To feel a sense of belonging in nature

(continued)

Table 1 (continued)

Items	
42	To stay physically attractive
43	To get a faster time than my friends
44	To prevent illness
45	People look up to me
46	To see if I can beat a certain time
47	To blow off steam
48	Brings me recognition
49	To have time alone with the world
50	To get away from it all
51	To make my body perform better than before
52	To beat someone I've never beaten before
53	To feel mentally in control of my body
54	To get compliments from others
55	To feel at peace with the world
56	To feel like a winner

Life meaning—13, 20, 25, 27, 41, 49, 55
Self-esteem—11, 23, 29, 31, 32, 34, 53, 56
Step 4—Second-order factor loadings.

1. Physical Health Motives—composed of health orientation and weight concern.
2. Social Motives—composed of affiliation and recognition.
3. Achievement Motives—composed of competition and personal goal achievement.
4. Psychological Motives—composed of psychological coping, self-esteem and life meaning.

2.3 Statistical Analysis

The athletes completed the original instrument development by Masters et al. (1993), that is, the 56-item stem question. Both confirmatory factor analysis and exploratory factor analysis were applied to the data set generated from the 2009 World Masters Games using SPSS version 23. In the context of multivariate statistical analysis, the primary objectives of factor analysis are (Hair et al., 2006, 2010):

1. To identify underlying constructs or factors that explain the correlations among a set of measured variables.
2. To test explicit hypotheses about the structure of the variables in this research the structure of the events in decathlon and heptathlon.

3. To summarize a large number of variables with a smaller number of derived latent variables or factors.
4. To determine the number of dimensions or factors to represent a number of variables.
5. To achieve the simplest, parsimonious and pragmatically more meaningful factor solution that can be related to existing theories if they exist.

A number of factor analyses and rotations were applied based on recommendations to derive the most interpretable factor solution, specifically, principal component analysis, unweighted least squares, generalized least squares, maximum likelihood, principal axis factoring, image factoring and alpha factoring. Each method differs in the criterion used to define goodness of fit indices, and the reader is referred to Hair et al. (2006, 2010) for a more detailed explanation of these factor analytic approaches. Although the factor matrix obtained from the extraction phase indicates the number of significant factors, the percentage of variance explained and initial factor loadings, it is sometimes difficult to identify or obtain factor simplicity from the initial matrix. As one of the major goals of factor analysis is to identify factors that are substantively or theoretically meaningful, the factor rotation method was applied to transform the initial factor matrix into a rotated matrix that can generate conceptually easier models to interpret.

3 Results

3.1 Exploratory—First-Order Factors

Exploratory factor analysis based on principal component analysis derived eight factors and not the expected nine factors based on the original instrument. The initial extraction non-rotated orthogonal solution was set to display factor loadings at 0.4 or greater. Total variance explained was 67.9%, and some factor complexity was noted as a small number of items loaded with two or more derived factors. In the initial solution, 51 items loaded with factor 1 which explained a very significant 38.1% of the explained variance, five items with factor 2 (6.7% variance), seven items with factor 3 (6.4% variance), six items with factor 4 (5.6% variance), four items with factor 5 (3.9% variance) and derived factors 6 (2.9% variance), 7 (2.4% variance) and 8 (1.9% variance) did not have any significant factor loadings greater than 0.4. This indicated the initial responses across the majority of items were in the same direction. The subsequent factor rotations as expected generated some partitioning of the factor loadings. The varimax rotated solution with Kaiser normalization did provide some more theoretical meaning to the analysis and dispersed the items more meaningfully across the eight factors, as the eight-factor rotated model loaded with some of the underpinning theoretical constructs. Specifically, factor 1 was loaded with items associated with psychological coping, factor 2 items associated with recognition, factor 3 with health orientation, factor 4 with self-esteem,

factor 5 with competition, factor 6 with affiliation, factor 7 with personal goal achievement and factor 8 with weight concern and life meaning was not identified as a specific factor. Limited space does not permit the presentation of the rotated factor matrix based on the 56-item instrument.

3.2 Exploratory—Second-Order Factors

The derivation of the second-order factors was assessed using factor structure of the nine factors as scored in the original instrument using the scoring criteria based on relevant items. Significant correlations were evident between all the nine factors, and as a consequence, only one significant factor was derived (explained variance 57.8%).

As a consequence, not rotations can be performed. The component matrix is displayed in Table 2. In this solution all the first factors are loaded with only the one second-order factor derived. This result is inconsistent with the expected four second-order factors of physical health motives, social motives, achievement motives and psychological motives.

3.3 Confirmatory—First-Order Factors

In this solution, the researchers defined nine first-order factors to be derived. Total explained variance 70.4%. The initial solution, once again, indicated that 52 items loaded with factor 1, eight items with factor 2, six items with factor 3, seven items with factor 4, three items with factor 5 and no significant loadings of any items with factors 6, 7, 8 and 9. This indicates the responses are in the same direction for most athletes across the majority of participant motivation items. Once again factor

Table 2 Component matrix second-order factor

	Component
	1
Weight concern	0.726
Competition	0.693
Health orientation	0.692
Goal achievement	0.747
Recognition	0.784
Affiliation	0.547
Psychological coping	0.808
Life meaning	0.872
Self-esteem	0.912

Note Extraction method: Principal component analysis. One component extracted

complexity was noted for a number of items as they loaded across two factors and did not represent the more unique loadings suggested in the original instrument development and validation. Varimax rotation did redistribute the loadings to partially replicate the nine factors postulated by Masters et al. (1993) with factor 1 representing a mix of psychological coping and self-esteem, factor 2 psychological coping, factor 3 personal goal achievement, factor 4 health orientation, factor 5 affiliation, factor 6 recognition, factor 7 weight concern, factor 8 self-esteem part 2 and factor 9 competition. However, there was a moderate degree of factor complexity with self-esteem loaded with factor 1 and factor 8. It was interesting to note that competition only loaded with one item on factor 9 and other items evaluating competition did not display significant loadings. Once again, limitations based on space do not permit the inclusion of the 56-item factor matrix table.

3.4 Confirmatory—Second-Order Factors

The initial solution displayed in Table 3 indicates that all first-order factors load with factor 1, as well as displaying some factor complexity for weight concern with factor 1 and factor 2, competition and goal achievement with factor 1 and factor 3, and affiliation with factors 1, 2 and 4. The explained variance in this model was 86%. The varimax-rotated solution displayed in Table 4 loads recognition, psychological coping, life meaning and self-esteem with factor 1, competition, goal achievement, recognition and self-esteem with factor 2. However, factor complexity is displayed for both recognition and self-esteem. Weight concern, health orientation goal achievement load with factor 3, however, once again complexity is displayed for goal achievement loading with both factors 1 and 3. Finally, affiliation loads significantly with factor 4.

Table 3 Initial solution component matrix

	Component			
	1	2	3	4
Weight concern	0.726	−0.491		
Competition	0.693		0.628	
Health orientation	0.692	−0.506		
Goal achievement	0.747		0.445	
Recognition	0.784			
Affiliation	0.547	0.503		0.622
Psychological coping	0.808			
Life meaning	0.872			
Self-esteem	0.912			

Note Extraction method: Principal component analysis. Four components extracted

Table 4 Varimax-rotated component matrix

	Component			
	1	2	3	4
Weight concern			0.800	
Competition		0.897		
Health orientation			0.871	
Goal achievement		0.760	0.460	
Recognition	0.658	0.521		
Affiliation				0.948
Psychological coping	0.878			
Life meaning	0.845			
Self-esteem	0.678	0.444		

Note Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization. Rotation converged in 6 iterations

4 Discussion

4.1 Exploratory Factor Analysis

The results are to some degree inconsistent with the theoretical construct and empirical validity of the original (Masters et al., 1993). The initial solution produced eight significant factors and not the expected nine, and loadings on the initial solution were low for factors 6, 7 and 8. The initial exploratory factor analysis solution indicated significant loadings for the majority of items on a derived factor 1 and which explained most of the variance in the correlation matrix. This factor 1 in this context could be referred to as a general participant motivation disposition, which was supported by the significant factor loadings for many of the items. The varimax-rotated matrix provided a more meaningful solution, where items were associated with first-order factors as health orientation, weight concern, personal goal achievement, competition, recognition, affiliation, psychological coping and self-esteem. However, the theorized factor of life meaning was not generated.

The expected four second-order factors did not eventuate in this research as only one significant factor was derived and all the nine first-order factors loaded with this derived factor. This result using this method was inconsistent with the second-order factor structure presented in the original MOMs instrument and suggests the one second-order factor derived in this research represents a more global participant motivation orientation to international competition at this level. In his research, the athletes were from many cultures/nations and participating across many different sports, whereas previous research sampled marathon and distance runners. Results from Zach et al. (2015) generated eleven and Ruiz and Sancho (2011) seven significant first-order factors, respectively, and these were from samples in homogenous cultures/nations and represented different results from the hypothesized

structure in the original instrument evaluating participant motivation in endurance running athletes.

4.2 Confirmatory Factor Analysis

This analysis constrained the analysis to generate nine first-order factors and four second-order factors based on the 2009 World Masters Games data set. A data set was multicultural/multinational and represented a diversity of individual and team sports. The initial solutions for the first-order factors reflected to a degree, the results of the exploratory factor analysis, where the majority of item loaded with one factor the general or global disposition for participant motivation, although some factor complexity was noted. The varimax rotation is to generate a more meaningful solution and partially consistent with the nine-factor model of Masters et al. (1993). Specifically, factor 1 representing a mix of psychological coping and self-esteem, factor 2 psychological coping, factor 3 personal goal achievement, factor 4 health orientation, factor 5 affiliation, factor 6 recognition, factor 7 weight concern, factor 8 self-esteem part 2 and factor 9 competition. Although self-esteem constructs did appear with factor 1 and factor 8 and questions related to the factor of the competition were in most cases excluded as meaningful to the solution based on 2009 World Master Games athletes.

The second-order factors (Masters et al., 1993) were the following.

1. Physical Health Motives—composed of health orientation and weight concern.
2. Social Motives—composed of affiliation and recognition.
3. Achievement Motives—composed of competition and personal goal achievement.
4. Psychological Motives—composed of psychological coping, self-esteem and life meaning.

In this research, significant factor loadings were:
Factor 1—recognition, psychological coping, life meaning and self-esteem.
Factor 2—competition, goal achievement, recognition and self-esteem.
Factor 3—weight concern, health orientation and personal goal achievement.
Factor 4—affiliation.

These results are different from the predicted model as recognition appears as a factor without affiliation as factor 4 and yet appears in factor 1 as well indicating factor complexity. Personal goal achievement is loaded with weight concern and health orientation in factor 3 as well as in factor 2. However, psychological coping, life meaning and self-esteem do load together on factor 1 and in part replicating this concept from the original instrument for this second-order factor.

5 Conclusion

Both exploratory factor and confirmatory factor analysis in an attempt to replicate the first- and second-order factor structure of the Masters et al. (1993) MOMS instrument to measure participant motivation in athletes did not display generalizability when applied to different cultures, cohorts and sports. This study confirmed the findings of Zach et al. (2015), Ruiz and Sancho (2011) that different first-order factor structures are different across different cultural and sports settings and suggests modifications of the original instrument to be more cultural and sport-specific when evaluating athlete participant motivations.

The identical statement is relevant when the second-order factor structure of the original English version of the instrument is evaluated as the second-order structure in his research was significantly different when evaluated via exploratory and confirmatory factor analysis based on the athletes sampled from the 2009 World Masters Games.

The next step in the research is to apply structural equation modelling to the existing data set to evaluate the best theoretical and empirical model that fits the data and possibly resulting in further refinement of the original instrument when evaluating participant motivation in masters' athletes, competing in many different sports from many different cultures/nations.

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