

# (SP) MEASURING ATTITUDE TOWARD DOPING: FURTHER EVIDENCE FOR THE PSYCHOMETRIC PROPERTIES OF THE PERFORMANCE ENHANCEMENT ATTITUDE SCALE

*Andrea Petroczi*  
Kingston University, UK

## **Introduction**

Athletes with positive doping test results are often singled out by the public. They are either considered as victims of a misfortunate series of events or scandalous individuals who wanted to win too much. Bob Goldman's famous question about the hypothetical drug (Goldman, 1992)<sup>1</sup>, or a paraphrase of it, is one of the most often cited, unscientific 'attitude measure' of doping. Theoretically speaking, the question is about behavioural intentions under one or two hypothetical conditions, but they probably tell us more about elite athletes' attitudes toward doping use than about their actual behavioural intentions. It is a great rhetorical device, but hardly has any scientific value (Beamish & Ritchie, 2005). Empirical research into athletes' attitudes toward doping is limited in many ways. In the past fifteen years, attempts have been made in sport science research to obtain a quantitative measure of attitude toward doping (Carney and Corcoran, 1990; King, 1991 cited in Hill, 2002; Tricker & Connolly, 1997; Tricker, 2000; Laure et al., 2004; Peretti-Watel, et al., 2004). However, such work is rare and often, the scales' psychometric properties are questionable. Results and conclusions are difficult to compare when measurement tools were specifically developed for the given research and never used again. Works have found in the literature focused on the outcome that is measured by the doping attitude "scale", but the scale development itself seemingly suffered from the lack of proper development, sampling and testing. Often, scale properties are not reported and the scale is not available for the readers to see. Therefore, the aim of this project was twofold: 1) to re-test the psychometric properties of the Performance Enhancement Attitude Scale (Petroczi, 2002) and 2) refine the scale into a shorter instrument that possesses good internal consistency across different samples.

## **Methods**

The original PEA-Scale is a 17-item, six-point Likert-type attitude scale. The response is ranging from strongly disagree (1) to strongly agree (6). All six points are anchored through disagree (2), slightly disagree (4), slightly agree (3), and agree (2). No neutral middle point is offered and all 17 items are scored in the same direction. There was evidence suggesting that the scale is unidimensional. During scale development, the internal consistency of the scale was satisfactory across samples. Cronbach alphas for

---

<sup>1</sup> Goldman's question: 'You are offered a banned performance-enhancing substance that comes with two guarantees: 1) You will not be caught, 2) you will win every competition you enter for the next five years and then you will die from the side effects of the substance. Would you take it?' 52% of the 198 athletes said 'yes' (Goldman, 1992 p. 24). In 1997, Bamberger and Yaeger cited Goldman and his questions from 1995 slightly differently: the first question was the same but they added another question: 'You are offered a banned performance-enhancing substance, with two guarantees: You will not be caught and you will win. Would you take the substance?' 159 athletes said 'yes', 3 said 'no'.

mixed group of athletes, Division I football players, coaches and general public were 0.85 ( $SEM = 3.12$ ), 0.71 ( $SEM = 5.79$ ), 0.91 ( $SEM = 2.76$ ) and 0.79 ( $SEM = 3.36$ ), respectively. The scale was also translated into Hungarian. After its development, the scale was used again on independent samples of American and Hungarian elite athletes (Petroczi, 2002). Cronbach alphas were again satisfactory, 0.85 ( $SEM = 4.97$ ) and 0.74 ( $SEM = 5.00$ ), respectively.

For the purpose of the current research, yet another sample of 293 competitive athletes was used. Respondents were recruited from three different countries: USA ( $N_{USA} = 187$ ), Canada ( $N_{CAN} = 74$ ) and Hungary ( $N_{HUN} = 32$ ). Although, the size of the Hungarian sample is relatively small, it met the minimum criterion of sample size > number of questions. Respondents completed a paper-and-pencil questionnaire under complete anonymity. Because questionnaires were distributed and collected by coaches, lecturers and/or athletic directors, uniquely pre-marked envelopes were provided and athletes were instructed to place the completed questionnaire into the envelope, seal it and sign across the seal. Reliability was measured by calculating Cronbach alpha coefficients independently for each sub-samples. SPSS function of item-total correlation and iteration of reliability coefficient if item deleted was used to identify ambiguous and/or not evenly contributing items in order to improve the scale's generalizability. Scale dimensionality was tested by confirmatory factor analysis using AMOS 4.

## Results

Using the new data, the PEA-Scale showed good internal reliability in its original 17-item form for all three sub-groups (Cronbach  $\alpha > 0.8$ ). Further analysis indicated that the scale can be shortened and improved. Six items – identified through statistical analyses - were deleted. CFA results for the shortened scale showed good model fit (Table 1). Due to the sample size, the model was only tested for the combined sample ( $N = 293$ ) and the USA sample ( $N = 187$ ). Standardised regression weights were statistically significant and they ranged between 0.30 and 0.72 for the combined sample and between 0.33 and 0.78 for the US sample.

**Table 1: Fit indices of the PEA-Scale measurement model (2 pairs of error terms are correlated)**

	$\chi^2$	$df$	$p$	$\chi^2/df$	$CFI$	$TLI$	$RMSEA (CI90)$
Combined	81.581	42	0.000	1.942	0.992	0.992	0.057 (0.03, 0.075)
USA	57.336	42	0.058	1.365	0.995	0.995	0.044 (0.00, 0.071)

Reliability coefficients for the shortened 11-item PEA-Scale for the Canadian, Hungarian and American samples were 0.84 ( $SEM = 1.39$ ), 0.87 ( $SEM = 1.33$ ) and 0.84 ( $SEM = 1.46$ ), respectively. Mean summated scores and standard deviations were:  $M_{CAN} = 24.67 (\pm 8.71)$ ,  $M_{HUN} = 22.53 (\pm 10.23)$  and  $M_{USA} = 24.53 (\pm 9.15)$ . The difference between the three counties was not statistically significant ( $F(2, 270) = 0.663, p = 0.516$ ).

## Discussion

Attitude measure using the PEA-Scale appears to be reliable and stable over time and across different samples. Empirical evidence supported the assumption that the scale is unidimensional. Trimming the scale into an 11-item measure has further improved the scale's reliability, even across different cultures. In psychological measurement, short scales always preferred over their longer equivalent, therefore the shortened PEA-Scale2 is recommended for future use in doping social science research.

## References

- Bamberger, M & Yaeger, D. (1997). Over the Edge. *Sports Illustrated*.
- Beamish, R. & Ritchie, I. (2005). From Fixed Capacities to Performance-Enhancement: The Paradigm Shift in the Science of 'Training' and the Use of Performance-Enhancing Substances. *Sport in History*, 25(3), 412 – 433.
- Carney, M.D. & Corcoran, K.J. (1990). *Expectations for physical and non-physical effects from anabolic steroid use*. Paper presented at the annual meeting of Eastern Psychological Association, March, 1990, Philadelphia, PA, USA.
- Goldman, B. (1992) *Death in the locker room II*. Chicago, IL: Elite Sports Medicine Publications.
- Hill, T.P. (2002). *Perceptions of banned drugs in athletics in relation to sport participation, gender, and socioeconomic status*. Unpublished Master's thesis, West Virginia University, Morgantown, WV. Retrieved March 27, 2006 from: [http://kitkat.wvu.edu:8080/files/2323/Hill\\_Torri\\_Thesis.pdf](http://kitkat.wvu.edu:8080/files/2323/Hill_Torri_Thesis.pdf)
- Laure, P., Lecerf, T., Friser, A. & Binsinger, C. 2004. Drugs, recreational drug use and attitudes toward doping of high school athletes. *International Journal of Sports Medicine*, 25, 133-138.
- Peretti-Watel, P., Guagliardo, V., Verger, P.M., Pruvost, J., & Obadia, Y. (2004). Attitudes toward doping and recreational drug use among French elite student-athletes. *Sociology of Sport Journal*, 21, 1-17.
- Petroczi, A. (2002). *Exploring the doping dilemma in elite sport: Can athletes' attitudes be responsible for doping?* Published Doctor of Philosophy dissertation, University of Northern Colorado, USA.
- Tricker, R. (2000). Painkilling Drugs in collegiate athletics: Knowledge, Attitudes, and the use of student athletes. *Journal of Drug Education* 30(3), 313-324.
- Tricker, R. & Connolly, D. (1997). Drugs and college athlete: an analysis of the attitudes of student athletes at risk. *Journal of drug Education*, 27(2), 105-119.

**Email:** [a.petroczi@kingston.ac.uk](mailto:a.petroczi@kingston.ac.uk)