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Abstract: Discusses myths and misunderstanding of theory of multiple intelligences according to the books `Frames of Mind,' and `Multiple Intelligences: The Theory of Practice,'. Assessment standards for multiple intelligences; Similarity of intelligence with domains or disciplines; Validity of the psychological connotation of the term. (*AN: 9512053705*)

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REFLECTIONS ON MULTIPLE INTELLIGENCES

Myths and Messages

Mr. Gardner discusses seven myths that have grown up about multiple intelligences and attempts to set the record straight by presenting seven complementary "realities."

A silence of a decade's length is sometimes a good idea. I published Frames of Mind, an introduction to the theory of multiple intelligences (MI theory) in 1983.[1] Because I was critical of current views of intelligences within the discipline of psychology, I expected to stir controversy among my fellow psychologists. This expectation was not disappointed.

I was unprepared for the large and mostly positive reaction to the theory among educators. Naturally I was gratified by this response and was stimulated to undertake some projects exploring the implications of MI theory, I also took pleasure from -- and was occasionally moved by --the many attempts to institute an MI approach to education in schools and classrooms. By and large, however. except for a few direct responses to criticisms,[2] I did not speak up about new thoughts concerning the theory itself.

In 1993 my self-imposed silence was broken in two ways. My publisher issued a 10th-anniversary edition of Frames of Mind, to which I contributed a short, reflective introductory essay. In tandem with that release, the publisher issued Multiple Intelligences: The Theory in Practice, a set of articles chronicling some of the experiments undertaken in the wake of MI theory -- mostly projects pursued by colleagues at Harvard Project Zero, but also other MI initiatives.[3] This collection gave me the opportunity to answer some other criticisms leveled against MI theory and to respond publicly to some of the most frequently asked questions.

In the 12 years since Frames of Mind was published, I have heard, read, and seen several hundred different interpretations of what MI theory is and how it can be applied in the schools.[4] Until now, I have been content to let MI theory take on a life of its own. As I saw it, I had issued an "ensemble of ideas" (or "memes") to the outer world, and I was inclined to let those "memes" fend for themselves.[5] Yet, in light of my own reading and observations, I believe that the time has come for me to issue a set of new "memes" of my own.

In the next part of this article, I will discuss seven myths that have grown up about multiple intelligences and, by putting forth seven complementary "realities," I will attempt to set the record straight. Then, in the third part of the article, reflecting on my observations of MI experiments in the schools, I will describe three primary ways in which education can be enhanced by a multiple intelligences perspective.

In what follows, I make no attempt to isolate MI theory from MI practice. "Multiple intelligences" began as a theory but was almost immediately put to practical use. The commerce between theory and practice has been ready, continuous, and, for the most part, productive.

Myths of Multiple Intelligences

Myth 1. Now that seven intelligences have been identified, one can --and perhaps should -- create seven tests and secure seven scores.

Reality 1. MI theory represents a critique of "psychometrics-as-usual." A battery of MI tests is inconsistent with the major tenets of the theory.

Comment. My concept of intelligences is an outgrowth of accumulating knowledge about the human brain and about human cultures, not the result of a priori definitions or of factor analyses of test scores. As such, it becomes crucial that intelligences be assessed in ways that are "intelligent-fair," that is, in ways that examine the intelligence directly rather than through the lens of linguistic or logical intelligence (as ordinary paper-and-pencil tests do).

Thus, if one wants to look at spatial intelligence, one should allow an individual to explore a terrain for a while and see whether she can find her way around it reliably. Or if one wants to examine musical intelligence, one should expose an individual to a new melody in a reasonably familiar idiom and see how readily the person can learn to sing it, recognize it, transform it, and the like.

Assessing multiple intelligences is not a high priority in every setting. But when it is necessary or advisable to assess an individual's intelligences, it is best to do so in a comfortable setting with materials (and cultural roles) that are familiar to that individual. These conditions are at variance with our general conception of testing as a decontextualized exercise using materials that are unfamiliar by design, but there is no reason in principle why an "intelligence-fair" set of measures cannot be devised. The production of such useful tools has been our goal in such projects as Spectrum, Arts PROPEL, and Practical Intelligence for School."

Myth 2. An intelligence is the same as a domain or a discipline.

Reality 2. An intelligence is a new kind of construct, and it should not be confused with a domain or a discipline.

Comment. I must shoulder a fair part of the blame for the propagation of the second myth. In writing Frames of Mind, I was not as careful as I should have been in distinguishing intelligences from other related concepts. As I have now come to understand, largely through my interactions with Mihaly Csikszentmihalyi and David Feldman,[7] an intelligence is a biological and psychological potential; that

potential is capable of being realized to a greater or lesser extent as a consequence of the experiential, cultural, and motivational factors that affect a person.

In contrast, a domain is an organized set of activities within a culture, one typically characterized by a specific symbol system and its attendant operations. Any cultural activity in which individuals participate on more than a casual basis, and in which degrees of expertise can be identified and nurtured, should be considered a domain. Thus, physics, chess, gardening, and rap music are all domains in Western culture. Any domain can be realized through the use of several intelligences; thus the domain of musical performance involves bodily-kinesthetic and personal as well as musical intelligences. By the same token, a particular intelligence, like spatial intelligence, can be put to work in a myriad of domains, ranging from sculpture to sailing to neuroanatomical investigations.

Finally, a field is the set of individuals and institutions that judge the acceptability and creativity of products fashioned by individuals (with their characteristic intelligences) within established or new domains. Judgments of quality cannot be made apart from the operation of members of a field, though it is worth noting that both the members of a field and the criteria that they employ can and do change over time.

Myth 3. An intelligence is the same as a "learning style," a "cognitive style," or a "working style."

Reality 3. The concept of style designates a general approach that an individual can apply equally to every conceivable content. In contrast, an intelligence is a capacity, with its component processes, that is geared to a specific content in the world (such as musical sounds or spatial patterns).

Comment. To see the difference between an intelligence and a style, consider this contrast. If a person is said to have a "reflective" or an "intuitive" style, this designation assumes that the individual will be reflective or intuitive with all manner of content, ranging from language to music to social analysis. However, such an assertion reflects an empirical assumption that actually needs to be investigated. It might well be the case that an individual is reflective with music but fails to be reflective in a domain that requires mathematical thinking or that a person is highly intuitive in the social domain but not in the least intuitive when it comes to mathematics or mechanics.

In my view, the relation between my concept of intelligence and the various conceptions of style needs to be worked out empirically, on a style-by-style basis. We cannot assume that "style" means the same thing to Carl Jung, Jerome Kagan, Tony Gregoric, Bernice McCarthy, and other inventors of stylistic terminology.[8] There is little authority for assuming that an individual who evinces a style in one milieu or with one content will necessarily do so with other diverse contents- and even less authority for equating styles with intelligences.

Myth 4. MI theory is not empirical. (A variant of Myth 4 alleges that MI theory is empirical but has been disproved.)

Reality 4. MI theory is based wholly on empirical evidence and can be revised on the basis of new empirical findings.

Comment. Anyone who puts forth Myth 4 cannot have read Frames of Mind. Literally hundreds of empirical studies were reviewed in that book, and the actual intelligences were identified and delineated on the basis of empirical findings. The seven intelligences described in Frames of Mind represented my best-faith effort to identify mental abilities of a scale that could be readily discussed and critiqued.

No empirically based theory is ever established permanently. All claims are at risk in the light of new findings. In the last decade, I have collected and reflected on empirical evidence that is relevant to the claims of MI theory, 1983 version. Thus work on the development in children of a "theory of mind," as well as the study of pathologies in which an individual loses a sense of social judgment, has provided fresh evidence for the importance and independence of interpersonal intelligence.[9] In contrast, the finding of a possible link between musical and spatial thinking has caused me to reflect on the possible relations between faculties that had previously been thought to be independent.[10]

Many other lines of evidence could be mentioned here. The important point is that MI theory is constantly being reconceptualized in terms of new findings from the laboratory and from the field (see also Myth 7).

Myth 5. MI theory is incompatible with g (general intelligence),[11] with hereditarian accounts, or with environmental accounts of the nature and causes of intelligence.

Reality 5. MI theory questions not the existence but the province and explanatory power of g. By the same token, MI theory is neutral on the question of heritability of specific intelligences, instead underscoring the centrality of genetic/environmental interactions.

Comment. Interest in g comes chiefly from those who are probing scholastic intelligence and those who traffic in the correlations between test scores. (Recently people have become interested in the possible neurophysiological underpinnings of g[12] and, sparked by the publication of The Bell Curve,[13] in the possible social consequences of "low g.") While I have been critical of much of the research in the g tradition, I do not consider the study of g to be scientifically improper, and I am willing to accept the utility of g for certain theoretical purposes. My interest, obviously, centers on those intelligences and intellectual processes that are not covered by g.[14]

While a major animating force in psychology has been the study of the heritability of intelligence(s), my inquiries have not been oriented in this direction. I do not doubt that human abilities -- and human differences -- have a genetic base. Can any serious scientist question this at the end of the 20th century? And I believe that behavioral genetic studies, particularly of twins reared apart, can illuminate certain issues.[15] However, along with most biologically informed scientists, I reject the "inherited versus learned" dichotomy and instead stress the interaction, from the moment of conception, between genetic and environmental factors.

Myth 6. MI theory so broadens the notion of intelligence that it includes all psychological constructs and thus vitiates the usefulness, as well as the usual connotation, of the term.

Reality 6. This statement is simply wrong. I believe that it is the standard definition of intelligence that

narrowly constricts our view, treating a certain form of scholastic performance as if it encompassed the range of human capacities and leading to disdain for those who happen not to be psychometrically bright. Moreover, I reject the distinction between talent and intelligence; in my view, what we call "intelligence" in the vernacular is simply a certain set of "talents" in the linguistic and/or logical-mathematical spheres.

Comment. MI theory is about the intellect, the human mind in its cognitive aspects. I believe that a treatment in terms of a number of semi-independent intelligences presents a more sustainable conception of human thought than one that posits a single "bell curve" of intellect.

Note, however, that MI theory makes no claims whatsoever to deal with issues beyond the intellect. MI theory is not, and does not pretend to be, about personality, will, morality, attention, motivation, and other psychological constructs. Note as well that MI theory is not connected to any set of morals or values. An intelligence can be put to an ethical or an antisocial use. Poet and playwright Johann Wolfgang yon Goethe and Nazi propagandist Joseph Goebbels were both masters of the German language, but how different were the uses to which they put their talents!

Myth 7. There is an eighth (or ninth or 10th) intelligence.

Reality 7. Not in my writings so far, But I am working on it.

Comment. For the reasons suggested above, I thought it wise not to attempt to revise the principal claims of MI theory before the 1983 version of the theory had been debated. But recently, I have turned my attention to possible additions to the list. If I were to rewrite Frames of Mind today, I would probably add an eighth intelligence -- the intelligence of the naturalist. It seems to me that the individual who is able readily to recognize flora and fauna, to make other consequential distinctions in the natural world, and to use this ability productively (in hunting, in farming, in biological science) is exercising an important intelligence and one that is not adequately encompassed in the current list. Individuals like Charles Darwin or E. O. Wilson embody the naturalist's intelligence, and, in our consuming culture, youngsters exploit their naturalist's intelligence as they make acute discriminations among cars, sneakers, or hairstyles.

I have read in several secondary sources that there is a spiritual intelligence and, indeed, that I have endorsed a spiritual intelligence. That statement is not true. It is true that I have become interested in understanding better what is meant by "spirituality" and by "spiritual individuals"; as my understanding improves, I expect to write about this topic. Whether or not it proves appropriate to add "spirituality" to the list of intelligences, this human capacity certainly deserves discussion and study in nonfringe psychological circles.

Messages About MI in the Classroom

If one were to continue adding myths to the list, a promising candidate would read: There is a single educational approach based on MI theory.

I trust that I have made it clear over the years that I do not subscribe to this myth.[16] On the contrary,

MI theory is in no way an educational prescription. There is always a gulf between psychological claims about how the mind works and educational practices, and such a gulf is especially apparent in a theory that was developed without specific educational goals in mind. Thus, in educational discussions, I have always taken the position that educators are in the best position to determine the uses to which MI theory can and should be put.

Indeed, contrary to much that has been written, MI theory does not incorporate a "position" on tracking, gifted education, interdisciplinary curricula, the layout of the school day, the length of the school year, or many other "hot button" educational issues. I have tried to encourage certain "applied MI efforts," but in general my advice has echoed the traditional Chinese adage "Let a hundred flowers bloom." And I have often been surprised and delighted by the fragrance of some of these fledgling plants -- for example, the use of a "multiple intelligences curriculum" in order to facilitate communication between youngsters drawn from different cultures or the conveying of pivotal principles in biology or social studies through a dramatic performance designed and staged by students.

I have become convinced, however, that while there is no "right way" to conduct a multiple intelligences education, some current efforts go against the spirit of my formulation and embody one or more of the myths sketched above. Let me mention a few applications that have jarred me.

The attempt to teach all concepts or subjects using all the intelligences. As I indicate below, most topics can be powerfully approached in a number of ways. But there is no point in assuming that every topic can be effectively approached in at least seven ways, and it is a waste of effort and time to attempt to do this.

The belief that it suffices, in and of itself just to go through the motions of exercising a certain intelligence, I have seen classes in which children are encouraged simply to move their arms or to run around, on the assumption that exercising one's body represents in itself some kind of MI statement. Don't read me as saying that exercise is a bad thing; it is not. But random muscular movements have nothing to do with the cultivation of the mind . . . or even of the body!

The use of materials associated an intelligence as background. In some classes, children am encouraged to read or to carry out math exercises while music is playing in the background. Now I myself like to work with music in the background. But unless I focus on the performance (in which case the composition is no longer serving as background), the music's function is unlikely to be different from that of a dripping faucet or a humming fan.

The use of intelligences primarily as mnemonic devices. It may well be the case that it is easier to remember a list if one sings it or even if one dances while reciting it. I have nothing against such aids to memory. However, these uses of the materials of an intelligence are essentially trivial. What is not trivial -- as I argue below -- is to think musically or to draw on some of the structural aspects of music in order to illuminate concepts like biological evolution or historical cycles.

The conflating of intelligences with other desiderata. This practice is particularly notorious when it comes to the personal intelligences. Interpersonal intelligence has to do with understanding other people, but it is often distorted as a license for cooperative learning or applied to individuals who are extroverted. Intrapersonal intelligence has to do with understanding oneself, but it is often distorted as a rationale for

self-esteem programs or applied to individuals who are loners or introverted. One receives the strong impression that individuals who use the terms in this promiscuous way have never read my writings on intelligence.

The direct evaluation (or even grading) of intelligences, without regard to context or content. Intelligences ought to be seen at work when individuals are carrying out productive activities that are valued in a culture. And that is how reporting of learning and mastery in general should take place. I see little point in grading individuals in terms of how "linguistic" or how "bodily-kinesthetic" they are; such a practice is likely to introduce a new and unnecessary form of tracking and labeling. As a parent (or as a supporter of education living in the community), I am interested in the uses to which children's intelligences are put; reporting should have this focus.

Note that it is reasonable, for certain purposes, to indicate that a child seems to have a relative strength in one intelligence and a relative weakness in another. However, these descriptions should be mobilized in order to help students perform better in meaningful activities and perhaps even to show that a label was premature or erroneous.

Having illustrated some problematic applications of MI theory, let me now indicate three more positive ways in which MI can be -- and has been -- used in the schools.

The cultivation of desired capabilities. Schools should cultivate those skills and capacities that are valued in the community and in the broader society. Some of these desired roles are likely to highlight specific intelligences, including ones that have usually been given short shrift in the schools. If, say, the community believes that children should be able to perform on a musical instrument, then the cultivation of musical intelligence toward that end becomes a value of the school. Similarly, emphasis on such capacities as taking into account the feelings of others, being able to plan one's own life in a reflective manner, or being able to find one's way around an unfamiliar terrain are likely to result in an emphasis on the cultivation of interpersonal, intrapersonal, and spatial intelligences respectively.

Approaching a concept, subject matter, or discipline in a variety of ways. Along with many other school reformers. I am convinced that schools attempt to cover far too much material and that superficial understandings (or nonunderstandings) are the inevitable result. It makes far more sense to spend a significant amount of time on key concepts, generative ideas, and essential questions and to allow students to become thoroughly familiar with these notions and their implications.

Once the decision has been made to dedicate time to particular items, it then becomes possible to approach those topics or notions in a variety of ways. Not necessarily seven ways, but in a number of ways that prove pedagogically appropriate for the topic at hand. Here is where MI theory comes in. As I argue in The Unschooled Mind, nearly every topic can be approached in a variety of ways, ranging from the telling of a story, to a formal argument, to an artistic exploration, to some kind of "hands-on" experiment or simulation. Such pluralistic approaches should be encouraged.[17]

When a topic has been approached from a number of perspectives, three desirable outcomes ensue. First, because children do not all learn in the same way, more children will be reached. I term this desirable state of affairs "multiple windows leading into the same room." Second, students secure a sense of what it is like to be an expert when they behold that a teacher can represent knowledge in a

number of different ways and discover that they themselves are also capable of more than a single representation of a specified content. Finally, since understanding can also be demonstrated in more than one way, a pluralistic approach opens up the possibility that students can display their new understandings -- as well as their continuing difficulties-in ways that are comfortable for them and accessible to others. Performance-based examinations and exhibitions are tailor-made for the foregrounding of a student's multiple intelligences.

3. The personalization of education. Without a doubt, one of the reasons that MI theory has attracted attention in the educational community is because of' its ringing endorsement of an ensemble of propositions: we are not all the same; we do not all have the same kinds of minds; education works most effectively for most individuals if these differences in mentation and strengths are taken into account rather than denied or ignored. I have always believed that the heart of the MI perspective- in theory and in practice-inheres in taking human differences seriously. At the theoretical level, one acknowledges that all individuals cannot be profitably arrayed on a single intellectual dimension. At the practical level, one acknowledges that any uniform educational approach is likely to serve only a minority of children.

When I visit an "MI school," I look for signs of personalization: evidence that all involved in the educational encounter take such differences among human beings seriously; evidence that they construct curricula, pedagogy, and assessment insofar as possible in the light of these differences. All the MI posters, indeed all the references to me personally, prove to be of little avail if the youngsters continue to be treated in homogenized fashion. By the same token, whether or not members of the staff have even heard of MI theory, I would be happy to send my children to a school with the following characteristics: differences among youngsters are taken seriously, knowledge about differences is shared with children and parents, children gradually assume responsibility for their own learning, and materials that are worth knowing are presented in ways that afford each child the maximum opportunity to master those materials and to show others (and themselves) what they have learned and understood.

Closing Comments

I am often asked for my views about schools that are engaged in MI efforts. The implicit question may well be: "Aren't you upset by some of the applications that are carried out in your name?"

In truth, I do not expect that initial efforts to apply any new ideas are going to be stunning. Human experimentation is slow, difficult, and filled with zigs and zags. Attempts to apply any set of innovative ideas will sometimes be half-hearted, superficial, even wrongheaded.

For me the crucial question concerns what has happened in a school (or class) two, three, or four years after it has made a commitment to an MI approach. Often, the initiative will be long since forgotten -- the fate, for better or worse, of most educational experiments. Sometimes, the school has gotten stuck in a rut, repeating the same procedures of the first days without having drawn any positive or negative lessons from this exercise. Needless to say, I am not happy with either of these outcomes.

I cherish an educational setting in which discussions and applications of MI have catalyzed a more fundamental consideration of schooling --its overarching purposes, its conceptions of what a productive

life will be like in the future, its pedagogical methods, and its educational outcomes, particularly in the context of the values of that specific community. Such examination generally leads to more thoughtful schooling. Visits with other schools and more extended forms of networking among MI enthusiasts (and critics) constitute important parts of this building process. If, as a result of these discussions and experiments, a more personalized education is the outcome, I feel that the heart of MI theory has been embodied. And if this personalization is fused with a commitment to the achievement of worthwhile (and attainable) educational understandings for all children, then the basis for a powerful education has indeed been laid.

The MI endeavor is a continuing and changing one. There have emerged over the years new thoughts about the theory, new understandings and misunderstandings, and new applications, some very inspired, some less so. Especially gratifying to me has been the demonstration that this process is dynamic and interactive: no one, not even its creator, has a monopoly on MI wisdom or foolishness. Practice is enriched by theory, even as theory is transformed in the light of the fruits and frustrations of practice. The burgeoning of a community that takes MI issues seriously is not only a source of pride to me but also the best guarantor that the theory will continue to live in the years ahead.

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ILLUSTRATION: A child has a world of his own and do things the way he perceived his world.

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