

Position paper on whether *Homo sapiens* is dumbing down...

Ralph L. Holloway

Professor of Anthropology

Columbia University

About the only truly definitive position I can take on this trenchant question is that I KNOW I am dumbing down, which is sure to happen at age 79... Which then raises an interesting possibility: if people dumb down as they age, and as the population of aged souls increases thanks to various and sundry improvements in health (hardly worldwide yet), then it surely stands to reason that we ARE dumbing down! I leave this possibility to the demographers among us.

To be a bit persnickety, the question is really very complex and difficult to really answer with certainty, and there are several good reasons why. First, it assumes that we know what is dumb and what is smart, which then leads naturally to value judgments, and begs the issue of what metrics to use to make a reasoned judgment. Should we compare IQ score through the decades? How many populations should be studied (see Lynn and Harvey 2008 for 192 nations ranked by fertility rates and IQ scores.) Should we look for something more inclusive, such as “g”, a factor-analytic approach to various “kinds” of intelligence (Jensen 1998; the first part of Nyborg’s 2003 *The Scientific Study of General Intelligence*)? Should we accept or dispute the “Flynn Effect” (e.g., Teasdale and Owen, 2008, Rushton and Jensen 2010)? Should we compare the crystallized intelligence that our parents and grandparents knew (geography, history, basic math, civics, etc) with our own (without access to Wikipedia for example), or should we look at their fluid intelligence and somehow compare it to ours? Would it even be possible to do so? Is reliance on technological advances a sign of our personal dumbing down when we try to adapt to new situations? Is the vast amount of television trivia a signal that our brains are rotting? Can we exist without cell phones, tablets, and computers and do we really need mass higher education “certification” to keep us as intelligent as we were (whenever that was)? Given the politicians in Congress, and their inability to focus on true problems in our society and their lack of responsibility toward issues such as global warming, it is difficult to maintain any sense of an elevated intelligence in our society and the world in general. This whole marasmus belongs in the camps of sociology, philosophy, and psychology, and perhaps psychiatry. Nevertheless, there are some very strong arguments, based on considerable amounts of data, that indeed the world is dumbing down (e.g., Lynn and Harvey, 2008, Lynn 2008, 2011, Woodley et al 2013, to mention but a few sources.) The reactions to these studies have largely been to ignore them or condemn them, usually without accompanying data.

But surely, we biological anthropologists who study human evolution MUST know something about this issue? Well, that leads to the second question about the underlying complexity of the question. What can the various metrics about our brains, and their evolution (and possible devolution) through time tell us? In this position paper, I will stick strictly to the matter of brain size and not the brain’s organization, since there is little or no information as to how that has changed through time. It is suggested that our brains have reduced in size during the past 20,000 years, and perhaps mostly so from about 10,000 years ago with the advent of agriculture and domestication of plants and animals. (Hawks 2012,

Henneberg 1988; Gallagher (2014) Neandertals and Upper Pleistocene anatomical modern humans had cranial capacities larger than our current world average of 1330 ml, and it appears true that there is a relationship between latitude and brain volumes, such that the largest brain volumes are in very northern latitudes, while decreasing toward the tropics and equator. Indeed there are plenty of theories out there that it was adaptations to cold climates that provided a rise in brain volumes during the Pleistocene and later. But is there any solid data to show that intelligence and brain size are correlated? Well, indeed there is. Anderson (2003) has a review of the many studies linking cognitive scores on many tests to MRI-derived brain volumes, and the overall correlation, R , is about 0.35, varying between .3 and .6, depending on the samples. Even meta-analyses exist of this relationship. Of course, these are aggregate statistics, and it remains true that one cannot predict cognitive behavior of individuals based on their brain size. Studies have gone further attempting to discern differences between volumes of gray and white matter and intelligence score. The Gur team (Gur et al, 1999) at U. of Penn has consistently shown sex differences in these measures. More research regarding the organization of the brain, in addition to overall size, needs to be done, and herein lies that 800 pound gorilla in the room: how does the brain vary in different ethnic groups beyond sheer size? How has brain size differed over the last 100 or more years based on autopsy data that medical examiners will not release?

My own analyses of various autopsy data sets, and a recent re-evaluation of cranial capacities from museum collections suggests there are indeed differences between various ethnic groups and brain size, although body size probably has some role to play in the differences.

In essence then, I think the hypothesis that we have "dumbed down" is a reasonable one to pursue, and seriously consider.

My own prediction for the future is that given the stupidity and greed afflicting our species, and the inability to halt degradation of the world's environments and the ever-increasing billions of the world's population, protein resources will become scarcer and body size will reduce bringing another round of brain size reduction as the two are related. We've got another 2-3 million years to go if we want to rival most animal groups at the level of the Genus, as most Genera have a paleontologically recognized span of roughly 5-10 million years.

Anderson, B. 2003. Brain imaging and g. Chapter 2 in Nyborg, N., Ed. The Scientific Study of General Intelligence: Tribute to Arthur Jensen.

Gur, RC et al. 1999 Sex differences in brain gray and white matter in healthy young adults: correlations with cognitive performance. *Journal of Neuroscience* 19:4065-4072.

Hawks, John (2012) Selection for smaller brains in Holocene human evolution. arXiv:1102.5604.

Henneberg, M.(1988). Decrease of human skull size in the Holocene. *Human Biology* 60:395-405.

Jensen, A. 1998. The g Factor. Praeger Publishers.

Lynn, R and Harvey, J. 2008. The decline of the world's IQ. *Intelligence* 36:112-120.

Lynn, RL. 2008. The Global Bell Curve. Race, IQ, and Inequality Worldwide. Washington Summit.

Teasdale TW., and Owen, DR. 2008. Secular declines in cognitive test scores: a reversal of the Flynn Effect. *Intelligence* 36:121-126.

Woodley, MA et al. 2013. Were the Victorians cleverer than us? The decline in general intelligence estimated from a meta-analysis of the slowing of simple reaction time. *Intelligence* 41: 843-850.