



**“The Psychology of Anti-Vaxxers: Privilege, Conspiracies, and
the Medical Model”**

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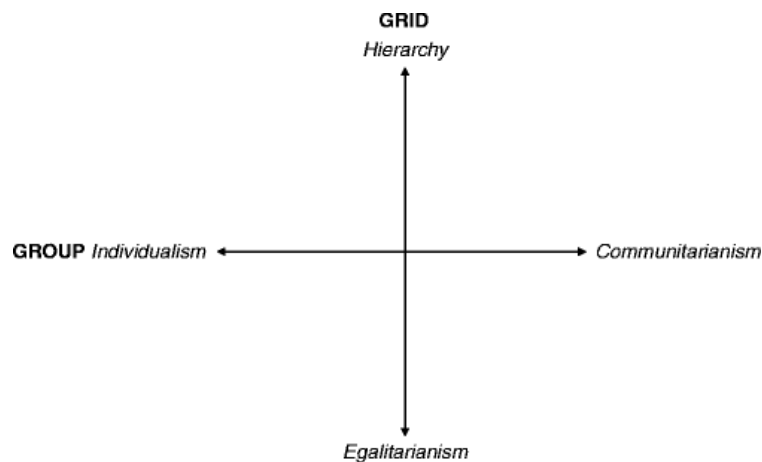
Introduction

Twelve children were subjected to muscle biopsies, colonoscopies, and other painful procedures at the hands of the greatest villain of the anti-vaccination movement, who disregarded the results of his study and fabricated bogus data to prove his hypothesis. Dr. Andrew Wakefield, a gastroenterologist in the United Kingdom, conducted a highly invasive study on children in an attempt to link neurological recessive disorders and diseases of the digestive tract with the measles, mumps, and rubella vaccine. After the fabricated report was published in a prominent British medical journal, *The Lancet*, the entire study was proven fraudulent and Dr. Wakefield lost his license to practice in the UK (Matthews-King et al. 2). The Wakefield study has catalyzed tens of thousands of parents to turn away from the MMR vaccine and has begun a spiral of anti-vaccination activism, reigniting diseases which were previously considered 'extinct' in certain countries and increasing the prevalence of preventable disease (Eggertson 1). It was finally retracted from *The Lancet* twelve years after publication (Eggertson 1). Tales of young children contracting autism, epilepsy, or the very diseases vaccines are meant to protect against have ignited an entire 'anti-vaxxer' movement that led to a significant social change where tens of thousands of parents elect not to protect their children from preventable disease. With an abundance of scholarly, peer reviewed research performed worldwide by qualified scientists, why are well educated families of moderate to high socioeconomic status suffering from vaccine anxiety, risking the health of millions on a global scale? What causes people to be skeptical of vaccination despite scientific data and clear evidence?

Contrary to popular belief, the tendency for scientists to over-explain and over-educate parents negatively influences the bias of those who have a negative preconception of vaccinations (Hornsey et al. 307). A decade of millions of dollars worth of studies to prove the original was entirely fabricated should be sufficient to convince parents of the safety and necessity of vaccinations on an individual and global scale. Despite each generation becoming more educated than the last, the idea of parents believing in anti-vaccination strongly enough to base their children's health care decisions on it seems to allude to factors other than lack of education (Hornsey et al. 307). The other confounding variable is The Theory of Psychological Reactance, which explains the unintended consequences of attempting to persuade a person into adopting an idea opposite to what they believe in; this attempt to “restrict a person’s freedom” might result in an “anticonformity boomerang effect” (Elsevier 1). This effect was first noted by Hovland, Janis and Kelly in 1953 and is especially prevalent when the conflicting argument triggers an emotional response or suggests one is socially outcasted (Hovland et al). I will use The Boomerang Effect, also known as the Theory of Psychological Reactance, to make sense of the lasting impact the intense anti-vaxx activism that plays on the psychological and emotional influences of parents and families, inciting and social change robust enough to cause a powerful wave of global vaccine anxiety.

I will use the Theory of Cultural Cognition, which focuses on the effects of conflicting worldviews how these views impact the decisions people make concerning certain products, services, or rules based on risk. First reported by Mary Douglas and Aaron Wildavsky, the theory is set to prove the ways in which people interpret societal dangers in relation to their idealized communities or “social ordering.”(Kahan 1). The worldviews are classified into two groups: first, individualistic and hierarchical worldviews are defined as beliefs about the amount of

control society should have over individuals, and whether hierarchies are desirable in a community. Communitarianism and egalitarianism, on the other hand, refer to how likely people are to value the community above the individual and how likely they are to believe all people should have equal rights and abilities (Hornsey et al. 308). Access to goods and services, as pointed out by Kahan in the *Handbook of Risk Theory*, are also significant means of identifying if one favors a “high grid” or a “low grid” distribution and organization of society (Kahan 3).



Douglas’s “group–grid” scheme. “Group” and “grid” delineate dimensions of social organization and worldviews.

Kahan, Dan M., “ Cultural Cognition as a Conception of the Cultural Theory of Risk”, The *Handbook of Risk Theory*, doi:10.1007/978-94-007-1433-5_28

I will also employ the adaptive-conspiracism hypothesis, which details the evolutionary benefits of trusting conspiracy theories, including pattern recognition, agency detection, and threat management (Prooijen et al. 1). The Theory of Psychological Reactance, the Theory of Cultural Cognition, and Prooijen et al.’s psychological mechanisms all work together to offer an explanation to the question, why would well educated families trust and propagate anti-vaccine activism despite proven risks of abstaining from vaccines.

The cases I have chosen to illustrate the complexity of the anti-vaccination issue vary in their methods and goals. Published in the *American Psychological Journal*, “The Psychological

Roots of Anti-Vaccination Attitudes” is a study conducted at the University of Queensland and later published by the American Psychological Association. The primary researchers, Hornsey, Harris, Fielding, found that the more likely a person is to believe in conspiracies and hold disgust towards hospitals and the medical field, the more likely they are to be affected by anti-vaxx activism and vaccine skepticism. They surveyed a total of five thousand people in twenty four countries to determine the correlation between risk, asserted by the Theory of Cultural Cognition, and anti-vaccination attitudes. Next, Kostovičová’s study “Predicting Perception of Risks and Benefits within Novel Domains,” details a fabricated social experiment in which a new vaccine is presented to parents along with conflicting reviews by other parents and physicians. I have also chosen to use Ana Kata’s “Anti-Vaccine Activists, Web 2.0, and the Postmodern Paradigm – An Overview of Tactics and Tropes Used Online by the Anti-Vaccination Movement,” in which she discusses how more and more people turn away from trusted physicians and medical professionals and get their medical advice from the internet, Kata notes that there is a shift in power from physicians to patients and their families. Kata studied common tropes and rhetoric found on these websites, including what kinds of claims anti-vaccine activists make, and just how far they are, “skewing science, shifting hypotheses, censoring dissent, and attacking critics” (Kata 1). She also explains how celebrity influence has impacted the anti-vaccination movement. I will also employ “Mapping the Anti-Vaccination Movement on Facebook,” studied by Naomi Smith and Tim Graham, in which they observe the network of anti-vaccine activism on Facebook and the methods in which it spreads.

Due to theoretical evidence provided in the cases I have studied, there is reason to believe that there are contributing psychological factors that would make a person more likely to trust

anti-vaccine activism and it has only been perpetuated in recent years due to social media and the new digital age, impacting the way in which people share and spread information.

The Privilege of Abstaining

The first reaction of any experienced scientist is to present facts, data, charts, and explanations to convince the average person to distrust skeptics. However, numerous studies have found that a data driven approach leads to a “boomerang effect”, which suggests that proposing scientific data in a clear cut, easy to understand way leads to the opposite of the desired response: more people with a negative bias are more likely to reject the traditional scientific approach and express even more skepticism for vaccines. The study, “The Psychological Roots of Anti-Vaccination Attitudes: A 24-Nation Investigation”, tried to correlate beliefs in conspiracy theories, general disgust for hospitals and medicine, and beliefs about societal control in a survey presented to 5,323 participants in twenty four countries. The results were not consistent with the common assumption that those who refuse to get vaccinated simply do not understand vaccines. Hornsey et al. concluded the factors that determine a person’s bias are more psychological, emotional, and often abstract as, “People develop an attitude- often through intuitions, emotions, and ‘gut’ responses that are difficult for them to articulate,” and further, they are, “motivated to search for evidence to support their attitude” (Hornsey et al. 308). The study found that people are more likely to trust data that enforces their preconceived bias. This explanation for why some people may reject factual, scientific research in favor of personal accounts or falsified information is consistent with the study’s hypothesis. “Gut” and emotional responses have a larger impact on a person’s bias than science because parents cannot connect with statistics in the same way that they relate to the hardships endured by other parents.

For example, in a study that used a made up vaccine for HPV and presented 142 parents with fabricated controversial ideas first by a parent, then a doctor, most people chose to identify with the more emotional accounts of adverse effects as opposed to the data. Half of the final sample were undergraduates, one third held a university degree, and the remaining group have only a high-school education. The obstacle to vaccine acceptance was clearly not differing levels of education. The study explained, “experiential account had a strong emotional component (emotional bias). The doctor’s account was considerably less emotional and gave more emphasis to ‘hard facts’, which were probably less able to engage participants’ interest and attention,” (Jiménez et al. 26). As a result, emotional accounts of negative adverse effects induced an emotional response in parents and was enough to convince them not to vaccinate their children despite a plethora of scientific data. Beyond this, the idea of trusting data that more closely relates to a personal bias works in both anti-vaxx ideas as well as pro-vaxx ideology. In “A Broken Trust: Lessons from the Vaccine–Autism Wars,” Liza Gross, a prominent independent journalist, reports, “When scientists find themselves just one more voice in a sea of ‘opinions’ about a complex scientific issue, misinformation takes on a life of its own,” (Gross 2). The significant social change is a snowball effect. Scientific ‘opinions’ have become something parents consider instead of a piece of information parents trust. More and more parents who claim to experience dangerous side effects are likely to warn other parents who then refuse to vaccinate their children, no matter how many graphs are thrown at them. This is not only an example of how emotional anecdotes influence decisions more so than evidence, but it enforces the Theory of Psychological Reactance; parents are more likely to side with the scary propaganda brought up by those who confirm a preconceived bias. The statistical evidence results in a boomerang effect.

Further, refusal to acknowledge a significantly large problem helps people cope with issues they cannot understand. In these examples, the weight of individualism is heavy. Infectious diseases are scary. They can result in blindness, horrible rashes, paralysis, amputation, and sometimes death. By refusing to vaccinate, parents align themselves with the ideology that they are removing their child as far from the disease as possible. Because the prevalence of certain diseases had gone down so drastically since vaccines were created, many parents are unlikely to truly remember the devastating effects of measles, for example. The individualism is prevalent because the parent is putting the health of their child above that of the population; it is a matter of one vs. the community, and is representative of a “low group” and “high grid” belief system, consistent with Douglas’s Theory of Cultural Cognition (Kahan 1). Some parents consider the chance of their child contracting Autism or Autism like symptoms to be worse than Polio or Pertussis. Liza Gross reports that one in every four Americans believe vaccines cause Autism. Those who opt out of vaccination depict a strong hierarchism or individualistic worldview; they place their child’s health above that of all else. They disregard herd immunity while believing they are helping their own children. Gross reported on the effects of children abstaining from vaccination:

“Not surprisingly, the first half of 2008 saw the largest US outbreak of measles—one of the first infectious diseases to reappear after vaccination rates drop—since 2000, when the native disease was declared eliminated. Mumps and whooping cough (pertussis) have also made a comeback. Last year in Minnesota, five children contracted Hib, the most common cause of meningitis in young children before the vaccine was developed in 1993. Three of the children, including a 7-month-old who died, hadn't received Hib vaccines because their parents either refused or delayed vaccination” (Gross 2).

A social change that allows people to forego vaccination causes children to contract horrible, yet preventable diseases. This is an individualist ideology. Outbreaks of diseases like Polio and whooping cough are now rare compared to prevalence prior to vaccine development. Parents might be more relaxed with vaccine regulations because they have not been exposed to these diseases themselves nor have they seen the detrimental effects a disease could wreak on their family. Notably, this is an extremely privileged standpoint considering the millions of lives lost to preventable diseases because the technology is simply unavailable in rural or underprivileged areas.

These ideas of disregarding herd immunity and the suggestion that Autism is worse than paralysis or amputation are enforced in online communities like Facebook, where parents may go to engage in discussions with other concerned or confused parents. In the study, "Mapping the Anti-Vaccination Movement on Facebook," published in *Information, Communication & Society*, six public Facebook groups were tracked in an attempt to follow along with the spread of anti-vaccination propaganda and general discourse. Despite Facebook's capabilities of reaching a widely diverse population, the conversation surrounding anti-vaccination appear to be "small world"; the comment section is mainly populated by women. As confirmed by the aforementioned conclusions of Hornsey et al.'s study, "Much of the appeal of anti-vaccination sites is in the genuine pain of those touched by childhood illness and death, and the lack of a seemingly adequate medical explanation (Davies et al., 2002). In this instance, anti-vaccination reasoning fills this 'void' by placating parents who feel abandoned or dismissed by the medical community" (Smith et. al). While acknowledging parents' experience with detrimental diseases or adverse effects, the notion that it is those experiences that result in vaccine skepticism, "Those touched by childhood illness and death" may very well be referring to malities completely

unrelated to preventable disease we have vaccinations for, or they could be the diseases parents link to vaccinations. Either way, the confirmation that exposure to childhood illness and death is linked to vaccine hesitancy is startling because it indicates a positive feedback loop; the more children who become sick, the less parents will vaccinate out of fear, thus more and more children will continue contracting illnesses.

Reluctance to accept scientific data is, despite popular belief, not the prominent cause of vaccine hesitancy. This is true especially in those with a preconceived negative bias against vaccinations. Emotional responses and ‘gut feelings’ have a significantly higher impact on a parent’s likeliness to vaccinate rather than data and explanations, especially because they might confirm “restrict a person’s freedom” might result in an “anticonformity boomerang effect” (Elsevier 1). Parents who choose to disregard herd immunity in favor of putting their own child above the health of everyone else hold individualistic worldview. The problem with sacrificing herd immunity is that vaccination refusal does not just impact the child who does not get vaccinated. People who are willing to risk their health, their children’s health, and the health of others around them are creating holes in the immunity umbrella.

Psychological Aptitude for Conspiracy Theorism

The belief that Princess Diana’s death was orchestrated by the government, water fluoridation is meant to spread disease, or that the illuminati caused 9/11, offer alternative explanations for shocking, influential events. These, and all other conspiracy theories, involve a hypothesized pattern in how different people and systems are connected. Believing in conspiracy theories have evolutionary benefits and, as a result, mean that certain people are more apt to recognize conspiratorial patterns between unrelated systems or events. The adaptive-

conspiracism hypothesis states that conspiracy thinking adapted to, “Alert ancestral humans to the possibility that others were forming dangerous coalitions against them,” so they could be better prepared to detect danger and fend off threats (Prooijen et al 3). Pattern recognition, agency detection, and threat management all heavily impact a person’s susceptibility to conspiracy theories.

In “The Psychological Roots of Anti-Vaccination Attitudes: A 24-Nation Investigation,” Hornsey et al. concluded that there is a link between high conspiratorial beliefs and anti-vaccination attitudes; he related this to the Theory of Cultural Cognition, explaining, “For some, however, individual conspiracy beliefs are not held in isolation, but rather emerge from a unitary ‘conspiracist’ worldview: that it is uncommon for shadowy networks of people with malevolent intentions to execute mass hoaxes on the public in near-perfect secrecy” (Hornsey et. al 308).

The adaptive conspiracism hypothesis is also evident here. Pattern detection is a beneficial evolutionary adaptation because perceiving cause and effect increases our chances of survival, which confirms the idea that conspiratorial thinking is ‘not held in isolation.’ For many patients, the expense of healthcare and the large profits attained by both medical professionals and large pharmaceutical companies generate distrust and skepticism among those who are more likely to detect patterns in unrelated events. Those who resonate with conspiracy theories have increased vaccine skepticism than those who are psychologically doubtful of conspiracies.

Beyond the scope of whether or not government intervention in health aligns with our worldviews, some anti-vaxxers identify with melodramatic conspiracies in which Big Pharma is out to harm people through vaccination. Hornsey et al. reports, “[The] most prevalent [conspiracy theory concerning vaccines] is that Big Pharma and other vested interests exaggerate the benefits of vaccines and fail to report the dangers” (Hornsey et al. 308). There is no way to

be certain that pharmaceutical companies do not have similar ‘shadowy networks of people with malevolent intentions’, especially because the pharmaceutical business is very profitable. There is data that exists to nullify this hypothesis for vaccines. It would be illegal for any company of association to falsify medical data, so it is very unlikely that the benefits of all vaccines have been fabricated, which is among the most prominent fears of vaccine skeptics. This ties directly into the infamous ‘vaccines cause autism’ hoax of 1998. Andrew Wakefield, a disgraced gastroenterologist who performed invasive studies on children with autism, falsified results and fabricated an entire study in hopes of becoming a prominent published physician in the United Kingdom. His pseudoscience, though repeatedly disproved, sparked initial vaccine controversy and hesitancy among parents worldwide (Matthews-King et al. 1). Just as he was operating for his own selfish motivations, conspiracists are likely to assume other medical professionals and researchers in pharmaceutical companies are working for their own ‘malevolent intentions.’ However, it is possible, and likely probable, that pharmaceutical companies have exaggerated the benefits of different drugs and this gives some veracity to a skeptic's fears.

When presented with anti-vaccination conspiracy theories, parents are more likely to abstain from vaccination. The study, “The Effects of Anti-Vaccine Conspiracy Theories on Vaccination Intentions,” fabricated a scenario in which parents were asked to imagine a scenario in which they had an eight month old infant called Sophie who was at risk of contracting a fictitious disease. Dysomeria, the fabricated disease, could cause vomiting and a fever. Participants were informed about the CDC approved vaccination for Dysomeria and were asked to state how likely they were to vaccinate Sophie. After being exposed to anti-vaccine conspiracy theories, participants were less likely to have the intention of vaccinating Sophie. Notably, the

term, ‘conspiracy theory’ was left out of the excerpt as it might lead parents to believe in its fallacy. As an example of a point presented to parents:

“...further, there is a significant amount of evidence that vaccines can hurt more than they help. For example, by the year 2002, tens of thousands of reactions to vaccines, including deaths, were reported. One must magnify these figures tenfold, because it is estimated that 90% of doctors do not report incidents...”

“The anti-conspiracy article differed by arguing that there are no reasons to doubt the efficacy and safety of vaccines. It then continued to provide specific examples such as the idea that the financial benefits of preventing illnesses far outweigh the profits made from vaccines and that there is little evidence to suggest that vaccines are harmful. An extract was as follows:

“...further, there is little evidence to suggest that vaccines are harmful. The side effects are minimal and whilst millions of people have been immunised over the years, less than.005% have ever had an adverse reaction to a vaccine...” (Jolly et al. 3)

The conspiracy, that doctors do not ‘report incidents’ is far fetched as there would have to be significant allowances for this to be true. If it were, physicians would lose their license and the vaccine would be recalled by the pharmacological company that produces it as well numerous studies proving its efficacy. Overall, it is unlikely that a physician would not report incidents of adverse effects of vaccinations. However, the notion that ‘tens of thousands of reactions’ to different vaccines can result from seemingly unnecessary medical procedures is understandably startling to a parent. The emotional, gut responses a parent might feel are likely to counteract the reasonable counterpoint to the conspiracy.

Losing Faith in the Medical Model

The correlation between high conspiratorial beliefs and vaccine hesitancy is partially due to power imbalances between wealthy healthcare corporations and the people they are meant to serve. People who identify with the hierarchism or individualist worldviews are likely to become skeptic of outward intrusion on medical decisions because they prefer less of a societal impact on

individual decisions (Hornsey et. al 309). Big pharma might push certain medications to doctors who then persuade patients to try them, meaning the effectiveness of certain drugs might differ among what is recommended to patients. While a pharmaceutical corporation's goal is to sell as many medications as possible, those who view big corporations as predators transcend medications like aspirin and relate to vaccines that are necessary for preventing wildly deadly diseases.

Those who lose faith in the medical model are likely to abstain from vaccination on the grounds that they simply do not trust the efficacy of these vaccinations. David Jolley, the head of a psychological study that evaluated the effectiveness of conspiracy theories on vaccine intention among British parents, "The Effects of Anti-Vaccine Conspiracy Theories on Vaccination Intentions," reported, medical conspiracies make parents feel powerless and riddled with disillusionment. Considering the shortcomings of society, no matter what they may be, it is believable to assume medicine is full of malevolent perpetrators. The American Healthcare system is already convoluted. This study supports evidence that parents are considering conspiracy theories as a result of the amount of falsified published data as well as the abundance of anti-vaccine propaganda. Not taking action, or not vaccinating, seems like the easiest choice for concerned parents despite leading to more harm than good.

Despite not being a trustworthy source of medical advice for their children, some parents are apt to trust other parents over physicians. Doctors obtain a significant amount of schooling, are associated with an expensive American health care system, and make well above the median income in the United States. A medical degree is not the same as an emotional account of adverse effects after a vaccine. To expand on the aforementioned idea, parents are more likely to believe in hardships endured by other parents rather than meaningless facts and figures reported

by people who are in a place of power and who might have ulterior motives. “Predicting Perception of Risks and Benefits within Novel Domains”, the study which used a fabricated HPV vaccine proves, “Qualitative study showed that parents considered the testimony of other parents who believed that the MMR vaccine caused their child's autism to be especially reliable (Hilton et al. 2007). This might be because parents are thought not to have ulterior motives, while doctors, governments, and pharmaceutical companies often feature in medical conspiracy theories,” (Jiménez 24). Their education, despite making them a reliable source of medical advice, is tainted by their above-average salaries and association to expensive health care systems and pharmaceutical companies. Education, position, and money are power and power disparities can make people suspicious. People tend to trust groups more similar to them, and for most parents, doctors do not fit the bill.

Further, a study which related the perceptions of the HPV vaccine between men and women in order to assess the Cultural Cognition Theory and determine which groups are willing to take risks based on their worldviews. The study found that, “Assessment of risks inherent to HPV vaccination was positively associated with hierarchism among men, negatively with familiarity among women and sensitive to the worldviews of the advocates... evaluation of risks and benefits in novel domains is affected by a complex interplay of cultural cognition, domain familiarity, personal relevance and general risk attitudes” (Kostovičová, 1). However, one limitation of the study involves the arguments presented concerning the HPV vaccine. As a pro-argument, the source stated, “The vaccine against HPV has been approved by the European Medicines Evaluation Agency,” but the counter is, “However, vaccinated girls may assume that the vaccine provides them with complete protection...,” which implies that parents would have preferred to withhold the vaccine from their daughters as they feared it would make them feel

safer against pregnancy and STD's, which might encourage sexual promiscuity (Kostovičová 183). These points, although valid, do not express the true risks of a vaccine. It would have been more effective if the point involved some data on the decreased risks of HPV since the vaccination was released in a certain area and for the counter to express some sort of adverse effect other than promiscuous girls. This concludes that hierarchism is associated with decreased perception of the HPV vaccine specifically in men and that the public's perception of vaccines are dependent on cultural perceptions or "worldviews", as discussed by the Theory of Cultural Cognition.

Anti-Vaxxer Activism

There have been vaccine skeptics since vaccines were commonly used. From a 1982 documentary *DPT: Vaccine Roulette* to celebrity influence to Andrew Wakefield's paper, generations of parents have reason to believe that vaccination will be detrimental to their families (Kata 3789). Presently, the new digital age influences how information is spread and interpreted, which has resulted in a shift in the patient- physician relationship. This has ignited such a significant social change in a short amount of time. In Ana Kata's study, "Anti-Vaccine Activists, Web 2.0, and the Postmodern Paradigm – An Overview of Tactics and Tropes Used Online by the Anti-Vaccination Movement," Kata explains some common tropes commonly used on these social media pages, confirming that they make it "difficult for parents to critically evaluate the nature of vaccine-related health information" (Kata 3779). For example, common sentiments published on these pages include, "Galileo was persecuted too," which implies that, "science was wrong before," and that these activists are pioneering a major health science breakthrough (Kate 3783). Kata claims that this relativism, meaning there are "no objective facts" and "multiple

meanings and ways of ‘knowing.’” It supports, and puts a name to, the arguments often presented by anti-vaxxers, including the “Vaccines are unnatural!” , “Vaccines should be 100% safe.”, and “Vaccines are toxic!” tropes circulating Facebook (Kata 3779).

However, there is some opposition presented in Kata’s study. She describes how the overly interconnected internet supports discourse and communities by small groups of people who are able to make their voices echo. This implies anti-vaxxers are a small group who promote their ideologies, when in reality, she also states that 80% of search users seek out medical information online. While they may not directly contribute to the anti-vaccine discourse in the comment section, every search, click, or like supports these pages and bolsters their voices.

Further, it is likely parents believe in outlandish theories not only because they sound valid, but because there is no stigma surrounding them. “Mapping the Anti-Vaccination Movement on Facebook,” a study conducted by Naomi Smith and Tim Graham, tracked the spread of information on Facebook reported that in the anti-vaccination groups, the terms, ‘conspiracy theory’ or, ‘anti-vaxx’ were excluded, likely because some participants might view these terms as extreme. For example, “However, very few websites present as explicitly ‘anti-vaccination’, instead, websites claim to be ‘pro-safe vaccines’, or in favour of ‘vaccine choice’, whilst simultaneously claiming that vaccines include toxic and harmful substances (Kata, 2102). Such strategies accompanied by emotional appeals to parents’ protective instincts (Davies et al., 2002) make it more difficult for parents to critically evaluate the nature of vaccine-related health information online” (Smith et al. 3). This suggests the creators or administrators of these pages are fully aware of the negative connotation of ‘anti-vaccination’ as well as the stigma surrounding it. Instead, rephrasing the titles of the pages makes the community seem less intimidating and also completely valid by members not apart of the group. The vast majority

would be in favor of safe vaccinations and choice in health care. By still expressing the utmost disgust towards vaccination, the pages align themselves with the debatably appropriate stigma surrounding anti-vaccination. They are self aware and conscious of how effective the ‘emotional appeal’ is to parents.

Additionally, the relationship between the health care professional and patient has shifted in the new digital age. Kata explains, “While medical knowledge was previously bound to textbooks and journals, the Internet allows access to the “school of medicine” [8], shifting the locus of power from doctors as sole directors of a patient’s care to the patients themselves. Patients are depicted as consumers with access to information diversity, their choices no longer restricted by the higher status allocated to “experts”” (Kata 3779). The recent shift has allowed debate in the exam room; WebMD, for example, might be alongside an anti-vaxx blog in giving a parent ideas about how they should treat their children. While it is a good thing that patients have access to information about how to best take care of themselves and the people they love, the digital age offers a plethora of information that might only be applicable in certain situations or under certain circumstances. Kata further emphasizes how suspicion has lead to “decreased trust in ‘expert systems’, like the medical model, “In fact, postmodern characteristics of disillusionment and suspicion towards science and the notion of expertise have contributed to decreased trust in “expert systems” [10]. The postmodern medical paradigm questions the legitimacy of science and authority, stressing the need for patients to hold more power [11]. Indeed, it can be argued that in a postmodern society, everybody is an ‘expert’” (Kata 3779) . The transition to referring to Facebook for health care advice is new. Even with well educated families, fear cause overly attached parents to put “risks over benefits” where as a physician is

detached and can make a more objective decision. In this way, I agree that everybody being an “expert” has its faults because it can be dangerous for “patients to hold more power.”

Further, Kata details Jenny McCarthy’s influence on the spread of anti-vaccination activism. As an American actress and anti-vaccine activist, her book and appearance on live television not only bolstered the effect of the already present anti-vaccination group, but solidifies the ideas of a patient claiming “expert” with a medical doctor; in the Theory of Cultural Cognition, McCarthy would be someone who rejects the need for hierarchies in society. Her belief in the “University of Google” supports the developing medical paradigm as relativism as she flaunts her “self proclaimed expertise” (Kata 3779).

The Theory of Cultural Cognition, which evaluates how much risk a person is willing to undergo based on their worldviews, confirms examples of relativism as expressed by Jenny McCarthy as well as the common tropes perpetuated on social media. The idea that the common person with a “Google degree” is above that of an experienced scientist or physician with a medical degree suggests a high individualist view. It would make sense for that person to reject hierarchism and proclaim themselves to be an “expert” on vaccination. Moreover, if a patient has a preconceived bias brought on by the “University of Google,” a physician responding with evidence against this bias might result in an “anticonformity boomerang effect” (Kata 3789; Elsevier 1).

Conclusion

Due to the Theory of Psychological Reactance (Boomerang Effect), Theory of Cultural Cognition, and the adaptive-conspiracism hypothesis, there is reason to believe that contributing psychological factors impact how likely a person is to trust anti-vaccine activism, which has only

been perpetuated in recent years due to social media and the new digital age, impacting the way in which people share and spread information. The “anticonformity boomerang effect” explains why those who are presented with data of an opposing side are likely to reject it in support of their preconceived bias on the grounds that an argument could have appealed to their emotions. Our perception of risk in relation to cultural beliefs or “worldviews” heavily influences the way people interpret anti-vaccine activism. This supports the adaptive- conspiracism hypothesis, which claims believing in conspiracies is an evolutionary adaptation meant to protect people from malevolent groups; specifically, pattern recognition plays a significant role because it is an evolutionary mark of fitness but causes people to see relationships between unrelated systems or people. Together, these frameworks support and reinforce cases that explore the correlation between people and their vaccine attitudes. Evidence from these studies support that people with high conspiratorial thinking are likely to abstain from vaccination and have positive anti-vaccine attitudes. Additionally, there is evidence that supports the spread of activism through tropes and claims is effective in reaching parents via emotional assertions that appeal to a parent’s protectiveness. There is, ultimately, confounding evidence that supports anti-vaccine attitudes are held in populations who do understand and give merit to scientific thinking; their likelihood of supporting anti-vaxxer activism. Despite Wakefield’s disturbing experiment has been proven false, the disgraced physician’s impact has lasted over a decade. These next step is using these variables to contribute a possible solution to the expanding global health threat; scientists are going about this problem in the wrong way. As evidence suggests, presenting anti-vaxxers with data is not enough. Instead, debunking myths that Big Pharma is out to harm people and creating trustworthy and transparent health care systems in which patients are treated more like people and less like customers could be methods of aiding vaccine anxiety.

Bibliography

- Eggertson, Laura. "Lancet retracts 12-year-old article linking autism to MMR vaccines." *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne*. 9 Mar. 2010. Canadian Medical Association. 20 Oct. 2019
- Elsevier. "Psychological Reactance." *Psychological Reactance - 1st Edition*, 28 Oct. 1981, <https://www.elsevier.com/books/psychological-reactance/brehm/978-0-12-129840-1>.
- Gross, Liza. "A Broken Trust: Lessons from the Vaccine–Autism Wars." *PLOS Biology*, Public Library of Science, journals.plos.org/plosbiology/article?id=10.1371%2Fjournal.pbio.1000114.
- Hornsey, Matthew J, et al. "The Psychological Roots of Anti-Vaccination Attitudes: A 24-Nation Investigation.: Semantic Scholar." Undefined, 1 Jan. 1970,
- Hovland, C.I., Janis, I.L., & Kelley, H. H. "Communication and Persuasion." Yale University Press, 1953.
- Jolley, Daniel, and Karen M. Douglas. "The Effects of Anti-Vaccine Conspiracy Theories on Vaccination Intentions." *PLoS ONE*, vol. 9, no. 2, 2014, doi:10.1371/journal.pone.0089177.
- Jiménez, Ángel V., et al. "An Experimental Investigation into the Transmission of Antivax Attitudes Using a Fictional Health Controversy." *Social Science & Medicine*, vol. 215, 2018, pp. 23–27., doi:10.1016/j.socscimed.2018.08.032.
- Kata, Anna. "Anti-Vaccine Activists, Web 2.0, and the Postmodern Paradigm – An Overview of Tactics and Tropes Used Online by the Anti-Vaccination Movement." *Vaccine*, vol. 30, no. 25, 2012, pp. 3778–3789. Science Direct, doi:10.1016/j.vaccine.2011.11.112.
- Kahan, Dan M. "Cultural Cognition as a Conception of the Cultural Theory of Risk." *Handbook of Risk Theory*, 2012, pp. 725–759., doi:10.1007/978-94-007-1433-5_28.
- Kostovičová, Lenka, Jana Bašnáková, and Viera Bačová. "Predicting Perception of Risks and Benefits within Novel Domains." *Studia Psychologica*, vol. 59, no. 3, 2017, pp. 176-192. ProQuest

Matthews-King, et al. "Health Correspondent, Who Is Andrew Wakefield and What Did the Disgraced Doctor Do?" The Independent, Independent Digital News and Media, 4 May 2018

Prooijen, Jan-Willem Van, and Mark Van Vugt. "Conspiracy Theories: Evolved Functions and Psychological Mechanisms." *Perspectives on Psychological Science*, vol. 13, no. 6, 2018, pp. 770–788., doi:10.1177/1745691618774270.

Smith, Naomi, and Tim Graham. "Mapping the Anti-Vaccination Movement on Facebook." *Information, Communication & Society*, vol. 22, no. 9, 2017, pp. 1310–1327., doi:10.1080/1369118x.2017.1418406.