

Different Views of Individual Differences

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Only gradually over time has it dawned on me that most cognitive psychologists, including myself, view individual differences in how people learn and remember in a markedly different way than do many laypersons and even, perhaps, other types of psychologists.

At the risk of oversimplification, I think cognitive psychologists typically view individual differences as akin to differences in parameter values. We assume individuals differ in such things as working-memory capacity, prior relevant knowledge, speed of rehearsal or retrieval, visual/spatial versus verbal/propositional skills and preferences, and so forth – but we don't think individuals differ in the basic functional architecture of learning and memory. That is, we assume that the same basic architecture governs how everybody – in the absence of serious organic or psychogenic disorders – stores new information, remembers or forgets that information over time, and accesses or fails to access that information when it is needed.

It was in the context of testifying as an expert witness that it first became clear to me that laypersons (and lawyers) often have a quite different view of individual differences. After providing testimony on the memory dynamics that can result in false identifications, even by sincere and well meaning witnesses, my testimony was often challenged in a way that initially caught me by surprise. I was confronted by prosecution arguments that a particular witness was a unique individual — that I had not interviewed or tested said individual and, hence, could not know whether the dynamics I had described held for that particular person. It took me a while to realize that I was not only being asked whether some people might be better than others at remembering faces or events, or whether it was possible for a given person to remember something accurately under conditions in which the average person would not, but also whether my testimony had any relevance at all to the particular witness in question.

Could I really say, for example, that the factors associated with reduced accuracy of identification—such as familiarity induced by prior or subsequent exposures to a defendant, impoverished encoding conditions at the time of the event in question, or long retention intervals, sometimes extending into weeks and months — actually applied to the witness in question? (I remember one prolonged and somewhat bizarre interchange in the courtroom in which I tried to draw parallels to the functioning of the human heart – arguing that our hearts might differ in size, rate of beating, and so forth, but not in functional architecture, such as number of chambers, direction of blood flow, and so forth.)

In giving talks to general audiences on the implications of basic research on learning and memory for optimizing training and instruction, I have occasionally encountered similar, if less aggressive, questions from people who wanted to know whether my generalizations actually apply to them or their children. Again, what seems to be behind such questions is the idea that they, as unique individuals, might have a learning style that somehow places them outside of my generalizations about the conditions of learning that do and do not facilitate retention or transfer. Maybe, for example, massed practice or some other manipulation of the conditions of learning known to produce poor learning might actually enhance

their learning.

In response to such questioning, I have argued, not always successfully, that learning procedures should be customized to the learner, but not because some individuals learn via different process dynamics than do other individuals. Rather, the optimal learning procedures for different individuals or populations may need to differ because new learning builds on old learning, there are motivational differences in how individuals respond to difficulties and errors, and so forth – and different individuals and groups will often come to a learning environment with distinct differences on such dimensions.

Behind such questions, in my view, is a general societal disposition to over-attribute differences in performance between individuals to differences in innate ability or talent. The role of aptitude is over-appreciated and the role of experience, effort, and practice is under appreciated.

As I have argued elsewhere (Bjork, 1994), I think the belief that performing well is due to talent or having a “gift” has a number of negative consequences. One consequence is that it can breed an attitude of helplessness: We hope we have the gifts to excel in some domain, and we assume there’s nothing much we can do if we don’t have those gifts.

Such beliefs can also function as self-fulfilling prophecies: An early bad experience – on a mathematics or science exam, for example – can lead a young person to label himself or herself as lacking the innate ability to perform well in a given domain. In turn, this labeling leads to behaviors that reinforce that conclusion. Educational and occupational activities that might provide evidence to the contrary are avoided, and experiences in some domain of presumed talent are sought out. Over time, these behaviors produce confirming evidence in both directions. Stereotypes about the supposed innate abilities of people from different ethnic, racial, or gender groups can also motivate behaviors that turn such assumptions into self-fulfilling prophecies.

Another negative consequence of the societal belief that differences in performance reflect differences in innate ability is an emphasis on selection rather than on training. Companies devote enormous effort and resources to trying to identify individuals who have the “right stuff,” rather than on training programs that might enhance the performance of current or potential employees.

Such societal assumptions also result in counterproductive attitudes about the meaning and role of errors during training and instruction. A large body of experimental evidence suggests that optimizing learning and instruction requires creating what I have called “desirable difficulties” for the learner. Introducing such difficulties also increases the incidence of errors and mistakes during the learning process. Such errors, rather than reflecting inadequacies of the learner, are a necessary component of effective training and instruction – because people learn by making and correcting mistakes. But if you come to these situations believing that differences in individual performance reflect differences in innate ability, then errors and mistakes become something to be avoided because they are assumed to reflect inadequacies of the learner or instructor or both. As a consequence, those responsible for the design of training and instruction are motivated to structure the conditions of learning in a way that reduces or eliminates errors. Unfortunately, the byproduct of doing so is far-from-optimal training and instruction.

What I find particularly distressing about the emphasis on innate ability is that young people in our country are confronted with a mixed message. In certain domains, especially athletics, the message

conveyed by television and other media is that if you “just do it” and persist in pursuing your dreams, you can be anything you want to be—an NBA star, perhaps, or an Olympic athlete. When it comes to academic achievement, career choices, and other intellectual goals, however, the message — conveyed in subtle and not-so-subtle ways — is different: If you want to be a scientist, or physician, or lawyer, or engineer, or business executive, you need to have certain special innate abilities. Without those abilities, persistence and effort is futile. What is especially unfortunate and paradoxical is that for most young people such a mixed message is exactly backwards. For them, it is the dream of NBA or Olympic stardom that is the impossible dream, and it is the dream of being a surgeon, or scientist, or teacher, or entrepreneur that is within reach.

Reference

Bjork, R.A. (1994). Institutional impediments to effective training. In D. Druckman and R. A. Bjork (Eds.), *Learning, remembering, believing: Enhancing human performance*. (pp.295-306) Washington, DC: National Academy Press.