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Preliminary Validation of the Athlete Development Formulation Survey (ADFS)

Emily Dunn, Dior Anderson, Eleanor Langham-Walsh, Megan Lowery, Prof. Lew Hardy, Prof. Tim Woodman, Dr Gavin Lawrence, Dr James Hardy, Dr Vicky Gottwald, Dr Ross Roberts & Dr Sam Oliver

Introduction

- Talent development is often measured through anthropometric factors, competition and motor performance tests (Gullich & Cobley, 2017).
- There is evidence that psychosocial factors are important in attaining international medals (Hardy et al., 2017).
- No one has yet compiled psychosocial factors important to athlete development into one practical tool.
- Aim of the study was to develop and undertake preliminary validation of the Athlete Development Formulation Survey (ADFS) using a non-traditional correlational method.

Method

Item Generation and Justification

- Initial pool of 190 items was generated from the manuscript of the Great British Medalists Project (Hardy et al., 2017) alongside items from existing questionnaires.
- Items were revised (Rust & Golombok, 2009).
- Two items per construct were generated* or used from existing measures.

Instrument Construction

1. **Life Experiences:** environment of expectation and achievement (EEA)*; strong work ethic (SWE)*; highly competitive environment (HCE)*; mastery focus (MF)*; and outcome focus (OF)*.
2. **Athlete Personality:** difficulty with emotional expression (DWE)*; counterphobic attitude (CA)*; need to succeed (NS)*; need to avoid failure (NAF)*; selfishness*; ruthlessness*; perfectionistic concerns (PC); perfectionistic strivings (PS); socially prescribed perfectionism (SPP); and obsessiveness*.
3. **Athlete Behaviours:** mastery focus; outcome focus; total preparation for competition (TPC)*; commitment to training (CT)*; and relative importance of sport (RIS)*.

Strongly Disagree | Somewhat Agree | Neither Agree nor Disagree | Somewhat Agree | Strongly Agree

Participants

Study 1

- 365 participants were recruited online through social media.

Life experiences *n* = 117 (*M* hours training per week = 5.61, *SD* = 4.70; *M* years participating in sport = 7.35, *SD* = 7.27). ***Personality*** *n* = 122 (*M* hours training per week = 6.18, *SD* = 5.29; *M* years participating in sport = 7.35, *SD* = 7.27). ***Training Behaviours*** *n* = 123 (*M* hours training per week = 5.86, *SD* = 5.16; *M* years participating in sport = 9.50, *SD* = 7.08).

Study 2

- 66 participants (M = 30, F = 36) recruited in university lectures (*M* hours training per week = 7.00, *SD* = 3.37; *M* years participating in sport = 7.34, *SD* = 2.84).

Procedure and Analysis

- Each construct (2 items) were correlated with an existing measure (see results).
- Bivariate and dissatenuated correlation, Cook's Distance (Cook, 1977) and attention questions (study 2) were used.
- Magnitude of correlations were reported with effect sizes (Cohen, 1988).

Results

Table 1. *Correlations between ADFS Life Experiences Constructs and Previously Validated Measures*

ADFS Variables	WOFO: Mastery		WOFO: Work Ethic		WOFO: Competitiveness		POSQ: Ego		POSQ: Task	
	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2
Environment of expectation and achievement	.51** (1.00)	.37** (.80)								
Strong work ethic			.49** (.63)	.61** (.78)						
Highly competitive environment					.59** (.73)	.49** (.61)				
Outcome Focus							.36** (.46)	.57** (.62)		
Mastery Focus									.19 (.28)	.42** (.68)

Disattenuated correlations are reported in parentheses. Where disattenuated values are greater than 1, it indicates measurement error is not randomly distributed and the value is reported as 1.00. * indicates $p < .05$. ** indicates $p < .01$. *Note.* 1 WOFO = Work and Family Orientation Questionnaire, (Helmreich & Spence, 1978). POSQ = Perception of Success Questionnaire (Roberts & Balague, 1998).

Table 2. *Correlations between ADFS Personality Constructs and Previously Validated Measures*

	ADFS Variables	1	2	3	4	5	6	7	8	9	10
Study 1	Difficulty with Emotion	.40** (1.00)									
	Counterphobic Attitude		.34** (.50)								
	Need to Succeed			.27** (.41)							
	Need to Avoid Failure				.21* (.44)						
	Ruthlessness					.25* (.31)					
	Selfishness						.36** (.50)				
	Perfectionistic Concerns							.64** (.72)			
	Perfectionistic Strivings								.54** (.72)		
	Socially Prescribed Perfectionism									.58** (.75)	
	Obsessiveness										.70** (.92)
Study 2	Difficulty with Emotion	.46** (.93)									
	Counterphobic Attitude		.31* (.49)								
	Need to Succeed			.12 (.22)							
	Need to Avoid Failure				.14 (.23)						
	Ruthlessness					.42** (.52)					
	Selfishness						.30** (.39)				
	Perfectionistic Concerns							.67** (.74)			
	Perfectionistic Strivings								.60** (.76)		
	Socially Prescribed Perfectionism									.46** (.65)	
	Obsessiveness										.73** (.88)

Note. 1 = Sensation Seeking Emotion Regulation and Agency (SEAS, Barlow et al., 2013): Emotion regulation, before participating. 2 = SEAS: Emotion regulation and agency, whilst participating. 3 = Performance Failure Appraisal Inventory (Conroy et al., 2002). 4 = Manifest Needs Questionnaire (Steers & Braunstein. 5 = Dirty Dozen (DD, Jonason & Webster, 2010): Machiavellianism. 6 = DD: Dark Triad. 7 = Multidimensional Inventory of Perfectionism (MIPS; Stoeber et al., 2006): Negative Reactions to Imperfection. 8 = MIPS: Striving for Perfection. 9 = Multidimensional Perfectionism Scale (Cox et al., 2002). 10 = Passion Scale (Vallerand et al., 2003): Obsessive Passion. * indicates $p < .05$. ** indicates $p < .01$.

Table 3. *Correlations between ADFS Athlete Behaviours Constructs and Previously Validated Measures*

ADFS Variables	POSQ: Ego		POSQ: Task		QTI		SRSB		IOS	
	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2
Outcome Focus	-.48** (-.53)	.60** (.68)								
Mastery Focus			-.31** (-.38)	.45** (.62)						
Total Preparation for Competition					.47** (.54)	.50** (.65)				
Commitment to Training							.50** (.60)	.33** (.49)		
Relative Importance of Sport									.39**	.24

Note. POSQ = Perception of Success Questionnaire. QTI = Quality of Training Questionnaire QTI (Woodman et al., 2010). SRSB = Self-Regulated Swim Behaviours (Starkes & Young, 2006). IOS = Inclusion of Others in the Self Scale (Aron et al., 1992). * indicates $p < .05$. ** indicates $p < .01$.

Discussion

- Consistent preliminary validation was shown across both studies with increased correlations when measurement error was accounted for.
- Lower strength correlations may be due to non-domain specific measures.
- Further validation is needed within a large elite athlete population across different sports.
- These studies are the first steps toward a practical psychosocial survey to examine important factors known to impact athlete development.
- In applied practice the ADFS could be used as part of multidisciplinary approach to measure and athlete development.

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