

Comment

Intelligence: Pre-Theory and Post-Theory

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Abstract: Defining “intelligence” exemplifies a mistake that has historical precedent: confusing the role of pre-theory and post-theory definitions. In every area, pre-theory concepts give broad directions for investigation: are the movements of heavenly bodies affected by the existence of other heavenly bodies? Post-theory concepts add precision and predictability. The mistake occurs when a successful theory like Newton’s demands that its peculiar and precise theory-imbedded concept forbids competing theories: Einstein was impossible (warping of space) so long as it was assumed that all theories must be in accord with Newton’s concept (attraction across space). In psychology, Arthur Jensen made the same mistake. He gave his theory-embedded concept of *g* the role of executioner: the significance of every phenomenon had to be interpreted by its compatibility with *g*; and thus trivialized the significance of IQ gains over time. This is only one instance of a perennial demand: give us a precise definition of “intelligence” to guide our research. However, precision comes after research has generated a theory and its very precision stifles competing research. Be happy with a broad definition on the pre-theory level that lets many competing theories bloom: pre-theory precision equals post-theory poverty.

Keywords: intelligence; two definitions; causes of confusion; perils of precision; Jensen’s mistake; new definitions not needed

I will discuss the pitfalls of “defining” intelligence. De Boeck’s comments are spot on. The concept of intelligence exists on two levels: the pre-theory level of a broad concept (a heuristic) that focuses a field of research; the post-theory level where theory gives the concept a specific meaning and makes it quantifiable. On the pre-theory level, we use “solving problems of cognitive complexity”, just as economics uses “the allocation of scarce goods and services”, politics uses “political authority”, and

international relations uses “what states do when not subject to political authority”. Very rarely, the heuristic needs to be modified. The concept of “what propels heavenly bodies through space” led to a dead end, and was altered in favor of “how the movements of heavenly bodies are affected by the presence of other bodies”. Note that this was broad enough to allow for competing theories that gave celestial influence a specific meaning and made it quantifiable: On the theory level, Descartes thought the sun revolved on an axis creating a whirl pool in the ether that swirled the planets about in their orbits; Newton thought that heavenly bodies influenced one another in proportion to their mass and inversely to the distance squared; Einstein thought that mass warped the space in its vicinity and the resulting curved space delineated the planetary orbits. Here we encounter a great danger. A successful theory gives such precise definitions and useful predictions that the vague heuristic looks humble by comparison. Therefore, its practitioners use the theory’s key concept as if it were a heuristic to delineate the field! The Newtonians denied that anything other than his concept of gravitation could be relevant and said they would reject any picture of the universe that could not be mechanically replicated. In *The g factor*, Jensen junks the ambiguous concept of intelligence for his precise concept of g [1]. Using it as a test of whatever was relevant, he denies that IQ gains over time could be anything but hollow because they did not correlate with g . It took time to see that this was an abuse of a successful theory-embedded concept. IQ gains over time enhanced the sophistication of a population to solve cognitively complex problems. To ignore this because people got better at solving various problems autonomously rather than in terms of a rigid hierarchy dictated by the magnitude of g -loadings discouraged investigation of their significance. Fortunately, some scholars were not so blinded and have shown that: all education encourages autonomous problem-solving skills; cognitive skills not correlated with g predict university performance; the diversification of cognitive skills over time predicts GDP growth; it also predicts personal adjustment to the modern world. Moral: let defining intelligence alone except within the context of a theory that refines and quantifies it; never assume that a theory-embedded concept delineates the field. The heuristic we have is fine: you can investigate whatever you want, the role of g in solving cognitively complex problems, the role of working memory, the role of the brain, the role of creativity, why some are better at solving the complex problem of what others think and feel, and so forth.

Conflicts of Interest

The author declares no conflict of interest.

Reference

1. Jensen, A.R. *The g Factor: The Science of Mental Ability*; Praeger: Westport, CT, USA, 1998.

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