Available online at www.sciencedirect.com
ScienceDirect
Intelligence 34 (2006) 503–505
INTELLIGENCE

On failing to grasp the core of MI theory: A response to Visser et al.

Howard Gardner

Harvard Grad School of Education, United States

Received 17 March 2006; received in revised form 3 April 2006; accepted 3 April 2006
Available online 22 May 2006

The theory of multiple intelligences (hereafter MI) has been much written about, more in the popular and scientific trade press, than in the technical scientific literature. Views tend to be polarized: extravagant praise or arbitrary dismissals. From time to time I have responded to the critiques (Gardner, 1995, 1999, 2006; Gardner and Moran, submitted for publication); and recently I have responded in *Gardner under fire*, a book devoted in part to a critique of MI theory (Schaler, 2006).

I welcome the article by Visser et al. (hereafter Visser) because it actually contains data that have been collected in an effort to test some of the tenets of the theory. Alas, while the intention is praiseworthy, the actual effort recreates the very conditions that I had sought to challenge. In what follows I first give some general background about MI theory; I then point out my misgivings about the enterprise undertaken by Visser; finally I suggest some lines for future work.

As laid out in my book Frames of Mind (1983), the theory of multiple intelligences is a synthesis of work in a number of disciplines, ranging from neuroscience to anthropology. The major claim in the book is that the human intellect is better described as consisting of a set of semi-autonomous computational devices, each of which has evolved to process certain kinds of information in certain kinds of ways. Each of the major intelligences (there are probably 8 or 9) is itself composed of sub-intelligences; it is an empirical question to what extent these subcomponents correlate with one another.

In defining the intelligences, I laid out and adhered to a set of 8 criteria. Pointedly, these criteria did not include sensory capacities. Some of the intelligences–for example, linguistic and bodily-kinesthetic–obviously entail motor capacities; but in principle individuals should be able to exhibit these intelligences if they are largely immobilized—e.g. use of body through the deployment of prostheses or robots. While emotions are clearly relevant for the personal intelligences, these intelligences involve far more than the emotions; nor are they measures of personality. In sum, the intelligences are not meant to be reflections of emotions, personality, or sensory acuity. Rather, each of the intelligences is seen as a *computational capacity*—the ability to process certain kinds of information in the process of solving problems or fashioning products.

MI theory is also intended as a critique of the concept of "g" and, especially, of the prominence afforded it in most psychological writings. Of course, in a literal sense, 'g' is simply a statistical entity, that accounts for a certain amount of the variance in a battery of tests. As such, it is not itself controversial. One difficulty with the concept of 'g' is that it is necessarily an emergent from a set of tests given to a specific population under specific conditions and analyzed in a certain way; and so 'g" will and does vary according to the tests, the testees, and the methods of analysis. Another is the rhetorical decision to make 'g' stand for 'general intelligence.' thus attributing to it enormous explanatory power, particularly in a contemporary Western setting.

Many studies, including the ones cited here, confirm that 'g' regularly emerges whenever a battery of tests is

E-mail address: hassold@pz.harvard.edu.

doi:10.1016/j.intell.2006.04.002

administered. In *Frames of Mind*, I suggested that 'g' is probably a blend of linguistic and logical intelligence, with some spatial component featured in certain tests. I think that this statement is basically correct. But it is equally possible that 'g' is actually a measure of what is valued in Western testing in a scholastic setting: such components as speed of response, flexibility of response, motivation to succeed in tests, facility with the manipulation of symbols, and probably other disparate indices as well. Indeed, even a century after Spearman introduced the term, we still have little understanding of what 'g'–the positive manifold among various measures–actually is.

What seem clear to me is that one can manipulate 'g', depending on how 'school like' the task is. The more the tasks/tests resemble the kinds of exercises undertaken in a Western secular school, the higher the 'g' will be. This poses a challenge to those who wish to test the empirical claims of MI theory. I have always called for 'intelligence-fair' tests—ones that look directly at the intelligence itself, rather than through some paper-and-pencil task which purports to measure that intelligence. Intelligence-fair also implies that one seeks, insofar as possible, to eliminate linguistic or logical components when other intelligences are being assessed. And so, for example, spatial intelligence is most properly examined by seeing how individuals navigate an unfamiliar terrain, while interpersonal intelligence is most properly examined by seeing how individuals negotiate with other persons.

An issue analogous to the one just described arises in cognitive development, the field with which I am most familiar. Authorities differ on whether cognition is seen as basically unitary (general skills and operations) or as modular (composed of skills and operations that are specific to particular domains). Those of a Piagetian persuasion sample tasks that contain a numerical and/or logical component; not surprisingly they find strong correlations in task performances. Those more sympathetic to a modular approach focus on skills that are particularly diagnostic of specific domains (e.g. artistry, narrative, social or emotional understanding) and find much lower correlations.

Visser has made a reasonable effort to choose tasks that are central to the domains under examination. And yet, with few exceptions, the tasks chosen have a strong logical component. Indeed, in describing one of the tests for interpersonal intelligence, the authors go so far as to say "what would *logically* happen next?" In describing naturalist intelligence, the authors describe their task as "the ability to categorize objects into logical groups." I would call the majority of their tasks "crypto-logical–mathematical'; moreover, those that are not logical typically foreground a verbal component—for example, the task of social translation is highly verbal. Thus is it is not surprising that the authors find generally high correlations across the spheres that they term 'cognitive.' When they fail to find such correlations, they conclude that the spheres are not cognitive. This tack goes against the spirit and the letter of MI theory, which seeks to broaden the notion of what is cognition, and what counts as intelligence.

Indeed, rather than subjecting MI to a searching inquiry, Visser ends up by recreating the very structure that I had sought to challenge. She eliminates from her discussion and conclusion tasks that she considers non-cognitive, and injects logical components into the remaining areas under exploration. No wonder she ends up finding support for the traditional theory!

I would raise other questions points with reference to this study.

- Visser uses a visual task to interrogate spatial intelligence. Fair enough, but note that spatial is not the same as visual, and even individuals who are blind can exhibit considerable spatial intelligence.
- Visser expresses surprise that the two tasks of bodily intelligences have only a low correlation. But in introducing this concept, I have always indicated that fine motor intelligence might be quite different from the intelligence of the whole body.
- Nowhere have I said or implied that intrapersonal intelligence has anything to do with the strength of self-concept. That is clearly a dimension of personality, not intellect.
- The other task of intrapersonal intelligence is ingenious. Individuals' own performances are used as a way of assessing whether they have insight into their own profiles. Note, however, that the use of this task itself implies acceptance of this construct as a useful one.
- The low correlation of musical to other tasks is explained because musical is sensory. Of course, it is sensory but the sense being tested is musical, not auditory. To hear pitch, rhythm, etc. one needs musical analysis, not simply auditory acuity.

As I have often explained, except for Project Spectrum (Gardner, Feldman, & Krechevsky, 1998), I have not devoted energies to the devising of tasks that purport to assess MI. I have no objection to other individuals doing so though efforts so far have been modest. In my own experience, I have been impressed by efforts to create environments in which the use of multiple intelligences is highlighted. An exemplary instance is the Explorama at

Danfoss Universe in Denmark (danfossuniverse.com); visitors have a chance to explore fifty different tasks, deliberately designed so that those tasks evoke one or more of the several intelligences. In my ideal world, this is how one would assess multiple intelligences and determine their correlation of lack thereof.

Tests and tasks are one way to assess the empirical support for MI theory, but they are not the only way. As indicated above, MI theory is essentially a work of scientific synthesis. In my own view, findings from brain science and genetics will make crucial contribution to our understanding of intelligence and of intelligences in the years ahead. Meanwhile, I urge Visser and other scholars to carry out further explorations of the nature of human intellect, and its constituent skills and operations. No matter where the data lead, we in the field will learn from such efforts.

References

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books New editions 1993, 2004.

Gardner, H. (1995). Reflections on multiple intelligences: Myths and realities. *Phi Delta Kappan*, *77*(3), 200−209.

Gardner, H. (1999). *Intelligence reframed. Multiple intelligences for the 21st century.* New York: Basic Books.

Gardner, H. (2006). *Multiple intelligences: New horizons.* New York: Basic Books.

Gardner, H., & Moran, S. (submitted for publication). The science in multiple intelligences theory: A response to Lynn Waterhouse. Submitted for publication to Gale Sinatra (Ed.) for inclusion in *Educational Psychologist.*

Gardner, H., Feldman, D., & Krechevsky, M. (Eds.). (1998). *Project Zero frameworks for early childhood education*. New York: Teachers College Press three volumes.

Schaler, J. (Ed.). (2006). *Gardner under fire* Chicago: Open Court Publishing.