

This Week's Citation Classic

Kagan J, Rosman B L, Day D, Albert J & Phillips W. Information processing in the child: significance of analytic and reflective attitudes. *Psychol. Monogr.* **78**:1-37, 1964. [Fels Research Inst., Yellow Springs, OH].

School age children differ in the time they take to evaluate the validity of their solutions in intellectual tasks with response uncertainty. This dimension, called reflection-impulsivity, is moderately stable over tasks and time. [The *Social Sciences Citation Index*[®] (SSCI[™]) indicates that this paper has been cited over 285 times since 1966.]

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"The origin of this first set of investigations into the dimension called reflection-impulsivity was a set of sorting responses produced by adults in the Fels longitudinal sample.¹ I noted that those subjects who used concrete, descriptive bases for their grouping were more cautious and inhibited than the adults who used categorical or functional dimensions. We initiated a series of studies with children which indicated that the disposition to show long decision times and low error rates because the children examined all alternatives in a problem situation (called reflectivity), in contrast to fast decision times and high error rates (called impulsivity), was a moderately stable characteristic of school-age children. Subsequent to the 1964 monograph many

other investigators have explored the implications of this construct because the psychological property of impulsivity has been popular among investigators concerned with syndromes of reading disability, learning disorder, and hyperactivity.² Additionally, the methods used to operationalize reflection-impulsivity are objective, reliable, relatively easy to implement, and require only a half-hour to administer.

"At the present time it appears that this disposition is predictive of quality of performance on selected academic subjects, reactivity to humor, and style of creativity. Our current interpretation is that socialization experiences that create anxiety over error predispose a child toward a reflective attitude. In general, across the period four through 10 years of age, children become more reflective and less impulsive as they come to appreciate the undesirable consequences of error. Japanese children appear to be socialized to avoid error more consistently than American children and develop a reflective attitude earlier than American children. Additionally, we believe that temperamental attributes which can be detected in the first two years of life, especially slow tempo of play and a high frequency of occurrence of the smile of assimilation during the first year, can predispose a child toward a reflective or an impulsive attitude depending upon socialization experiences related to attitude toward error. The complete corpus of data suggests that when a child or adult is solving a problem that contains response uncertainty, the probability of error can be influenced by the reflection-impulsivity disposition. Hence, investigators should take this attitude into account in their empirical work."

1. **Kagan J & Moss H A.** *Birth to maturity*. New York: Wiley, 1962. 381 p.

2. **Messer S B.** Reflection-impulsivity: a review. *Psychol. Bull.* **83**:1026-52, 1976.