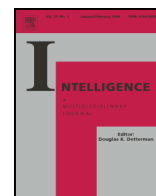




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## Intelligence



## You should be teaching intelligence!

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## ABSTRACT

In this brief paper, I attempt to convince you that you should be teaching a course on human intelligence. First, I review some of the reasons that it is important to teach a course on intelligence and argue that every psychology and education department should be teaching such a course on a regular basis. Second, I discuss my own history of beginning to teach such a course and how that course is currently taught. I also give some suggestions about how to get the course introduced into your department's regular course offerings. Finally, I discuss how you and the field of intelligence research will profit if you teach a course on intelligence.

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## 1. Introduction

If you are reading this, you should be teaching a course in human intelligence. There are numerous reasons it is important for you who know about intelligence to teach what you know about intelligence. Let me list a few of those reasons.

## 1.1. Few intelligence courses are being taught

Recently, I was told by a publisher that, based on a search of U.S. psychology and education course listings, only five courses were being taught on human intelligence (not including courses that teach how to give tests). Compare this to personality courses where nearly every department in the U.S. teaches at least one course on personality. People will never learn about intelligence if they are not taught. Nor will the best students enter our field if they never hear about it.

It makes no sense to allow people to be ignorant of our field. Intelligence is the most reliable and most valid of any social sciences variable. It has given rise to a multi-billion dollar testing industry. Millions of group-administered tests are given annually for job selection, military entrance and placement, and educational admission, to name only a few of the uses. Intelligence tests are used around the world as a

reliable and valid clinical tool in psychology and education. Theory about intelligence is more fully developed and more mathematically sophisticated than for almost any other psychological construct. More is known about the underlying cognitive, genetic, and brain processes for intelligence than for any other complex psychological construct. And yet, according to at least one publisher, there are only five courses about intelligence being taught in the U.S. It would appear that we are keeping our light under a bushel when it is the social sciences' foremost accomplishment.

## 1.2. Those who should know about intelligence do not know

It is amazing to me that we fail to present the crowning achievement of a social science research to an audience eager to hear about it. Students need to know about intelligence if for no other reason than as an example of the power of social science research. But there are many other reasons they should know about it.

For undergraduates, knowing about human intelligence will be helpful to them no matter what their future career choice. For students going into medicine or law, an understanding of the broad range of human ability will be helpful in dealing with patients and clients. In teaching intelligence, I have been amazed at the frequency with which high ability students believe that everyone is like them. They are often shocked when told about the full range of ability and even more shocked when they encounter it in the real world.

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More specific information about intelligence will also be useful. Recent research on cognitive epidemiology may make those going into medicine more sensitive to differences among people when prescribing interventions. In the US, lawyers concerned with capital cases need to know about intelligence since those with intellectual disability are exempt from the death penalty. Lawyers should also be aware of the wide range of ability their clients have. For students in education, understanding human intelligence, how it is measured, and what those measures mean are fundamental to their future careers and for understanding the close relationship between education and intelligence. For anyone going into business, the large literature on employment is important to know.

For all undergraduate students, the many debates about unresolved issues will sharpen their critical judgment skills in weighing evidence and coming to their own conclusions about scientific issues. At the very least, most undergraduates, not many years hence, will be presented with test results for their own children, sometimes by a poorly trained teacher or guidance professional who has little idea what the scores mean. For their children's sake, it will be important for them to understand what those scores mean and how they should be interpreted.

For graduate students in psychology and education, it is incomprehensible to me that they are sent forth to practice either clinical psychology or education knowing as little about intelligence as they do. Very often they have had only a single course that teaches them how to administer tests with very little instruction on what intelligence is or what scores on a test actually mean. To me, this is equivalent to training surgeons as technicians with no knowledge of anatomy or physiology.

### *1.3. Much of what people know about intelligence is wrong because they learned it from the popular press*

A serious problem for the field of human intelligence is that what people do know about intelligence is often wrong. If not outright wrong, it is often distorted through the lens of the popular press. Not surprisingly, reporters tend to favor controversy because it is likely to attract more readers. The stories about human intelligence that get reported tend to be about things that have been historically controversial like ethnic and sex differences. Even at their most extreme, sex and ethnic differences probably account for a small part of intelligence differences among humans. Another popular topic in the press is schemes to raise intelligence. This research is often reported before a successful study or two have been fully substantiated. They are often over sold to the public and disconfirming research is seldom reported in the popular press. Still another popular area of reporting is fraud, misuse, or bias in tests giving the impression that tests are never reliable or valid.

These issues that get the most press attention are controversial because they go to the heart of some of the fundamental assumptions of core social structures. Carson (2007) has traced these philosophical developments going back at least to the enlightenment. Rational thinkers were beginning to have doubts about hereditary monarchies. Democracies seemed the obvious alternative. The question was who should replace hereditary monarchs?

The obvious answer was to select the most able. The question was, could that be anyone? The common sense Scottish philosophers along with others suggested alternatives. One alternative was that the most able would be those who were taught the most because people were identical at birth. Another was that the most able would be those endowed by nature with the most ability and who had learned the most, at least partly because of their initial endowment. Because research on intelligence bears directly on this issue, we should not be surprised that it is controversial as it has been for at least four centuries. We, as researchers, should be aware that what we learn about intelligence bears on these important issues and can ultimately resolve at least the empirical foundations. It is not surprising that people who have implicitly adopted one of the philosophical positions as the foundation of their world view about how we should be governed take issue with empirical results that they feel shake that foundation. Fundamental scientific results that challenge some people's philosophical outlooks have been and probably always will be controversial.

These are just some of the reasons for teaching a course on human intelligence. Undoubtedly, you can think of many more. But these reasons are sufficient to justify anyone who knows about intelligence research to teach what they know.

## **2. How I began teaching an intelligence course**

I am an accidental teacher of intelligence. Though I had been interested in intelligence much of my life, I had been teaching courses largely about intellectual disability. I also taught an introductory psychology course that enrolled between 100 and 250 students. One semester, I entered the lecture hall to find the usual 18 to 20 year old students with one exception. In the front row was someone I judged to be 12 or 13 years old. I initially assumed that it was a sibling of one of the enrolled students. When I called the roll, I found out that this was an enrolled student named Brian (not his real name). I was somewhat concerned that someone so young could keep pace with the class. On investigation, I discovered that Brian was a math prodigy enrolled as a math major. I also later learned that he had been one of the highest scorers in the Study of Mathematically Precocious Youth.

I was right to be fearful about how Brian would do in the course but not in the way I had anticipated. From the first lectures on I found by his questions that Brian, in addition to probably being the smartest person in the room, was the most informed student in the room and had done a substantial amount of reading in psychology on his own. He would ask questions that would be more typical of a graduate student and I would attempt to answer his questions often going well beyond the introductory level information. Both Brian and I enjoyed these intellectual excursions but the rest of the class was less enthusiastic. As the class progressed, when Brian would raise his hand, I could hear an audible groan from the other students. Since the information I covered in answering Brian's questions was probably not going to be on the test, many students regarded it as a nuisance.

After one class in which Brian had a lot of questions and the rest of the class was particularly abusive, I took Brian aside. I told him that he was well advanced over most students in the

class and that his questions were good ones. I suggested that he write them down during class and we would go back to my office and discuss them after class. That is what we did for the rest of the semester. At the end of the semester, Brian said he was particularly interested in intelligence and asked if I would teach a course on the topic.

Our department had no such course on the books so I agreed to teach an independent study course as an overload to my regular teaching assignment. The following semester I taught Brian and four or five additional students I suspect he had recruited. I used the only text book then available by Brody and Brody (1976) and supplemented it with selected readings. These additional students were very much like Brian, intellectually well informed students sometimes referred to as nerds. They were four or five years older than Brian and I had the impression that they had adopted Brian as their special charge. All the students were largely interested in why they were exceptional and “different”. It was a delightful experience to have engaged students concentrating on the thing in which I was most interested. (I happened to meet Brian on the day he had graduated, now about a foot taller, and found that he was scheduled to spend a year at Oxford and would then complete his PhD in mathematics at Harvard.)

I probably learned more from the course than the students. In fact, it was life changing for me. It made me aware that there was a desperate need for such a course to be taught regularly. I did the necessary paperwork to have the course approved by the college and have been teaching it ever since. The course has a substantially larger enrollment than the first time I taught it.

Over the years the course has evolved and I began working on a book to use in the course. That book is nearing completion and I have made finished draft chapters available to people teaching an intelligence course in the hope of getting feedback. If you are interested in using the book in its current state, you can contact me at [detterman@case.edu](mailto:detterman@case.edu) and I will make the draft book available to you. All I ask is that you give me as much feedback as possible.

### 3. How I teach intelligence

The first problem in teaching a course on intelligence is having a course to teach. Universities arose in the 9th or 10th century and their administrative structure copied the structure of religious educational institutions that were their predecessor. Indeed, if a professor from one of the earliest universities walked into a modern university classroom, he would recognize it instantly as a university classroom. If you walked into a college classroom over 600 years ago, you would also recognize it as very similar to your own classes. As Fig. 1 shows, based on the representation of a university lecture in progress in 1350, things have not changed much. The typical student behaviors (talking, sleeping, etc. but note that texting has not yet reached the classroom) are the same as you would find in any university class today. The notable differences are the absence of blackboards and PowerPoint and the academic regalia that now, at most universities, is only worn on special occasions.

The point here is that a university is a very conservative institution and it is never easy to add a new course. Most psychology programs maintain course offerings that are not much different than when they were founded in the first half of

the 20th century. It may not be easy to get a course on human intelligence into the curriculum but on the positive side, once it is there the conservative nature of the institution will keep it there forever. Your effort will not be wasted.

You will probably have an uphill fight introducing an intelligence course. The strategy that I happened into may be easiest. I first taught the course as a group independent study and only after it became clear that it was a popular and useful course was it approved as a new regular course. After it was approved, it slowly became incorporated as a requirement into other departments' requirements and is now enmeshed in the university structure. If intelligence is to be taught widely, it is important to have it as a regular course in many universities.

The course I teach is designed for advanced undergraduates but I have also used a similar format for beginning graduate students. About two weeks before the first meeting of the course, I send students an email including the syllabus for the course. In addition, I send a questionnaire that each student is instructed to fill out before the first day of class. The questionnaire contains questions about intelligence that capture many of the misconceptions people have about intelligence research. At the end of the course, we review this questionnaire to see if their answers have changed during the course. In the email, I also include a link to a web page that includes a number of intelligence tests that they are asked to take before class begins. Initially, I gave these tests in class and graded them but found it took too much class time so now I have each student take them independently and grade their own. My main purpose for this is to be sure that students appreciate the diversity of mental tests and know what is meant by “intelligence test”.

During the first meeting of the class, I review the course details mentioned in the syllabus and the email. I also inform them that this is a course in which people may have markedly different opinions and that everyone needs to be respectful of others' opinions. In essence, I inform them that they should not engage in ad hominem attacks or other forms of personal attacks but that respectful debate will not only be tolerated but encouraged. This has worked well and many students find the time spent in debating issues the best part of the course. I have always regretted that there was not more time for debate.

The course is divided into weekly units that cover the following topics in this order: History, Psychometrics, Testing and Tests, Mental Abilities: Structure and Explanations, Validity, Genetics, The Brain, The Environment, Cognition, Development, Education, Exceptionality: Creativity, Genius, Accomplishment, and Intellectual Disability, and Group Differences. For each unit, I provide the chapter from my developing book, a PowerPoint lecture, discussion questions, and fun readings. Fun readings are articles from the literature, popular press, the internet, and other sources. For example, one reading I have used is an account by a student who set out to get a perfect failing score on the SAT. His efforts are incredible and he ends up getting one answer right. There is no extra credit for reading these and they are not included on the tests yet despite this lack of incentive a surprising number of students do read them.

One problem in teaching an intelligence course for the first time is developing some expertise in the wide variety of interdisciplinary areas in which intelligence is studied. This is a much less serious problem than it first appears. Those who



Fig. 1. A representation of a university classroom about 1350. (Wikimedia, 2013).

have taught an introductory psychology course faced a much larger problem. Further, there are now good resources for gaining the necessary basic knowledge needed for the course. You will quickly find that you are already much better informed than the students you are teaching on these topics. Further, you will gain substantial knowledge as you gain experience with the course.

#### 4. What I have learned from teaching intelligence

Over the years of teaching an intelligence course, I have learned a great deal about what students do not know about intelligence. And what they don't know is substantial. Most importantly, they have no idea how variable human intelligence is. It is one of the most variable of human characteristics with a range of 10 to 12 standard deviations. But many students think that everyone is like them. It is reasonably easy to convince them otherwise and for many students the range of human intelligence comes as a major moment of enlightenment.

I have also learned that students have a surprisingly uncomplicated view of intelligence. While they know that they have been selected for college based on tests, they are not fully conscious of why or of other spheres or their lives are affected by intelligence. They are unaware of the intricate and interdependent relationships between genetics, the brain, and cognition as related to intelligence. They are also unacquainted

with the complexity of the environment and how hard it is to characterize it in a scientifically meaningful way. And these are just a few of the things they do not know about intelligence but should.

Most of all, what I have learned is that it will not be possible to solve the extremely complex scientific goal of what intelligence is on my own. I realized some years ago that I would not be able to answer all the questions I have about intelligence working by myself. It is certainly a laudable goal to understand our species' main adaptive mechanism but we will need help in doing it. We need educated people who have an appreciation for this goal even if they do not directly contribute to it. We also need people to join us who will continue the search for the answers we are looking for and who will join a relatively new but extremely important scientific endeavor. These are the major reasons for teaching a course on intelligence. Remember that we can construct environments best suited to our goals and teaching a course on intelligence is one way to begin to do that.

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