

Comment

## Intelligence as Trait—and State?

Robert J. Sternberg

Cornell University, Ithaca 14853, NY, USA; E-Mail: Robert.sternberg@gmail.com

Received: 16 January 2014; in revised form: 28 January 2014 / Accepted: 29 January 2014 /

Published: 11 February 2014

---

**Abstract:** We tend to think of intelligence as trait-like. However, with increasing use of psychoactive drugs that enhance performance on psychometric tests of intelligence, investigators need to think of intelligence also as having state-like properties. Questions of the ethics of such drug use will need to be faced in the field of high-stakes psychometric testing as they now are being faced in professional athletics.

**Keywords:** intelligence; state; trait; performance-enhancing drugs

---

When we measure anxiety, we can measure it as a trait or a state. For example, the *State-Trait Anxiety Inventory* (STAI) [1] provides measures of both. Other psychological characteristics, even happiness, can also be thought of in both forms [2]. Although we all feel happier or sadder at times, some people seem to be generally happier than others.

Intelligence traditionally has been thought of as a trait. Hence we measure IQ as a relatively stable disposition of an individual. This view of intelligence has a long history, in that conventional measurements of intelligence, dating back to Binet, have now been available for over 100 years. However, a question we seriously need to address now is whether intelligence, like anxiety, needs to be viewed both in trait and state forms.

No one would question seriously whether scores on intelligence tests can be affected by immediate contextual variables, such as a noisy room, a catastrophic recent event in the life of the test-taker, bad lighting, or even a bad night's sleep. Typically, such variables have been viewed as “noise,” or error of measurement, rather than as variables affecting some kind of “state intelligence.”

There are, however, over-the-counter drugs that may affect intelligence measurements systematically, including a substance as prevalent as caffeine. Today, the problem of whether contextual variables simply can continue to be considered as noise is greatly magnified by the ready

availability of prescription-based stimulants such as Adderall and Ritalin. These drugs, prescribed for various forms of attention-deficit/hyperactivity disorders, typically have the effect of increasing focus and concentration. Although they are available only by prescription, in the United States, at least, their use has become increasingly common, both by doctor's prescription and by unauthorized sharing of drugs among students. Other drugs, such as anti-anxiety drugs, may decrease test performance by inducing drowsiness.

When performance-enhancing drugs are taken, either on a regular basis or frequently, prior to the administration of intelligence tests and related tests of academic skills, their use no longer legitimately can be considered "noise." On the contrary, the use of such drugs may be giving advantages to those who use the drugs in a systematic way to increase focus at the time of testing (and at other times as well, such as during study periods). The long-term effects of such drugs are not well studied, although there is evidence they can become addictive to some degree.

As we look at drug use in baseball, cycling, and other types of athletic competitions—where "doping" has led to international outrage and distorted records—we know that there are economic and social as well as individual consequences of drug use. But in the field of intelligence, we have not yet figured out what they are. We need to do so now, because the horse is out of the barn and we cannot let it run wild. We must seriously consider what drugs can be used ethically and whether they indeed result in variations in state intelligence.

### Conflicts of Interest

The author declares no conflict of interest.

### References

1. Spielberger, C.D. State-trait anxiety inventory. In *Encyclopedia of Psychology*; Corsini, R., Ed.; John Wiley & Sons: New York, NY, USA, 2010.
2. Lyubomirsky, S.; King, L.; Diener, E. The benefits of frequent positive affect: Does happiness lead to success? *Psychol. Bull.* **2005**, *131*, 803–855.

© 2014 by the authors; licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).