Open Dialogue peer review:

# A response to Hartley

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### Teaching psychology for successful intelligence

MY BEGINNINGS in the field of psychology were, at best, shaky. I enrolled in the introductory psychology course at Yale in the fall semester of 1968. I was excited about my intended future career in psychology. I had done poorly on IQ tests as a child, and was determined to study intelligence and show that there was more to intelligence than performance on IQ tests. But, if anything, my performance in that first course was consistent with my low IQ scores as a child. I received a grade of C, and my professor, handing back a test paper, commented to me that there was a famous Sternberg in psychology and it looked like there would not be another one. As to my grade for the course, he referred to it as a 'gift.'

Fortunately, I decided to switch majors to pure math, and my truly dismal performance in a course on real analysis – a course I dropped halfway through – made the grade of C look quite promising. Oddly, perhaps, I graduated with highest honours in psychology. I went on to graduate school at Stanford, returning to Yale three years later as an assistant professor. Thirty-five years later I was president of the American Psychological Association, and listed by the ISI as one of the top 0.5 per cent of psychologists in terms of citations. Whatever skills were needed to succeed in the introductory-psychology course as it was taught to me were not the same ones as I needed for some measure of success in professional psychology.

It would make sense to teach psychology in a way that values the skills that the profession values. If courses require different skills from those required for the profession, then there are two risks. One is that students will leave the field who have the potential to succeed later in it. A second risk is that students will succeed in the courses, think that they have the skills to succeed in the field, and then be disappointed when they discover that the skills that got them through the introductory courses do not serve them well later on.

Whatever the skills are that are needed for success in the field, they go well beyond the memory skills that tend to be emphasised in many introductory courses. Indeed, looking at my own introductory course, I find that the knowledge taught today in that course differs radically from the knowledge taught in 1968. There is relatively little overlap between modern texts and those of 40 to 50 years ago. If all one learned in an introductory-psychology course were knowledge, one would become out of date over the course of not so many years.

I became convinced that the teaching in my introductory psychology course was deficient. I was determined to do better when I taught psychology, seven years after I took the introductory course. The first course that I taught as an assistant professor at Yale University was entitled 'Theories of Intelligence'. It was based on what seemed to me, in 1975, a stupendous idea. I wanted to write a book by the same title and I thought that I truly could integrate teaching and research by writing a book at the same time that I taught a course about the contents.

Predictably, the course was a terrible flop. The first day I had roughly 50 students, the second session, roughly 25, the third, roughly 12, and I ended up with five students. It was

as close to a geometric progression as one could get in the real world. Too bad the progression was going in the wrong direction! The problem, of course, is that I could not keep up with the book. It was my first year and I had myriad diverse responsibilities. There was no way I was going to find time to write a book in a semester. The book did come out – 15 years later – under another title (Sternberg, 1990).

I learned, over the course of my career, that teaching and research can go together, but not in the way I anticipated. In particular, I have found that, however Hartley (this issue) may have experienced things, at the very least, my own teaching of psychology has changed radically over the years. Yet I agree with Hartley that, in general, much less has changed in the teaching of psychology than one would hope.

In my 1975 course on 'Theories of Intelligence', my principal mode of teaching was lecture. I also used a textbook – I can't remember which one. I occasionally had question-and-answer sessions but overwhelmingly I used lectures, often accompanied by the use of transparencies projected by an overhead projector. In retrospect, the course must have been a deadly bore.

In my 2011 course on 'The Nature of Leadership', here are some of the kinds of activities in which students engage:

- Deal with a team member who publicly challenges your authority as team leader.
- Devise a procedure to hire a dean.
- Figure out one way to improve the university and then convince funders (the class) to fund you.
- Deal with an incompetent team member whom you cannot discharge.
- Analyse the performance of a major world leader in terms of course concepts.
- Analyse your own leadership performance in terms of course concepts.
- Listen to well-known leaders come to our class and talk about their leadership activities and relate what they have done to what you do.

- Read reminiscences, case studies, special topics, and a textbook on leadership theories and research.

My way of teaching now is very different from my way of 1975. This essay is about the difference. It is the result of more than three decades of research informing teaching through a theory called the 'theory of successful intelligence' (Sternberg, 1985, 1997, 2003, 2010; Sternberg & Grigorenko, 2007; Sternberg, Jarvin & Grigorenko, 2009).

**The theory of successful intelligence**
The theory of successful intelligence suggests that many students' failures to achieve at a level that matches their potential often results from teaching and assessment that are narrow in conceptualisation and rigid in implementation – like my first year of teaching as an assistant professor. The traditional ways of the academy simply fail to meet the needs of all students. The traditional ways typically shine a metaphorical spotlight on a small number of students with a certain pattern of abilities, and almost never shine the spotlight on a large number of students who have the ability to succeed, but whose patterns of abilities do not correspond to the patterns valued by the traditional teaching and testing. The solution is to value other ability patterns and then change teaching and assessment so that these other ability patterns can lead to success in school.

According to the proposed theory, *successful intelligence* is (1) the use of an integrated set of abilities needed to attain success in life, however an individual defines it, within his or her sociocultural context. People are successfully intelligent by virtue of (2) recognising their strengths and making the most of them at the same time that they recognise their weaknesses and find ways to correct or compensate for them. Successfully intelligent people (3) adapt to, shape, and select environments through (4) finding a balance in their use of analytical, creative, and practical abilities (Sternberg,

1997). A person can excel in analytical, creative, and/or practical abilities; all of them, or none of them. The main attribute for successful intelligence is to be able to capitalise on strengths and compensate for weaknesses. Consider each element of the theory in turn.

The first element makes clear that there is no one definition of success that works for everyone, including people who choose teaching of psychology as a field of pursuit. Some teachers excel in large lectures, others in small discussion sections, and still others in one-on-one mentorship. Some may excel in all three of these sets of skills. In general, because people have different life goals, education needs to move away from single targeted measures of success, such as grade-point-average or levels of honors.

The second element asserts that there are different paths to success, no matter what goal one chooses. Some people achieve success in large part through personal charm; others through brilliance of academic intellect; others through stunning originality; others through working extremely hard. For most of us, there are at least a few things we do well, and our successful intelligence is dependent in large part upon making these things 'work for us.' At the same time, we need to acknowledge our weaknesses and find ways either to improve upon them or to compensate for them. For example, we might work hard to improve our skills in an area of weakness, or work as part of a team so that other people compensate for the kinds of things we do not do particularly well.

The third element asserts that success in life is achieved through some balance of adapting to existing environments, shaping those environments, and selecting new environments. Often, when we go into an environment – as do students and teachers in school – we try to modify ourselves to fit those environments. In other words, we adapt. But sometimes it is not enough to adapt: We are not content merely to change ourselves to fit the environment, but rather, also want to change the environment to fit us. In this case, we shape the environment in order to make it a better one for us and possibly for others as well. But there may come times when our attempts to adapt and to shape lead us nowhere – when we simply cannot find a way to make the environment work for us. In these cases, we leave that old environment and select a new environment. Sometimes, the smart thing is to know when to get out.

Finally, we balance three kinds of abilities in order to achieve these ends: analytical abilities, creative abilities, and practical abilities. We need creative abilities to generate ideas, analytical abilities to determine whether they are good ideas, and practical abilities to implement the ideas and to convince others of the value of our ideas. Most people who are successfully intelligent are not equal in these three abilities, but they find ways of making the three abilities work harmoniously together. In the augmented theory of successful intelligence (Sternberg, 2003, 2010, 2011), emphasis is placed as well upon wisdom – the use of one's knowledge and skills to achieve a common good, through the infusion of positive ethical values, by balancing one's own, others', and higher order interests, over the long and short terms.

**The theory of successful intelligence as a basis for teaching psychology**

Teaching for successful intelligence employs several principles: (a) active learning; (b) teaching for creative, analytical, practical, and even wisdom-based thinking; (c) making learning activities personally relevant; (d) making learning concrete as well as abstract; and (e) capitalising on strengths as well as correcting or compensating for weaknesses. If a teacher fails to enable students to capitalise on strengths, that teacher risks creating self-fulfilling prophecies whereby the teacher (like my own in introductory psychology) expects a student not to succeed and that expectation leads the student indeed to fail, or at least, not to succeed at the level he or she is capable of reaching.

Teaching for successful intelligence combines teaching for memory, analytical thinking, creative thinking, practical thinking, and perhaps even wisdom. All teaching and assessment should be balanced in terms of the thinking skills they require. At the same time, as teachers, we need to put behind us the false dichotomy between 'teaching for thinking' and 'teaching for the facts,' or between emphases on thinking and emphases on memory.

Thinking always requires memory and the knowledge base that is accessed through the use of our memories. One cannot analyse what one knows if one knows nothing. One cannot creatively go beyond the existing boundaries of knowledge if one does not know what those boundaries are. And one cannot apply what one knows in a practical manner if one does not know anything to apply.

At the same time, memory for facts without the ability to use those facts is really useless. A story recently appeared in the news about a man who entered a truck upon which an electrical wire had fallen during a continuing storm. A second man, observing the first man's imminent entrance into the truck, shouted at him to stop, but too late. The first man was electrocuted. The first man had Master's degrees in physics and engineering; the second man had no such degrees. Without doubt, the first man's educational achievements gave him the declarative (factual) knowledge that he could have used to save his life. But he was unable to apply this knowledge (turn it into procedures) in a way that would have ensured his survival.

It is for this reason that we encourage teachers to teach and assess achievement in ways that enable students to analyse, create with, and apply their knowledge. When students think to learn, they also learn to think. And there is an added benefit: Students who are taught analytically, creatively, and practically perform better on assessments, apparently without regard to the form the assessments take. That is, they

outperform students instructed in conventional ways, even if the assessments are for straight factual memory (Sternberg, Grigorenko, & Zhang, 2008). Moreover, our research shows that these techniques succeed, regardless of subject-matter area. But what, exactly, are the techniques used to teach analytically, creatively, and practically? (See Table 1 for a summary.)

1. *Teaching analytically means encouraging students to: (a) analyse; (b) critique; (c) judge; (d) compare and contrast; (e) evaluate; and (f) assess.* When teachers refer to teaching for 'critical thinking', they typically mean teaching for analytical thinking. How does such teaching translate into instructional and assessment activities? Consider various examples across the psychology curriculum:

   (a) *Analyse* the ethics of the Milgram (1974) experiments.

   (b) *Critique* the design of the experiment (just gone over in class or in a reading) showing that recall memory sometimes can be better than recognition memory.

   (c) *Judge* the merits of psychoanalytic therapy in treating depression.

   (d) *Compare and contrast* the functioning of the left and right hemispheres of the brain.

   (e) *Evaluate* the validity of the Wechsler Adult Intelligence Scales.

   (f) *Assess* the personality of a particular individual using the MMPI.

2. *Teaching creatively means encouraging students to: (a) create; (b) invent; (c) discover; (d) imagine if…; (e) suppose that…; and (f) predict.* Teaching for creativity requires teachers not only to support and encourage creativity, but also to role-model it and to reward it when it is displayed (Sternberg, Jarvin & Grigorenko, 2009; Sternberg & Lubart, 1995). In other words, teachers need not only to talk the talk, but also to walk the walk. Consider some examples of

**Table 1: Summary of selected prompts for Analytical, Creative, and Practical instruction and assessment.**

| *Analytical* | *Creative* | *Practical* |
|---|---|---|
| (a) analyse | (a) create | (a) apply |
| (b) critique | (b) invent | (b) use |
| (c) judge | (c) discover | (c) put into practice |
| (d) compare and contrast | (d) imagine if... | (d) implement |
| (e) evaluate | (e) suppose that... | (e) employ |
| (f) assess | (f) predict | (f) render practical |

instructional or assessment activities that encourage students to think creatively.

(a) *Create* a theory of leadership.

(b) *Invent* a dialogue between a behaviour therapist and a psycho-analytic therapist evaluating the origins of agoraphobia.

(c) *Discover* a situation in which people act against their economic interests.

(d) *Imagine* if IQ tests were invented by hunters living in earlier times.

(e) *Suppose that* schools taught students to think wisely. How would the world be a different place?

(f) *Predict* the results of an experiment about to be performed in class.

3. *Teaching practically means encouraging students to: (a) apply; (b) use; (c) put into practice; (d) implement; (e) employ; and (f) render practical* what they know. Such teaching must relate to the real practical needs of the students, not just to what would be practical for individuals other than the students (Sternberg et al., 2000). Consider some examples:

(a) *Apply* what you have learned about intermittent reinforcement to gambling behaviour in a casino.

(b) *Use* your knowledge of cognitive-behaviour therapy to design a treatment for a patient suffering from fear of snakes.

(c) *Put into practice* what you have learned in statistics to analyse the results of an experiment.

(d) *Implement* a business plan you have written to start a psychological consulting business.

(e) *Employ* the availability heuristic to explain how well-known individuals with no political experience can win elections.

(f) *Render practical* an idea you have had about psychology.

Teaching for wisdom is part of the augmented theory of successful intelligence. Here are some examples of teaching for wisdom in psychology:

Teaching for wisdom means encouraging students to: (a) apply their knowledge to a common good; (b) over the long and short terms; (c) through the infusion of positive ethical values; (d) by balancing intraper-sonal (one's own), interpersonal (others'), and extrapersonal (larger) interests; and (e) in order to balance adaptation to, shaping of, and selection of environments. Table 2 summarises some of these ideas.

Here are some examples of teaching for wisdom:

(a) Can a war ever *promote a common good?*

(b) Can deception in psychological research ever *be based upon positive ethical values?*

(c) Does practicing therapy without a doctoral degree *promote short-term interests at the expense of long-term ones?*

(d) Are control groups in which participants fail to receive a treatment that may help them ever *ethically justified?*

(e) Can suppression of dissenting opinions in a classroom *serve an interpersonal good –*

**Table 2: Summary of selected prompts for Wisdom-Based instruction and assessment.**

> *Utilise* your knowledge and skills for the common good.
> *Balance interests:* intrapersonal (one's own), interpersonal (others'), and extrapersonal (beyond the individual).
> *Plan* for the long-term as well as the short-term.
> *Infuse* positive ethical values.

for example, a good for the efficient presentation of material to a large number of students? What is perhaps most important is to teach in all of these various ways, not just in some of them, in order to ensure that one helps each student maximise his or her opportunity to learn. When I first taught introductory psychology, I was determined not to repeat the error of my introductory-psychology teacher. I am a more creative learner, and I wanted to ensure that creative learners among my students had a chance to succeed. So I taught in a way that emphasised creative thinking. But I could see after a week or two that the course was failing. The reason was that, like my own introductory-psychology teacher, I was teaching to my own strengths. What the students needed was a balanced approach, not one that substituted one narrow form of teaching for another.

**Conclusion**

All teachers of psychology can teach for successful intelligence. In doing so, they will improve their teaching, improve student learning, and most importantly, modify in a constructive way the entire teaching-learning process. Data collected with thousands of students shows that teaching for successful intelligence works (see Sternberg, Grigorenko & Zhang, 2008; Sternberg, Jarvin & Grigorenko, 2011).

There are other contemporary theories besides the theory of successful intelligence that can serve as a basis for modern teaching (e.g. Ceci, 1996; Gardner, 1983, 1999; Mayer, Salovey & Caruso, 2000). The theory of successful intelligence is only one of several. But whichever theory is used, the time has come to move forward in our teaching and assessment, and to enter the 21st century rather than being stuck in the 20th. Most importantly, it is important to teach for creative, analytical, practical thinking, and wisdom as well as just knowledge and narrow thinking skills.

Perhaps Hartley (this issue) is correct that, in general, the teaching of psychology has not changed much in 50 years. But it can and should. It is time to teach in a way that allows all motivated students to succeed, not just those who happen to learn in traditional ways. If my introductory-psychology course had been taught via the theory of successful intelligence, maybe I would have done better than a C. But then, maybe not.

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## References

Ceci, S.J. (1996). *On intelligence … More or less.* Cambridge, MA: Harvard University Press.

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

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

Mayer, J.D., Salovey, P. & Caruso, D. (2000). Emotional intelligence. In R.J. Sternberg (Ed.), *Handbook of intelligence* (pp.396–421). New York: Cambridge University Press.

Milgram, S. (1974). *Obedience to authority: An experimental view.* New York: Harper & Row.

Sternberg, R.J. (1985). *Beyond IQ: A triarchic theory of human intelligence.* New York: Cambridge University Press.

Sternberg, R.J. (1990). *Metaphors of mind.* New York: Cambridge University Press.

Sternberg, R.J. (2003). *Wisdom, intelligence, and creativity synthesised.* New York: Cambridge University Press.

Sternberg, R.J. (2010). *College admissions for the 21st century.* Cambridge, MA: Cambridge University Press.

Sternberg, R.J. (2011). The theory of successful intelligence. In R.J. Sternberg & S.B. Kaufman (Eds.), *Cambridge handbook of intelligence* (pp.504–527). New York: Cambridge University Press.

Sternberg, R.J., Forsythe, G.B., Hedlund, J., Horvath, J., Snook, S., Williams, W.M., Wagner, R.K. & Grigorenko, E.L. (2000). *Practical intelligence in everyday life.* New York: Cambridge University Press.

Sternberg, R.J. & Grigorenko, E.L. (2007). *Teaching for successful intelligence* (2nd ed.). Thousand Oaks, CA: Corwin.

Sternberg, R.J., Grigorenko, E.L. & Zhang, L.-F. (2008). Styles of learning and thinking matter in instruction and assessment. *Perspectives on Psychological Science, 3*(6), 486–506.

Sternberg, R.J., Jarvin, L. & Grigorenko. E.L. (2009). *Teaching for wisdom, intelligence, creativity, and success.* Thousand Oaks, CA: Corwin.

Sternberg, R.J., Jarvin, L. & Grigorenko, E.L. (2011). *Explorations of the nature of giftedness.* New York: Cambridge University Press.

Sternberg, R.J. & Lubart, T.I. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity.* New York: Free Press.