

Internet References . . .

The Dilemma of Determinism

This is a link to the classic paper written by William James, one of psychology's founding fathers, in which he discusses the doctrine of determinism versus the idea of human agency.

http://www.rci.rutgers.edu/~stich/104_Master_File/104_Readings/James/JAMES_DILEMMA_OF_DETERMINISM.pdf

Informal Education

This website is dedicated to expanding knowledge in many areas. The following link provides a brief history of Howard Gardner and his theory of multiple intelligences, as well as links to other helpful sites.

<http://www.intfed.org/thinkers/gardner.htm>

UNIT 4

Cognitive Processes

P *psychology is often defined as the study of behavior and cognition. Consequently, cognitive processes are a pivotal arena for psychological research. How do our minds work? For example, are individual differences in cognition explained by a theory of multiple intelligences? Traditional intelligence tests typically provide one overall score, as if it is valid to speak of intelligence as one entity, cutting across all activities and skills. Does this have some validity? Recent research has seemed to question this overall intelligence notion. Is it better to think of many different intelligences corresponding to different aspects of thought and behavior? How much is knowledge and intelligence related to capacity for memory? Is it possible for memories to be false? Can you forget a major life event, such as sexual abuse, only to remember it later through therapy? How much should we rely on such "recovered" memories to inform us about our actual past and present?*

- Is the Theory of Multiple Intelligences Valid?
- Are the Recovered Memories of Psychological Trauma Valid?

ISSUE 10



Is the Theory of Multiple Intelligences Valid?

YES: Howard Gardner, from *Multiple Intelligences: New Horizons* (Basic Books, 2006)

NO: John White, from "Howard Gardner: The Myth of Multiple Intelligences," Lecture at Institute of Education, University of London (November 17, 2004)

ISSUE SUMMARY

YES: Psychologist Howard Gardner argues for the validity of his theory of multiple intelligences because it both reflects the data collected about intelligent human behavior and explains why people excel in some areas but fail in others.

NO: Educational philosopher John White believes that Gardner cannot prove the existence of multiple types of intelligence and argues that people who are generally able to adapt well will excel in whatever field they choose.

People who saw Michael Jordan play professional basketball were amazed by his grace and poise. Even when ill, he could outscore most other players. What was the source of his abilities? Did his proficiency at playing basketball necessarily imply that he was good at other activities? After all, Jordan was also generally acknowledged as being bright, articulate, and socially skilled. On the other hand, his attempt to play major league baseball was less than successful. Can people only be really good at one thing and not any others, or is some general ability—some general intelligence—involved?

The traditional view of intelligence is that there is a single factor, often called *g*, that underlies most other abilities. The other abilities may require some unique pieces of information to perform successfully, such as playing a musical instrument, but those persons with a high *g* are thought to be quicker in acquiring this information or more easily adaptable to these new circumstances. Most tests of intelligence assume and reinforce this more traditional view of intelligence because they seem to imply that a person's intelligence can be represented as a single, measurable quantity or score.

Howard Gardner, however, has recently challenged this popular tradition. In the first article of this issue, this renowned psychologist has argued that intelligence is best understood not as a single general capacity, but as a number of distinct and relatively independent abilities. Michael Jordan may have bodily-kinesthetic intelligence, but that does not mean he has musical intelligence. Gardner argues that the single-factor theory of intelligence is outdated and should be replaced by a theory of multiple intelligences. He believes that individuals have profiles reflecting both strengths and weaknesses in different areas of intelligence. According to Gardner a good test-taker—the usual recipient of a high "IQ" score—is not necessarily any "smarter" than a good presenter; they both happen to be more intelligent in different areas.

In the second selection, John White examines Gardner's position in some detail, calling it the "myth of multiple intelligences." White begins his critique of Gardner's theory by describing Gardner's original attempt (1983) to define intelligence. According to White, Gardner's original definition was itself too narrow. Instead of defining different types of intelligence as Gardner does, White believes that intelligence has a lot to do with the general flexibility or adaptability of a person in achieving their goals. The more intelligent a person is, the more capable that person is of achieving his or her goals, no matter how divergent these goals may be. In this sense, then, White's proposal is a recent update of the more traditional general approach to intelligence that Gardner is attempting to replace.

POINT

- Humans are best understood as having a number of relatively independent intellectual faculties.
- Multiple intelligence theory gives a framework for why people succeed in some areas but fail in others.

- Evidence from brain research, human development, evolution, and cross-cultural comparisons support the theory of multiple intelligences.
- Multiple intelligence theory has important educational implications.

COUNTERPOINT

- The existence of multiple types of intellectual faculties has not been proven.

- People who are generally "intelligent" will be able to succeed because they understand how to adapt to the differing performance areas.

- The research cited by Gardner could just as well be used to support general intelligence theory.

- The acceptance of multiple intelligence theory in educational settings could give students a false picture of themselves.



Howard Gardner

In a Nutshell

The original scene: Paris, 1900—La Belle Epoque. The city fathers approached a talented psychologist named Alfred Binet with an unusual request. Families were flocking to the capital city from the provinces, and a good many of their children were having trouble with their schoolwork. Could Binet devise some kind of a measure that would predict which youngsters would succeed and which would fail in the primary grades of Paris schools?

As almost everybody knows, Binet succeeded. In short order, his discovery came to be called the “intelligence test”; his measure, the IQ, for “intelligence quotient” (mental age divided by chronological age and multiplied by 100). Like other Parisian fashions, the IQ soon made its way to the United States, where it enjoyed a modest success until World War I, when it was used to test over one million American military recruits. With its use by the U.S. armed forces, and with America’s victory in the conflict, Binet’s invention had truly arrived. Ever since, the IQ test has looked like psychology’s biggest success—a genuinely useful scientific tool.

What is the vision that led to the excitement about IQ? At least in the West, people had always relied on intuitive assessments of how smart other people were. Now intelligence seemed to be quantifiable. Just as you could measure someone’s actual or potential height, now, it seemed, you could measure someone’s actual or potential intelligence. We had one dimension of mental ability along which we could array everyone.

The search for the perfect measure of intelligence has proceeded apace. Here, for example, are some quotations from an advertisement for one such test:

Need an individual test which quickly provides a stable and reliable estimate of intelligence in four or five minutes per form? Has three forms? Does not depend on verbal production or subjective scoring? Can be used with the severely physically handicapped (even paralyzed) if they can signal yes or no? Handles two-year-olds and superior adults with the same short series of items and the same format? Only \$16.00 complete.

Now, a single test that can do all that is quite a claim. American psychologist Arthur Jensen suggests that we could look at reaction time to assess

From *Multiple Intelligences: New Horizons* (Basic Books, 2006), pp. 3-24. Copyright © 2006 by Howard Gardner. Reprinted by permission of the author.

intelligence: a set of lights go on; how quickly can the subject react? British psychologist Hans Eysenck recommends that investigators of intelligence look directly at brain waves. And with the advent of the gene chip, many look forward to the day when we can glance at the proper gene locus on the proper chromosome, read off someone’s IQ, and confidently predict his or her life chances....

I would like to present an alternative vision—one based on a radically different view of the mind, and one that yields a very different view of school. It is a pluralistic view of mind, recognizing many different and discrete facets of cognition, acknowledging that people have different cognitive strengths and contrasting cognitive styles. I introduce the concept of an individual-centered school that takes this multifaceted view of intelligence seriously. This model for a school is based in part on findings from sciences that did not even exist in Binet’s time: cognitive science (the study of the mind) and neuroscience (the study of the brain). One such approach I have called the theory of multiple intelligences. Let me tell you something about its sources and claims to lay the groundwork for the discussions on education in the chapters that follow.

I introduce this new point of view by asking you to suspend for a moment the usual judgment of what constitutes intelligence, and let your thoughts run freely over the capabilities of human beings—perhaps those that would be picked out by the proverbial visitor from Mars. Your mind may turn to the brilliant chess player, the world-class violinist, and the champion athlete; certainly, such outstanding performers deserve special consideration. Are the chess player, violinist, and athlete “intelligent” in these pursuits? If they are, then why do our tests of “intelligence” fail to identify them? If they are not intelligent, what allows them to achieve such astounding feats? In general, why does the contemporary construct of intelligence fail to take into account large areas of human endeavor?

To approach these questions I introduced the theory of multiple intelligences (MI) in the early 1980s. As the name indicates, I believe that human cognitive competence is better described in terms of a set of abilities, talents, or mental skills, which I call *intelligences*. All normal individuals possess each of these skills to some extent; individuals differ in the degree of skill and in the nature of their combination. I believe this theory of intelligence may be more humane and more veridical than alternative views of intelligence and that it more adequately reflects the data of human “intelligent” behavior. Such a theory has important educational implications.

What Constitutes an Intelligence?

The question of the optimal definition of intelligence looms large in my inquiry. And it is here that the theory of multiple intelligences begins to diverge from traditional points of view. In the classic psychometric view, intelligence is defined operationally as the ability to answer items on tests of intelligence. The inference from the test scores to some underlying ability is supported by statistical techniques. These techniques compare responses of subjects at different ages; the apparent correlation of these test scores across ages and

across different tests corroborates the notion that the general faculty of intelligence, called *g* in short, does not change much with age, training, or experience. It is an inborn attribute or faculty of the individual.

Multiple intelligences theory, on the other hand, pluralizes the traditional concept. An intelligence is a computational capacity—a capacity to process a certain kind of information—that originates in human biology and human psychology. Humans have certain kinds of intelligences, whereas rats, birds, and computers foreground other kinds of computational capacities. An intelligence entails the ability to solve problems or fashion products that are of consequence in a particular cultural setting or community. The problem-solving skill allows one to approach a situation in which a goal is to be obtained and to locate the appropriate route to that goal. The creation of a cultural product allows one to capture and transmit knowledge or to express one's conclusions, beliefs, or feelings. The problems to be solved range from creating an end for a story to anticipating a mating move in chess to repairing a quilt. Products range from scientific theories to musical compositions to successful political campaigns.

MI theory is framed in light of the biological origins of each problem-solving skill. Only those skills that are universal to the human species are considered (again, we differ from rats, birds, or computers). Even so, the biological proclivity to participate in a particular form of problem solving must also be coupled with the cultural nurturing of that domain. For example, language, a universal skill, may manifest itself particularly as writing in one culture, as oratory in another culture, and as the secret language composed of anagrams or tongue twisters in a third.

Given the desideratum of selecting intelligences that are rooted in biology and that are valued in one or more cultural settings, how does one actually identify an intelligence? In coming up with the list, I reviewed evidence from various sources: knowledge about normal development and development in gifted individuals; information about the breakdown of cognitive skills under conditions of brain damage; studies of exceptional populations, including prodigies, savants, and autistic children; data about the evolution of cognition over the millennia; cross-cultural accounts of cognition; psychometric studies, including examinations of correlations among tests; and psychological training studies, particularly measures of transfer and generalization across tasks. Only those candidate intelligences that satisfied all or a healthy majority of the criteria were selected as bona fide intelligences. A more complete discussion of each of these criteria and of the intelligences that were initially identified may be found in *Frames of Mind*, especially chapter 4. In that foundational book I also consider how the theory might be disproved and compare it with competing theories of intelligence. An update of some of these discussions is presented in *Intelligence Reframed*, and in the chapters that follow.

In addition to satisfying the aforementioned criteria, each intelligence must have an identifiable core operation or set of operations. As a neurally based computational system, each intelligence is activated or triggered by certain kinds of internal or external information. For example, one core of musical intelligence is the sensitivity to pitch relations, and one core of linguistic intelligence is the sensitivity to the phonological features of a language.

An intelligence must also be susceptible to encoding in a symbol system—a culturally contrived system of meaning that captures and conveys important forms of information. Language, picturing, and mathematics are but three nearly worldwide symbol systems that are necessary for human survival and productivity. The relationship of an intelligence to a human symbol system is no accident. In fact, the existence of a core computational capacity anticipates the actual or potential creation of a symbol system that exploits that capacity. While it may be possible for an intelligence to develop without an accompanying symbol system, a primary characteristic of human intelligence may well be its gravitation toward such an embodiment.

The Original Set of Intelligences

Having sketched the characteristics and criteria for an intelligence, I turn now to a brief consideration of each of the intelligences that were proposed in the early 1980s. I begin each sketch with a thumbnail biography of a person who demonstrates an unusual facility with that intelligence. (These biographies were developed chiefly by my longtime colleague Joseph Walters.) The biographies illustrate some of the abilities that are central to the fluent operation of a given intelligence. Although each biography illustrates a particular intelligence, I do not wish to imply that in adulthood intelligences operate in isolation. Indeed, except in abnormal individuals, intelligences always work in concert, and any sophisticated adult role will involve a melding of several of them. Following each biography is a survey of the various sources of data that support each candidate as an intelligence.

Musical Intelligence

When Yehudi Menuhin was three years old, his parents smuggled him into San Francisco Orchestra concerts. The sound of Louis Persinger's violin so entranced the young child that he insisted on a violin for his birthday and Louis Persinger as his teacher. He got both. By the time he was ten years old, Menuhin was an international performer.

Violinist Yehudi Menuhin's musical intelligence manifested itself even before he had touched a violin or received any musical training. His powerful reaction to that particular sound and his rapid progress on the instrument suggest that he was biologically prepared in some way for a life in music. Menuhin is one example of evidence from child prodigies that support the claim that there is a biological link to a particular intelligence. Other special populations, such as autistic children who can play a musical instrument beautifully but who cannot otherwise communicate, underscore the independence of musical intelligence.

A brief consideration of the evidence suggests that musical skill passes the other tests for an intelligence. For example, certain parts of the brain play important roles in the perception and production of music. These areas are characteristically located in the right hemisphere, although musical skill is not as clearly localized in the brain as natural language. Although the particular

susceptibility of musical ability to brain damage depends on the degree of training and other individual characteristics, there is clear evidence that amnesia or a selective loss of musical ability, occurs. . . .

Bodily-Kinesthetic Intelligence

Fifteen-year-old Babe Ruth was playing catcher one game when his team was taking a "terrific beating." Ruth "burst out laughing" and criticized the pitcher loudly. Brother Mathias, the coach, called out, "All right, George, YOU pitch!" Ruth was stunned and nervous: "I never pitched in my life . . . I can't pitch." The moment was transformative, as Ruth recalls in his autobiography: "Yes, as I took the position, I felt a strange relationship between myself and that pitcher's mound. I felt, somehow, as if I had been born out there and that this was a kind of home for me." As sports history shows, he went on to become a great major league pitcher (and, of course, attained legendary status as a hitter).

Like Menuhin, Babe Ruth was a prodigy who recognized his "instrument" immediately on his first exposure to it, before receiving any formal training.

Control of bodily movement is localized in the motor cortex, with each hemisphere dominant or controlling bodily movements on the contralateral side. In right-handers, the dominance for bodily movement is ordinarily found in the left hemisphere. The ability to perform movements when directed to do so can be impaired even in individuals who can perform the same movements reflexively or on a nonvoluntary basis. The existence of apraxia constitutes one line of evidence for a bodily-kinesthetic intelligence.

The evolution of specialized body movements is of obvious advantage to the species, and in human beings this adaptation is extended through the use of tools. Body movement undergoes a clearly defined developmental schedule in children; there is little question of its universality across cultures. Thus, it appears that bodily-kinesthetic "knowledge" satisfies many of the criteria for an intelligence.

The consideration of bodily-kinesthetic knowledge as "problem solving" may be less intuitive. Certainly carrying out a mime sequence or hitting a tennis ball is not solving a mathematical equation. And yet, the ability to use one's body to express an emotion (as in a dance), to play a game (as in a sport), or to create a new product (as in devising an invention) is evidence of the cognitive features of body usage. . . .

Logical-Mathematical Intelligence

Along with the companion skill of language, logical-mathematical reasoning provides the principal basis for IQ tests. This form of intelligence has been thoroughly investigated by traditional psychologists, and it is the archetype of "raw intelligence" or the problem-solving faculty that purportedly cuts across domains. It is perhaps ironic, then, that the actual mechanism by which one arrives at a solution to a logical-mathematical problem is not as yet completely understood—and the processes involved in leaps like those described by McClintock remain mysterious.

Logical-mathematical intelligence is supported as well by empirical criteria. Certain areas of the brain are more prominent in mathematical calculation than others; indeed, recent evidence suggests that the linguistic areas in the parietal lobes are more important for logical deduction, and the visuospatial areas in the parietofrontal lobes for numerical calculation. There are persons who perform great feats of calculation even though they are tragically deficient in most other areas. Child prodigies in mathematics abound. The development of this intelligence in children has been carefully documented by Jean Piaget and other psychologists.

Linguistic Intelligence

As with the logical intelligence, calling linguistic skill an intelligence is consistent with the stance of traditional psychology. Linguistic intelligence also passes our empirical tests. For instance, a specific area of the brain, called Broca's area, is responsible for the production of grammatical sentences. A person with damage to this area can understand words and sentences quite well but has difficulty putting words together in anything other than the simplest of sentences. Other thought processes may be entirely unaffected.

The gift of language is universal, and its rapid and unproblematic development in most children is strikingly constant across cultures. Even in deaf populations where a manual sign language is not explicitly taught, children will often invent their own manual language and use it surreptitiously. We thus see how an intelligence may operate independently of a specific input modality or output channel.

Spatial Intelligence

Navigation around the Caroline Islands in the South Seas is accomplished by native sailors without instruments. The position of the stars, as viewed from various islands, the weather patterns, and water color are the principal signposts. Each journey is broken into a series of segments, and the navigator learns the position of the stars within each of these segments. During the actual trip the navigator must mentally picture a reference island as it passes under a particular star. From that envisioning exercise, he computes the number of segments completed, the proportion of the trip remaining, and any corrections in heading that are required. The navigator cannot see the islands as he sails along; instead he maps their locations in his mental picture of the journey.

Spatial problem solving is required for navigation and for the use of the notational system of maps. Other kinds of spatial problem solving are brought to bear in visualizing an object from different angles and in playing chess. The visual arts also employ this intelligence in the use of space.

Evidence from brain research is clear and persuasive. Just as the middle regions of the left cerebral cortex have, over the course of evolution, been selected as the site of linguistic processing in right-handed persons, the posterior regions of the right cerebral cortex prove most crucial for spatial processing. Damage to these regions causes impairment of the ability to find one's way around a site, to recognize faces or scenes, or to notice fine details. . . .

Interpersonal Intelligence

... Interpersonal intelligence builds on a core capacity to notice distinctions among others—in particular, contrasts in their moods, temperaments, motivations, and intentions. In more advanced forms, this intelligence permits a skilled adult to read the intentions and desires of others, even when they have been hidden. This skill appears in a highly sophisticated form in religious or political leaders, salespersons, marketers, teachers, therapists, and parents. . . . All indices in brain research suggest that the frontal lobes play a prominent role in interpersonal knowledge. Damage in this area can cause profound personality changes while leaving other forms of problem solving unharmed—after such an injury, a person is often not the “same person”

Biological evidence for interpersonal intelligence encompasses two additional factors often cited as unique to humans. One factor is the prolonged childhood of primates, including the close attachment to the mother. In cases where the mother (or a substitute figure) is not available and engaged, normal interpersonal development is in serious jeopardy. The second factor is the relative importance in humans of social interaction. Skills such as hunting, tracking, and killing in prehistoric societies required the participation and cooperation of large numbers of people. The need for group cohesion, leadership, organization, and solidarity follows naturally from this.

Intrapersonal Intelligence

In an essay called “A Sketch of the Past,” written almost as a diary entry, Virginia Woolf discusses the “cotton wool of existence”—the various mundane events of life. She contrasts this cotton wool with three specific and poignant memories from her childhood: a fight with her brother, seeing a particular flower in the garden, and hearing of the suicide of a past visitor:

These are three instances of exceptional moments. I often tell them over, or rather they come to the surface unexpectedly. But now for the first time I have written them down, and I realize something that I have never realized before. Two of these moments ended in a state of despair. The other ended, on the contrary, in a state of satisfaction. . . . The sense of horror [in hearing of the suicide] held me powerless. But in the case of the flower, I found a reason; and was thus able to deal with the sensation. I was not powerless. . . . Though I still have the peculiarity that I receive these sudden shocks, they are now always welcome; after the first surprise, I always feel instantly that they are particularly valuable. And so I go on to suppose that the shock-receiving capacity is what makes me a writer. I hazard the explanation that a shock is at once in my case followed by the desire to explain it. I feel that I have had a blow, but it is not, as I thought as a child, simply a blow from an enemy hidden behind the cotton wool of daily life; it is or will become a revelation of some order; it is a token of some real thing behind appearances; and I make it real by putting it into words.

This quotation vividly illustrates the intrapersonal intelligence—knowledge of the internal aspects of a person: access to one's own feeling life, one's range of emotions, the capacity to make discriminations among these emotions and eventually to label them and to draw on them as a means of understanding and guiding one's own behavior. A person with good intrapersonal intelligence has viable and effective model of him- or herself—one consistent with a description constructed by careful observers who know that person intimately. Since this intelligence is the most private, evidence from language, music, or some other more expressive form of intelligence is required if the observer is to detect it a work. In the above quotation, for example, linguistic intelligence serves as a medium in which to observe intrapersonal knowledge in operation.

We see the familiar criteria at work in the intrapersonal intelligence. A with the interpersonal intelligence, the frontal lobes play a central role in personality change. Injury to the lower area of the frontal lobes is likely to produce irritability or euphoria, whereas injury to the higher regions is more likely to produce indifference, listlessness, slowness, and apathy—a kind of depressive personality. In persons with frontal lobe injury, the other cognitive functions often remain preserved. In contrast, among aphasics who have recovered sufficiently to describe their experiences, we find consistent testimony: while there may have been a diminution of general alertness and considerable depression about the condition, the individual in no way felt himself to be a different person. He recognized his own needs, wants, and desires and tried as best he could to achieve them.

The autistic child is a prototypical example of an individual with impaired intrapersonal intelligence; indeed, the child may not even be able to refer to himself. At the same time, such children may exhibit remarkable abilities in the musical, computational, spatial, mechanical, and other non-personal realms. . . .

The Unique Contributions of the Theory

As human beings, we all have a repertoire of skills for solving different kinds of problems. My investigation began, therefore, with a consideration of these problems, the contexts in which they are found, and the culturally significant products that are the outcome. I did not approach “intelligence” as a refined human faculty that is brought to bear in literally any problem setting; rather, I began with the problems that human beings solve and the products that they cherish. In a sense I then worked back to the intelligences that must be responsible.

Evidence from brain research, human development, evolution, and cross-cultural comparisons was brought to bear in the search for the relevant human intelligences: a candidate was included only if reasonable evidence to support its membership was found across these diverse fields. Again, this tack differs from the traditional one: since no candidate faculty is necessarily an intelligence, I could make an up-or-down decision on a motivated basis. In the traditional approach to intelligence, there is no opportunity for this type of empirical decision.

My belief is that these multiple human faculties, the intelligences, are to a significant extent independent of one another. Research with brain-damaged adults repeatedly demonstrates that particular faculties can be lost while other high level of ability in one intelligence, say mathematics, does not require a similarly high level in another, like language or music. This independence of intelligences contrasts sharply with traditional measures of IQ that find high correlations among test scores. I speculate that the usual correlations among subsets of IQ tests come about because all of these tasks in fact measure the ability to respond rapidly to items of a logical-mathematical or linguistic sort; these correlations might be substantially reduced if one were to survey in a contextually appropriate way—what I call “intelligence-fair assessment”—the full range of human problem-solving skills.

Until now, my discussion may appear to suggest that adult roles depend largely on the flowering of a single intelligence. In fact, however, nearly every cultural role of any degree of sophistication requires a combination of intelligences. Thus, even an apparently straightforward role, like playing the violin, transcends a reliance on musical intelligence. To become a successful violinist requires bodily-kinesthetic dexterity and the interpersonal skills of relating to an audience and, in a different way, of choosing a manager; quite possibly it involves an intrapersonal intelligence as well. Dance requires skills in bodily-kinesthetic, musical, interpersonal, and spatial intelligences in varying degrees. Politics requires an interpersonal skill, a linguistic facility, and perhaps some logical aptitude.

Inasmuch as nearly every cultural role requires several intelligences, it becomes important to consider individuals as a collection of aptitudes rather than as having a singular problem-solving faculty that can be measured directly through pencil-and-paper tests. Even given a relatively small number of such intelligences, the diversity of human ability is created through the differences in these profiles. In fact, it may well be that the total is greater than the sum of the parts. An individual may not be particularly gifted in any intelligence, and yet, because of a particular combination or blend of skills, he or she may be able to fill some niche uniquely well. Thus, it is of paramount importance to assess the particular combination of skills that may earmark an individual for a certain vocational or avocational niche.

In brief MI theory leads to three conclusions:

1. All of us have the full range of intelligences; that is what makes us human beings, cognitively speaking.
2. No two individuals—not even identical twins—have exactly the same intellectual profile because, even when the genetic material is identical, individuals have different experiences (and identical twins are often highly motivated to distinguish themselves from one another).
3. Having a strong intelligence does not mean that one necessarily acts intelligently. A person with high mathematical intelligence might use her abilities to carry out important experiments in physics or create powerful new geometric proofs, but she might waste these abilities in playing the lottery all day or multiplying ten-digit numbers in her head.

All of these statements are about the psychology of human intelligence—to which MI theory seeks to make a contribution. But of course they raise powerful educational, political, and cultural questions. Those questions will engage us in later parts of the book.

Conclusion

I believe that in our society we suffer from three biases, which I have nicknamed “Westist,” “Testist,” and “Bestist.” “Westist” involves putting certain Western cultural values, which date back to Socrates, on a pedestal. Logical thinking, for example, is important; rationality is important; but they are not the only virtues. “Testist” suggests a bias towards focusing on those human abilities or approaches that are readily testable. If it can’t be tested, it sometimes seems, it is not worth paying attention to. My feeling is that assessment can be much broader, much more humane than it is now and that psychologists should spend less time ranking people and more time trying to help them.

“Bestist” is a thinly veiled reference to David Halberstam’s 1972 book *The Best and the Brightest*. Halberstam’s title referred ironically to the figures, among them Harvard faculty members, who were brought to Washington to help President John F. Kennedy and in the process launched the Vietnam War. I think any belief that all the answers to a given problem lie in one certain approach, such as logical-mathematical thinking, can be very dangerous. Current views of intellect need to be leavened with other, more comprehensive points of view.

It is of the utmost importance that we recognize and nurture all of the varied human intelligences and all of the combinations of intelligences. We are all so different largely because we have different combinations of intelligences. If we recognize this, I think we will have at least a better chance of dealing appropriately with the many problems that we face in the world. If we can mobilize the spectrum of human abilities, not only will people feel better about themselves and more competent; it is even possible that they will also feel more engaged and better able to join the rest of the world community in working for the broader good. Perhaps if we can mobilize the full range of human intelligences and ally them to an ethical sense, we can help increase the likelihood of our survival on this planet, and perhaps even contribute to our thriving.

John White



Howard Gardner: The Myth of Multiple Intelligences

Introduction

... MI theory identifies some eight or nine types of intelligence: not only the logico-mathematical and linguistic kinds measured by IQ, but, also musical, spatial, bodily-kinesthetic, intrapersonal, interpersonal, to which have now been added naturalist and possibly existential intelligences. My question will be: is there good evidence that these intelligences exist? Or are they a myth?

MI theory is all the rage in school reform across the world. I heard recently from James McAleese of Richard Hale School in Hertford that the Canadian province of Quebec has introduced the idea into all its secondary schools. In Britain many schools are using MI as a basis for a more flexible type of teaching and learning, which acknowledges that children have different preferred "learning styles." Not everyone learns best through traditional methods which draw heavily on linguistic and logical skills. So room is made for children who can bring to bear on their learning their ability in music, say, or their kinesthetic abilities. In history, for example, pupils' work on the Treaty of Versailles might include a conventional essay for the linguistic children and a rap presentation of the treaty for the musical ones. In many schools children are given questionnaires to profile their intelligences. Some schools give their pupils smart cards—the size of credit cards—inscribed with their preferred intelligences.

And MI does appear to deliver the goods in terms of inclusion and raising self-esteem. Pupils who used to think themselves dim can blossom when they find out how bright they are making music or interacting with people. Kinesthetic learners can now see themselves as "body smart." The idea that intelligence is not necessarily tied to IQ has been a liberating force.

The educational world, including government agencies as well as schools, has gone for MI in a big way. But for the most part it seems to have taken over the ideas without questioning their credentials. MI theory comes to schools "shrink-wrapped", as one teacher put it to me. This is understandable, since schools do not have the time to investigate all the ideas that come their way that look as if they have some mileage in the classroom.

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The idea that children come hard-wired with a whole array of abilities in varying strengths is appealing. But is there any reason to think it true?

Everything turns on the claim that the eight or nine intelligences actually exist. The bare idea that intelligence can take many forms and is not tied to the abstract reasoning tested by IQ is both welcome and true. But it's hardly news. Many philosophers and psychologists have agreed with common sense that intelligence has a lot to do with being flexible in pursuit of one's goals. You want to buy a washing machine and check things out rather than rush into it. You vary your tactics against your opponent when you are playing tennis. Your child is being bullied at school and you work out what's best to do. There are innumerable forms in which intelligence can be displayed. We don't need a new theory to tell us this. Long ago the philosopher Gilbert Ryle reminded us that 'the boxer, the surgeon, the poet and the salesman' engage in their own kinds of intelligent operation, applying 'their special criteria to the performance of their special tasks.' All this is now widely accepted.

This means that there are as many types of human intelligence as there are types of human goals. Gardner has corralled this huge variety into a small number of categories. Is this justified? Is it true that there are just eight or nine intelligences? Or is MI theory a myth? ...

I'm aware that, if Gardner is right, I'll probably be connecting more with those of you whose preferred learning style is linguistic or logical. But kinesthetics among you please feel free to walk about the room or express things in mime. Interpersonals are most welcome to discuss the argument with their neighbour as we go along. I thought I'd cracked it for those stronger on the spatial, since I've got some overheads. But then I realized they are mainly filled with words—so I guess the linguistically intelligent will be the winners in this.

How Do You Know When You've Got an Intelligence?

How does Gardner pick out his intelligences? How does he identify them? In Chapter 4 he writes

First of all, what are the prerequisites for an intelligence: that is, what are the general desiderata to which a set of intellectual skills ought to conform before that set is worth consideration in the master list of intellectual competences? Second, what are the actual criteria by which we can judge whether a candidate competence, which has passed the "first cut," ought to be invited to join our charmed circle of intelligences?

Identifying an intelligence is thus a two-stage process. First, it has to satisfy the prerequisites; and secondly it has to satisfy the criteria.

Prerequisites

The first stage is the more important. If a candidate fails here, it stands no chance. So what Gardner says about prerequisites is crucial. He tells us that

A human intellectual competence must entail a set of skills of problem-solving . . . and must also entail the potential for finding or creating problems. . . . These prerequisites represent my effort to focus on those intellectual strengths that prove of some importance within a cultural context.

He goes on to say that

a prerequisite for a theory of multiple intelligences, as a whole, is that it captures a reasonably complete gamut of the kinds of abilities valued by human cultures.

Failing Candidates

Which candidates fail and which pass the test? Among failures, Gardner includes the "ability to recognize faces" because it "does not seem highly valued by cultures."

Is this true? If most of us could not recognize the faces of our relatives, friends, colleagues, or political leaders, it is hard to see how social life would be possible.

Passing Candidates

In Gardner 1983 the passing candidates must include the seven intelligences. They must have all been picked out for their problem-solving and problem-creating skills important in human cultures.

Are we talking about all human cultures, most, or only some of them? Gardner is not clear on this.

Neither is there any evidence that he has surveyed a great number of human societies in order to reach this conclusion.

There is a mystery about this "first cut." How is it that recognizing faces fails, but musical ability passes? Gardner does not give us any clear indication.

What he has in mind, I think, is that the ability to recognize faces is not an *intellectual area* that is culturally valued. It's not like mathematics or music or the visual arts. If this is so—and I give further evidence below that it is—then for something to count as an intelligence it has to be a subdivision of the realm of the intellect. It has to be something like a form of knowledge or understanding in the sense used by Paul Hirst in his well-known theory of "forms of knowledge."

If this is right, then the first thing you have to do to pick out an intelligence—as a prerequisite—has nothing to do with empirical investigations of individuals and seeing how their minds or their brains work. It has all to do with reflecting on the social world—specifically that part of the social world concerned with intellectual activities and achievements. To be an intelligence is—so far—the same as being a separable realm of understanding.

I will come back to the "prerequisites" later. As we shall see, they are of pivotal importance.

Criteria

Once a candidate intelligence has satisfied the prerequisites, it has to meet various criteria. These comprise:

- potential isolation of the area by brain damage
- the existence in it of idiots savants, prodigies and other exceptional individuals
- an identifiable core operation/set of operations
- a distinctive developmental history, along with a definable set of expert "end-state" performances
- an evolutionary history and evolutionary plausibility
- support from experimental psychological tasks
- support from psychometric findings
- susceptibility to encoding in a symbol system.

I examined these problems in a little book I wrote on Gardner's theory in 1998 called *Do Howard Gardner's Multiple Intelligences Add Up?* Here I will simply summarise some main arguments. I begin with specific items. For convenience, I begin with two of them taken together.

"An identifiable core operation/set of operations"

"A distinctive developmental history, along with a definable set of expert 'end-state' performances"

The interconnectedness of these two can be illustrated by linguistic intelligence. This has as its "core operations" a sensitivity to the meaning of words, to the order among words, to the sounds and rhythms of words, and to the different functions of language. These core operations are seen at work "with special clarity" in the work of the poet. Linguistic intelligence also possesses a distinctive developmental history, culminating in expert "end-state" performances like those of the poet. Other intelligences illustrate the same point.

Gardner's theory of intelligence is developmentalist. Developmentalism is the theory that the biological unfolding between two poles from seed through to mature specimen that we find in the physical world is also found in the mental world. In his criteria, Gardner acknowledges the two poles in the mental case. At one end, there are allegedly genetically given capacities. At the other end is the mature state, the "definable set of expert 'end-state' performances". Gardner is interested in the really high fliers in each area—people like famous poets (linguistic); famous mathematicians (logic-mathematical); famous musicians (musical); famous visual artists; famous dancers, mime-artists (bodily/kinaesthetic); famous politicians (interpersonal); writers like Proust (intrapersonal).

Problems in Developmentalism

Gardner's theory faces an objection besetting all forms of developmentalism. This theory is based on the assumption that the unfolding familiar in the biological realm is also found in the mental. There are two problems about this, one for each of the two poles.

- i. First the seed, or initial state. Biological seeds, plant or animal, *have within them the power to unfold* into more complex stages, given

appropriate environmental conditions. To locate a parallel initial state in the mental case it is not enough to pick out innately given capacities. There is no doubt that such capacities exist. We are all born with the power to see and hear things, to desire food etc. But these do not have within them the power to *unfold* into more complex forms. They do *change* into more sophisticated versions: the desire for food, for instance, becomes differentiated into desires for hamburgers and ice-cream. But it does not unfold into these. The changes are cultural products: people are socialized into them.

ii. Secondly, the mature state—Gardner's "end-state." We understand this notion well enough in physical contexts. A fully-grown human body or delphinium is one which can grow no further. It can certainly go on *changing*, but the changes are to do with maintenance and deterioration, not further growth. If we apply these ideas to the mind, do we want to say that all human beings have mental ceilings—e.g. in each of Gardner's intelligences—beyond which they cannot progress? Psychologists like Cyril Burt have believed this, but the notion is deeply questionable. I can argue this through further if you wish.

There is also a problem about *what counts* as maturity—the end-state—in the case of the intelligences. With the human body, we know through the use of our senses when maturity has occurred: we can see that a person is fully grown. What equivalent is there in the mental realm?

We do not just use our senses. We cannot see a person's intellectual maturity as we can see that he or she is physically fully grown. Significantly, ideas about maturity are likely to be controversial. Some people would understand intellectual maturity in quiz show terms, as being able to marshal and remember heaps of facts; others would emphasize depth of understanding, etc. The judgments lack the consensus found in judgments about fully grown pine trees. This is because we are in the realm of value judgments rather than of observable facts.

Gardner's examples of high levels of development in the intelligences reflect his own value judgments. He has in mind the achievements of selected poets, composers, religious leaders, politicians, scientists, novelists and so on. It is Gardner's value judgments, not his empirical discoveries as a scientist, that are his starting point.

I have tried to show that whether we look towards the beginning of towards the end of the development process, we find apparently insuperable problems in identifying mental counterparts to physical growth. Since developmentalist assumptions are central to Gardner's MI theory, the latter is seriously undermined.

"Susceptibility to encoding in a symbol system"

Gardner writes:

following my mentor Nelson Goodman and other authorities, I conceive of a symbol as any entity (material or abstract) that can denote

or refer to any other entity. On this definition, words, pictures, diagrams, numbers, and a host of other entities are readily considered symbols.

It is important to see how wide the range of Gardner's symbols is. They include not only obvious ones like words and mathematical symbols, but also paintings, symphonies, plays, dances and poems. It is because works of art are symbols in his view that he can connect many of his intelligences with their own kind of symbolic entities. For instance, it is not only words which are the symbols associated with linguistic intelligence: this also contains such symbols as poems. Symbols in music include musical works; in spatial intelligence paintings and sculptures, in b/k intelligence dances; in intrapersonal intelligence introspective novels like Proust's. But the notion that a work of art is itself a symbol is problematic in aesthetics. The main difficulty is: what is it symbolizing? Take a work of abstract art. Or a poem by Sylvia Plath. What are the symbols of?

The whole theory of symbolization in art from Suzanne Langer to Nelson Goodman is deeply problematic.

We can discuss this further later if you'd like. For the moment my claim is that this criterion "**susceptibility to encoding in a symbol system**" rests on a highly dubious aesthetic theory. It is a long way from empirical science.

Without going through all the other criteria, a word about two of them

"The potential isolation of the area by brain damage"

I think we can take it that there are localized areas of function within the brain. If one part of the brain is damaged, one's sight is impaired, if another one's ability to move one's left hand. All this shows is that certain physiological necessary conditions of exercising these capacities are absent. It does not help to indicate the existence of separate "intelligences."

Given his developmentalism, one can understand why Gardner should look to brain localization in order to identify intelligences, for he has to provide an account of the "seed" which is to unfold into its mature form, and this seed has to be part of our original constitution. But the kinds of function picked out by brain localization research do not have the power to *unfold* into mature versions of themselves.

"The existence, in an area, of idiots savants, prodigies and other exceptional individuals"

Gardner invokes the existence of *idiots savants* to support his theory, but what I know of them does not lead me to think of them as intelligent. What they all have in common is a *mechanical* facility, one which lacks the flexibility adapting means to ends found in intelligent behaviour.

Prodigies only support Gardner's case if there is good evidence that their talents are innate. But what evidence there is seems to point to acquired abilities.

Conclusion

It would be natural to think that the "criteria" are all straightforwardly applicable. But this is not so. The criteria to do with development and with symbols presuppose the truth of *theories*—one in psychology, the other in aesthetics—which turn out to be untenable. And this undermines the viability of MI theory as a whole. . . .

My main concern is not with MI theory for its own sake but with its present influence in the educational world. If I am right, the eight or nine intelligences have not been shown to exist. If so, what are the implications for the school reforms based on the theory? As things are now, children are being encouraged to see themselves, in PSHE (Personal, Social and Health Education) lessons and elsewhere, as having innately given strengths in certain areas. This is part of their self-understanding. But if the theory is wrong, they may be getting a false picture of themselves. . . .

