



Measuring explicit attitude toward doping: Review of the psychometric properties of the Performance Enhancement Attitude Scale

Andrea Petróczi^{a,b,*}, Eugene Aidman^c

^aKingston University, School of Life Sciences, Penrhyn Road, Kingston upon Thames, Surrey KT1 2EE, United Kingdom

^bThe University of Sheffield, Department of Psychology, Western Bank, Sheffield S10 2TN, United Kingdom

^cUniversity of Adelaide, School of Psychology, North Terrace Campus, SA 5005, Australia

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ABSTRACT

Objectives: Doping use is seldom an accident – it is a deliberate action often requiring considerable commitment. Attitudes are known to influence this type of action and hence they are likely to be predictive of doping-related behaviours. To measure ‘doping attitude’, a valid and reliable tool is required.

Design: This paper briefly reviews methodological issues in doping attitude research, introduces the Performance Enhancement Attitude Scale (PEAS) and provides a comparative analysis of its reliability and validity as a self-reported measure of a generalized doping attitude.

Methods: The scale's reliability was examined with Cronbach's internal consistency coefficient and test-retest correlations using data from 9 independent studies encompassing 7 years. Confirmatory factor analysis was performed to assess the scale's structure. Known-groups' validation strategy was employed to examine construct validity in 4 studies.

Results: Estimates of the PEAS' internal consistency (ranged between .71 and .91 across various samples) provided good evidence of the scale's simultaneous reliability. The chi-square/df ratio in all cases was below the threshold with an average of 1.85 (ranging from 1.370 to 2.291), indicating an acceptable measurement model fit. Theoretically expected difference in doping attitudes was found between doping users and non-users with elevated PEAS scores from users, as well as predictable dynamics of PEAS scores across the repeated measures, provided support for construct validity of the scale.

Conclusion: The psychometric properties of the 17-item unidimensional PEAS suggest that the scale is a useful tool for measuring self-declared attitudes toward doping, with adequate reliability and promising validity estimates. Suggestions are discussed for the continuous scale development and validation process.

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The use of performance enhancements has been a problem in competitive sport for decades. In the past four years, even though the proportion of the adverse analytical findings and anti-doping rule violations per year has remained low (<2.3%), there was a steady increase in the relative positive tests from 1.60% in 2003 to 2.13% in 2005 with a small dip to 1.92% in 2006 (WADA, 2006a, 2006b). The increase may have been due to employing increasingly sophisticated testing procedures but it may also signal an increase in doping use; or the combination of both. Not surprisingly, the percentage of positive test results in some Olympic sports in which athletes can benefit from using performance enhancements (by

increasing endurance or power) exceeds the usual 2% average (e.g. cycling 4.7%, baseball/softball 5.8%, weightlifting 2.9%, triathlon 2.8% and boxing 2.4%). However, test results in some non-Olympic sports with recognition by the International Olympic Committee (IOC), such as airsport 9.3%, billiard 7.7%, bridge 7.4%, orienteering 3.5%, golf 2.7%, rugby 2.6%, signal that chemically enhanced performance is sought after in many competitive sports – both within and outside the IOC remit. Based on literature evidence (Alaranta et al., 2006; Bamberger & Yesalis, 1997; Baron, Martin, & Magd, 2007; Laure, 1997, 2000), it is safe to assume that the proportion of performance enhancement users is higher than evidenced by the adverse analytical findings and with new technological advances such as gene doping (Lippi & Guidi, 2003; Miah, 2004) and availability of drugs (Greydanus & Patel, 2005), it is likely to grow.

The development of effective anti-doping prevention requires a better understanding of the underlying mechanisms that render

* Correspondence to: Andrea Petróczi, Kingston University, School of Life Sciences, Penrhyn Road, Kingston upon Thames, Surrey KT1 2EE, UK. Tel.: +44 (0) 20 8547 2000x2436; fax: +44 (0) 20 8547 7562.

E-mail address: a.petroczi@kingston.ac.uk (A. Petróczi).

some athletes or athlete groups more vulnerable to doping than others and the factors that may protect athletes from engaging in doping practices (Petróczi & Aidman, 2008). In order to obtain a reliable view of how widespread doping is in sport, estimating the prevalence of doping is a prime goal of many international and national sport governing bodies (NGBs). Epidemiological studies provide insight into the doping problem but obtaining reliable information on doping behaviour is hindered by the fact that athletes are asked to admit a behaviour that could jeopardise their sports career. In the absence of more objective information on performance-enhancing drug use at the population level, attitudes are often used as a proxy for doping behaviour, assuming that those who use banned performance enhancements show greater leniency towards doping than those who stay clear of doping. Attitudes were also in the foci of doping behavioural models (Dodg & Jaccard, 2008; Donovan, Egger, Kapernick, & Mendoza, 2002; Lucidi et al., 2008; Strelan & Boeckmann, 2003) aiming to identify risk factors that lead to doping. Increased knowledge regarding risk factors and a better understanding of the causes of doping behaviour are among the priorities of WADA (Social Science Research, 2009 Call for Proposal). In preparation for the 2012 Olympics, the House of Commons of UK Parliament produced an extensive report investigating human performance enhancement in sport (HC, 2007). Among the recommendations, an increased effort for research into ethics of doping and evidence-based prevention has been emphasised.

While past research into illegal drug use identified a number of possible risk factors (Frisher, Crome, Macleod, Bloor, & Hickman, 2007), their direct application to doping may or may not be appropriate. Lüschen (1993) argues that the difference between illicit drug use and doping lies with intention behind the use of such means. Whilst drug use is typically done for the effect itself, doping is used for the effect with the intention to gain competitive advantage over the opponent.

Attitudes toward doping

Assessing athletes' attitudes toward certain prohibited performance-enhancing substances (mostly anabolic steroids) and doping in general has a long history in sport psychology. In the past 35 years, athletes have been questioned about their beliefs about the positive outcomes of using performance-enhancing substances, providing researchers with a reasonably good insight into individuals' doping behaviour. Laure (1997) summarised publications relevant to doping between 1980 and 1996 and found that the motives for using performance-enhancing substances can be sorted into two main categories. The first category dealt with physiological aspects, such as increasing strength, endurance, dealing with tiredness, injury and/or lack of training. The second category incorporates the psycho-sociological elements, such as achieving external goods, societal expectation, pressure to win, and personal desire to be acknowledged. Common threads across interviews and survey data seem to be mingled around issues like achieving better performance, inner desire to win or perform better (Anshel, 1991; Kersey, 1993; Laure, Lecerf, Friser & Binsinger, 2004; Laure & Reinsberger, 1995; Melia, Pipe, & Greenberg, 1996; Scarpino et al., 1990; Tricker, O'Neill, & Cook, 1989; Williamson, 1993), external pressure to win (Anshel, 1991; ASDA, 1997; Scarpino et al., 1990). The external pressure for "winning at all cost" manifests in many forms, most often comes from coaches who repeatedly warn athletes about the exceptional abilities of the competitors (Anshel, 1991). A constant paranoia about chemically enhanced competitors may also influence athletes' decision regarding doping (ASDA, 1989, 1990, 1997, 2000; Fuller & La Fountain, 1987; Yesalis, Herrick, & Buckley, 1988). Doping substances or methods are also seen as means to cope with the physical demand of training and competition (Yesalis et al., 1988), speeded recovery

from or pain relief during injuries (Anshel, 1991; ASDA, 1989; Martin & Anshel, 1991). The cruel race against records once set by predecessors (Silverster, 1973) has also been used as justification for using banned substances.

Beyond the scope of sports performance, improving appearance is also among the reasons of using drugs, more specifically, anabolic steroids (Melia et al., 1996; Williamson, 1993). Interestingly, many athletes see doping as a necessary mean to an end (Curry & Wagman, 1999) and do not consider using performance enhancement as 'cheating'. It is probably the case because athletes do not take the drug to replace hard work and training, but rather to add the extra edge to the work they have already done in order to increase the probability of winning, and having something valuable in return (Laure & Reinsberger, 1995). Many athletes posit that hard work alone cannot compete with chemically enhanced performance of some competitor, thus drugs are necessary part of their training regime (Brissonneau, 2006; Maycock & Howat, 2005). In addition, they also believe that no harm is done by doping since there is no 'victim' involved in their actions, other than perhaps themselves (Fuller & La Fountain, 1987).

Assuming that top performing athletes are all highly motivated and achievement oriented individuals, the difference between those who use prohibited means and those who do not lies elsewhere. Among the usual suspect constructs, attitudes toward doping have seen repeated attempts to quantify them (Alaranta et al., 2006; Lucidi, Grano, Leone, Lombardo, & Pesce, 2004; Peretti-Watel, Guagliardo, Verger, Pruvost, & Obadia, 2004; Sas-Nowosielski & Swiatkowska, 2008; Wanjek, Rosendahl, Strauss, & Gabriel, 2007). However, this research typically reports findings derived from ad hoc measurements, while other scales focused on attitudes toward specific substances, mainly steroids (Anshel & Russell, 1997; Schwerin & Corcoran, 1992, 1996a, 1996b; Tricker & Connolly, 1997). As an attitude is response of liking or disliking (Bem, 1970), resulting from the processes of evaluation and associated behavioural choice that are dynamic and ubiquitous in daily life (Petty, Wegener, & Fabrigar, 1997), it can be expressed as either evaluative judgments or behavioural tendencies (e.g. approach-avoidance) or both. The sense that something is good or bad, positive or negative, pleasant or unpleasant; to be avoided or approached is critical to most behaviour (Cunningham & Johnson, 2007). A conceptual shift from treating attitudes as representations directly retrieved from memory in response to perceptual cues to viewing attitudes as constructed dynamically in situational, cognitive and motivational contexts (Schwarz & Bohner, 2001) has highlighted the importance of subjective experiences associated with attitudes that integrate into behavioural tendencies of approach or avoidance – some more automatically while others with more reflection. Both the valence and intensity of attitudes have the capacity to motivate. As a result, attitudes form a distinct type of motives. Doping use is assumed to be a deliberate action often requiring considerable commitment. As attitudes are known to influence this type of action and hence they are likely to be predictive of doping-related behaviours (Lucidi et al., 2008), rigorous investigation of athletes' attitudes toward performance enhancements can yield important information to inform anti-doping effort.

Aims

A recent comprehensive review (Backhouse, Atkin, McKenna, & Robinson, 2007) concluded that the current research methodologies used to examine athletes and their support networks attitudes to doping in sport are weak. For the majority of the measurement tools, the scale development process was not reported (or not in sufficient details) and the scales used were not subjected to psychometric testing, which seriously undermines the validity and

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