

Science AMA Series: I'm Ben Bergen, Cognitive Scientist at UC San Diego. Let's talk about the science of swearing! How does it affect our brains? How did it evolve? Does it harm kids? Can it make you stronger? Will it help you get elected? AMA!

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Abstract

Hi! I'm Ben Bergen, a Professor of Cognitive Science at UC San Diego. I study language, and my most recent book *What the F* is about the science of swearing. Profanity is special—it's processed differently in the brain and it triggers different psychological reactions from neutral language. So there's a lot that it can uniquely reveal. But for the most part, there's been very little research on it because of persistent taboos. Even tenured professors can lose their jobs for using the wrong words in lecture. So for the duration of its history, the science of language has mostly been the science of anodyne words. It's like studying biology but ignoring reproduction because it makes you uncomfortable. I invite you to join me in taking some corrective measures. I'll be online today at 1pm EDT to answer your questions. Feel free to ask me about the neuroscience, psychology, linguistics, sociology, or history of taboo words and gestures. Consider yourself trigger-warned. Update 3.00pm ET Thanks for all your great questions! I'm going to take a break, but I'll check back later today, so if you have any more questions I'll do my best to answer them!

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BEN_BERGEN [R/SCIENCE](#)

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I invite you to join me in taking some corrective measures. I'll be online today at 1pm EDT to answer your questions. Feel free to ask me about the neuroscience, psychology, linguistics, sociology, or history of taboo words and gestures. Consider yourself trigger-warned.

Update 3.00pm ET Thanks for all your great questions! I'm going to take a break, but I'll check back later today, so if you have any more questions I'll do my best to answer them!

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Ok, I would love to know if it's harmful to children's development or not. I've always been of the opinion swearing in general is different to swearing *at* someone, especially in anger. Children need to be taught the difference, and taught context... where it's always inappropriate to swear, and where it's allowable.

[Ariadnepyanfar](#)

All the evidence is correlational--for ethical and other reasons, you can't do randomized controlled trials where you swear at some kids and not at others! Nevertheless, there are a lot of studies showing a correlation between exposure to verbal abuse (including but not limited to abuse using swear words) and children's negative health outcomes, like increased rates of depression, anxiety, and detachment from school. This is particularly true of kids who are called by slurs. The most studied ones are homophobic slurs, which have these same health correlations. So there's a bulk of evidence that verbal abuse is harmful. But there's only one study I know of that reports negative effects of swearing in general by kids. That study reported positive correlations between children's exposure to profane media and their relational aggression. But as I've written [here](#), there are good reasons to believe this correlation is spurious (it seems more likely that kids who are aggressive seek out aggression in media, which happens to have more swearing in it). At the same time, there are social benefits of swearing, like seeming more honest, accessible, and funny (as I've written [here](#)). And finally, although

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there's a lot of concern about swearing stunting their vocabularies, kids who swear more DON'T have smaller vocabularies. In a number of studies, people who swear more fluently also have a bigger active vocabulary as well. So in sum there's a lot of circumstantial evidence that abuse is harmful, very little showing that swearing in general causes harm, and some evidence that an ability to swear can be socially helpful, when deployed appropriately.

What makes a word "bad"? Beyond the etymology, are there any unique processes that occur in the brain upon saying or hearing a curse word versus a normal word. "Bottom" vs "ass" for instance.

Thank you!

[pumpup_the_OH](#)

There are two questions here. First, why are certain words "bad"--like, why is "ass" bad, but "bottom" isn't. There are a couple answers. The first is cultural. English is spoken by people, many of whom share a cultural belief that some words are bad. Not all people and places are like this. I understand that in Germany and France, for instance, strong words aren't typically treated as so terrible that you have to bleep them and pretend they don't exist around kids. Then that cultural belief in bad words has to be applied to particular words. Around the world, bad words tend to come from certain domains of human experience that are themselves taboo: religion, sex, bodily functions, and groups of other people. In addition, in some languages, like English, bad words tend to sound similar. You might have noticed that "ass" has just one syllable and ends with a consonant ("s"). This is a tendency in English--there are more strong one-syllable words that end with "-ck", "-nt", "tch", and so on than you'd expect by chance. And this makes people think that new bad words should sound like these. So when they invent new words (think "MILF" or "THOT") or when they reinterpret old words in new ways ("ass" wasn't always taboo), they're influenced by the sound. And finally, there has to be a system in place where adults train children in these values. Punishing children for using certain words, chastising other adults who use those words around kids, or censoring words in media sends a signal to kids that these words are not only bad but powerful. And that affects how their brains and bodies react to those words. I'll address that in another comment because this one is getting really long!

What's the physiological difference between people who swear rarely versus those who swear multiple times in almost every sentence? Is the "correlation" between swearing and intelligence bogus or is there some truth to the saying? As someone who swears (more than I think I should) thanks for doing this AMA!

[SuitingColt](#)

At the extremes, some people swear a lot because of divergent neurological conditions. Some people who develop aphasia (language deficits due to brain damage) swear more than previously, or they preserve swearing while losing the rest of language. Similarly, some people with coprolalia (a symptom of Tourette Syndrome, among others) uncontrollably produce taboo words. And that tells us about the neurology of swearing. But when we're talking about neurotypical adults, there's not much evidence that swearing tells us much about them. There have been a couple studies purporting to show a correlation between high rate of swearing and high intelligence, but they're not too convincing (because they typically don't measure intelligence directly). And there are no studies showing that more swearing is associated with lower intelligence. One thing that does change when you swear more is that you become less physiologically sensitive to swearing. But maybe that's not surprising.

As a bilingual speaker why does it feel so much better to say bad words in Spanish than in English?

[iMexi](#)

People's physiological reactions to taboo words are strong. Blood pressure, heart rate, and sweating all increase more in reaction to profanity than they do to even other emotionally evocative words, like "love" and "murder". But when you do the same study with bilingual people, you find that these effects are far stronger if they learned the language early in life than later. Apparently to really feel these words, you need to be trained through early childhood interactions with family and peers. So if you spoke Spanish earlier and more often at home than English, then the Spanish words would be the ones you experienced strong emotions with early on, creating the emotional associations that you carry with you to this day.

I've read from other sources that swear words are stored in the emotional area of the brain that's why it feels different saying it compared to words is this true? And can we intentionally do the same thing with normal words like cat and dog so that it makes us feel like we are swearing but are actually not?

[A-Manual](#)

We know that parts of the limbic system (which is involved in emotions) are activated when we produce swear words or even hear them. In turn, this produces a suite of physiological consequences: increased adrenaline, heart rate, blood pressure, sweating, and so on. Now, can you hack your brain to respond to "cat" and "dog" the same way? Probably not, without extreme measures. You develop these emotional reactions to words over the course of development. In childhood, you experience the strong emotions people exhibit when they say these words, and you feel strong emotions when you're punished for using them. These associations aren't available later in life. So we know this because if you learn a second language as an adolescent or later, your brain doesn't react to profanity in the second language as strongly as it does to your first language. And the same would presumably be true if you tried to associate neutral words like "dog" and "cat" in your native language with strong emotions. Outside of some extreme sort of Clockwork Orange-style conditioning, I think you're out of luck.

Speaking of evolution of swearing and how it is processed in the brain, do the different types of swears process differently?

For example there are religious swears, sex/body swears, exclamations vs targeted.. we're all familiar with George Carlin's "fuck" bit, is it all the same no matter how we use the word fuck or do different applications work differently?

[FeivelSwindlebaum](#)

We don't know! There is evidence that people treat these different types of swear as more or less taboo. Currently, if you ask [Millenials at a large public university in Southern California](#), you find that the most offensive terms are the slurs. The word "fuck" is rated as only the 13th most offensive! But of course that has changed over time. For most of the 20th century, sex-related words were more offensive. And around the world, there are languages and cultures where the worst words are religious ones (Italian and Quebecois, for instance). All of this to say that if offensiveness translates into different brain reactions, then you'd expect Millenial brains to react differently to slurs than sex-related profanity, on average.

How *did* it evolve? It wouldn't have come out of nowhere, right? Especially if it does have this difference in how it is processed. What might be the 'swearing equivalent' outside of humans? Would that just be aggression?

[PM me your rad feats](#)

We don't know exactly, but here's the current best guess. A major function of profanity is to spontaneously convey strong emotions. Other animals vocalize to express emotions--your dog whines and barks and so on. And as it turns out, when you swear in pain or joy you're using a homologous set of systems in the brain to what your dog does when he vocalizes. (If you want the details, it involves the basal ganglia in the limbic system.) Of course, humans swear differently around the world, whereas dogs all bark in dog. Like lots of other behaviors we share with other animals, we've trained our impulse to vocalize emotions in culture-specific ways. In English, we say these words, in Cantonese these other words, and so on. And it gets more interesting. There's actually a second way we can swear. When we're not swearing for emotional reason, but more cool-headed ones, like when I consciously and intentionally type f-u-c-k, I'm using a completely different set of brain systems. I'm using the evolutionarily new and species-specific parts of the left hemisphere (Broca's and Wernicke's areas, etc.) that control all the rest of language. So profanity actually lives in two places, depending on how it's used. What we don't know is which came first in humans. Did human language evolve first through something like profanity--emotional grunts that became culture-specific--and then spread to the rational, abstract system I'm using to type these words and you're using to understand them? Or one proto-human pop out talking and some of the words started getting used as emotional vocalizations? We don't know.

Do the effects differ in subcultures that have swearing environments that are commonplace? The Army comes to mind.

[BeenCarl](#)

We know that norms about language use differ by environment. The Army falls on the same side of things as real estate offices (coffee is for closers) and newsrooms. But not preschools and nunneries. And there's evidence that you judge someone who uses profanity differently, depending on how acceptable you think swearing is in that context. So when a standup comic swears on stage, you think he's being honest about his emotions, but when the same person starts swearing in the supermarket, you're more likely to judge him as unhinged. We don't know about the brain reactions in those different settings, though. It's hard to drag an fMRI machine to the Laugh Factory.

We are forbidden from using swear words at work so some people use other words in the way they would use swear words. Does that have the same effect on the brain as using the actual curse word? For example, saying "shut the front door" as opposed to "shut the f*#k up"?

[medwd3](#)

When substitutions like "shut the front door" are used as controls, they don't evoke the same magnitude of response in the brain or body as the actual curses do. Largely that's because there's no social stigma about using them--so you haven't learned the same emotional association with them.

Is it true that swear words make us feel less pain? Does it work like distractions or is it something about how we feel about word.

[GediMarko](#)

There are several studies that have shown this. People come in to the lab and immerse their hand in near-freezing water. They're randomly told either to swear or to use some other neutral words (like "wood"). And it turns out that the ones randomly assigned to swear can hold their hands in about 50%

longer, and they report experiencing less pain. Now, as for whether it's due to distraction or something else, like a fight-or-flight response, we don't yet know. There are a lot of studies you'd need to do with different controls to find that out.

What goes on in the brains of people who deliberately censor themselves; i.e. saying "That's f--ked up," where they pronounce the 'f--ked' as 'fkt' (or something similar)?

[DrumminBeard](#)

We have a self-monitoring system in our brain that predicts what we're going to say and tries to weed out the things that could be problematic, like slips of the tongue and malapropisms. One reason that swear words and their substitutions (shoot, frick, etc.) sound similar is to allow you a little more time to decide which one you want to say. When you calculate that you should probably suppress the actual profanity, there's a signal sent from your right inferior frontal gyrus--part of the brain that directs inhibitory control--that makes you alter what you were going to say.

Is the significance of swearing and the effect on the brain the same between different languages and different words that can be used?

[Richevszky](#)

As far as we can tell, no. For a given person, some words will be very taboo and others less so, and they affect that person's brain and bodily commensurately. And across languages and cultures, there are different overall beliefs about how bad swearing is. In some places, using taboo language about preferred deities is a capital crime. In others, you can swear on the evening news and no-one will blink an eye.

Why does there seem to be a hierarchy of swear words?

Is it because of the psychological effect, or is it more of a social thing?

[Nikhedoniac](#)

This hierarchy can change over time (in the history of English, first religious terms, then sex-related words, and now slurs have been judged most offensive). And it's different from language to language-- In Russian, the strongest words relate to sex, but in Quebecois, it's religious terms. So you'd have to say it's largely determined by culture.

How long does it take for a swear word to become part of the social lexicon?

[daddytaco00](#)

It's really hard to tell, because it usually happens gradually. What we do know is that certain types of exposure can accelerate it. the word "MILF" was used in a very limited way before it appeared in American Pie, and then it took off. "Shitgibbon" took off after a notable [tweet](#).

Do you swear? If yes how often?

[Ghsovec](#)

I believe firmly that variety is critical not just to diet but also vocabulary!

How does *shame* influence the power of swear words

[NoTeeNoShade](#)

I'd bet a lot. Anecdotally, there's something I've been provisionally calling the "Watching an R-rated movie with your grandma effect." Many people report that they react differently to profanity depending on how they think their reactions will be judged by others. But I don't think anyone's ever studied it!

Where in the Gaslamp district do you hear swearing the most?

[whyguapo](#)

Who goes to the Gaslamp?

Have you found a similar definition of swearing across all languages? Does every language have the same idea of good and bad words, and are they always about the same subjects?

[Boleo](#)

It differs somewhat, within parameters, as I say in a couple other comments in this thread. In some languages, words about death and disease are profane. We don't really have this much in English, but in Dutch, apparently, words for diseases like cancer and tuberculosis are used as general purpose swears. In Italian, adding the word for pig, "porco" to religious terms is very strong, like "porco dio" and "porca madonna". So it's can vary.

For some people, swear words seem to go through some process of "maturation," where initially they elicit thoughts of the concept that's linked to the word. But eventually, the swear is only distantly linked to the concept and is much more just a vehicle for strong emotion. Has this process been studied at all? Is there a "life-cycle" to swear words for individuals or in cultures?

[Metaculus](#)

Yup, you got it, at least on the historical time scale. A word like "cock" was once just a word for a male chicken. This was before the word "rooster" existed. Then "cock" gained an anatomical meaning, which eventually people decided they didn't want to countenance and they started avoiding it, at least in the United States. But over time, that taboo will fade away, if it hasn't already. In the same way that "zounds" no longer causes frissons, even our strongest profanities will eventually seem quaint or even unrecognizable.