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Semantic discussions of intelligence and the (un)importance of the study of race and g: A comment on Hunt and Jaeggi (2013)

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Abstract

A commentary on parts of Hunt and Jaeggi (2013) dealing with the definition of "intelligence", changes in g , and the importance of the issue of race and g .

Keywords: intelligence; definition; g -factor; race and intelligence

1 Introduction

In their paper, *Challenges for Research on Intelligence*, Hunt and Jaeggi[1] draw attention to what is, in their view, the key interesting research areas on "intelligence" research. This paper is a commentary on that paper.

2 Definitions

2.1 Stipulative definitions

Hunt and Jaeggi claim that "word definitions are changed by usage, rather than by dictate, so we do not think that an elegant linguistic solution is likely". This is however not always the case. It applies to lexical definitions of the type usually found in dictionaries. However, in science (and math and logic), stipulative definitions are quite common[2]. For example, metric units were stipulated by various methods and have also been changed from time to time when problems or better ways of defining the units were found. *meter* has had many definitions throughout time, the most recent based on the distance light travels in a vacuum in $299,792,458^{-1}$ of a second. An earlier definition from 1799 used a particular prototype stick and *meter* was defined as the length of that stick[3].

As a further example, in astronomy, the definition of *planet* was recently changed. In classical Greek,

planet meant 'wandering star', but as time went by it became quite foolish to group all the objects that traveled the skies into the category 'planet'. This original category included the Sun, the Moon, Mercury, Venus, Mars, Jupiter, and Saturn. This is an unsuitable definition for term as it excludes the most obvious planet, the Earth, and includes things that are quite dissimilar together (the Sun, the Moon, and all the modern planets). Later, the definition was changed so that whatever orbited the Sun was considered a planet. This removed the Sun and the Moon, and when technology enabled the observation of Neptune, Uranus and Pluto, they were added as well. But the inclusion of Pluto broadened the scope of the class "planet" to an unwieldy size and a rather heterogeneous mixture of space objects beyond the familiar nine. For that reason, in 2006 the definition was again amended so as to exclude these objects[4, 5]. As clearly illustrated in these examples, in matters of science, productive deliberation over term definitions is the rule rather than the exception.

2.2 The definition of "intelligence"

Hunt and Jaeggi appear to want to start another semantic discussion over the word "intelligence", quoting Boring with his famous quote "what the intelligence tests test" (this is quite true, but not a good definition). This is an unproductive conflation of terms, as the manifest variable is not the latent variable.

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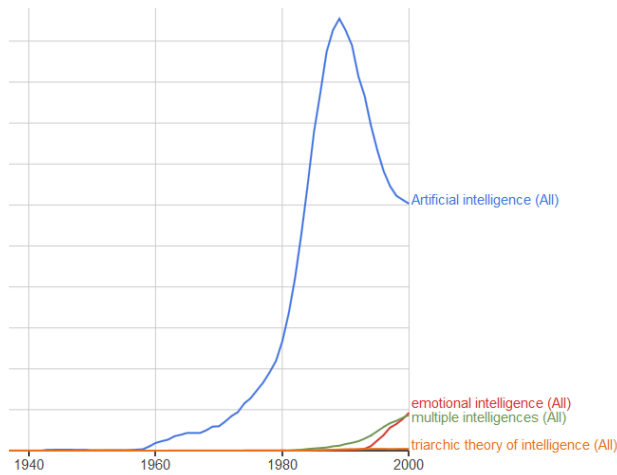


Figure 1: Google N-gram view of the different terms using the word "intelligence". <https://books.google.com/ngrams>

Let us quickly review the discussion over the word "intelligence". Arthur Jensen devoted a chapter in his behemoth 1980 book (chapter six, "Do IQ Tests Really Measure Intelligence?") to arguing that IQ tests really do measure intelligence as commonly understood[6]. However, in *The g Factor* from 1998[7], he wrote a chapter about the semantic discussions of the word "intelligence" (chapter three, "The trouble with "Intelligence""), and concluded that it was best to simply abandon the word as it had become too contaminated with other meanings, or as he wrote in the summary (p. 45):

The word *intelligence* as an intraspecies concept has proved to be either undefinable or arbitrarily defined without a scientifically acceptable degree of consensus. The suggested remedy for this unsatisfactory condition is to dispense with the term *intelligence* altogether when referring to intraspecies individual differences in the scientific context and focus on specific mental abilities, which can be objectively defined and measured. The number of mental abilities, so defined, is unlimited, but the major sources of variance (i.e., individual differences) among myriad abilities are relatively few, because abilities are not independent but have sources of variance in common.

The reasons for this most likely included the emergence of Howard Gardner's Multiple Intelligence Theory (introduced 1983[8]), Sternberg's (introduced 1985[9]), and perhaps the field artificial intelligence (AI) with the rise of home computers in the 1980s. See Figure 1.

Hunt and Jaeggi seem to agree with Jensen 1998 (not 1980) when they cite the OED for giving some eight definitions plus sub-definitions.

As reflected by Linda Gottfredson's comments, the frustrations within the field of intelligence research encapsulated by Jensen's earlier sentiments resulted in a shift in term usage[10](p. 27):

Theorists have long debated the definition of "intelligence," but that verbal exercise is now moot. *g* has become the working definition of intelligence for most researchers, because it is a stable, replicable phenomenon that—unlike the IQ score—is independent of the "vehicles" (tests) for measuring it. Researchers are far from fully understanding the physiology and genetics of intelligence, but they can be confident that, whatever its nature, they are studying the same phenomenon when they study *g*. That was never the case with IQ scores, which fed the unproductive wrangling to "define intelligence." The task is no longer to define intelligence, but to understand *g*.

We can sum up these positions thus:

1. "intelligence" is well-defined and IQ tests measure it well (Jensen, 1980)
2. "intelligence" is not well-defined and we should get rid of it and talk about *g* instead (Jensen, 1998)
3. "intelligence" is well-defined because we have operatively defined it as *g* (Gottfredson, 2002)
4. There are many different intelligences (Gardner, 1983 and later works)
5. There are three kinds of intelligence (Sternberg, 1985)

My tentative position is as follows. *g* is clearly very important for understanding human cognitive abilities, and that semantic discussions in general are a waste of time. But at the same time I think more conceptual and empirical work needs to be done on the concept of 'intelligence', the word "intelligence", *g*, and verbal concepts like "general mental ability" (when that it not just a synonym for *g*). My worry with Hunt and Jaeggi's stance is that they may be doing the field a disservice by making it seem as if even the experts how no idea what they are even talking about.

For the rest of the paper I will use "g" to refer to the general mental ability understood as a somewhat vague concept.

3 Changes in g

Hunt and Jaeggi mention it as an uncontroversial fact that g is rising, citing one of James Flynn's works. However, it is not clear that the Flynn-Lynn/FLynn effect (see [11]) is a real increase in g. If one trains people on how to take an IQ test, or just re-tests them on the same test within a short amount of time, they will increase their raw scores[12], just like the FLynn effect. If one then uses the scoring from the test manual, they will have increased their IQ too. However, few, if any, would regard this as an actual increase in g, but instead some kind of measurement error or training effect.

While test training is itself an interesting topic, it is quite conceptually distinct from changes (increases or decreases) in the construct. Unfortunately, most previous studies of the raising of g (see [13]) only looked at IQ scores, and not g scores or the g-loadedness of the changes in g. If a real change in g occurred, the tests that are the most g-loaded should change the most; the correlation between a test's g-loadedness and the change should be positive. It turns out that training effects and the FLynn effect are not g-loaded, but effects from inbreeding are. Data needs to be found from the old studies so that these modern analyses can be run, or if the data is lost, new studies need to be done. This is the price to pay for the researchers' lack of data sharing. Hopefully, this journal can make a great contribution to the study of g by both having open access *and* data sharing policies (cf. [14]). It would be even better if an open data repository was created. In any case, I look forward to sharing data with other researchers (see also[15])

4 On the importance of the issue of race and g

Hunt and Jaeggi are right that studying race and g is probably not a good way to study the nature of g, although it seems quite likely that some understanding can be gained from that direction, as it indeed can from any direction. We might not know of Spearman's Hypothesis (group differences in g are g-loaded i.e. highest on the most g-loaded sub-tests, see [16, Section 4]) if we had never studied racial differences in g scores. Regarding their assertion that "In no case, though, do we see research on racial differences in intelligence as being a high-priority scientific topic", to downplay the practical implications of this line of study is unwise and irresponsible. For instance, western countries as a whole have a fertility problem (this

section is based on [17]). The number of children per woman (total fertility rate) is too low for sustaining their populations[18]. When these countries also have welfare systems that only work economically with sizable younger generations (who contribute economically to society) we have the possibility of economic disaster (See Figure 2 for data from Denmark).

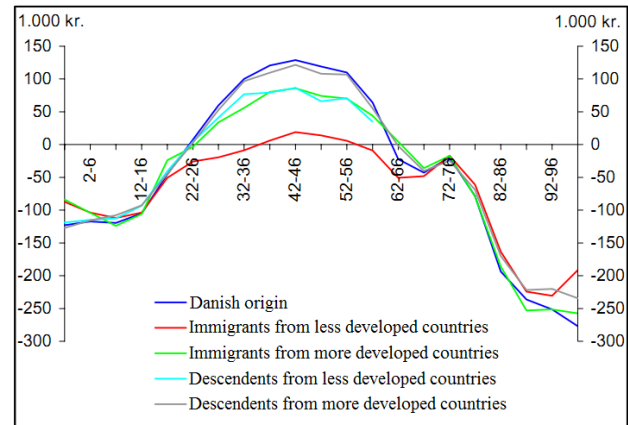


Figure 2: The net contribution to society from different groups over the course of their lives. From [19, p. 386, my translation].

Since it is unlikely that the tendency toward longer educations and low birth rates for Western women will reverse, another solution must be found. The current humanistic, egalitarian tendencies in politics make the choice obvious: Open the borders and let people in. Who is going to say no to refugees fleeing from war, disease, and hunger? The solution can work, but only providing the immigrants contribute to society in the same (or greater) capacity as the current inhabitants. However, if this is not the case, they will instead become an economic burden, and this attempted solution will only make things worse. Since g is one of the major determinants of income, social status, crime rates etc., it is critically important for predicting the potential economic and societal performance of immigrant groups, and by extension the impact they can be expected to have on the standard of living in the accepting country. If a group's average genetic levels of g are lower than that of current inhabitants, the performance gap cannot be expected to close (absent gene therapy or cognitive implants or the like). In that case, immigration will only increase the economic problems in the country in question. In other words, the question of race and g has important social policy implications for immigration policy. Other areas, such as affirmative action, may also benefit from honest examination in this field. This is not to say that the results imply specific policies themselves; as Rushton and Jensen wrote in their review of 30 years of research on race and g "no specific policies necessarily follow from knowing about the causes of group differences"[16]. But research findings can

help predict the results of a given policy if adopted, as well as sculpt their creation with an eye to maximizing pragmatic utility. Research into race and g is thus vital for evidence-based politics in that area.

Hunt and Jaeggi assert that the issue isn't important, since "Due to migration and intermarriage, the identity of different racial groups can change in a very few years." That depends quite a lot on what is meant by "a very few years"! As can be predicted from assortative mating tendencies in humans, people gravitate toward mates from their own racial groups (endogamy, for the case of Ashkenazi Jews, see [20, 21]), which hinders the mixing process (for a fascinating discussion of inbreeding and social inequality see [22]). Unless racial groups are forced by some means to start interbreeding, races will not disappear any time soon due to mixing. Indeed, hundreds of years of interbreeding has failed to extinguish racial sentiments, including interracial conflict, in Latin America[23].

It is also hard to take seriously their claim that it isn't important. In a recent *Nature* article that mentioned the top 10 social science challenges, #4 was "How do we reduce the 'skill gap' between black and white people in America?"[24]. This is fundamentally a question of g. Affirmative action policies were instituted expressly to reduce or eradicate the 'skill gap' with the expectation that it would succeed. Supporters have made strong predictions about its success, but there have been no success despite over 50 years of affirmative action in the US.[25].

The authors' dismissal of race differences in g is harmful to science as it perpetuates what Linda Gottfredson called "The Egalitarian Fiction"[26], which is the proposition that "racial-ethnic groups never differ in average develop intelligence". Any such reported differences then have to be explained by biased tests or racism on part of the messengers (or both). This leads to a climate of both direct and indirect censorship for researchers.

The goal of science is to find out how the world works, and to exclude information that is uncomfortable and "inconvenient truths" is to do knowledge, science, and society a disservice.

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