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This issue’s winner is Ewelyn Medawar, who wrote an engaging and fun article about food fads (page 4).

Congratulations, and thanks to everybody for their contributions!
The term “superfoods” or miracle foods is on—both in Germany and around the world. Some consumers believe that those ingredients provide a recipe for well-being, improved health and mental calmness. However, there is a paradoxical imbalance of belief in benefits of superfoods and lack of high-quality scientific information on them.

The term “superfoods” or miracle foods as such is not clearly defined, but broadly refers to “food with high levels of either nutrient or bioactive phytochemicals with human health benefits” [1]. For instance, açaí and chia seeds are proposed to provide cardioprotective qualities via anti-inflammatory properties and beneficial food matrix composition [2,3]. In etymological terms “super” (Greek: above) implies that those food items are above other food items—superior products, so to speak. This little marketing trick helps to promote an allegedly positive value to these food items.

But do superfoods actually bring about health benefits? And if so, which mechanisms could mediate those benefits? If we look at studies investigating cognitive performance, some studies show beneficial effects of the antioxidant molecule resveratrol [4], others show no effect [5]. Overall, evidence from well-controlled human studies is very scarce and not available for superfoods, for which benefits are loudly trumpeted by marketing strategies.

So why is it that many consumers believe in the efficacy of superfoods and end up spending large amounts of money to get hold of them?

**Trust Marketing Claims**

As many health benefits as superfoods or miracle foods purport to provide, purchasing decisions are most likely not based on profound knowledge. Rather, consumers seem to be victims of marketing campaigns that successfully promote putative health claims without backing them up with evidence-based research. For example, one study showed that bread with a functional ingredient, such as linseed or chia, was valued more compared to a non-functional bread [6]. Common knowledge makes us believe those functional components are really functional, but did we ever base our knowledge on a well-controlled study testing the claim? No, because evidence is rare. Willingness to pay is mostly higher for functional foods due to the perceived added value. A study suggests that this added value is not only due to health benefits but also due to other factors, e.g. “naturalness” [7].

**Superfoods Help to Idealize “The Self”**

Another reason for the ready acceptance and purchase of superfoods might be the expected benefits for the consumer, promoting his/her idealism and a perceived superiority to non-functional foods [8]. This concept has been shown to exist in a study investigating the consumer’s response to food stimuli presented in a digital surrounding [9]. The consumers’ liking of an image was highly driven by visual cues and the background story, determining the palatability and “sexiness” of the presented food item. In the decision to buy a superfood, the study supported the importance of the hedonistic experience and symbolic value, and not the food item (or nutritive value) per se.

**Vitamins of our Cognitive**

Açaí – Chia – Merina – Matcha – Goji

The hype surrounding superfoods is on—which foods to eat? A study on the role of the brain to superfoods found that participants who did not expect superfoods were more likely to fall for their promissory statements. This paradox or “illusion of validity” bias has been shown to work for superfoods: firstly, consumers believe in the benefits of superfoods with all their presumed health claims and secondly, consuming superfoods could be used to externalise personal values and neoliberal norms to our social surrounding, i.e. the wish to embody healthfulness [11]. In general, the hype surrounding superfoods is just one example of the psychology of reducing a complex lifestyle/habit problem to a one-dimensional solution. We want to be healthier, therefore adding a superfood powder every morning to our cereal seems to be a feasible solution; avoiding unhealthy meals overall does not. Driving an electric car seems a feasible solution for being more sustainable; stopping the use of our car does not.

Consumer research has shown intriguing results on how green consumerism (purchase of more sustainable products) impacts our behaviour: being exposed to greener products compared to conventional ones made people act more altruistically. However, after purchasing said green products, people were less altruistic and showed more anti-social behaviour [12]. This behaviour is a well-known example for moral licensing. For purchasing superfoods this could be translated as follows: making a purchase decision for a functional food that conveys health benefits boosts my “healthy food choice record” and consequently, my health goals are already achieved and I can relax! “Health licensing”—analogous to moral licensing—should be further investigated and validated as a concept.

In short, we are very good at outsmarting ourselves—if we like superfoods, we should totally go for it and observe whether we see health benefits. If we do not, we should leave them on the shelves to be sent back to the greedy marketers. In any case, we should critically ask ourselves about our reasons for making purchase decisions.

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Image: Delicious Fruit Portrait, Alonsa Guevara Aliaga on Wikimedia Commons
The year 2017 marks a decade since the first iPhone was presented by Steve Jobs in his famous keynote at the Macworld Conference and Expo in San Francisco [1]. For those of us who are older, life without a smartphone is a part of innocent childhood, but for younger generations, it is not possible to imagine. A person spends on average around 4h per day on the phone, making it more than one whole day per week [2]. In addition, Americans check their phones on average every 12 minutes [3]. Thus, the decade of the smartphone, could also be called the decade of digital dependency.

The beginning of the smartphone era was humble: even Steve Jobs imagined an iPhone as a practical device to bring together your phone and a social media account can make you look suspicious or be perceived as extreme and uncool [7].

A Silicon Valley whistleblower

We are social beings. We want to keep in touch with family and friends, check who is where on a vacation, who got a baby and who got a promotion. As the band Aerosmith famously noted, we don’t want to miss a thing—otherwise FOMO strikes. Instead of calling a friend to congratulate her, we hit like the slot machine again—What are the notifications about? What photo comes next? Who snubbed her friend? You never know in advance and it will be different every time. When the rate of reward is the most variable, Harris says, attractiveness is the greatest [10]. In an interview with Anderson Cooper on 60 minutes, Harris argued that Silicon Valley is not programming apps, it is programming people, and that technology is not neutral because it is programmed to be used in a particular way and for family life [13]. People sign in to connect with friends from another part of the world but cannot maintain an uninterrupted conversation with a friend across the table. In 2012 the term ”phubbing” was coined to describe the act of snubbing someone in a social setting by looking at your phone instead of paying attention.

Social media gives us a platform to carefully curate a perfect digital persona—one that is always smiling, always having a good time, traveling and doing all the cool stuff. Logically we know it cannot be true, but instinctively we believe what we see and suffer because of it. Another new term, nomophobia—a fear of not being able to use your smartphone—is characterized by severe anxiety, avoidance of face-to-face interactions and a high level of social anxiety, ultimately leading to depression.

Digital life and mental health

While people report that the main reason they are on social media is to keep in touch with friends and family, they also report that time spent on social media makes them stressed and frustrated, and causes disruption to personal and professional relationships. Politicians from both the Left and Right are advocating for stronger regulation of Internet platforms. In the end, this is not a question of Right and Left, but right and wrong. Most likely, neither Facebook, nor Google, nor anyone else knew or predicted how addictive and exploitative their products could become. That time of innocence is gone, however—just like our analog childhood. Whatever tech companies are doing now is well-researched and orchestrated. Techn
How To Push The Brain’s “Buy!” Button

Spotlight on Neuromarketing

How to influence your audience

1. Playing on preconceptions helps to sell

As also becomes clear from the Pepsi-Coca experiment, it is not so much the taste, but rather their brand-recognition that interests consumers [2].

2. Pricing changes perception in taste

In a wine-tasting experiment, participants were asked to rate the wine they tasted. The most expensive wine was rated best. However, there were no differences between the wines; they were all the same [16]. With the increase in price, there was also an increase in medial orbital frontal cortex activation (the area for pleasantness [17]).

3. Follow the gaze

It is well known in advertising that babies, animals, and sex sell [18]. But apparently, the interaction between the consumer and the ad also matters. It has been shown that when the baby in the ad is looking back at us, we pay most attention to the baby. But, when the baby in the ad is looking at the text in the ad, we are more likely to read the text [19].

Neuroethics and the Facebook - Cambridge Analytica Data Scandal

An important aspect of Neuromarketing is Neuroethics. For example, there is currently no ethical board that oversees the behavioral experiments conducted by companies like Facebook [8]. This has been cited as contributing to scandals like the recent one with Facebook and Cambridge Analytica. In 2015, the social network, together with academic researchers, studied the influence of subtle changes to peoples’ Facebook timelines (remember calculating up dates from their Facebook friends). They observed how the behavior of nearly 700,000 users changed when using Facebook (which they believed reflected changes to peoples’ minds) as a result of these subtle manipulations to their timelines [9]. Later, Facebook offered companies the opportunity to target their ads specifically at insecure teenagers with low self-esteem [16]. Cambridge Analytica used Facebook information to determine which American voters could possibly be influenced by showing fake news (possibly also British voters) in which marketing went too far. [10].

One of the first studies, published in 2008, indicated that people who taste cola while blindfolded generally like Pepsi-Cola as much as Coca-Cola, and created activation in their Ventral Prefrontal Cortex (vmPFC). However, when the blindfold came off, Coca-Cola became the definite favorite, and the brain activity of the participants changed. When people saw the brand “Coca-Cola”, activation in the hippocampus (our memory center), the dorsal lateral PFC and the midbrain for those people showed an increase in activation [2]. This increase in activation seems to indicate a change in our perception of taste.

With studies similar to this Pepsi-Cola experiment, companies using neuromarketing have claimed that actions speak louder than words. Interviews and questionnaires do not reliably predict what we will buy [3], but brain activity does (or so it is thought [4]). Our subconscious mind knows what we want, even if we don’t. As put by Daniel Kahneman [5], author of the book “Thinking Fast and Slow”: “although system 2 [our rational, slow and reflective mind] believes itself to be where the action is … most peoples’ choices correspond to the prediction of system 1 [our fast and intuitive mind].”

Mind Reading: Fear of Neuromarketing

It seems as if Neuromarketing is after our unconscious mind, and for some people this rings alarm bells. Hearing about sleep nudging (a type of stimulus-response conditioning during sleep – think Brave New World), in which researchers can force us to link the smell of cigarettes with rotten eggs [6], or knowing that researchers direct more of their attention to the groups most vulnerable to their advertisements [7]… I can’t say it is strange that people fear that the information collected by big companies “harbors a hidden code to tweak our perceptions below the level of our consciousness.”

However, in general there are a number of reasons why we should not be scared. Firstly, reading the brain of a consumer is not that simple. For example, an fMRI study in 2011 suggested that activation of the insula in subjects upon seeing an iPhone must mean that they love their iPhone [12]. However, the insula is also the area of disgust, and as brain areas are overall not dedicated to one specific function, it is not that easy to simply “read” the mind of the consumer directly.

In addition to fMRI, neuromarketing research also uses EEG, biometric markers (the heart rate, respiration rate, skin conductance, and pupil dilation) and measurement of facial expressions. A particular variable of interest is when people have more reaction to a product. What that means in the end and whether this leads to more sales is a problem that comes later [8].

A few more reasons not to worry (yet): Imaging is very expensive and is currently not available for all neuromarketing companies [8]. The only brain responses that marketers possess are those of people who consented – researchers have no way of harvesting brain data from your smartphone, for example – and brain data that is collected is often averaged out to understand the average consumer, rather than an individual response. And like most studies in neuroscience, studies are “pretty abstract, focused and far from an everyday experience” [12]. In the meantime, the fear of mind-reading has led to quite some commotion. To give a couple of examples: France banned use of the fMRI scanner for marketing purposes in 2011 [13]; many companies are forced to explain that neuromarketing does not directly read peoples’ minds in interviews; and academics are currently researching the threat of neuromarketing [e.g. 4.6-7].

Another point to note is that marketing is about recognizing what the consumer wants, which in the end could also be good for them.

Our Subconscious Mind Is an Efficient Mind.

But there is also another side to this story. Do you consciously think when you act out one of your habits? Imagine you are in a shop. You need to pick between 10 types of bread. Although on the first day that you had to buy your own bread, you might have looked for what you would like, naturally you will not take 20 minutes to think about which one is the best now as it is too tiresome [based on an example in 14]. You pick the one that you always take, or something you want to try out (possibly because of ads). Efficiency: you decide with your subconscious mind [15]. Although probably influenced by an ad, it is only bread. We need to eat right?

Overall, marketers do not have “more control” over what we buy. They can predict better what we are already planning to do and make certain commodities stand out more.

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We all invariably know one person in our circle who always seems to know how to create, thrive in, and emerge unscathed from every possible situation. And they seem to do it effortlessly, much to the chagrin of onlookers who begin to feel the sting of inadequacy themselves. These onlookers then set out to watch each move of this person carefully and find out the winning formula, only to discover much to their disappointment, that there’s one rule that this person ever follows, it’s to never follow any rule. It appears like they’re spontaneously wielding the situation to their advantage on the spot. So is the “winning code” for success truly uncrackable?

Connecting a Powerful Dose of Charisma

Who can revisit a person who not only seems to know where they’re heading, but also appears to be kind enough to show the way to anyone who desires to follow? People in power are known to portray themselves as being empathic, or indeed truly are. Leading their followers requires that the leader sympathizes with their needs, understands their wants, and knows how to get it for them. Two tools are thus quite imperative in a leader’s toolbox: empathy, and the ability to attribute mental states to others (also known as Theory of Mind (ToM)). Functional neuroimaging shows that empathy and ToM stimuli activate overlapping neural networks including the medial prefrontal cortex, temporo-parietal junction and temporo-polar poles [1]. “Followers”, on the other hand, when perceiving ‘charisma’ in a leader, promptly respond by deactivating their frontal executive networks (as seen by a decrease in the BOLD signal in fMRI), indicating a temporary ‘handing over’ of their executive functions to the one they perceive as running the show [2].

Tweak Your Hormones to Stay at the Top

The Brain of a Leader

You can, in fact, predict who will take the lead in a pair of people even before they engage in a task by analyzing their brain waves with EEG. The leader shows as a suppression in alpha oscillations over their motor and frontal cortex, compared to the follower [6]. Frontal alpha suppression is seen when task complexity increases, when attention increases and when the neural system is engaged in planning [7]. This frontal alpha suppression seen in leaders a second prior to initiating the task suggests that they are already investing more in preplanning and control compared to the other partner. This primes their mental system into a state of readiness, making it easier for them to take the reins when the task eventually begins.

Born to Lead?

Are brain wave patterns of leaders acquired through constant exposure to situations that required them to call the shots, or are they genetically predisposed to be a guiding light for others? Getting your own throne appears to depend partially on whether you managed to successfully sneak in a single nucleotide polymorphism called rs4950 into your neuronal acetylcholine receptor gene (CHRNA3) [8]. The dopamine transporter gene DAT1 is also thought to be involved, as one study found a positive relation between DAT1 and moderate rule breaking which was positively associated with leadership role occupancy [9]. But these studies also reiterate that these findings don’t mean you can completely rule out environmental influences. Inheriting such genotypes might make it more probable and easier for the person to occupy a leadership role. We already notice that people with certain personality traits (such as neuroticism, extraversion, openness to experience, agreeableness and conscientiousness) find it easier to lead than the rest [10]. However, almost everyone agrees that personality differences are shaped by both genetics and external environmental influences [11].

Every day presents new opportunities. Every interaction paves new paths. Every day presents new opportunities. Would you choose to walk first, braving the comfort and familiarity of having your brethren walk beside you? When the moment comes, you’ll know what to do.

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Knowledge: Bottle-nosed dolphins with great knowledge of the activities of other clusters, and food locations perform side flips to redirect the whole group [15], while honey bee individuals who have scouted the area and found a new nesting site perform a “waggle” dance to induce the rest of the hive to follow them [16].

Personality differences are seen across the animal kingdom too [12], leading to the emergence of leaders and followers in non-human species. Some of the most complex non-human mammalian social structures are lead by their females (including killer whales, lions, spotted hyenas, bonobos, lemur, and elephants). In certain species, leadership is ascribed (spotted hyena daughters inherit their social rank from their mothers), while in others leadership is achieved (bottlenose dolphins, apes).

Leadership position occupancy is motivated by different factors in different animals:

A strong motive: In some species, the individual who has the most pressing need for a resource such as food emerges to be the leader going out in search of it. Starved fish tend to occupy the lead positions in schools while foraging for food [11], and lactating zebras (who are in an energetically demanding phase of their reproductive cycle) tend to lead the movement of their herd [13].

Knowledge: Bottle-nosed dolphins with great knowledge of the activities of other clusters, and food locations perform side-flips to redirect the whole group [15], while honey bee individuals who have scouted the area and found a new nesting site perform a ‘waggle’ dance to induce the rest of the hive to follow them [16].
FOCUS

FOCUS

Can A Series Really Raise Suicide Rates?

The Netflix series 13 Reasons Why seems to promote a head-on discussion of suicide. Is that an indication that it inadvertently encouraged some people to go through with the act?

The series, based on the 2007 novel by Jay Asher, follows the lives of several American high school students immediately after the suicide of a girl in their class, and through their interviews behind cassette tapes, recorded shortly before her suicide, as a sort of suicide note detailing her psychological pain. The people from her life - former friends, sexual partners, “enemies,” admirers - are left to decipher the tapes and deal with the aftermath.

A recent study spanning various research groups, including the National Institute of Mental Health (NIMH), analyzed data on suicides in the US, freely available for download from the Centers for Disease Control and Prevention (CDC’s) website [1], in order to determine if the release of 13 Reasons Why may have had an impact on the suicide rate [2]. The study joins a continuing dialogue around suicide, the duties of society towards preventative mental healthcare, and the role of media in the responsible depiction of such issues.

They focused on a five year period encompassing the release of the series on Netflix on March 31, 2017. They found a significant increase in the suicide rate for boys: 10-17 in April 2017. The first month the series was available for streaming on Netflix. This “28.9% step increase” [2] was found after controlling for a general increase in suicide rates and seasonal fluctuations. They used the homicide rate as a control, citing previous research suggesting that it is influenced by similar environmental factors to suicide. The suicide rate in April was also the highest of any month in the five-year study period that they looked at.

Perhaps the most chilling line in the study report: “We estimate that the series’ release was associated with approximately 195 additional suicide deaths in 2017 for 10- to 17-year-olds.” [2]

When I read the press release for this study on the NIMH’s website [3], my first thought was: is this clickbait? The NIMH is a large and reputable scientific organization, not a tabloid news hub. While all news implicitly cries out for attention, I would expect this source to lean more towards cautious scientific statements than cheap sensationalism.

My generation grew up with parents who had lived much of their lives in a pro-internet world, a time when all TV deaths were bloodless and elegant. Our parents had much fear of the corrupting influence that godless first-person shooter video games and gory, violent films might have on our supple neocortices and ventral tagmatae. We, of course, assumed most of their fears were akin to witch burning. So I decided to look into this further.

Suicide contagion and the responsibilities of the media

The authors of the suicide risk cite previous research toutng the power of media to raise awareness of suicide risk and encourage them to seek help [4], as well as to increase the risk for suicide, known as “suicide contagion.” Suicide contagion, also known as the Wether Effect (named for a character from a Goethe novel called “The Sorrows of Young Werther”), is a well-established finding that a publicized suicide influence other-at-risk people to kill themselves as well (sometimes referred to as a “copy-cat suicide”) [5]. After the release of Goethe’s novel, there were reports of people dying by shooting themselves in the same manner as the character Werther is depicted as doing, resulting in the banning of the book in some places [6] and perhaps starting the discussion of the responsibilities of the media and artists in depicting suicide.

So, there is evidence that media can have an effect on suicide risk. For as much as this particular study found evidence that this particular series increased the suicide rate — this is a more difficult question to assess.

This study was a quasi-experimental design, aimed at finding evidence for a correlation (which, as the authors admit and any good scientist will tell you, is NOT EVIDENCE FOR CAUSATION). But this is tricky terrain because a correlation is evidence that it could be worth looking closer for a causal link. And, given that suicidal ideation, not to mention suicidal acts are very, very difficult to study via controlled experimental methods, a correlational study might be the best way available.

Young people are especially at risk, particularly when they identify with the characters or see explicit depictions of suicide methods on-screen [7]. There are research-based guidelines that exist for the media [e.g. 8], which the authors suggest were largely unheeded by Netflix, with only one warning displayed before the first episode of the season.

A closer look at the methods

The primary methods used in this study were a quasi-Poisson regression and Holt-Winters forecasting models. Does that pretty much answer your questions?

Luke Tudge, a statistics lecturer at Humboldt-Universität zu Berlin, summarized: “It might actually mean specifically affected suicide rates, but not violent crime in general. The authors also note that another study found an increase in Internet searches about suicide in that month [10], as well as an increase in suicide attempt admissions at a local hospital [2, 9].

Why the effect was specific to boys to between the ages of 10-17 is ultimately unanswerable. She notes that “there was no obvious explanation why this should be the case” [9].

The study authors were also surprised, having predicted an increase in suicide rates for young women due to the plot centering around a high-school-aged girl who died by suicide. They cite studies which “indicate that suicide contagion is not a litmus test for those who strongly identify with the person who died by suicide (particularly celebrities)” [2]. However, they note that [SPOLLER ALERT] in the last episode of Season 1, a young male character makes a serious attempt at suicide with a gun. They also note that “a well-known gender paradox in suicide also exists, with male rates of suicide being higher than female rates and female rates of attempted suicide being higher than male rates across the lifespan” [2]. The study did not have data about attempted suicides, only actual deaths by suicide.

Towards understanding

Though causally inconclusive, this study makes it clear that we need to be aware that media portrayals of suicide may indeed pose a serious risk of increasing the likelihood that some at-risk people will kill themselves. At a minimum, even fictional portrayals of suicide should follow media guidelines [8], including the frequent issuing of warnings. This association study joins a continuing study of suicidology, the factors that lead to suicide and the ways we can support our fellow human beings.

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1. CDC WONDER Online Database, released December 2018, https://wonder.cdc.gov/wonder2.html
3. https://tinyurl.com/y6k6y3p7
9. Tudge L, personal communication, 2019

In Berlin, you can check out https://www.berliner-krisendienst.de/en/ if you or someone close to you needs to talk to someone with psychiatric training right away. The NIMH in the US also offers a helpline and in formation sheet about suicide prevention at https://www.nimh.nih.gov/health/topics/suicide-prevention/index.shtml.

Another comment in the study’s discussion that brought my childhood to mind: “Numerous media outlets failed to adhere to guidelines for suicide reporting after the death of the actor Robin Williams. This resulted in a roughly 10% increase in suicide deaths in the subsequent five months, representing an excess of 1,841 cases” [2, 10].

Image: Jan Vasiek on Pixabay

June 2019
The lemon juice bank robber and the ignorant — his actions, speeches and example. Donald Trump clearly did think they’re so insanely smart? Take lemon juice would make his face invisible [1]. The lemon juice can be used as an “invisible ink” he truly thought that lemon juice would make his face invisible [1].

Why can some seriously stupid people think they’re so insanely smart? Take lemon juice would make his face invisible [1]. The lemon juice can be used as an “invisible ink” he truly thought that lemon juice would make his face invisible [1].

In 1995, McArthur Wheeler robbed two banks in Pittsburgh in broad daylight with nothing to cover his face. Nevertheless, he was shot at by the cops that same evening. Looking at the surveillance videotapes, the police remarked, “But I put lemon juice on my face...”. Misunderstanding how lemon juice can be used as an “invisible ink”, he truly thought that lemon juice would make his face invisible [1].

The lemon juice bank robber and the 45th president of the United States of America are — unfortunately — just a few extreme examples of the “Dunning-Kruger Effect”. In 1999, Kruger and Dunning published an article named “Unskilled and Unaware of It” at Cornell University [1]. They observed that people who are incompetent tend to be the most confident. They argued that people who are incompetent in a specific task or strategy suffer from a dual burden: not only is their incompetence preventing them from succeeding in this task, they are also not able to realize their own incompetence. Dunning and Kruger called this a missing metacognition. For their work on these peculiar cognitive bias, Dunning and Kruger won the satirical Ig-Nobel prize in 2000. The award honors science which makes people first laugh and then think [2].

The “above average effect” Everyone might have his or her Dunning-Kruger moments. Do you think you are a good driver? Do you think you can drive a car better than the average person? Yes! Well, most people who think so, but of course, only 50% of all car drivers can be above average. However, thinking one is a better driver compared to the rest of the population isn’t nearly as insane as identifying as a “Flat Earther” [3] (For a fascinating look into the minds of flat earthers, check out “Behind the Curve” on Netflix.) Many educated and intelligent people will sincerely say that they think the earth is flat, even after they face dis-confirming evidence in scientific, logically sound experiments they run themselves! How is it possible that those people do not realize their lack of knowledge and instead show an inflated confidence?

In their study, Dunning and Kruger wanted to prove if less competence makes people more confident. They tested their subjects in different categories: humor, logical reasoning and grammar. On the basis of the test results, four groups were formed, from the top to the bottom quartile. Each person was asked to rank itself in comparison to the performance of the other participants. Strikingly, everyone thought that they performed better than the average. All groups, except for the top quartile, overestimated themselves. The bottom quartile hereby was the group, which overestimated themselves the most in comparison to their actual performance. Only the best quartile of participants was underestimating the own performance. Dunning and Kruger explained this by the so-called false-consensus effect [4]. Participants from the top quartile not necessarily underestimate themselves but overestimate their peers.

In one part of the study (grammar) the participants from the top and the bottom quartile were asked to estimate the performance of others, after reading that they were also allowed to reassess their own performance afterwards. With this, Dunning and Kruger wanted to test, if the participants would be able to recognize other person’s competence and if they would learn from that about their own competence.

To make it short: The bottom quartile failed both challenges. Neither were they able to estimate their own performance, nor did they reassess their own performance closer to the truth. Some participants from the bottom quartile overestimated their own performance even more than before! The top quartile, however, showed the opposite effect. They were able to estimate the performance of their peers and reassessed their own performance to a more realistic value, although they still underestimated themselves. Thus, the miscalibration of the incompetent stems from an error about the self, whereas the miscalibration of the highly competent stems from an error about others”, as Dunning and Kruger summarize it [1].

In the last part of their study, Dunning and Kruger again asked subjects to take part in a logical reasoning test and to estimate their performance. Subsequent ly, half of all participants conducted a training about logical reasoning, while the other half was asked to do a fill task. Afterwards, everyone could reassess the own performance. The main result was that people scoring in the bottom quartile were again overestimating themselves and after receiving the training they improved their ability in self-appraising a lot! People from the bottom quartile, who did not receive training, did not gain any improvements in their self-estimations either.

So the only way to help people see their incompetence is, to make them more competent. Without this learning and insight, incompetents are not able to see their incompetence for what it is. Coming back to Trump: Is there any way to make him more competent and with this ability to see his incompetence?

The 3-Vo Model of Cerebral Arteriogenesis

In 1664, Thomas Willis published the article “Cerebri anatome”, an outstanding work where he described for the first time a ring-like arterial system located on the ventral surface of the brain. Richard Lower, a gifted pupil of Willis, designated the circulatory anatomous “Circle of Willis” in honour to his teacher. Subsequently, Lower became interested in the question how blood flow would be redistributed and carried to the brain, if some of the four arteries supplying blood to the brain were to be tied.

To answer his question, Lower bilaterally ligated (tied shut) both carotid arteries of a spaniel dog, and found that after the surgery, the dog seemed as lively as before [1]. Lower’s experiment demonstrated that two vertebral arteries are sufficient to compensate the bilateral carotid artery ligation by the redistribution of blood flow via collateral anastomoses. This study paved the way for a better understanding of the mechanism of cerebral arteriogenesis in neuroscience. 300 years later, Prof. Dr. Ivo Buschmann continued the pioneer work of Lower and established the 3-vessel occlusion (3-VO) model in rat as described below.

The 3-VO Model of Cerebral Arteriogenesis

The 3-VO Model of Cerebral Arteriogenesis is regarded as positive outward remodeling (lumen enlarge- ment and wall thickening) of preexist- ing collateral arteries – the most im- portant endogenous mechanism for the compensation of vascular occlusion. In particular, cerebral arteriogenesis can be considered as the primary compensatory mechanism for tissue perfusion in case of ischemic stroke. In order to investigate the mechanism of cerebral arteriogenesis, Prof. Buschmann [2] de- veloped a novel animal model in 2003: 3-vessel occlusion (3-VO). The model is referred to as 3-VO because of the se- quential ligation of bilateral vertebral arteries and the unilateral common carotid artery ligation. After 3-VO, ce- rebral perfusion is supplied by a single internal carotid artery (ICA) into the Circle of Willis and flow direction will be changed towards the pressure gradients. From the ICA, blood flows through the paired PCAs into the contralateral ischemic region. Hence, the posterior or cerebral artery (PCA) is recruited as collateral pathway to connect the left ICA to the middle cerebral artery (MCA) in the hypoperfused right area. Therefore, PCA is the target vessel for analyzing cerebral arteriogenesis [3].

How Arteries Supply Blood to the Brain

Ligation of three feeding brain arteries is a challenging situation for the cere- bral circulation. There are only four feeding arteries in total – two ICAs and two vertebral arteries (VA). The feeding arteries enter the brain all via the Circle of Willis. The ICA runs along the carotid canal and then bifurcates into the MCA and anterior cerebral arteries (ACA). The bilateral ACAs are connected by the anterior communicating artery in the midportion of the anterior portion of the Circle of Willis. On the posterior portion of circle, each posterior communicating artery connects to...
KAORU LI
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AG BADER, AG BUSECHMANN

How does the brain’s blood supply develop?

Attraction can be a complicated thing. Imagine meeting an attractive person in a café and wondering, should I talk to them? Should I ask them out? Where should we go? Do they like me? But hold on, these questions aren’t new. According to a classic social psychology study, the solution might be easier than you think.

The “shaky bridge experiment”
In 1974, Dutton and Aron performed a famous experiment [1] where an attractive female researcher asked men walking over a shaky bridge to participate in a brief study. In the middle of the bridge, individual men were asked to fill out short questionnaires and write short stories to describe a set of pictures. In the end, the female researcher gave the men her telephone number in case they had any questions regarding the study. The responses of the men walking across the narrow, shaky bridge were compared to another group of men who were asked to do the same while walking across a wider and more stable bridge. Compared with men on the stable bridge, more men met on the shaky bridge ended up calling the researcher and their stories contained more sexual content.

Misattribution of arousal
Dutton and Aron concluded that those men walking across the shaky bridge misattributed their arousal—caused by walking over a fear-inducing bridge—to the attractiveness of the female researcher. Because the men might not have been aware that their arousal was first, they found a different explanation for it’s appearance. Consequently, this phenomenon can always arise when a person experiences arousal without being aware of the underlying cause.

However, the same effect was not observed when a male researcher recruited female pedestrians for the study. This could hint to subtle gender differences in the effect. Furthermore, their experiment only tested for heterosexual attraction, leaving open questions of generalizability.

A classic study on the misattribution of arousal

If you buy the theory, consider that any plausible reason for an observed arousal could be used to explain the arousal, and that could also subconsciously influence you. Let’s say you’re about to present a poster at a conference and you drink a lot of coffee in order to be awake. If this coffee then makes you feel nervous and conscious about your heartbeat, you might misattribute the arousal to your nervousness about the presentation [4]. Importantly, however, if you’re aware of this connection you can correct your misattribution.

2. Schachter and Singer, Psychological Review, 1962

How can you make your dates more exciting?
A simple take away might be to make your dates more exciting [3]. How could such insights be helpful for your next date?

Not tip for a spicy date
How could such insights be helpful for dating? A simple take away might be to make your dates more exciting [3]. It doesn’t have to be a shaky bridge, but maybe you can go on a roller coaster ride together, go skiing or watch a scary movie—be creative. Or, if you’re like me and you always feel the effect of every cup of coffee, it might be enough already. If you ever someone you want to talk to in a café, go ask to buy them a cup of coffee and spice things up.

MELINA ENGELHARDT
PhD STUDENT, AG PICH

How does the brain’s blood supply develop?

The IC A anteriorly and the PCA posteriorly, thereby closing the circle.

Whereas ischemia is the initial stimulus for angiogenesis, fluid shear stress (FSS) is regard as the driving force of arteriogenesis. FSS is defined as the frictional force which appear in parallel to the endothelial cells of the vessel lumen in the direction of blood flow. In case of an arterial occlusion, a decrease of distal blood pressures causes a steep pressure gradient across collateral artery upon the stenosis or occlusion. As a result, increased shear stress leads to arterial lumen enlargement and wall thickening [4]. Specifically, after 3-VO, redistribu- lumen enlargement and wall thickening increased shear stress leads to arterial occlusion, a decrease of distal blood pressures causes a steep pressure gradient across collateral artery upon the stenosis or occlusion. As a result, increased shear stress leads to arterial lumen enlargement and wall thickening [4]. Specifically, after 3-VO, redistribu- lumen enlargement and wall thickening.

Hormonal Regulation in Cerebral Arteriogenesis
For decades, our group has been focusing on the hormonal regulation of the kallikrein-kinin system (KKS) in cerebral arteriogenesis. KKS is regarded as one of the most pivotal hormonal systems participating in a wide spectrum of physiological functions in the cardiovascular as well as the nervous system [5]. Kininogen is the substrate for kallikrin and kinin is liberated by cleaving kininogen. Kinin modulates its biological function by activating two distinct G protein-coupled receptors subtypes: bradykinin receptor 1 (B1R) and bradykinin receptor 2 (B2R). Bradykinin receptors regulate multiple physiological responses by internal signal transduction.

Gene knockout and transgenic technologies have been applied widely to investigate the specific role of biological systems. In regards to the KKS, Prof. Dr. Michael Bader at the Max-Delbrück-Center in Berlin was the first to develop a knockout mouse strain with a disrupted B1R gene in 2000 [6]. Nowadays, B1R, B2R and B1R&B2R knockout mouse strains are used by Prof. Bader to understand the role of kinin receptors in many physiological processes. Using these models, Dr. Philipp Hillmeister demonstrated for the first time that kininogen is a molecular marker for cerebral arteriogenesis and B1R was shown to be one of the most relevant modulators in cerebral arteriogenesis signaling. B1R stimulate monocyte transmi- gration in the perivascular tissue, which is relevant for the production of para-intravascular tissue, which is relevant for the production of paracrine cytokines in order to govern collateral artery growth in the brain [7].

Lower’s experiments on cerebral anat- omy laid the foundation for key models in modern neuroscience. More impor- tantly, by applying his knowledge about blood flow and the anatomy of the Circle of Willis, our group signifi- cantly contributed to cerebral arteriogen- genesis research and demonstrated that collateral growth is the most relevant compensatory mechanism for the preven- tion of ischemic stroke.

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CNS newsletter

Illustration: Sandra Proebis
Around the world, the rise of populist leaders like Trump and Bolsonaro, as well as parties like the Italian 5-Star movement, have stumped people and the establishment alike [1,2]. Yet, it is no longer the exception, but rather it is becoming the rule: it is no longer possible to deny the rise of populism. As the Guardian puts it “[p]opulist parties have more than tripled … in the last 20 years” [2]. The question is thus no longer why this specific person won elections, but rather why is this movement taking place.

Many scholarly articles have related this development to the change in socioeconomic landscape, such as the increasing economic deregulation, privatization of the market and globalization [3]. These changes have probably been “accelerated in the aftermath of the EU’s financial crisis” [4]. Less educated citizens, the self-employed and the retired have been hit the most [4,5]. These changes however cannot fully explain the interest in the right-wing populist parties [5-7]. Although correlations between the proportion of immigrants and the unemployment levels with the rise of populist parties have been found in certain countries, these have not been found in others [5].

Then what else can explain populism? Here, it is tempting to go into the neuroscientific mechanisms of politics, I will however refrain from this. As explained by Kings College Neuroscience Professor Coen in one of his interviews, “Neuroscience […] is not a tool for appraising ethical judgments or the merits of different opinions” [8]. I agree with this statement. In addition, there currently are not enough sources that can adequately describe from a neuroscientific perspective why we vote a certain way. Hence claims based on neuroscience would be baseless [9]. For example, the amygdala, as well as the PFC and the insula, are activated significantly more when we see a candidate from an opposing party [10]. But this in itself does not say much about the recent rise [11].

So what could explain populism? Psychology, maybe, because it is not so much the economy (or neuroscience), it is how people feel (about their economic position), how others play into these feelings, and how we act on this.

For example, a recent study found that “declinism” (a negative feeling about the evolution of society) and belonging to a group that is treated unfairly appears to predict support for populism [12]. Not that strange, given that an essential part of populism includes some kind of appeal to the people and a denunciation of the elite’ [13].

But wait, who feels this way and why? It was originally suggested that mostly the frustrated floaters – who is disappointed in his/her choice of political party – switches to another party [14]. However, it now appears that also stable voters switch to vote for populist parties [14]. This also taps on one of the why mechanisms: emotion, namely disappointment. A feeling that politicians put the voters switch to vote for populist parties [14]. This also taps on one of the why mechanisms: emotion, namely disappointment. A feeling that politicians put the fear and shame, we are more likely to project it onto others [4]. For we are scared to lose the things we love. We anticipate shame, we feel powerless. We cannot let the insecurity of the world attack our own self-image, for we must live up to the standards of society [4,17]. "The politicians feed on our fear and give them their own twist: stir up the fear of foreigners and/or put the interests of marginalized natives above all else" [18].

Populistic parties polarize the political spectrum and separate voters from their original political party by making use of the feeling that it is “us, the people” against the “elite” [19]. Often, politicians even use “we” versus “them” speech. This has been suggested to lead to the mobilization of people [19]. So that’s how we are “played”.

According to studies, fear is linked to extreme views [16], and leads us to look for a scapegoat, especially when we suppress the feeling of shame [19]. And it is not only disappointment, it is also fear, anger and shame [19].

Populistic parties polarize the political spectrum and separate voters from their original political party by making use of the feeling that it is “us, the people” against the “elite” [19]. Often, politicians even use “we” versus “them” speech. This has been suggested to lead to the mobilization of people [19]. So that’s how we are “played”. Populistic parties polarize the political spectrum and separate voters from their original political party by making use of the feeling that it is “us, the people” against the “elite” [19]. Often, politicians even use “we” versus “them” speech. This has been suggested to lead to the mobilization of people [19]. So that’s how we are “played”.

Although this is only part of the story, and one way to look at it, politics has been described by many as an emotional game [22] in which the politicians feed sentiments rather than ratio [source]. It must be said that populistic parties have been suggested to use more emotional communication [23], and eighty percent of the winning parties have used “we-speech” [24]. Thus, we have probably been affected in some way by our emotions, and our social identity.
The news cycle in the past few years has been wearying, and in the past few months, it’s becoming increasingly difficult to ignore signs of a growing disconnection between “expert opinion” and fact (alternative or otherwise). Between vaccine skeptics and climate change deniers, it seems that public trust in science is eroding at an alarming pace. Put more bluntly, having a degree and a lab coat doesn’t inspire trust and confidence in the general public like it used to. Everywhere, researchers and policymakers are getting exasperated, trying to build up trust in scientists. The bigger question is… do we trust one another?

Try a little experiment for yourself. Take 5 papers from your field and hand them to a colleague. Then, ask them which findings they trust and believe. Collectively, these are known as Questions about Research Practices (QRP). QRPs have been consistently tied to poor study quality, and in some cases, even to failure of translation [5]. To what extent do they represent “bad apples”, or rather a general research climate? A meta-analysis from 2009 found that approximately 2% of scientists have admitted to having committed academic fraud, while around 33% had indulged in some sort of QRPs. Interestingly, the same analyses also examined what scientists thought of their friends and colleagues. Here, 14% claimed that they had witnessed active fraud by others, with upwards of 70% noting practice of QRPs. That’s a big difference, and can well explain some of the suspicion floating around [6].

Interestingly, it turns out that not everyone views “academic trust” in the same way. A recent study in the Netherlands examined how a scientist’s seniority could affect their perceptions of academic misconduct and QRPs going on around them. Essentially, the more senior the scientist (i.e. tenured professors, the more comfortable they felt with their institution’s research integrity climate. PhD students (surprise, surprise) perceived the most competition and suspicion among their colleagues [7].

Publications, Prisoners and P-Values

As uncomfortable as it may be, we need to get used to the idea that scientists don’t always trust each other. But instead of getting swamped in paranoia, we need to examine the factors which lead to this being the case. On a purely pragmatic basis, having novel, squaky-clean data should help you get into high-impact journals and advance your academic career: Publish or Perish. Erren and colleagues [8] have even described this as a Prisoner’s Dilemma: the more you (unscrupulously) get ahead of your colleagues, the more you stand to profit.

Some enterprising economists have also modeled this. Using three groups, Grimes et al. [9] first conceived three groups of researchers: diligent scientists who did not commit QRPs, sloppy scientists who unintentionally let incorrect findings slip through, and unethical scientists who pushed fraudulent work. Using varying proportions of false positive and false negative results (with the diligent researchers having the least and unethical ones having the most), and a constant drive to output “novel” findings, the model meted out funding based on publication record. Unsurprisingly, the unethical scientists hoovered up all of the sweet, sweet, academic cash, while the diligent ones languished. However, when the model also varied funding based on reproducibility and other rubrics of trustworthiness, the diligent researchers generally did better.

Both the Prisoner’s Dilemma and the modelling group come to the same conclusion: institutions need to place focus on high-quality reproducible research, while fostering (and rewarding) a climate of research integrity. This, of course, also extends to re-thinking appointments and funding based solely on publishing “high”.

Leap of Faith

At its core, science is built on trust—trust one another. On the one hand, the public needs to believe that ongoing experiments will one day benefit society in some way. On the other, scientists need to be able to trust and verify published findings in a way that doesn’t jeopardize their careers (or waste their time). It’s a precarious balance, and right now, things are listing in a somewhat unpleasant direction. The answer, I think, is not to throw up our hands and naively accept Nature and Science as gospel truth. Instead, we need to take a critical look at the types of systems and incentives that have led to the current situation. And of course, we need to be honest with ourselves: are all of your own research practices worthy of trust in the first place?

Constance Holman
PhD student, AG Schmitz

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*Women also commit science fraud, of course!
Using Music For Improving The Quality Of Decision Making By Patients

Music, the unconscious

Music is a rhythmic sound that can be associated with words to add a more meaningful, and hence recognizable, pattern. It is nature’s shared, inherited language. Humans have used it for centuries to passively express or actively change their mood. From a programmer’s perspective, it is like a low-level machine language. It requires less interpretation by human consciousness and easily addresses the unconscious.

The heard drug

Music has been associated in many studies with reduction of anxiety and stress in both healthy and ill people [1]. Such an effect was reflected in some studies by a decrease of pain, nausea, and vomiting [2,3]. Even in neonates, it has shown to improve their performance and response to treatments [4]. Moreover, adult patients showed an enhancement of both objective and subjective evaluation, accompanied by an improvement of their health statuses. Nurses in some specialties have started using music for daily practices [5]. However, it is not yet widely used.

Everyone has their own flavor of music. Such flavor was found to be connected with the complexity of mental models [6]. This can mean that the same piece of music can initiate different feelings for different people.

We can see also that artists add background music to their movie scenes in order to elicit certain emotions in their viewers, resulting in physiological effects on the viewers’ experience. Such physiological effects can be beneficial on engagement level in entertainment but not on the health level, particularly on the engagement level in entertainment.

Some people show cognitive disabilities due to the impaired release of neurotransmitters in the brain and blood. Such impairment can be idiopathic, or due to life stimuli, or intake of medications. In addition to medical treatment, complementary medicine, like music, religious recitations or meditation techniques can aid in releasing such hormones and minimizing the need for high external doses from medications.

Cancer-related suicide: can music change minds?

Our latest study in the journal Cancer found that patients diagnosed with end-stage diseases and some types of cancers like pancreatic and lung cancer have a higher suicide risk [7]. This risk peaked in the first two months after diagnosis, while the patient was still processing the shock of the prognosis. We hypothesized that it resulted from feelings of helplessness and stress.

Physicians may use many techniques for delivering bad news. Not all of them have been trained in how to do so. Many members of the cancer medical team have their own approaches to support the patients, including the previously mentioned nurses use of music.

Can music change patients’ minds and support them in accepting their diseases and fighting it to the last minute? This question is surprisingly debatable. Using music as an intervention may require a clinical study, in which some patients receive music therapy and some do not. Such a clinical study would require the approval of the subjects in the form of consent forms and institutional review boards. Wouldn’t this complicate what we believe important for the patient? Would a subject that is already feeling helpless agree to let the medical team try to change that person’s mind? Would their prior knowledge that they would be exposed to a behavioral modification using music change their response to a second active intervention (e.g. a new treatment)?

One aspect that must be considered is that, even if the trial were to be successful, some patients believe extending their remaining time can cause them more pain. Our early feedback from the public when Aerzteblatt journal highlighted our suicide article was a reply from one of the readers that if he gets such disease he would not like to live, from a physician’s perspective, the progress of medicine depended on those who had the courage to face their disease and try other potential medications. One hundred years ago almost all malignant cancers were deadly, even those cancers which currently have a 99% survival rate. What do you think, should improving patients mood be optional?

Sorting the dmighty, developing a new medicine

Returning to machine language; with the help of current mobile apps and artificial intelligence, computers can sort and create human profiles based on data about the music people listen to and its effect on their activity and mood [8,9]. Such a task was hard to achieve previously due to the extreme variation in all elements and confounders of the study, but with the advance- ment of the Internet and the ability to crowdsourced millions of participants, such task is no longer a far-off dream.

Meanwhile, using music to change patients’ moods must be studied under the appropriate ethical considerations. Soon in the future, music pieces may have to be individualized, come with a prescription insert and be used wisely.

Further reading:

https://www.sciencemag.org/article/ music-changes-the-way-you-think/
https://www.thelancaster.com/health/archive/2015/05/can-music-be-used-as-medicine/391820/

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Image: Joanna Weber,
Imagine sitting down for a meal with one of your heroes. Daniel C. Dennett, let’s say, or a philosopher of mind, whose writings about the Intentional Stance and folk psychology from the 70’s and 80’s continue to shape cognitive science today.

How did you get this opportunity? He’s a friend of a friend who knew it would make you so happy to have a conversation with him. So she set it up, and here you are, and in your imagination you laugh, talk about what a creep Searle is, you discuss consciousness with a capital C, and how amazing it is, the various flavor notes in wine you can taste when you are paying attention. What’s that, some type of - wood! How delightful! Did you taste it before you knew it was there? You laugh some more and drink some more wine. He tells you that you have a bright future in philosophy. Come on by the old Uni any time. Actually, we’re looking for a post doc at the moment...

Well, let’s say you actually set this up. Dennett is now 77 years old. Hegardens and remains a fairly healthy lifestyle, especially since the heart attack, but on this particular evening he has had a long day (he managed to fit you in, because your mutual friend is his wife’s daughter’s whatever). The restaurant you met him at is dimly lit and he’s struggling to keep from falling asleep into his own (magnificent) beard. There are long and mildly uncomfortable silences as you make boiler plate, polite conversation, but the discomfort is mostly on your end because he is Dan Dennett and he has nothing to prove to you. His words are polite but his eyes tell you that you ruined a perfectly nice evening. After exactly 41 minutes he says with incredible enthusiasm and energy that seems to spring out of nowhere: “well, it’s been fun!” And shuffles off.

What happened?

Let’s talk about another Dan: Daniel Gilbert, a social psychologist at Harvard University. Were you to sit down with him, he might have something to say to you about how you ended up in this mess with Dennett: your well-intentioned, but sadly overactive imagination.

It’s not new research but it remains a largely stable finding: when you imagine how you are going to feel about an event in the future, you’re going to make mistakes. You’re going to base your simulation on the future event on a particularly salient aspect of a similar past memory: things going on around you in the present, like the baby waiting in the subway seat next to you, are going to bias your imagination of how you will feel in your imagined scenario; you will neglect “inessential features” of your imagined activity - like the amount of time you spend in waiting in lines at the theme parks, in the hot, hot sun - in favor of “essential features,” like the two seconds that of roller coaster’s climactic moment; and you will put too much focus on the beginning of a long-term activity, like that first day of your band’s tour when you’re rocking out and the crowd is loving it, rather than what it will be like to play that same song for the 30th crowd after two months of sleeping in a van [1].

Social psychology refers to this line of research as the study of hedonic and affective forecasting: imagining future pleasure or pain, and future emotions, respectively. Gilbert published a series of papers on this topic in the 2000’s which have remained core components of current research into the same topic [e.g. 1,4,5]. He studies and lectures on happiness, affective forecasting and other related topics to this day [2] [e.g. his 2014 TED talk on imagining changes to your future self [4].

You are medium-sized

Like Dennett, a lot of Gilbert’s research is based on the idea that we humans are medium-sized organisms, limited in our perspective not just to medium-sized spatial perception, but to a medium-sized conception of time as well. Folk psychology, as Dennett describes it, is “how middle-sized physical objects in our world react to middle-sized events” [3]. Evolution has shaped us to see things that are useful to us and develop a working conception of how these things behave. We can see tables and chairs, food, cats, ants, large rocks and mountains. We know that knocking over a cup of milk will spill it. We have trouble seeing individual molecules, atoms, bacteria (if you can see bacteria it’s time to clean whatever it is you’re looking at). It’s also difficult to truly conceptualize the size of planets, stars, solar systems.

So it is with time: as temporal distance grows, our accuracy wains. You can more reliably plan for your lunch one hour from now than you can for lunch with a friend in one year. And if you’re hungry when making this plan, this may help you order the right sized steak today, but your plan to meet your friend at the all-you-can-eat Brazilian steakhouse for lunch in one year may later seem like overkill [5].

Your time travel skills are weak

A popular theory posits that our ability to look into the future shares a similar mechanism with our ability to look into the past [6], what psychologists call episodic memory. Such memories are a hallmark of most of our conscious experiences. Certain triggers, including our own volition, can prompt a mental journey to a previous event in our lives, through which we re-experience a moment with a shockingly low level of reliability and accuracy [7]. This contrasts to semantic memory, facts without episodes (who starred in the film Superbad?!) and procedural memory, e.g. how to ride a bike [8].

Mental time travel may be a shared cognitive device by both episodic memory of the past and prospective imagination of the future [6, 9], though it is debated whether the ability to look forward or backward in time developed first in evolutionary history. In one view, a sense of ownership over your own memories, or “autoneosis” [10], was important enough to become a selected for trait by evolution, and only later developed into an ability to imagine events in the future [6]. Some, however, believe it is the other way around: the earlier advantages of mental simulation came from our ability to envision the future and anticipate rewards or consequences, and that an ability to envision our pasts only serves to generate adaptive future behavior [9].

Whatever its origins, our capacity for future thinking is demonstrably limited and medium-sized, losing predictive accuracy the further we try to imagine into the future. Often, according Gilbert, we do rely on the past when imagining an event in the future. That terrible time at the dentist may actually not have been so bad, mostly boring - but you remember the really intense moments, like a quick, sharp poke in your gums with a metal enamel cleaner, and you will base your expectations for future dentist appointments on that memory [1]. Supporting this notion is a reliable set of studies of continuous hedonic ratings, which show that a person’s final judgement of an event is the average rating of the peak and final hedonic ratings [11]. So if it is really good or bad at the end, it makes a huge difference for how you remember it. All’s well that ends well.

And why are we so bad at this?

Gilbert’s explanation is that when we try to make a decision about the future, our cortex “tricks” our subcortical, emotional systems into temporarily believing an event is taking place, allowing
Don’t be afraid to dream. Perhaps Dan ever trust yourself—just approach your All this is not to say that you cannot prefer to think of ourselves as being anticipated they would [19]. Perhaps we misfortune of others than they had an Turns out they felt more pleasure in the feelings towards the actual incident. were contacted for ratings of their study of Schadenfreude actually oc imagined event from a prospection happening to someone else. After an This is supported by a study which found expected hedonic value of achieving a drive effortful action and resistance to into being; if we overestimate the con sequences, it can motivate us to avoid it. Beyon Mlieyan and Thomas Suddendor at the University of Queensland in Brisbane, Australia suggest that “to do effortful action and resistance to challenges in the face of uncertainty, one could benefit from exaggerating the expected hedonic value of achieving a temporally displaced outcome (or the hedonic cost of failing to do so)” [17]. This is supported by a study which found that when people imagined winning at a competitive task before playing (thus leaving something to be motivated to do), impact bias was higher when than imagining after playing [18].

Now just imagine... One thing that we don’t overestimate? The amount of Schadenfreude we will feel when imagining something had happening to someone else. After an imagined event from a prospection study of Schadenfreude actually oc-urred by chance afterwards, subjects were contacted for ratings of their feelings towards the actual incident. Turns out they felt more pleasure in the misfortune of others than they had antici-pated they would [19]. Perhaps we prefer to think of ourselves as being more wholesome than that?

All this is not to say that you cannot ever trust yourself—just approach your-self with a healthy dose of skepticism. Don’t be afraid to dream. Perhaps Dan

Dennett would find you to be a swell conversation companion. But if you’re going to follow your dreams, use some of the methods listed above to critique the image in your head. And if the image in your head is coming from someone else telling you what to imagine, maybe give it a double dose of that healthy skepticism.

Alex Masurovsky
MA Student
Berlin School of Mind and Brain

According to surveys, the vast majori-ty of the population (between 60-90%) believes in miracles [1-2]. Believing in miracles is not a bad thing per se, and can actually be meaningful. How-ever, it is dangerous when the human tendency to believe in miracles gets exploited by people in order to make money. Unfortunately, there are plenty of people that are involved in exactly that. Selling of miracle cures can rage from probably harmless in the case of some homeopathic ‘cures’, to extreme-ly dangerous, as was the case when the Genesis II Church of Health and Heal-ing sold a miracle cure for autism that turned out to be a kind of industrial bleach [3]. One example that has been extensively in the news lately is the promotion of diet shakes by in-fluencers on Instagram.

Alex Masurovsky

MA Student
Berlin School of Mind and Brain

3. Donnett DC, The Intentional Stance, 1987
4. https://tinyurl.com/kdftshlnh
5. Gilbert DT, Stumbling on Happiness, 2006
8. Tulving E, Elements of Episodic Memory, 1983
19. Gonzalez-Gadea ML, Bauten A, Stigman M, PlaS Cine, 2018

When Money Trumps Health


Since the rise in popularity of social media, and in particular Instagram, things labelled “alternative medicine” have the potential to reach thousands of people. This is concerning because most of these supposed “cures” remain unregulated and untested. So how can we prevent people from falling for these kind of promises? One organisation trying to fight exploitation of so called miracle cures is “Quackwatch” [5]. It does so by investigating questionable claims and providing reliable informa-tion. However, is providing informa-tion enough, and should we trust that people will do their due diligence before they self medicate? Or should there be stricter regulation by the government to protect people? Or maybe we are all responsible for calling something out when it doesn’t seem right, since we spend years developing a healthy skept-icism (see also Dr. Brown on page 29).
In the end, I attended various talks on understand the pathology in the brain conference, and my aim was to better medically focused on medical education. three days, with one extra day specific registration costs only 30€ for health care aspects. For students, conference focuses larger German Society of Surgery in 2008 [2]. Their annual meeting focuses certainly worth attending. Next year's con- thus, if you are interested in any neuro- surgeons, the conference is defi- more how interdisciplinary neurosur- gery is, including, for example, neuro- scientists, neurologists, radiologists, psychologists and scientific illustrators. Thus, if you are interested in any neuro- surgical topics, the conference is defi- nitely worth attending. Next year’s con- ference will take place in Libeck from June 21th – 24th.

**Innovations in neurosurgery**

As neurosurgery is also a highly techni- cal field, part of the conference is a busi- ness fair where companies present their innovations. These can involve new op- erating tables or chairs for the surgeon, surgical instruments, microscopes, but also virtual reality glasses and 3D screens with augmented reality for the operating procedure. It is, for example, possible to project important structures (such as the tumor, fiber bundles and arteries) on the brain during surgery in order to decrease the risk of harming important structures. Other projects try to create a 3D virtual brain before the surgery which can then be used to plan a surgery using virtual reality. Structurally, I felt that the emphasis on multiconference with big topics

The 7th meeting of the German Soci- ety of Neurosurgery (DGNC) took place in Würzburg (Bavaria) from May 12th – 13th. This year’s meeting evolved around two main topics: Neurosurgery 2030 and Health Care Research [1]. Which new technologies might ad- vance? Which challenges could arise? Will we have to treat different diseases? How, and how can we learn from the past in order to move forward?

The DGNC is a comparably small med- ical society with 1700 members in 2017. It was founded in 1950 and joined the larger German Society of Surgery in 2008 [2]. Their annual meeting focuses on scientific research in the field as well as neurosurgical education and related health care aspects. For students, con- ference registration costs only 30€ for three days, with one extra day specifi- cally focused on medical education.

It was my first time attending this conference, and my aim was to better understand the pathology in the brain tumors of patients I work with daily. In the end, I attended various talks on different tumor types, their diagnosis and treatment. I also wanted to get a glimpse on other neurological topics outside my field such as pediatric neu- rosurgery, deep brain stimulation, neu- rotraumatology or spinal neurosurgery. As for most conferences, one should check out the program in advance and highlight the important talks, as there are usually multiple parallel sessions taking place.

**A glimpse into the looking class**

A report from the annual meeting of the German Society for Neurosurgery

A small conference with big topics

What Have We Learned, Dr. Brown?

Dr Markus Dettenhofer is currently the CEO of CEITEC, a consortium of re- search institutes in Brno, Czech Repub- lic. He has vast experience in science policymaking, managing and mentor- ing. I had the pleasure of chatting with him about these topics and about how to evolve towards a scientific career. The DGNC is a comparably small med- ical society with 1700 members in 2017. It was founded in 1950 and joined the larger German Society of Surgery in 2008 [2]. Their annual meeting focuses certainly worth attending. Next year’s con- ference will take place in Libeck from June 21th – 24th.

Dr Dettenhofer, you’re the execu- tive director of CEITEC, and you have been a visiting scientist for a number of organizations, for instance, the Joint Research Cen- tre of the European Commission. Because you have many titles, it would be interesting to know: what do you see your function as, in your own words? What is your mission?

I had a very classic academic career: PhD postdoc, and so forth. Then, at one point, when I was in Boston at Harvard Medical School, I started get- ting involved with startup companies. Through this, I recognized that there was a different world outside of aca- demia - a world of people that are not just scientists, but also business devel- opers, lawyers, and venture capitalists. It is great that there is such a diversity of individuals out there, but one of the things that’s important is the ability to translate information to people of dif- ferent backgrounds. It is critical to un- derstand your field of expertise, but also how to zoom out, so that others can un- derstand you. The necessity to be able
I've been head of CEITEC for six years. A project which was initially under the patronage of the European Commission, and therefore has some framework of legal process, an assurance of doing things with accepted norms. This is why I felt it would allow for a viable path of developing, from a base level to a higher level.

I went on a very important journey to Central America at one point, which was supposed to be a vacation, but turned into more of an understanding of how countries develop their interests. For instance, I went to the country of Panama, and I was, very serendipitously, introduced to a former president of the country, who said: “We want to spend money on innovation”, something that I didn’t realize at the time, was that many countries want to encourage science and innovation, however they may not realize what is involved in order to innovate. And so, then, I thought: there is so much global aspiration among different nation-states that are willing to invest time and effort into something that is not commonly understood. This area of science and innovation for development, I felt, is ripe for somebody like myself. This set of experiences allowed me to fast forward to my overall mission.

The mission, and the reason why I’m in the Czech Republic, is to lead a development project. A project which was initially under the patronage of the European Commission, and therefore has some framework of legal process, an assurance of doing things with accepted norms. This is why I felt it would allow for a viable path of developing, from a base level to a higher level.

I’ve been head of CEITEC for six years now. In this particular role, I think that the biggest value that we will bring is not necessarily the discoveries (except for the really phenomenal breakthroughs), but it’s the fact that we have several hundred PhD students under our umbrella. If we train our students properly to be thinking about ways which can make an impact on society, I think we can see an amplifying effect.

And if these individuals go on to do great things that, for example, provide innovative solutions to the world’s challenges, then that’s a reward in itself. One of the biggest roles is to try to set conditions for human development, even though it’s at times within a very hostile setting.

Do you mean financially?

No, not financially. It’s more the process of decoupling old habits and starting to be forward thinking in an adventurous way, which will enable new ideas to percolate through the system, not just from top down, but all throughout the system. That is a major challenge.

And did you always know that you were interested in going into the industry and in creating a maximum impact with scientific research? When did you recognize this? How did it come to your mind, when you were still in academia?

No, I didn’t realize it when I was in academic research. Although I had a quite normal, lovely, driven academic life, I think there was a point when I got a bit disillusioned with the idea of just publishing papers, and the grant writing process, with the level of rejection, without it seeming to really make an impact. Sure, you might get a lot of citations on some of your papers, but then, in essence, nothing is being implemented. Now I’ve gone sort of full circle on this, because I do think getting the information out is very important as a process for educating people, even though I’m not sure whether the academic paper is always the best vehicle to do so. So, I see the academic process as a really great tool for developing smart people that have analytical and problem-solving skills, which are both becoming less appreciated in this world. The fake news movement, the threat of attention span shortening, people not spending enough time reading, and so forth, is an area that scientists could make an impact on society. I think the people that are real experts can assemble information, take data, and analyze it to come up with an answer to a question or challenge, and that is something that we need to protect as the scientific community. But I think the academic community fails short in the sense that precisely these skills aren’t utilized in the most effective manner. Therefore, I see the academic training as absolutely critical, but it has to be supplemented with some real-world experience, going towards making the world a better, more informed place rooted in fact-based decisions. In this sense, I think that if only some scientists, through training and encouragement, could be steered towards doing projects that make a scalable positive impact on the world, it would be great.

“One of the perils of academia is that you end up getting very side-tracked because [...] you have the pressures of finishing the thesis and publishing the paper(s).”

I actually feel that there is a great proportion of PhD students as well, that go in the field exactly with this mentality of “we want to make an impact”, and there’s very few of us who will only go into the science because they like pipetting things and interpreting data. Most of us have a broader vision, but that somehow gets stunted when you’re in academia, and you get retrained to just focus on the paper publication, getting grants, and so on and so forth.

Yes, one of the perils is that you end up getting very side-tracked because you may go into the PhD having this sort of high mission, but then you have the pressures of finishing the thesis and publishing the paper(s). And so your focus shifts. I teach at a business school, and one of the things that I have noticed is that, when the students propose team projects, most who are in their 20s, end up choosing projects that are nonprofit in nature, that typically
In this light, what would your advice be to all of these young people? Something everybody should be aware of and implement?

A number things. First, it’s critical to follow your own path, to listen to your own voice, listen to yourself. But how do you listen to yourself, if you have not seen enough of the world? So this gets to the importance if you have not seen enough of the world? So this gets to the importance of exposure, and getting perspective by seeing as much as you can, something that I have benefited from in my own life. This means not just from a local point-of-view, but from a different cultural reading, but I also had a lot of independent reading, but I also had a lot of explorational discussions with different people, and I would say it’s this experience and exposure to the different sorts of people that was important. I do go to conferences and workshops that are outside of my area, a lot. There are things that I’m just interested in, and I’ll go there to learn.

First, it’s critical to do a PhD. The growth model is encouraging: “do more, better, faster”, but it comes at the expense of our collective resources and people’s good will.

I guess it’s also sort of an obligation these days, since there’s no such thing anymore as life-long employment. The whole work life has changed so much that it’s guaranteed you are only going to be in a job for five to ten years, and then you will be somewhere else. And you might as well self-reflect and be somewhere where you actually want to be in case the sector you’re currently in is going to shrink. I think that’s something more students also should do. However, no, or very few PhD supervisors, are going to tell you “go reflect about what you want to do further in life, go reflect about your personality, and what you like to do.”

But they should. If your students do this, and then they come back with renewed drive, I would say to the PhD supervisor: this is advantageous, because the students will be motivated to finish their PhD faster. We see that one of the issues is the demotivation of students for several reasons, which leads to a prolonged PhD, which should be avoided. This is where the self-reflection on why you chose to do a PhD, and why you’re going to follow it through to get it done comes in. It’s important to know that the PhD is a step towards other, greater things.

In line with this, when you left academia, and then when you later returned, did you take conscious steps and decisions to do this? Did you take courses or read something in particular to further your development?

When I did my PhD, I took a couple of Harvard Business School classes. And, other than that, yes, a lot of independent reading, but also a lot of explorational discussions with different people. Then, pursue a vision that is an area that is my interest right now. You touched on this a bit earlier – I’m periodically a visiting scientist at the Joint Research Centre (JRC), which is part of the research wing of the European Commission. I go down to Sevilla, because
clearly, it’s just lovely, but there are also really good colleagues, who I’ve worked with in the past. I used to function as panelist for their discussions at various EU national events. This is probably also interesting for your readers, because the JRC do look for visiting scientists, through their visiting fellowship program (https://tinyurl.com/no38k4c). They like to have people from many different scientific fields for a couple of months. The group is mostly composed of economists, agronomists and social scientists, and I, as a geneticist, am sort of an odd bird. But I have benefited a lot out of our work together, because the JRC does most of the analysis for the EU and its development.

I started working with them on a social science project, which surveyed institutional governance throughout Europe. We now have a study of almost 100 higher education institutions, in 22 countries in Europe, on how they operate from a management point-of-view, and how that correlates with performance.

And this is all with the goal of implementing new science policies, if I understand correctly. It was important for us to connect the performance with certain policies at the institute level, because frequently the nation-state perspective, or the region is being considered. But the real action/implementation is happening within the institutes. It is the institutes who are training people and performing science, thus we felt there was a need to study management practices at this level, broadly across Europe, to understand what practices correlate with a positive output. We’ve now gotten to a point where we understand how certain policies correlate with higher performance in publication quality, as well as the openness of organizations, and money brought in through grants.

What kind of policies do this?

Ah, I’m afraid I can’t say quite yet, as we are writing the manuscript right now (laughs). What we want to do is to convince national authorities of these good practices. In the beginning, we went to these national authorities with suggestions to improve science, but not much was happening. What we can now do is to clearly say: “Look, if you have this policy in place, you have a better chance of actually having a higher ranking, higher performance, and higher output.”

…and getting funds.

Right. And this was the idea behind the research—a sort of an activists’ version of policy implementation in institutional development using encouraging, incentivizing policy.

It sounds like you’re doing so many different things. So, how do your workdays actually look like?

Well, I try to keep things really calm. I have the regular office stuff, who do a great job, and of course I do a lot of communicating within our organisation. A lot of times, it’s just having the right people executing the task necessary to fulfill the mission of our organization. But I think it’s also carving out free space for myself to think and execute. However, there’s also sometimes real crisis, and then suddenly that consumes a lot of time. For instance, when new policies need to be put in place, even at an institute level, especially when grievances arise. So there are occasionally these really, really tough situations we have to navigate.

For instance, when movements like “#metoo” hit?

Yes, for example, even though “#metoo” is unfortunately not recognized in my neighborhood. But basically, yes, those things have happened, and it’s really ugly sometimes.

“I see these parallel tracks of a local community versus a scientific community that oftentimes are not only detached from one another, but unable to connect”

I believe that many issues are a reflection of a certain cultural acceptance within the context of the geographic location and its historical experience. Issues arise when certain norms are accepted practices within a locality, and then you’re trying to bring in people from all over the world that have basically different values and different understandings (although, I must say that, with an international scientific training, there’s a commonality of cultural behavioral acceptance). That is part of the training, once you go through a good institution, a new set of norms becomes part of the DNA of these people. Bringing international individuals into a context that’s developing, with a local context, and that’s culturally different, often causes a clash. And that’s very difficult to solve. You may say, you could bring in a lot of money, and the money will solve things like equipment and what not, but some of these cultural habits and patterns, occasionally very locally entrenched, significantly clash with what we understand in a robust, open scientific culture. And I see these parallel tracks of a local community versus a scientific community that oftentimes are not only detached from one another, but unable to connect. I see these parallel tracks of a local community versus a scientific community that oftentimes are not only detached from one another, but unable to connect. It’s like making moral codes from all over the world meet, and it’s difficult to make that settle in just a few years.

I think it relates to this idea mentioned earlier of perspective. If you haven’t gone elsewhere, nor lived abroad, and not in the sense of a vacation, where you won’t necessarily absorb what’s going on in a different place, you’re not going to be so socially exposed as you are if you lived in different cultures. I think there’s also a difference for individuals that leave their own organizations and go for a stage of their work, even if it’s a couple of years, to another place, but have the knowledge that they have a secure job coming back— they are less likely to actually remodel the way they think than somebody who is not anticipating coming back. Because those people need to look forward.

They need to adapt; they’re forced to adjust to the new surroundings. Right.

So how do you think one could access the funds to deal with such cultural challenges in science? For instance, for such studies like you are conducting?

There are some funds that were under Horizon 2020’s With and For Society program, and we did win some of those...
This interview has been edited for brevity and clarity:

“..."How do you develop somebody’s self-confidence? I think it works by building a safe setting [...]"

It is, after all, an investment on the part of the European Union, so it would make a lot of sense to analyze if it’s actually being put to the users that were stated in the application.

Yes, but there is this dilemma. Certainly, the flow of money should not stop to help improve the development of science for the EU member-states. However, if the money go to empower traditional habits, and does not allow for the actualization of new idea permeability, this would be a wasted effort. There is a Catch-22 situation: that the Commission and the member-states are not independent, they’re interdependent, in that the member-states pay dues to the Commission, and depending how tough the EC is at a given time point, the member-states can create more political pressure on them. So, here is the dilemma, if the EC were to be more proactive from different perspectives, or career perspectives, and maybe even explain science or explain certain things in a process that could be engaging or interesting. I think this was a big advantage for myself.

Okay, let’s continue with another career question. What personality traits, do you think, were particularly useful in your career? And which ones would have been a disadvantage?

I say this: I think science tends to have a selective process for personality traits. I think people that gravitate towards laboratory work often derive their energy from internal sources. I was somewhat more introverted earlier, but now that’s completely changed. In the last Myers-Briggs test I took, I scored 88% extroverted. I think it came from the recognition that I could speak to a lot of different people, relate to them from different perspectives, or career opportunities. The issue right now is, once the really hard work of ensuring implementation. The classes that I have are usually from a mixed European background, so it doesn’t seem as though it’s one country versus another. I think it’s really important to be able to connect, to relate to people and understand them. I think it gains trust among individuals, which means one can say things one believes and that others don’t agree with. The ability to be open about it, and then also be receptive to different people’s perspective and reflect on it, is a highly important trait, because people are not meant to agree on everything. That being said, I also know that in some cultures is very difficult for most people to say “no” to somebody. Another trait that’s important is for individuals to understand where they would like to be or envision in which particular direction they would like to go. This goes back to the self-reflection and understanding within the context of the world, and also knowing where they would like to get to. Having this vision makes it easier for individuals. Because nowadays we’re presented with so many different choices, and the ability to prioritize and say ‘no’ to certain proposals, helps you in taking decisions. To say ‘no’ to some of them, means you are excelling yourself to attain directionality. There should be no problem telling someone: ‘Well, I like what you’re talking about, I think it’s great. You know, I wish you luck with this, but it’s just not where I’m going, I’m going to go with this other way.’ Making well-informed decisions that have purpose, without too much distraction, is a valuable thing to understand.

Would you also agree that having self-confidence is probably also crucial for all these steps, right? You can be as introverted and insightful as you want, but if you don’t believe your own conclusions, and if you keep thinking that you’re worse off and weaker than others, it’s still not going to bring you very far. So what about the self-confidence that is needed if you want to make decisions and be at peace with the decisions that you make for your career path and otherwise?

I think if you come to a point where you understand yourself, you know where you’re going, and then you recognize the fact that you are your own expert, then, self-confidence should come from that. I know that it’s an issue, especially for women, something that I see even in my classes. But how do you develop somebody’s self-confidence? I think it works by building a safe setting, where you have certain exercises, where you can get all students to feel comfortable. But it is also having them identify a few things that they know they’re good at, which is critical, and even possibly admitting these strengths. Further, it helps to reflect on your strengths and your weaknesses, especially the ones that you think you can work on, because a lot of it is just training and practice. Self-confidence is coming once you accept that, you are willing to share this openly, and then you can formulate your great vision, your idea and plans, but importantly you also will be willing to show your vulnerability in public. I have students that confess to an audience about their depression, and that’s why they’re taking medicine – which is powerful. It’s absolutely powerful, because it’s riveting, raw, and believable. And in turn, the audience acknowledges your courage, your authenticity, and the feedback is fantastic.

Perhaps it’s also a cultural setting – if you have a growth mind-set, that says even if you have these shortcomings, you can still train many of them away. Or if you have these strengths, you can definitely develop them some more things like these are probably also very important. It’s also seeing your whole class, your group, showing everybody else their weaknesses. It’s realizing that the others are also just humans.

Absolutely. That is a nice thing, and that it breaks some barriers. A lot of times, I absolutely agree, however it’s hard to say you know how much impact you are having, but these are some of the techniques and approaches that I’m using currently.

Very nice. It was great talking to you, Dr. Dettenhofer, and thank you so much for taking the time!
On May 17th, the Charité PhDnet held its 6th meeting with a presentation and discussion on options available for financing PhD projects in Berlin and at the Charité. PhDnet members presented the various stipends they have secured in the past, including those designed for the start of a new project and those meant for continuing or finishing a project, contrasted them with working contracts, and led a frank discussion about the benefits and drawbacks of each. Though not all options may be available to students at any given time, it is important they know about the implications, benefits, and disadvantages of the arrangements they make. The following is a brief summary of what was discussed.

Contracts

<table>
<thead>
<tr>
<th>Contract</th>
<th>Stipend</th>
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<tbody>
<tr>
<td>Formal work agreement</td>
<td>Scholarship award or grant</td>
</tr>
<tr>
<td>Employment as a research assistant in a particular lab</td>
<td>Not necessarily tied to a particular lab; depends on the conditions of the stipend</td>
</tr>
<tr>
<td>Depends on funding availability for a contract position in the lab</td>
<td>Subject to deadlines and competitive application processes</td>
</tr>
</tbody>
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Stipends

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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<tbody>
<tr>
<td>some include travel grants independent of lab funding</td>
<td>no social security (pension, parental leave, ALGE – at the conclusion of a stipend, the stipend holder is not eligible for unemployment)</td>
</tr>
<tr>
<td>more independence in terms of working hours, holidays, teaching obligations</td>
<td>health insurance rate on a voluntary basis</td>
</tr>
<tr>
<td>better chance for a position in your lab of choice if you come with your own funding</td>
<td>financial instability, non-competitive candidate for rental contracts, mortgages, etc.</td>
</tr>
<tr>
<td>add-on for CV</td>
<td>no bonuses such as 13th salary/Christmas money</td>
</tr>
<tr>
<td>networking with other stipend holders</td>
<td>usually do not count as work experience</td>
</tr>
<tr>
<td>in the majority of cases, less salary for equal work compared to a contract for the same position</td>
<td></td>
</tr>
</tbody>
</table>

The stipends listed below were presented at the meeting; however, there may be even more options available. For more information, please visit their websites.

1. Einstein Center for Neurosciences PhD Fellowship [4]
   Salary: 1750€/month for 3 years, last year financed by Charité
2. Boehringer Ingelheim Funds PhD Fellowship [5]
   Salary: 1700€/month for 2 years
   Salary: 1200€/month + health insurance for 1 year with the possibility of extension
   Salary: 1200€/month for up to 1 year
5. Research grants that come with stipends for PhD students (e.g. Marie-Curie, Franco-Noster) [8]

On regular working contracts, salary automatically increases with each full year of experience. However, if you transition to a Charité contract (the situation may differ at other institutions and universities) after having worked on a stipend, the time spent working on a stipend does not initially count as work experience for salary determination purposes. You are paid as an entry level beginner. However, there is a way to get your time on a stipend recognized as work experience and upgrade your level of payment to one appropriate for your amount of experience. In order to do that, make sure to submit Merkblatt zur Berücksichtigung von Stipendien-zeiten bei der Stundenzuordnung gemäß § 22TV-C and § 16TV-A, with the recommendation from your supervisor, CV and transcripts. For more info please get in touch with the human resources person that is handling your new contract.

At Max Planck Institutes the number of PhD students working on a stipend decreased over the years, stipends are more and more changed into Förderverträge due to an effort by student networks such as Max-Planck PhDnet [2].

Max-Planck PhDnet survey from 2017 of 2218 researchers in their PhD working at 84 Max Planck Research Institutes showed that only 9% of PhD candidates had the opportunity to choose between a contract and a stipend and that only 59% were familiar with the implications of a stipend. On top of that, health insurance was covered for 53%, while just 2% of PhDs received a bonus [8].

In order to foster good scientific results, push the boundaries of our knowledge and contribute to society, it is important that doctoral researchers are supported and respected as employees. Many PhD students are confronted with financial insecurities and changes in work arrangements while facing already challenging scientific problems. To avoid stressful and unpleasant surprises, it is important to be proactive, stay aware of the available funding options and the implications insurances are paid. To get your time on a stipend recognized as work experience for salary determination purposes. You are paid as an entry level beginner. However, there is a way to get your time on a stipend recognized as work experience and upgrade your level of payment to one appropriate for your amount of experience. In order to do that, make sure to submit Merkblatt zur Berücksichtigung von Stipendien-zeiten bei der Stundenzuordnung gemäß § 22TV-C and § 16TV-A, with the recommendation from your supervisor, CV and transcripts. For more info please get in touch with the human resources person that is handling your new contract.

The stipends presented the various stipends they have secured in the past, including those designed for the start of a new project and those meant for continuing or finishing a project, contrasted them with working contracts, and led a frank discussion about the benefits and drawbacks of each. Though not all options may be available to students at any given time, it is important they know about the implications, benefits, and disadvantages of the arrangements they make. The following is a brief summary of what was discussed.

Contracts

There are two main types of work contract for PhD candidates in Germany:

1. TVöD (Tarifvertrag über die Entlohnung der Angestellten) collective agreement for civil service. Pay band 13 is the most relevant for PhD students the amount depends on the federal state [1]
2. Fördervertrag - similar to the TVöD and designed specifically for doctoral students which can work only on their own project but have fewer days of vacation in a year [2]

Benefits

- Taxes and contributions to health, unemployment and pension insurances are paid
- Students start at pay level 1 and progress over time

Obligations

- General legal obligations of a working contract such as application for annual leave, a fixed amount of working hours and supervision may allow less freedom in research.
- Enrollment in a graduate program may also be encouraged

Contract lengths vary but can be renewed and extended as required/already agreed

On regular working contracts, salary automatically increases with each full year of experience. However, if you transition to a Charité contract (the situation may differ at other institutions and universities) after having worked on a stipend, the time spent working on a stipend does not initially count as work experience for salary determination purposes. You are paid as an entry level beginner. However, there is a way to get your time on a stipend recognized as work experience and upgrade your level of payment to one appropriate for your amount of experience. In order to do that, make sure to submit Merkblatt zur Berücksichtigung von Stipendien-zeiten bei der Stundenzuordnung gemäß § 22TV-C and § 16TV-A, with the recommendation from your supervisor, CV and transcripts. For more info please get in touch with the human resources person that is handling your new contract.

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Charité PhDnet is dedicated to addressing all the issues relevant to our lives as PhD students and providing space for social connection. If there is something you would like us to discuss in the future, send an email to charite.phdnet@gmail.com.

Yours,
Charité PhDnet Team
New Master’s Students 2019

In total, 24 candidates have confirmed their participation in our MSc program. Seven are from the regular Medical Neurosciences admission process, six from the Einstein Center for Neurosciences PhD fast-track option (two regular MedNeuro applicants have been offered the ECN PhD fast-track option) and six are Neurasmus students. We will also welcome five new Neurasmus students for their second year in Berlin.

From the newly admitted students, only two are male. The majority of the candidates are from the United Kingdom, followed by students from India. The other students are from Canada, Egypt, France, Germany, Greece, Ireland, Israel, Japan, Kenya, Mongolia, Pakistan, Philippines, Taiwan and the United States.

We will warmly welcome them this fall at the Orientation Week which will take place from September 30th to October 2nd and will include an introduction to the program, social activities and the graduation ceremony for recent graduates.

ECN Selection Symposium 2019

The Selection Symposium of the Einstein Center for Neurosciences (ECN) was held on March 18th and 19th. We are very glad to have carefully reviewed themselves and reported on their experiences. After the research presentations, the reviewers interviewed each student. Based on their presentation and interview, candidates were selected for the ECN program. Candidates will start the ECN program in Autumn 2019.

Master’s Thesis Defenses 2019

Master’s thesis defenses have been introduced themselves and reported on their experiences. The meeting will take place from July 1-4, with events such as Master’s thesis defenses on the first day, workshops, socials – including guided tours and an evening show – and the graduation ceremony on the last day.

Open Innovation in Science Award of the Einstein Center for Neurosciences Berlin

Open Innovation and Open Science are increasingly recognized as the central pillars of future research and innovation systems. A better integration of Open Innovation and Open Science into research will become an important driving force to increase scientific novelty and impact, calling for the creation of novel playgrounds for Open Innovation in Science (OIS).

The Einstein Center for Neurosciences Berlin together with the Einstein Foundation Berlin recognize the importance of applying OIS principles and methods for the progression of scientific research as well as for the optimal translation of scientific discoveries into impact that tackles current and future societal challenges. Submit your project idea to info@ecn-berlin.de until June 28th, 2019. More information: https://bit.ly/2JPzCYd.

No PhD Retreat This Year

Due to time and resource limitations, the Medical Neurosciences program is not planning a PhD retreat this year. We will continue it in 2020.

STEMPEERS is a non-profit organization aiming to mentor and support alumni from STEM disciplines (Science, Technology, Engineering and Mathematics), forming a globe-spanning peer-based network to foster STEM elitification, leadership, policy, ethics, work-life balance and entrepreneurship.

The network’s co-founder Ananda Ghosh started this initiative in 2015 with her peers through a Facebook page when he realized how much STEM graduates and even PhDs seem to feel lost and struggle to develop their careers.

Initially connecting STEM peers in India, the network has now grown globally and hosts annual meetings at several places. On April 27th, supported by SPARK Berlin and BBI, the EuroSTEMPEERS meeting took place in the heart of Berlin at the Charité Campus.

The conference comprised a couple of very inspiring talks, covering developments and career in current fields like E-Health and Data Science or how digitization was and still is transforming the scientific publishing process. Prof. Craig Garner, who has experiences in academia as well as in industry, provided valuable insight on how mentorship is able to encourage people and enhance entrepreneurship, leading to absolutely necessary innovations, e.g. in translational medicine.

Bejal Joshi, co-founder of the International Women in Science network pointed out how much change is still necessary to achieve gender-equality within and outside science and how a strong and supportive network is helping especially women to overcome problems of inequality.

Regarding change and innovation and how much knowledge helps communities to develop and grow, Prof. Markus Dettenhofer talked about how much this energy to transform can be experienced as a thread to established, yet outdated structures and profitiers thereof and how much those will fight to oppose ad-

visible change (read also page 29).

The conference was then concluded with three panel discussions on the topics of Inclusion and diversity, career opportunities in biotech and pharma as well as developments in science communication, outreach and publishing.

It was an exciting event, providing great opportunities for late and early career scientists and students to get in touch with the “real world” outside academia and find people who already jumped the hurdles of finding and going their very own way to build their individual careers. Many thanks to the organizers of this amazing conference and for getting so many high-profile speakers at hand! Getting up early on that dark Saturday morning was total worth it!

Cover image: Ioana Weber; map: Ralf Ansorg, created via R/googleVis

CAMPUS
Ramadan is celebrated as the holy month of fasting and piousness by Muslims all around the world. Ramadan is the ninth month of the Islamic lunar calendar, and the start of the holy month is marked by the annual observation of the crescent moon, celebrated in many different countries. Fasting during this month is considered one of the five pillars of the Islamic religion.

This year, Ramadan lasted for 29 days, as it started on the 6th of May and ended on the 3rd of June. In Germany, this year’s average duration of fasting was 19 hours per day (from sunrise to sunset). Fasting is obligatory for all adult Muslims, with exceptions including pregnant, menstruating and breast-feeding women, the elderly, and those who are travelling or are chronically ill.

“The month of Ramadan is that in which the Quran was revealed; a guidance for mankind, and clear proofs of the guidance, and the criterion (of right and wrong). And whosoever of you is present, let him fast the month.”

- The Quran, Chapter 2, verse 185.

One of the main reasons why Muslims fast during this time is the spiritual experience, which they gain by an increased number of prayers and acts of charity during this entire month. Muslims also consider fasting as a motivation to increase their self-discipline and empathy for those who are less fortunate.

Generally, there are very long dining tables during the month of Ramadan, where thousands of people eat at the same time. Acts of generosity and care towards the society and one’s family are highly encouraged during this time.

Ramadan ends with a religious fest (Eid Al-Fitr), which the Germans call ‘Zuckerfest’. Eid Al-Fitr lasts for three days, in which Muslims celebrate. Before it, they make a donation (zakat), usually to charities and/or poor people. Eid Al-Fitr starts with a prayer outside after the sun has set, usually followed by visiting relatives and neighbors and going to the graves of loved ones. After this point, Eid Al-Fitr is a feast of extensive desserts and crazily good food.
Schutz? Impfung!

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