Dunning–Kruger Effect – Why Once a Fool, Always a Fool

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The majority of people believe that they are better-than-average. In psychology, this phenomenon is called the illusory superiority. A specific form of illusory superiority is Dunning–Kruger's effect which states that people overestimate their abilities based on their real abilities. The rule is that the less competent a person is, the more they overestimate themselves. And, on the other hand, able people have a tendency to underestimate themselves slightly. A considerable part of this phenomenon is also the fact that the less able people do not change their attitudes even after being confronted with the reality.

The majority of people believe that they are better-than-average. Some sources (Boyd, 2014) mention that as much as 93 % of population consider themselves better than average, even though it is logical, that it is statistically impossible.In psychology, this phenomenon is called the*illusory superiority*, or the*Above Average Effect / Better than Average Effect*. Out of interest, I will give you a few examples.The majority of people think that they are more intelligent and more attractive than the majority of others (Whittlestone, 2012), and on the scale from 1 to 10, where 10 is the highest better-than-average, they ascribe themselves number 7 (Ghose, 2013). 88 % of people think that they drive better-than-average (Svenson, 1981); even the majority of elderly people rank themselves among better-than-average drivers (Marottoli and Richardson, 1998). If you suppose that this is only the case in more stupid people, you are wrong.94% of professors assume that they are better-than-average in comparison to their colleagues (Cross, 1977). And we could continue like this forever.

We all know situations when we met somebody who did not realize how stupid he or she is. In an internet discussion you have met a scribbler who strongly held their opinion and did not change it even after somebody had disproved it in a relevant way. After a few drinks, a family gathering had changed into a socio-political-economic debate and you realized that

your uncle is not a worker, but a political science professor, and that your grandmother knows more about economics than an acknowledged expert. Or rather, both of them were convinced about that. From time to time, you hear a debate in a pub at a table next to you, and you immediately understand what the real case is with the democracy. And it must have happened to you that a friend wrote to you about incredible proof of extra-terrestrial civilisations, or about an Illuminati conspiracy he or she had uncovered. Or your female friend advised you to get rid of your microwave oven because she had read about its harmful effects on the internet, and recommended reliable homeopathic medicine for an attractive price of 500 CZK.

All these people have one thing in common.The ignorance which they ignore. And if you have been recalling people and situations which fit my words up to now, and have not even once thought about the possibility that you might sometimes behave in a similar way, it is likely that you have also been a victim of this illusion. You likely consider yourself to be above average as well (and in a number of areas). Not that everybody who has seen themselves as above average has fallen for the illusory superiority, even though it is wiser to be careful because the phenomenon that I am going to describe below sees no difference and can attack all of us.

"Ignorance is strength" is one of the central mottos of Ingsoc in Orwell's dystopian novel 1984. And frankly, this motto is not far from truth. Philosophy had directly addressed this issue long before Winston set out to find the truth. There is a thematic saying that we ascribe to Socrates: "*I know that I know nothing*." The largest legacy of it is the scepticism towards the illusion of knowing. Even before Socrates, Confucius wrote that "*real knowledge is to know the extent of one's ignorance*." Bertrand Russell added another warning to this thought: "*The trouble with the world is that the stupid are cocksure and the intelligent full of doubt.*" And Charles Darwin really threw the helve after the hatchet: "*Ignorance more frequently begets confidence than does knowledge*." You will learn below to what extent these words are true.

Not only these but also other philosophers have seen a huge threat for knowledge and science in ignorance, illusory superiority, stupidity and dogmatic certitude. Therefore, it is no wonder that sooner or later psychologists also got to this issue. First, they described and

systematically verified the issue of illusory superiority. A bit later they also explored one of its specific parts which we call *Dunning–Kruger effect* these days.

Dunning–Kruger Effect

An inspiration for the first research was the case of a bank robber McArthur Wheeler from 1995 (Kruger and Dunning, 1999) who robbed two banks in Pittsburgh unarmed and without a mask. When the police arrested him, Wheeler was in shock and claimed that he "*spilled juice on himself*". Wheeler believed that if he smeared lemon juice all over himself, he would be invisible to cameras. What is more, he did not change his opinion even after having seen the footage of the robbery which he labelled as fake (Morris, 2010).

When the psychology professor David Dunning from Cornell University read about the case in a newspaper, he decided to solve the mystery. Together with Justine Kruger, who was doing his post-gradual research at the same university at the time, he carried out research whose results were published in an article with a fitting title that is well-known and frequently quoted nowadays –*Unskilled and Unaware of It*. In the beginning, the phenomenon was described as the *Unskilled-and-Unaware Problem*. Dunning himself gave it an almost poetic name "anosognosia of everyday life" (Morris, 2010), and even though it is a relatively new phenomenon described only in 1999, it is generally known nowadays under the name of both the researchers –*the Dunning–Kruger effect*. Authors have been awarded anIg Nobel prize – a parody award for unusual or trivial results of scientific research.

Dunning and Kruger (1999) examined the level of sense of humour, English grammar and logical thinking in Cornell University students. (There is no need to describe the respective studies in detail in this article. However, researching the sense of humour is so unconventional that I recommend watching this video, where the process of examining the sense of humour is described, among other things.) Subsequently, they studied students' metacognition; therefore, they asked them what they thought their results were. They asked them what they thought of their general knowledge and about their success rates in comparison to others. Results showed a certain similarity in all the studies (even the future ones). To understand the results better, look at the following graph:

[picture]

(The graph is from an article by Kruger and Dunning, 1999)

The participants were divided into four quartiles based on their results. It is evident that those who had the worse results in the test overestimated themselves most. Even though their average success rate was only 12 %, they assessed themselves much higher – around 62 %. The best of them, on the other hand, underestimated themselves slightly. However, that is not all.When the participants were confronted with the reality (the highest and the lowest quartile had to mark the results of the others) and had the opportunity to correct their assessments, the most competent people increased their assessment and got closer to the reality, while the least competent people did not change their metacognition (Kruger and Dunning, 1999). Feedback seems to help the competent ones more than the incompetent ones (e.g. Ferraro, 2010). That has been verified in other studies (Sheldon et al., 2014) where not only the incompetent ones were unable to receive negative feedback, but they also started to belittle the issue and question the test validity. David Dunning captured this issue in the best fashion (Morris, 2010): "*If you're incompetent, you can't know you're incompetent.*" That is the curse.When you are in the low quartile, you just do not know about it.

Why Is It So?

A requirement for the *Dunning–Kruger effect* is at least minimal knowledge of the issue (Ehringler et al., 2008; Kruger and Dunning, 1999). Only few people will overestimate themselves in, for example, the ability to fix nuclear weapons or juggling.On the other hand, everyday tasks, like writing, grammar, logic or driving, are together with global social topics are ideal for overestimating.The least competent people overestimate their abilities because of their ignorance.Because they are not familiar enough with a certain issue, they do not realize how big limits they have.The mistake of incompetent people is therefore in their perspective on their own knowledge and character (Kruger and Dunning, 1999). Some authors (e.g. Simons, 2013) assume that overestimating oneself is not caused by wrong metacognition but by irrational optimism in oneself. On the other hand, competent people know their knowledge very well, because they know their limits. However, their problem is assessing the performance of others, whom they overestimate, because when a task is easy for them, it will be easy for others as well (Kruger and Dunning, 1999). They fall into the so-called False-Consensus effect (see Ross et al., 1977).

Moreover, incompetent people suffer from a *double curse* (Dunning et al., 2003) which is a rather controversial idea supposing that the abilities required for a success in a test correlate with the correct self-awareness which enables us to estimate our strengths. The result is the fact that the incompetent people cannot change their attitudes even after being confronted with the reality, which is likely caused by the difficulty to accept negative feedback (Sheldon et al., 2014).

The Criticism of the Experiment

The experiment has been repeated many times, not only with students but also with people in their natural environment, and with a high financial reward based on successful guesses and with a number of other modifications, with similar results (see e.g. Dunning et al., 2003; Ehringler et al., 2008; Schloesser et al., 2013; Sheldon et al., 2014). No influence of the gender has been detected, (Kruger and Dunning, 1999) neither a significant cultural difference – even though in some cultures, people overestimated themselves less, the *Dunning–Kruger effect* appeared there nonetheless (Deangelis, 2003). The results have been criticised a number of times. One of the first criticisms (Krueger and Mueller, 2002) attacked the methodology and statistics because the authors of the criticism assumed that the results are caused by mere *regression towards the average* in combination with the *better-than-average effect*. Their thesis has been subsequently further elaborated on by other authors (Burson et al., 2006) who assumed that there is no difference between the competent and the incompetent people, because the incompetent ones overestimate themselves roughly in the same way as the competent ones underestimate themselves. Some other studies (Ryvkin et al., 2012; Krajč and Ortmann, 2008) not only support this, but their results have, in fact, brought the opposite effect: during a task that was too difficult, the incompetent people estimated their abilities better than the competent ones. However, Dunning and his colleagues have more or less refuted all the criticisms (see Kruger and Dunning, 2002; Ehrlinger et al., 2008; Schloesser et al., 2013), and even though the dispute is persisting and there are still many things that need to be clarified, it seems that we can see this psychological phenomenon, as it was described by Kruger and Dunning, as valid.

As it is the case with every phenomenon, this one has also found, in addition to the critics, many supporters and some people use it to make a point whenever possible. Often also in a situation, where the person himself or herself became a victim of this effect. Yarkoni (2010)

warns us that not everything that is labelled as *Dunning–Kruger effect* these days is really the case, and corrects one frequent myth of popular psychology magazines – *Dunning–Kruger effect* does not claim that the incompetent ones see themselves as more competent than the competent ones. In other words, a fool does not think that he or she is cleverer than an educated person. Quite the opposite: despite the huge overestimation of their own abilities, they still rank themselves below the most competent ones. A fool does not know that he or she is stupid, but at the same time they do not see themselves as people ranking among the highest quartile.

How Can We Fight This?

It looks a bit hopeless. A fool not only does not know, that he or she is a fool, but also because of the fact that a person is a fool, they will remain stupid because they cannot admit that they are stupid. However, there exist at least one way out – that is knowledge, or re-qualification (Schloesser et al., 2013). When one group in the original study was allowed to do a brief 10-minute course of logical thinking, the self-assessment of their performance was more realistic. In Dunning's words (Kruger and Dunning, 1999), "*The way to make incompetent individuals realise their own incompetence is to make them competent*."

It seems that the more people know, the more they realize how little they know in reality. In other words, the more people know about a certain issue, the more they realize how complicated, unexplored and extensive it is, and how many things they do not understand or know yet.

In addition to the knowledge already mentioned, we cannot omit feedback. We have already said that feedback helps the competent people more than the incompetent ones – however, it is necessary to understand that for the competent people it is positive feedback because it tells them how much better they are than they though. It would be interesting to confront the competent people with a fictitious reality, give them negative feedback and observe whether they accept it better than incompetent people. However, some optimistic studies (Krajč and Ortmann, 2008) hope that even negative feedback, if given correctly, can increase the incompetent people's accuracy in self-assessment.

Now you know why once a fool means always a fool, and how difficult, if not impossible, it is to help them. Now you know why the incompetent people see themselves as competent. Maybe you already understand the people you spent your time with trying to explain something to them in vain, and also the armchair experts who are abundant on the internet. You might even realize that you are not infallible and that you do not have to be better-than-average all the time and that even you might be influenced by the *Dunning–Kruger effect*. At the end, I cannot leave out the words of the Renaissance thinker, humanist and sceptic Michel de Montaignewhich describe the real nature of incompetence in such an ingenious way, and which are the best possible ending of this work: "*Being always right is a sign of foolishness*."

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