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A matter of mind-set in the interpretation of forensic application: Response to comments in "Science 1, Religion 5: A Reply to Petróczi et al. (2015)"

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As scholars, we welcome academic debate and thank < AUTHOR(S) NAME(S) > for their interest in our work; and also for the opportunity to clarify the important conceptual nuances between our argument and the (mis)interpretation or misunderstanding that they highlight in their reply to our paper. In our position statement, we do not talk about forensic science, forensic investigation or forensic interviewing, not even forensic psychology. Yet in their reply, < AUTHOR(S) NAME(S) > appear to fervently defend the role of forensic investigation in anti-doping - which action may just be a simple availability heuristic effect rather than a sign of guilt[1].

In responding to the points raised by < AUTHOR(S) NAME(S) >, first we must note that when we use the term „forensic application", it exclusively refers to the notion of using psychometric tests as a diagnostic tool to identify athletes who dope. Forensic techniques constitute a different set of investigative tools. Whether they have merit in anti-doping and to what extent is a wholly different argument, which we did not make. We solely focused on the appropriate use of psychometric measurements (scales, tests, questionnaires and responsetime based tests) in doping control.

In the paper, we argue for policy guidance on the use of psychometric measurements in doping research and anti-doping. Despite the claim by <AUTHOR(S) NAME(S) >, neither the World Anti-Doping Code 2015 nor the World Anti-Doping Agency's (WADA) Guidelines for Coordinating Investigations and Sharing Anti-Doping Information and Evidence address this, unless we take the position that if some measures are not specifically mentioned in these policy

[1] Excusatio non petita, accusatio manifesta. [He who makes excuses (when none were called for), indicts himself]

documents then they are not acceptable as evidence. Even then, a wide range of potential applications beyond identifying guilty athletes (e.g., research, design and evaluation of anti-doping interventions) remain unguided.

We expressed our concerns about the evident and potential misuse of psychometric tests in doping research and anti-doping, primarily owing to applications by those who are unskilled and untrained in psychometric testing. The liberal use of psychological concepts by non-experts is an unfortunate tendency that can be observed recently in investigation addressing doping behaviour. In this, the psychological construct of attitude – which originally "was invented to explain phenomena of interest" (Schwartz 2007, p638) - is the most likely victim. There is also notable fuzziness around „behavioural intention", "willingness", "beliefs" and "knowledge" about doping when it comes to their operational definitions and, subsequently, their measurements. The consequence of this is that if one is unclear about what the construct in question truly reflects, its appropriate use can only be incidental. The potential reason for this tendency is the discrepancy in expertise, access and interest among the stakeholders. That is, those who have easy access to the target population of elite athletes (and doping users among them) may not be researchers trained as psychologists but medical personnel or managers; and those who have the expertise to conduct the research do not have access or opportunity. Those who make decisions about anti-doping research funding have an enormous body of knowledge about the problems but may not have training in psychology (and psychometric testing). WADA's Education Committee, which is devoid of psychologists, is one example. Setting aside the misguided attempt by the Clean Protocol and the potential for similar attempts in the future, we feel that a policy guidance on psychometric testing and a (hopefully) growing compendium of

validated and vetted psychometric tests would serve the community of doping researchers and anti-doping advocates; and thus benefit the field. The driving force behind our proposal is not to control or hinder but rather, to find a way that protects, helps and facilitates progress in anti-doping; and to bring academic expertise to practice.

We firmly believe that, at this point in time, there are no valid psychometric tests for identifying doping behaviour. The psychometric properties of the existing measurements are not sufficiently robust for individual diagnostics; even when experts use them. These instruments are acceptable research tools - not more and not less. Anti-doping funding bodies are advised to tread with care and caution into the terrain of identifying dopers based on results of the existing psychometric tests.

Central to this argument is that whilst psychometric measurements are vital in both research and practice, it is acknowledged that they are based on arbitrary metrics. As such they are appropriate for testing and modifying existing psychological theories or generating new ideas but caution is warranted when "researchers wish to make inferences about the true, absolute standing of a group or individual on the latent psychological dimension being measured" (Blanton & Jaccard, 2006, p27). The other aspect is the construction of social knowledge about doping and doping related self-schemas. We provided an elaborate argument and an example figure and as much evidence as available to date in the surrounding text.

Those who apply explicit and implicit measurements in field settings must also acknowledge their limitations. It is particularly important if any of these psychometric measurements are used as a proxy for doping behaviour. For example, contrary to the optimism by Moston, Engelberg and Skinner (2014) about using the false consensus effect as an indicator (but not evidence) for doping involvement, its

application in field settings is limited. The higher estimation of perceived doping prevalence is relative (interpreted in comparison to the group average of the „clean athletes"); influenced by the social distance between the person making the estimate and the group for which the estimation is made (Jones, 2004) and, perhaps most importantly, it characterises athletes who are ready to admit doping (Petróczi et al., 2011). Depending on nuances in the test construction, the reactiontime based autobiographical Implicit Association test produces an alarming rate of false positives (Vargo, Petróczi, Shah & Naughton, 2014). These should be sufficient evidence to warrant caution and foster further research to aid a better understand the intricacies of doping-related psychometric tests (Petróczi 2013a, 2013b).

In response to the point about religion trumping science, careful reading reveals that the number of references from journals on „religion" is not reflective of our opinion. It simply follows the content of Table 1, which - to our best knowledge - captures all validated psychometric scales that have been used in doping research in the past 15 years. The noted lack of forensic journals among the references supports that the position statement, in fact, is not about forensic psychology.

The student's work on developing the "Forensic Anti-Doping Interview", which was listed along with works by us that attracted funding from anti-doping organisations, was added to show that there is interest in using non-analytical methods to detect doping. We did not say anything about the content or quality of this work but simply stated the fact that it won a prize.

Finally, it must be noted that we have no conflict of interest in this endeavour. We strongly believe that such policy is needed to govern the use of psychometric tests for individual diagnostics in anti-doping context, thus we expressed our opinion publicly. We feel that the problem exists - even if it is in its early stage - and fuelled

by the need and quest for alternative methods to analytical tests to detect doping. In our approach, early prevention to inform and guide such developments is preferred and WADA is well positioned to address this issue by drawing together an expert advisory group to set the standards for psychometric testing in anti-doping contexts.

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