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The secular rise in IQs: In Estonia, the Flynn effect is not a Jensen effect

Olev Must*, Aasa Must, Vilve Raudik

Department of Psychology, University of Tartu, Tiigi 78, Tartu 50410, Estonia

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Abstract

This study investigated the secular rise in IQ scores over a 60-year period in 12- to 14-year-old Estonian schoolchildren. In 1934/1936, Juhan Tork adapted the U.S. National Intelligence Test for Estonia and administered it to more than 6000 schoolchildren. We administered the same test to 449 students in 1997/1998 and compared the results of 381 of these with a carefully matched sample of 307 from the testing in the 1930s. We found a rise of nearly 1 S.D. on subtests using basic information-processing algorithms such as Comparison and Symbol–Number, but only 0.50 S.D.s on verbal subtests such as Sentence Completion and Concept Comprehension. The secular gains were most pronounced on the low *g*-loaded subtests. In two compared age groups of children, the rank order correlations between the secular changes on the various subtests and the rank of those subtests on the *g* factor are negative and nonsignificant, the mean $r_s = -.40$ (one-tailed $P = .13$). As such, these results supported Rushton's [Pers. Individ. Differ. 26 (1999) 381] finding that the secular rise over time is not occurring on the *g* factor. In Estonia, the Flynn effect is not a Jensen effect.

Keywords: Flynn effect; Jensen effect; *g* Factor

1. Introduction

The question has arisen whether the secular increase in IQ scores over time is occurring on the *g* factor, that is, whether the "Flynn effect" is a "Jensen effect." The Flynn effect refers to

* Corresponding author. Tel.: +372-7-375-912; fax: +372-7-352-900.
E-mail address: olev@psych.ut.ee (O. Must).

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the repeated demonstration that the populations of several countries have increased in average IQ by about 3 points a decade over the last 60 years (see Flynn, 1984, 1987, 1999; it is also sometimes known as the Lynn–Flynn effect; see Lynn, 1982). Similarly, the Jensen effect refers to the repeated finding that the vector of a test's *g* loadings is the best predictor of that test's correlation with a variety of variables, including not only scholastic and workplace performance, but also brain size, brain pH, brain glucose metabolic rate, average evoked potential, reaction time, and other physiological factors (see Jensen, 1980, 1998). The question is whether these two effects are related.

Rushton (1999) was the first to find evidence that the secular rise in IQ did not appear on *g*, and he concluded that the Flynn effect was not a Jensen effect. Rushton carried out a principal components analysis of the secular gains in IQ on the Wechsler Intelligence Scale for Children (WISC-R and WISC-III) from the United States, Germany, Austria, and Scotland, along with *g* loadings from the standardization samples, inbreeding depression scores from cousin marriages in Japan, and Black/White IQ difference scores from the United States. The results were the following: (1) the IQ gains on the WISC-R and WISC-III formed a cluster, showing that the secular trend is a reliable phenomenon, but (2) this cluster was *independent* of the cluster formed by *g*-factor loadings, inbreeding depression scores, and Black/White differences. Rushton's analysis showed that the secular increase in IQ was unrelated to *g* and other heritable measures.

Rushton's (1999) results, however, were contradicted by a subsequent study carried out in Spain. Colom, Juan-Espinosa, and Garcia (2001) reported a positive correlation (r=.78; P < .05) between *g* and the amount of generational change in two successive standardizations of the Spanish Differential Aptitude Test across 16 years. There were 10 samples of males and females for each of five subtests (Verbal Reasoning, Space Relations, Numerical Ability, Mechanical Reasoning, and Abstract Reasoning). However, there were ambiguities in the study of Colom et al. that raised questions about its generality. For example, 5 of the 10 samples showed a generational *decrement* (their Table 1).

The controversy is even more deep rooted because from the first discovery of the effect there have been contradictory findings with scores on some tests indicating a rise in scores, others indicating a fall, and still others indicating no change (Neisser, 1998). For example, Raven (2000) concluded that whereas convincing gains were apparent in "eductive ability" (abstract reasoning, as measured on the Raven's Progressive Matrices), the gain was ambiguous in "reproductive ability" (the ability to reproduce previously learned information, as measured on the Mill Hill Vocabulary Scale). Still, other data indicate that in some modern societies, such as Sweden, the IQ gain has been minimal or even absent (Svensson, Emanuelsson, & Reuterberg, 1997).

Questions concerning the reliability of the secular increase in test scores, and whether it occurs on the *g* factor, can only be answered with new research. Accordingly, the present paper brings new data from Estonia to bear on the issues. These Estonian data (from 1934 to 1936) are some of the oldest available for the comparison of two samples. They were gathered by Juhan Tork, an Estonian educator who was supported by the Estonian Ministry of Education. As part of his doctoral dissertation, Tork (1940) adapted the National Intelligence Test (Terman, 1921) from English to Estonian, and administered it to 6000 Estonian schoolchildren. The original