

## **Measuring Athletes Attitudes towards Drugs in Sport**

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## **Abstract**

With the shift from detection- to prevention-based deterrence in anti-doping activities the measurement of athletes' attitudes towards drugs in sport issues will take on a new significance, especially for national anti-doping organisations. The current paper seeks to increase awareness of psychometric issues for those researching in the area. The case for the central role of attitudes in drugs in sport research is examined briefly. This is followed by a pragmatically focused overview of the unique problems of associating attitude with behaviour in the drugs in sport context aimed at informing practitioners and applied researchers (attitude behaviour relation and measurement bias). The focus then shifts towards basic research and the future by introducing implicit attitude measurement and dynamical modelling as part of attitude measurement. It is hoped that the discussion serves as a platform for the evolution of attitude measurement in relation to drugs in sport, either in contrast to or sympathy with the ideas proposed.

The measurement of athletes' attitudes towards drugs in sport forms a central component to program evaluation and policy creation for national anti-doping organisations (NADOs). The typical response pattern indicates the overwhelming majority of athletes hold a strong negative attitude towards drugs in sport (Mugford, 1993; UK Sport, 2006). Petroczi & Namasz (2006) argue that this may be a function of social desirability. That is, the athletes are reporting what they think NADOs want to hear rather than their true attitude towards drugs in sport issues. This is a significant problem for NADO program evaluation and policy creation, especially with the transition from detection-based to prevention-based deterrence (see below). Part of the problem of measurement may derive from an absence of significant input by those with a background in psychology, or more specifically psychometrics, into drugs in sport research (Mazanov, O'Donnell & Battley, 2006). This paper seeks to redress this imbalance by providing an initial examination of how psychometric principles could improve measurement of athletes' attitudes towards drugs in sport.

The paper takes a *tour de force* of attitude measurement in relation to drugs in sport. The aim is less to provide a comprehensive account of attitude measurement in this context, rather to increase awareness of attitude measurement issues for those researching in the area. The first stop on the tour articulates why attitude measurement is relevant to drugs in sport and why NADOs should care about the psychometry of attitude measurement. Current practice examined by looking at the unique problem of associating attitude with behaviour in the drugs in sport context and the typical biases observed in attitude measurement. The focus then shifts to the future by discussing the potential for implicit attitude measurement and a brief reflection on Eiser's (1994) thoughts on standardising dynamical modelling as part of attitude measurement.

### *Why is Attitude Measurement Important to Drugs in Sport?*

The main reason why attitude measurement is important to drugs in sport is that attitudes become a proxy for otherwise unobservable behaviour. Detection-based deterrence, where the risk of getting caught is meant to deter use (secondary prevention), is fast becoming outdated with the threat of undetectable gene-doping looming large on the

drugs in sport horizon (Miah, 2004). The alternative is to deter use by stopping it before it starts, or primary prevention; referred to by Mazanov, O'Donnell & McDermott (forthcoming) as prevention-based deterrence. Attitudes therefore become one mechanism towards explaining drug use behaviour in sport. That is, it is the relationship between attitude and behaviour that makes attitudes attractive to drugs in sport research.

### *Why Should NADOs Care about Psychometry?*

Psychometry has had some role in NADO attitude measurement. NADO program evaluation or survey instruments tend to use Likert-type scales. The typical question asks about something of interest to the NADO with the standard five response categories based on agreement or importance. The data is then collected, reported (descriptively) and used to inform contemporary policy implementation or design new policy. What is missing from this process is the more rigorous standard of measurement prescribed by psychometrics.

Historically, attitude measurement by NADOs has been driven by purpose. As a comparator, researchers might invoke the getting accurate measurements to make statements about the nature of reality to justify more rigorous attitudinal measurement. On the other hand, NADOs may have been more concerned with balancing any combination of political, economic, social, technical (where psychometric rigour lies), legal and/or environmental considerations. In this complex social *milieu*, it is easy to see how psychometric rigour becomes just one part of the balancing act towards pragmatic compromise (satisficing). That is, the less rigorous measurement strategy is “good enough” pragmatic compromise that sees at least some data collected and acted upon.

Returning now to the central question, why should NADOs care about the psychometry of attitude measurement? With the transition from detection- to prevention-based deterrence, the historical reasons for the “good enough” measurement of attitudes being adequate have been waning. For example, the models underscoring prevention-based deterrence have a significant psychological component reflected by individual attitudes about drugs in sport, or athlete intentions to use prohibited substance or methods (eg

Donovan, Egger, Kapernick & Mendoza, 2002). Therefore, NADOs have to start caring about the psychometry of attitude measurement as it becomes central to their core business.

### *The Relationship between Attitude (Intention) and Behaviour*

Most models link attitude and behaviour through the mechanism of intention (eg Donovan *et al*, 2002; Ajzen & Madden, 1986; Ajzen, 1991). Meta-analyses show that intention explains about 25-30% of the variance in behaviour (Sheeran, 2002), making it a scientifically sound place to start in terms of understanding the link between attitude and behaviour for drugs in sport. Measuring intention, the research team at the University of Sheffield has identified a multiple item measure of intention that appears to give a reliable indication of behaviour (Armitage & Arden, 2002; Conner, Norman & Bell, 2002; Sheeran, Conner & Norman, 2001) by taking the average from questions using at three to five key words from Baumgartner's (1995) suite (eg intend, plan, expect, will, think or try)

There are two key problems with using intention. The first are the theoretical criticisms of the relationship between intention and behaviour (eg Albrecht and Carpenter, 1976; Greve, 2001; Liska, 1984). These established issues aside, a problem unique to drugs in sport research is the rather unique adverse consequence to an athletes admitting use<sup>1</sup> (eg bans from competing; WADA, 2003). Establishing prevalence has proven to be a difficult exercise in relation to drugs in sport, with estimates varying from 0.31% (reportable offences in Australia; ASADA, 2006) to anecdotal reports of over 95% (Alzado, 1991). So the aggregate level of use is at best indicative, and gives some indication of the difficulty of getting individual data for the purposes of attitudinal research.

Athletes may be less reticent to give information on their performance enhancing supplement use (eg vitamins, minerals, creatine or herbs). Mazanov, Petroczi, Bingham & Holloway (submitted) used data from UK Sport (2006) to develop an empirical model

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<sup>1</sup> Relative to the consequences of a narcotics addict admitting use.

relating attitude (rather than intention) to supplement use. The authors from UK Sport (Bingham & Holloway) indicated that the results match their experience working with athletes and prohibited substances. Note that this approach requires the establishment of equivalence beyond such anecdotal evidence before correspondence could be claimed. In the absence of evidence supporting equivalence, using attitude (intention) as a proxy for behaviour and substituting supplement use for actual prohibited substance use creates an indicative model. Being pragmatic, it is better to have some data and be aware of its limitation than have no data or remain ignorant of its limitation. That is, using supplements as a proxy may have to do until a more effective way of obtaining evidence about actual use emerges.

### *Typical Forms of Bias*

There are some basic forms of bias in attitudinal research that NADOs and researchers would do well to take into account. The discussion has been constructed with pragmatism in mind, as it is better to get contaminated rather than no data, so long as the contaminants are accounted for in the interpretation of results. The ideas presented are meant to be indicative rather than exhaustive, giving NADOs and researchers some ideas to think about when putting together an instrument to measure athlete attitudes. Three main points are being promoted:

- It is worth spending time thinking about how survey administration can reduce bias (source)
- It is worth spending time thinking about the wording of questions to minimise bias (social desirability)
- It is worth spending time thinking about how the responses can be framed to minimise bias (the normal distribution).

Source of the Question: The most significant bias for measurement of athletes' attitudes might be who asks the question. For example, the same question being asked by a NADO, sporting organisations or independent researcher could yield very different response distributions. Assurances of confidentiality and anonymity from NADOs or sporting organisations might fail to assuage respondent concerns about the consequences

of adverse (against the organisation) or incriminating answers; it might be simpler to have some one else collect the data. It is appreciated that this can be an expensive exercise. One cost-effective way around using a private provider, might be to establish a collaborative relationship with a research institution. If research institutions are used the added guarantees of ethical conduct offered by the human research ethics committees may ameliorate this bias.

The non-sporting organisation researcher confronts a variation on this form of bias. Typically, a researcher might seek some endorsement from a sporting organisation or ask to access the data base to develop a sampling frame. The issue that arises is whether this support will help or hinder the data collection. For example, using NADO logos or letters of endorsement might bias responses the same way as if the NADO sent the survey themselves. Alternatively, response rates may be low without the endorsement or data base. This balancing act can be informed by attitudinal research into other sensitive drug use issues such as adolescent smoking (where schools are independent to data collection; eg Byrne, Mazanov & Gregson, 2001; Byrne & Mazanov, 2005; Mazanov & Byrne, 2006).

Social Desirability: Petroczi and Namasz (2006) indicated that controlling for social desirability significantly improved modelling athlete drug use behaviour. Two forms of social desirability are discussed here; that inspired by the question and that of the respondent.

The way a question is worded can give a very clear message about the desirable or “correct” answer. For example, UK Sport (2006) asked the question “How important do you think it is to have an effective drug testing program?” Some 90% of respondents indicated it was “very important” or “important” to have an effective drug testing program. In this case the socially desirable answer was indicated by the question. An appropriate challenge is to query what UK Sport was supposed to ask. An alternative might be “Effective drug testing is important to my ongoing participation in my sport”,

strongly agree to strongly disagree. As can be seen by the clumsy alternative, the art of asking neutral questions is a difficult one.

The classical form of social desirability is people responding with what they think a particular social category might say (Lippa, 1990). This might be referred to as “faking good” where respondents are obliging, or “faking bad” where respondents may attempt to be funny or intentionally contaminate responses (Dipboye, Smith & Howell, 1994). Given the results of Petroczi & Namasz (2006), it might be worthwhile including a short social desirability measure in attitudinal surveys of athletes as a statistical control. Statistical control requires a degree of statistical sophistication that may be unavailable or impractical based on the survey characteristics. In this case, some judgement can be made by the researchers based on their knowledge of the data collection. The recommendation here is that researchers make some *caveat* about the effect of social desirability bias in their report of the results.

The Normal Distribution: Some respondents have a particular response bias towards using the middle response category (central tendency), towards the negative (severity) or towards the positive (leniency). Part of this problem is a function of people having different definitions of “important” or “agree”. Thurstone’s method of attitude measurement used an exacting and time consuming method to achieve a respondent defined interval scale (Lippa, 1990). This method was replaced by the statistically equivalent Likert-type scales. Another way of overcoming this problem is to attach descriptors to each of the response categories, called “behaviourally anchored rating scales” (BARS) (Dipboye *et al*, 1994). The descriptors give respondents a more precise idea about what each response category means (see Table 1). Of course, coming up with psychometrically rigorous descriptors can be an onerous job in itself and the lesson of pragmatism reapplied. Importantly, while Likert-type scales may be “good enough” there are alternatives like the BARS available.

Table 1: Hypothetical Likert and BARS response categories to “How important do you think it is to have an effective drug testing program?”



Likert	BARS
Very Important	Testing maintains the integrity of sport and is worth any cost
Important	Testing is an important part of sport I support
Unsure	Testing has its place but I would be just as happy without it
Unimportant	Testing has a minimal effect on competition and outcomes
Very Unimportant	Testing is an irrelevant waste of time of money

A Concluding Note on Bias: This section is indicative rather than exhaustive. The interested reader is directed to other sources (eg Anastasi & Urbina, 1996)) for a more in-depth examination of attitudinal measurement and bias. The key take home message for this section is that careful survey design can significantly improve the quality of the data and the information that results from the analysis (the opposite of “garbage in, garbage out”).

#### *Explicit versus Implicit Attitudes*

There are two ways of measuring attitude. The first is to ask about attitudes directly, akin to Fishbein & Ajzen’s (1975) suggestion that to measure intention all one need do is ask what they intend to do. Explicit measurement of attitudes confers the advantages of relatively easy question design, administration, analysis and interpretation (by both researcher and respondent). The disadvantages have been articulated to some extent by the biases outlined above.

As part of discussions at the 2006 World Anti-Doping Agency conference in Cyprus, Aidman and Petroczi argued persuasively for research into implicit attitude measurement (using the implicit association test; Greenwald, McGhee, & Schwartz, 1998) to overcome the problems of bias. The basic idea behind implicit attitude measurement is to minimise the amount of time respondents have to think about their responses (Aidman & Carroll, 2003). The respondent might be asked to indicate which adjectives flashed up on a computer screen for 300 milliseconds describe their attitudes towards drugs in sport as quickly as possible. (Note that the actual process is significantly more complex than this

example). Theoretically, this stops respondents from having the cognitive resources to mask their true attitude. While implicit attitude measurement may give a better reflection of reality, it is also a sophisticated psychometric technique requiring specialist knowledge and equipment. Psychometrically, the best thing to do would be for researchers to investigate the relationship between implicit and explicit attitudes to determine the questioning strategies that result in the least bias. This would give NADOs access to more refined explicit attitudinal measurement.

### *Eiser's Dynamical Attitudes*

Most attitude measurement makes the assumption that attitudes are stable; attitude measured at Time 1 will be the same as attitude measured at Time 2. Eiser (1994) postulates that attitude might be less stable than implied by the default assumption. This suggests that attitudes might need to be sampled repeatedly over time. The advantage of this view is that change in attitude over time becomes a predictor as well as attitude at any given point in time. Like the implicit attitude measurement strategy, the key disadvantage to this view means extra work tracking respondents over time and using more sophisticated analytic techniques, such as time series analysis or nonlinear regression. Of course, just because something is hard is no excuse to exclude it from consideration.

Dynamical modelling of social psychological constructs is certainly nothing new (Clair, 1998; Flay, 1978; Mazanov & Byrne, 2006; McGuire, 1973) although it is yet to become part of mainstream practice. There are precedents in the psychological literature on dynamical accounts of attitude in relation to drug use. Conner, Sandberg, McMillan & Higgins (2006) and Sheeran & Abraham (2003) demonstrate that the stability of intentions over time is an important predictor of behaviour. In the author's view, drugs in sport research represents an exciting opportunity to test Eiser's conceptualisation of dynamical attitudes.

### *Measuring Athletes' Attitudes towards Drugs in Sport*

A lot of ground has been covered in this *tour de force*. There is certainly grist for the mill for NADOs and researchers alike in approaching the issue of attitudinal measurement in relation to drugs in sport. For NADOs, it is hoped the suggestions give a sound argument to invest more heavily in psychometrically sound measurement of athletes' attitudes towards drugs in sport. For researchers, two clear streams (and a few others) of future research have been identified that have immediate application both for NADOs and as basic research. As noted above, the *tour* was designed to be thought provoking starting point rather than a definitive conclusion. It is hoped the reader builds on or persuasively argues against the ideas set out here as a basis for improving attitude measurement at the applied (in relation to drugs in sport) and basic levels.

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