Latent Structures of Athletic Participation Motivations Among Undergraduates

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Background

- Generally, researchers are well advised to rely on theory-based conceptions of constructs when designing new scales (Clark & Watson, 1995; Devellis, 2016).
- For this reason, scale items are frequently developed based on discussions with other researchers, as in the Sport Motivation Scale-6 (SMS-6; Mallett et al., 2007).
- However, writing items based on responses to qualitative methods can result in scales that are more inclusive of participant experience (Rowan & Wulff, 2007).
- Miller (2013) developed the Motivations for Athletic Participation Scale (MAPS) through just such a method. The structure of this scale has yet to be analyzed.

Research Question

- What factor structure exists within athletic motivation data that were generated from a scale based on focus-group responses?

Methods

- Data were retrieved from the Inter-university Consortium for Political and Social Research (Miller, 2013).
  - Data were randomly split into two samples, one for EFA, the other for CFA.
- Exploratory Factor Analysis ($N = 276$)
  - Number of factors determined through parallel analysis and eigenvalues.
  - Principal axis factoring with oblimin rotation used.
  - Items were removed for low communality or many crossloadings.
  - Factor composite scores used for second order EFA.
- Confirmatory Factor Analysis ($N = 286$)
  - Computed a correlation matrix of complete scores in SPSS for use in AMOS.
  - Modeled the structure identified in the EFA.
  - Model fit was improved by cross-referencing modification indices with EFA crossloadings and adding any paths that occurred in both analyses.

EFA Results

- Parallel Analysis and Eigenvalues suggested 5-7 factors.
  - 7 factors were extracted.
- 6 items were deleted for low communalities or extensive cross-loadings.
- EFA of Final 19 items yielded KMO of 0.86.

Final EFA Factor Loadings

	F1	F2	F3	F4	F5	F6	F7	h^2
Helps me feel confident	**0.60**				*0.24*		*0.22*	.71
Like meeting new people	**0.57**					*0.20*		.50
Exciting	**0.56**		*0.26*					.57
Make money		**0.99**						.95
Want a career		**0.81**						.70
Good at it			**0.77**					.70
Like competition			**0.62**					.58
Show off skills			**0.51**		*0.47*			.70
Not let teammates down				**0.83**				.78
Not let coach down				**0.66**				.52
Impress people					**0.71**			.64
Center of attention					**0.55**			.48
Be physically fit						**0.81**		.69
Like exercise						**0.71**		.66
Good for my health	*0.29*					**0.64**		.68
Be physically attractive					*0.37*	**0.48**		.49
Helps me relax						*0.21*	**0.62**	.50
Get mind off problems							**0.59**	.47
Time for myself	*0.27*						**0.43**	.48
% Variance Explained	*18%*	*15%*	*15%*	*16%*	*14%*	*18%*	*16%*	

Correlations Between Factor Composite Scores

A large number of correlations above .30 suggests a Second-Order EFA may be helpful.

	1	2	3	4	5	6
1. Thrill	--					
2. Financial Benefits	0.20	--				
3. Competitiveness	0.46	0.39	--			
4. Social Obligation	0.38	0.30	0.42	--		
5. Social Benefits	0.39	0.44	0.53	0.34	--	
6. Physical Benefits	0.52	0.17	0.30	0.34	0.40	--
7. Mental Benefits	0.54	0.32	0.46	0.36	0.33	0.43

Factor Loadings for Second-Order EFA

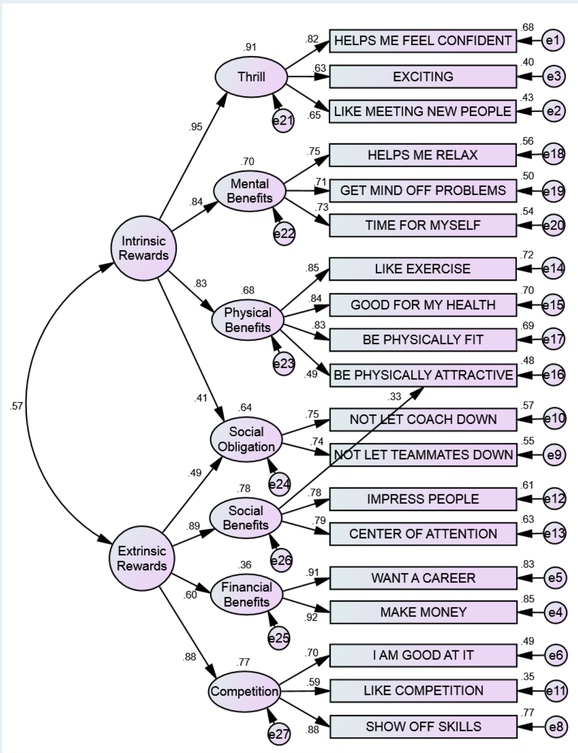
- Parallel Analysis and Eigenvalues suggested 1-2 factors.
  - Extracted 2 Factors.
- KMO = 0.82
- Factors were identified as Intrinsic Rewards (F1) and Extrinsic Rewards (F2).
- Factor scores were correlated (r = 0.58).

	F1	F2	h^2
Thrill	**0.84**		0.67
Physical Benefits	**0.62**		0.41
Mental Benefits	**0.54**	*0.20*	0.46
Social Obligations	*0.29*	*0.33*	0.31
Financial Benefits		**0.72**	0.42
Social Benefits		**0.63**	0.50
Competitiveness	*0.22*	**0.57**	0.52
% Variance Explained	34%	32%	

CFA Results

- Model Chi-Square: $X^2 = 421.10$, $df = 142$, $p < .001$
  - X^2/df ratio = 2.97 (less than 3)
- Goodness of Fit: GFI = .86, AGFI = .81
- RMSEA = .08; 90% CI: .07 to .09
- All tested paths were significant.

Final CFA Factor Structure



Discussion

- The EFA and second-order EFA offered a model of the scale that was clear and interpretable.
- Two over-arching latent constructs define the focus-group derived motivations for athletic participation as either intrinsically rewarding or extrinsically rewarding.
- Within each of these overarching latent constructs, athletic participation motivations are grouped by lower-order latent constructs.
  - Intrinsically Rewarding Latent Constructs:
    - Thrill
    - Mental Benefits
    - Physical Benefits
  - Extrinsically Rewarding Latent Constructs:
    - Social Benefits
    - Financial Benefits
    - Competition
  - Social obligations loads on both intrinsic and extrinsic rewards.
- Although the CFA resulted in only a mediocre fit to the structure suggested by the EFA, it is possible to note the difference in the structures of the MAPS and the SMS-6 questionnaires.
- Both measures ask participants to respond to the same question: "Why do you participate in sports?" However,
  - The focus group-derived scale expresses more the realms of life in which athletes receive benefit.
  - The SMS-6 is designed to express the level to which motivation is internalized (Mallett et al., 2007; Pelletier et al., 1995).
- However, the cross loading of social obligation on both intrinsic and extrinsic rewards suggests conceptual overlap between the two scales. The guilt/anxiety expressed by the items within social obligation are suggestive of introjection, a form of motivation that is intermediate in its level of internalization (Ryan & Deci, 2000; Pelletier et al., 1995).
- The MAPS may be thought of as a scale that expresses levels of internalization as conceptualized by athletes who are largely naïve of psychological theories of motivation.