Good, bad and ugly genes?

Science matters,

also in terms of terminology and word usage

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One sentence summary: “Good genes” is a well-established term and a widely used biological concept; it is, however, toxic in its inherent moral standpoint and its link to selective health treatment.

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Abstract

Our words shape our thinking, our thinking creates action. Scientific terms can be particularly influential when used in everyday language in terms of allegedly scientific arguments that back certain views or actions. Such use can be especially toxic when the terms refer to concepts that are ill-defined, outdated or questionable themselves. The term "good genes" represents an exemplary case in this regard. It refers to the belief system of eugenics and implies a moral perspective. The latest political debates demonstrate how easily such terms and concepts are employed to induce racist thinking and action; in the end it will even result in specific medication, selective investment in medical treatment, and so ultimately impacting even the life and death of patients. Science has the obligation to explicitly opt-out from such lines of argument, and to routinely check and re-think its theories, concepts and vocabulary.

Keywords: Good genes, eugenics, morals, ethics, science, racism, terminology, health issues, medical treatment, selective intervention

Main text

Our words shape our thinking, our thinking creates action—this roughly reflects the weaker form of the Sapir-Whorf hypothesis (Ahearn, 2011), and it has been common knowledge since the founding of so-called "Völkerpsychologie" in the early 19th century (von Humboldt, 1836). Words matter in many respects. Exact definitions of technical terms and proper and reliable use of these terms characterize scientific endeavors. Scientific language often also inspires or feeds everyday language, and technical terms come out of its fields. This can be quite problematic at times, for instance when someone is labelled as "depressed" or "mentally ill" just like that, without proper diagnosis. Good scientific practice demands that we unmask and qualify these—and other kinds—of incorrect, inadequate use, or even misuse, of scientific terms.

In some cases, scientific terms themselves stem from ill-defined, outdated or questionable scientific concepts. Such terms should be monitored and handled with particular care. In public debates, they can become highly toxic when misused as allegedly scientifically based arguments that defend, justify or propagate non-scientific views and concepts. So, my proposition is that particularly *because* the scientific community uses some of these concepts and terms, they are so persistently used by people who aim to express dangerous statements and conclusions. To refer to science is mostly a key to enhance trustworthiness.

An exemplary highly problematic case is the term "good genes". What is wrong or toxic about "good genes"? First of all, we have to record that "good genes" is a well-established, frequently and widely used construct in evolutionary biology and psychology. If we merely look at the last 40 years of research, we can find more than 100 scientific journal articles listed in Web of Science that present the term in their title[1]. All these articles together were cited more

[1] In 19 out of the found 111 papers, the term is put in quotation marks and could thus be interpreted as "scare quote" there, indicating some sort of skepticism towards and distancing from the term on the authors' side.. Some other

than 6,700 times overall, which indicates a clear impact on the scientific community. The "good genes" hypothesis[2] (American Psychological Association, 2020), however, has a very unfavorable history, and at present, it appears dangerous. The term can clearly be traced back to the ideology of *eugenics*, a set of beliefs and practices aiming at the "improvement" of the genetic quality of certain sections of the population or even the human population as a whole. Eugenics was introduced and very explicitly propagated by top fin-de-siècle scientist Francis Galton (Galton, 1904)—a scientist of undoubtedly great achievements, but also of inhuman programmatic ideas. The latter aspect is hardly ever considered problematic but rather often gently overlooked. As we know, political programs and common policies of the 20th century in the UK and in the USA (Hansen & King, 2001), but also in Canada and many other Western countries (Bashford & Levine, 2010) strongly referred to eugenics, actively excluding people and entire groups that were classified as "inferior" while other groups were promoted to be "superior" (Spektorowski & Ireni-Saban, 2013). Eugenics was followed and practically implemented in a long list of states and cultures by promoting the reproduction of people with "good genes" and by advocating and even forcing the sterilization of people that were considered to be lacking this quality (Hansen & King, 2001). Sadly enough, influential and highly esteemed social scientists were essential proposers and developers of modern eugenics (Fisher, 1915; Pearson, 1909). Leading personalities from the field such as Ronald A. Fisher, the founder of modern statistical science (Hald, 2004), and Karl Pearson, major developer of mathematical

articles use the term only in the title but do not refer to it again in the text which is notwithstanding problematic, too. There are also productive examples of papers where the term is not only used in quotation marks but where the authors also clarify that they only want to refer to this influential hypothesis without further propagating such terminology (e.g., Dhole, Stern, & Servedio, 2018). This shows that some researchers approach the theoretical construct more carefully than others do, but still the term is used.

[2] "A hypothesis of female mate selection arguing that certain features of male behavior and body structure reflect genetic variations that are correlated with positive survival attributes such as health and strength and that females choose males with such features, thereby enhancing their offspring's chances of survival".

statistics (Bronowski, 1978), encouraged the measurement of "good genes" via IQ tests and attractiveness scores (Fisher, 1915). Even if we refrain from eugenics today when talking of "good genes", the adjective "good" still implies a moral perspective. Using the term "good genes", we split the world in the "good ones" here, and the "bad ones" there.

From time to time, we have to check our language, our word usage. Concepts and terms are often part of the Zeitgeist; some of them show clear expiration dates. "Good genes" is one of the concepts that not only calls for re-phrasing but for true re-thinking. The ethical code of science should prevent moral codes, because linking central concepts of science to moral issues, whether implicitly or explicitly, is highly problematic, especially for societal debates which refer to such concepts. It is important to note that even the critical reflection on a term can comprise a perpetuation of the focused term, which is problematic for a number of reasons: For instance, frequent usage of a term (for whatever the reason) can trigger psychological effects such as false fame or mere exposure effects (Pohl, 2004), which can, in turn, lead to increased acceptance and felt commonplace of the iterated material (Belke, Leder, & Carbon, 2015).

In the 20th century, the idea of "good genes" paved the way for extreme ideologists[3], for the theoretical development and the practical running of extermination camps. Even the horrifying historic outcomes did not prevent the persistence and revival of this concept. Just as an example: Only recently, US President Donald Trump explicitly referred to the eugenic belief system (Haltiwanger, 2020) by praising states (e.g. Norway in the EU or Minnesota in the US) (Wallance, 2020) and persons (e.g. himself, but also the people of Minnesota who are mainly of

[3] It should be noted that so-called Social Darwinism, as developed by Spencer (1884) and others at the Fin de siècle, operated with very similar concepts already, however without reference to the genes—the explicit notion of genes as the basic units of heredity was not available until a bit later. The particular problem about the term "good genes" is that it makes believe that there would be "good" (better, best) genes with a positive value in an absolute sense; additionally, the scientifically deeply grounded term makes believe that science is backing up this assessment of moral quality.

European origin nowadays) (Wallance, 2020) with “good genes” which stand, in his eyes, in contrast to worthless “shithole countries” (not further specified) (Dawsey, 2018). By Trump’s explicit praise of “good genes”, he generated approximately 400,000 references to this term, documented by Google search, which is about 1/3 of all instances to be offered by Google when looking for “good genes” (effective 16 January 2021). Such toxic wording is not without consequences: it creates associations, it paves new avenues for possible and accepted thoughts (Raab, Auer, Ortlieb, & Carbon, 2013); it reinflames racist stereotypes (Harsanyi & Carbon, 2015). In the end, history tells us, such wording kills people, at least it can trigger aggressive thoughts and behavior with the potential to pave the way for people killing people(see Schoormans, Carbon, & Gattol, 2011)—concretely, by implementing specific medication, selective investment in medical treatment, and so ultimately impacting even the life and death of patients (Rivara & Fihn, 2020; Webb Hooper, Napoles, & Perez-Stable, 2020). Science plays an important role in this—if science does not opt out from such uses, very clearly and strictly, by disqualifying these terms and abolishing them from scientific discourse.

Conflict of Interest Statements

No conflicts to be reported.

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