

Knights R M & Hinton G G. The effects of methylphenidate (Ritalin) on the motor skills and behavior of children with learning problems.

J. Nerv. Ment. Dis. 148:643-53, 1969.

[Depts. Psychology and Pediatrics, Univ. Western Ontario, London, Ontario, Canada]

This study investigated the effects of a six-week trial of methylphenidate on children with learning problems via a double-blind, placebo-control design. The principal results of methylphenidate use on these children were increased attention span, improved performance IQ, changed heart rates, and weight loss. [The *SCI*® and the *SSCI*® indicate that this paper has been cited in over 170 publications.]

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This article resulted from a shared interest in research between George Hinton, an experienced pediatric neurologist, and me, a new assistant professor at the University of Western Ontario, London, Canada. In 1966 very few double-blind studies with placebo control existed; we were both interested in a more rigorous evaluation of the efficacy of stimulant medication for children with hyperactivity and learning problems.

In retrospect, I feel that our study was well designed not only from a methodological viewpoint but also because it was one of the first studies to include neuropsychological, behavioural, and neurological measures. This aspect of the study may account for its frequent citation since it made it of interest to both behavioural scientists and physicians. We were also among the first to report the effects of methylphenidate specifically on attention span, rather than on motor activity. In addition, we noted physiological effects including weight loss, changes

in diastolic pressure, and increased heart rate.

It seems reasonable that these factors may account for the frequent citation of this study; however, I subsequently published a study on the effects of Pemoline on hyperactive boys,¹ which was very similar in both methodological design and comprehensiveness of measures, and that study is my least frequently cited publication.

The *Classic* paper remains firmly in my own mind as an example of the ethical quandary posed by double-blind research as the result of one particular incident. After much discussion, we felt obliged to break the double-blind code because a 10-year-old participant jumped off a second-floor balcony, fortunately escaping serious injury. It was much to our relief that he was on placebo!

My work in the area of stimulant medication gave me the opportunity to meet many of the most outstanding researchers in the fields of hyperactivity and attention deficit disorder at a number of conferences and symposia.² With my colleague Dirk J. Bakker, I subsequently organized two NATO-sponsored conferences in Denmark³ and Canada⁴ that were attended by many of these researchers.

We find it interesting that many questions regarding stimulant medication remain unanswered. For example, it is still not possible to predict who will or will not be a drug-responder or what the differential response to the various stimulant medications will be. A comprehensive review in this field was provided by M.V. Solanto.⁵ Further research on the specific and long-term effects of these drugs continues to be necessary 18 years after the publication of this article.

1. Knights R M & Viets C A. Effects of Pemoline on hyperactive boys. *Pharmacol. Biochem. Behav.* 3:1107-14, 1975. (Cited 15 times.)

2. Connors C K, ed. *Clinical use of stimulant drugs in children: proceedings of a symposium held at Key Biscayne, Florida.* 5-8 March 1972. Amsterdam: Excerpta Medica, 1974. 238 p.

3. Knights R M & Bakker D J, eds. *The neuropsychology of learning disorders: theoretical approaches. Proceedings of an international conference.* Korspr. Denmark, June 15-18, 1975. Baltimore: University Park Press, 1976. 532 p.

4. ———. *Treatment of hyperactive and learning disordered children: current research.* Baltimore: University Park Press, 1980. 419 p.

5. Solanto M V. Neuropharmacological basis of stimulant drug action in attention deficit disorder with hyperactivity: a review and synthesis. *Psychol. Bull.* 95:387-409, 1984.

CC/A+H