



# Of natural bodies and antibodies: Parents' vaccine refusal and the dichotomies of natural and artificial



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## ABSTRACT

Despite eliminating incidences of many diseases in the United States, parents are increasingly rejecting vaccines for their children. This article examines the reasons parents offer for doing so. It argues that parents construct a dichotomy between the natural and the artificial, in which vaccines come to be seen as unnecessary, ineffective, and potentially dangerous. Using qualitative data from interviews and observations, this article shows first, how parents view their children's bodies, particularly from experiences of birth and with infants, as naturally perfect and in need of protection. Second, parents see vaccines as an artificial intervention that enters the body unnaturally, through injection. Third, parents perceive immunity occurring from illness to be natural and superior and immunity derived from vaccines as inferior and potentially dangerous. Finally, parents highlight the ways their own natural living serves to enhance their children's immunity rendering vaccines unnecessary. Taken together, this dichotomy allows parents to justify rejection of vaccines as a form of protecting children's health. These findings expose perceptions of science, technology, health, and the meanings of the body in ways that can inform public health efforts.

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## 1. Introduction

Childhood vaccines are credited with virtually eliminating many diseases in the United States, improving life expectancy, and lowering healthcare costs. This success is largely the result of laws, passed in all 50 states, which require evidence of vaccination before children enroll in schools or childcare settings. To balance state mandates with American values of individual autonomy, all states allow exemption for medical reasons, while some states allow exemption for reasons based on religious, philosophical, or personal beliefs (NCSL, 2015). Despite these successes, parents are increasingly refusing some or all vaccines, a pattern most evident among families with college educated mothers and higher incomes (Halsey and Salmon, 2015; Omer et al., 2009; Smith et al., 2004). Colorado, where interviews were conducted for this study, ranks among the states with the highest rates of vaccine refusal (Draper, 2015).

Unpacking the narratives parents provide for why they reject some or all recommended or required childhood immunizations is informative. It elucidates how a life-saving technology has come to

be seen as undesirable as well as broader meanings of science, technology, health, privileged parenting, and the body. Given the significance of vaccines in promoting community health, it is important to understand how and why vaccines, touted as one of the greatest accomplishments of medicine, have been rejected by those with the greatest access to health systems and as my data show, high levels of self-described commitment to protecting their children's health.

As parents describe the process of coming to question and reject vaccines, they reference a dichotomy between the natural and the artificial, in which vaccines are perceived as toxic to children's bodies and thus, something to be avoided. Although this framing may not entirely reflect the process by which they reached their vaccine decisions at the time they made them, this dichotomy comes to be a powerful part of their "vocabularies of motives," in which the explanations reference the contextual and "societal situations for which they are the appropriate vocabularies" (Mills, 1940, p. 913).

Using qualitative data from interviews, observations, and analysis of online forums, I show first, how parents describe their children's bodies as naturally perfect and in need of protection. I use descriptions of birth and resistance to newborn interventions to illustrate this perspective. Second, I identify how parents view

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the mode through which vaccines enter the body to be unnatural compared to infection and reject vaccines. Third, parents point to immunity occurring from illness as natural and superior and immunity derived from vaccines as artificial and inferior, which justifies their refusal. Fourth, parents feel capable of managing their children's health without vaccines because of their lifestyle choices toward natural living. Taken together, this dichotomy is a powerful frame through which parents explain their decision to reject vaccines as a means of protecting their children's health. I conclude by highlighting how parents' claims of natural and artificial are shifting expert discourse about vaccines.

## 2. Dichotomies of natural and artificial

Parents' concerns about vaccines emerge from larger anxieties about science, technology, and health. These views, at core, shape whether vaccines represent a life-saving innovation or a technology that carries unknown harms. For parents who prioritize natural living and imagine that manmade inventions are intrinsically inferior and potentially dangerous compared to naturally occurring things, vaccines come to represent risk.

The dichotomy of natural and artificial is not new and not unique to vaccines. In fact, seventeenth century philosophers theorized the natural state of man, separate from social institutions or societies; even Shakespeare wrote about this tension. As [Bensaude-Vincent and Newman \(2007, p. 8\)](#) write,

The terms *natural* and *artificial* mean quite different things, depending on the context and point of view in which they occur. Indeed, one can reach quite opposite conclusions when starting from different standpoints. A thing's "naturalness" or "artificiality" has one meaning when we are talking about its origin (extracted from nature versus human-made) and quite another when we are discussing its inherent qualities.

Critiques of technology also contain ambivalence about the moral meanings of its impact on humans and their bodies. [Turner \(2007, p. 24\)](#) explains, "Because technology presumes to control and change nature, it presents human beings with the prospects of utopian surmounting of the limitations of our natural animality, and therefore opens up the ever-present prospect of disaster." My data suggest that parents view vaccines as such a possible disaster to the natural body and natural balance between humans and infectious diseases.

Despite a large and growing body of research that calls into question the false dichotomy of natural and artificial, the parents in this study see these as separate and distinct. Much like [Bobel \(2002, p. 127\)](#) found in her research, "When mothers spoke of nature, they spoke of a monolithic and static concept, the one true thing that predates humankind and remains pure and unadulterated. To them, nature is the perfect model for human behavior because it is separate from and unpolluted by human manipulation." In the case of vaccines, parents view their children's bodies as naturally complete and uncontaminated and thus reject the notion that it should be exposed to toxins they see vaccines presenting.

## 3. Intensive parenting and healthcare consumption

To make sense of how parents' define the realm of natural and artificial to make vaccine choices, it is helpful to understand the cultural expectations of good parents and good consumers. In fact, vaccine resistance lies at the intersection of two ideologies: one that expects parents to intensively invest in their children and the other that calls for individuals to become savvy consumers of technology and health interventions. As they meld these cultural

definitions, parents prioritize "natural" as health promoting and manufactured products as potentially harmful.

Parents are defined as responsible for children's outcomes and well-being, with the majority of responsibility falling on mothers. Cultural expectations are that parents generally and mothers specifically intensively invest in their children in ways that are labor-intensive, financially expensive, wholly child centered, and self-sacrificing ([Elliott et al., 2013; Hays, 1996](#)). These expectations are increasingly policed by professional organizations and state programs, illustrating what [Lupton \(2012\)](#) and others have called reproductive citizenship. Ideologies of parenting and associated practices also reflect class privilege, with middle class and affluent parents subscribing to the belief that raising children to become successful adults requires active management and adult intervention ([Lareau, 2003](#)). Parents are encouraged to invest in their own children, but not all children, as future success becomes a zero-sum game with other children presenting potential competition. Parents are expected to assess risk, supervise experience, maximize opportunities and address barriers to their children's success. This phenomenon is embodied in popular cultural references like "helicopter parents," "snowplow parents," or the blade-wielding "lawnmower parents," which each communicate excesses of parental investment and efforts to mitigate obstacles ([Hyman and Jacobs, 2010](#)). Yet, as seen in much scholarship, mothers are held responsible for children's outcomes, with mothers uniquely blamed for children's illness, disability, or poor outcomes ([Blum, 2007; Ladd-Taylor and Umansky, 1998](#)). As such, parenting decisions about children's health become powerful ways of cultivating children that affluent parents are well situated to take on. Parents with privilege are also least likely to be coerced by the state, and thus, may claim more freedom to exercise choice ([Cheal, 1991; Reich, 2005](#)). These dynamics inform vaccine decisions ([Casiday, 2007; Poltorak et al., 2005](#)).

As parents invest in their own children, they do so in ways that reflect cultural norms that dictate that healthcare decisions, including those related to disease prevention, medication consumption, and elective procedures, are assigned to the individual. Biotechnology presents opportunities for lifestyle enhancement or "optimization" ([Conrad and Potter, 2004; Loe and Cuttino, 2008](#)), while disease is seen as preventable through personal responsibility. This cultural ethos of what [Crawford \(1980\)](#) and others have described as "healthism" represents the shifting of responsibility for health from the state to the individual, where staying healthy is now a moral obligation. Optimization technologies allow many conditions to be medically and pharmaceutically managed, with individuals more willing to view their own lives and experiences and those of their families through a medical lens ([Bell and Figert, 2012](#)). This is especially true for children, whose behaviors, learning styles, personality traits, and patterns of social interaction have increasingly become evaluated, diagnosed, therapeutically normalized, and often medicated. Parents' consumption choices represent their desire to adopt strategies they believe best protect or improve their children's health and bodies, which they see as pure and uncontaminated ([Mackendrick, 2014](#)). In short, they want those technologies that manage, support, or improve the natural state of the body ([Turner, 2007](#)), but see others as dangerous. Vaccines fall into this latter category, a distinction parents insist they are uniquely qualified to make. This view notably contradicts the logic of public health generally and vaccine policy specifically.

Vaccine resistance represents parents' insistence they are experts on their children and empowered to challenge professional recommendations ([Reich, 2014](#)). As expert knowledge becomes democratized and contested ([Barker, 2008](#)), patients or their parents may feel empowered to advocate for themselves; this creates

new sources of conflict with providers. Yet as parents question the experts, invest in their own children, and interpret the safety or naturalness of a proposed intervention, they position themselves as vigilant guardians of their children's natural healthy bodies. Vaccine choices, which emerge immediately after birth, are a key juncture for this process.

#### 4. Methods

Qualitative data were collected during in-depth interviews with three groups: parents, pediatricians, and complementary health-care providers who oppose vaccines; through ethnographic observations at national conferences of organizations that oppose vaccine mandates or support natural living; and from analysis of online parenting forums for parents throughout the country. I interviewed 34 parents who live in Colorado (29 mothers and five fathers) who challenge expert recommendations on vaccines for their children, either by opting out completely or by providing consent to some vaccines on a schedule of their own devising. Colorado has among the lowest rates of vaccination in the U.S. and remains one of the states with the highest rates of parents claiming exemptions (CDPHE, 2015; Draper, 2015). Among these parents are four participants who were initially identified as providers (two pediatricians and two chiropractors) who also reject vaccine recommendations for their children. Although five fathers participated, it is clear that healthcare decisions are maternal terrain, consistent with other research that shows that women are responsible for their children's healthcare (Salganicoff et al., 2005).

Despite epidemiological data that treats parental rejection of vaccines as categorical, this is not a group with clearly delineated lines of membership. Parents constantly reassess whether vaccines are necessary based on shifting perceptions of need and risk. They consider each child in the family differently, at different ages. Thus, I include those who opt out entirely (more than half have at least one child who has not received any vaccines) and parents who consent to vaccines on a schedule other than that recommended by federal advisory bodies, state law, and physician organizations. Parents may have consented to vaccinate their first child but not to later children or might have deliberately chosen vaccines that protect against a risk they perceive as serious while rejecting others. There were no consistent patterns between those who rejected all vaccines and those who consented to some. They engage in the same processes of assessing risk and benefit and sometimes move between categories, based on experience, research, or perceived needs of each child. Thus, I do not consistently reference children's total vaccine status.

All but one parent is white, consistent with national data showing that vaccine refusal tends to be a white phenomenon. All but one identify as heterosexual; 29 are married and five are divorced or separated. Ten parents have bachelor degrees, eleven have graduate degrees, eight have some college and five are high school educated. These parents have varying degrees of religiosity, but only one—a Christian Scientist—listed religion as a reason for refusing vaccines. Ten parents stay home full-time; eleven work full-time for wages; thirteen work part-time, help run family-owned businesses, or are professionals with limited work hours and great autonomy, including massage therapist, yoga instructor, birth coach, and writer. Ten parents have one child, twelve have two children, six have three, five have four, and one has eight. Parents are between 26 and 60 years old. All but two parents have at least one minor child at home. The diversity in ages means that I have captured parents' narratives of their vaccine choices, not necessarily as they are making them, but as they have made sense of them. Personal belief exemptions have been available in Colorado since 1989 so all parents had access while living in the state. The

schedule of recommended vaccines, set forth by the federal government has changed slightly over time, which means that physicians will offer parents an increasing number of vaccines as new ones become recommended, but those required by law for school attendance have changed only slightly during these children's lives.

Participants were recruited using convenience sampling: they were referred by others familiar with the study, by email, or through listservs. Parents who self-identify as “making independent choices about their children's healthcare, especially around vaccinations” were invited to participate. Once they volunteered to participate, they were informed of the risks and benefits and provided consent to participate. Semi-structured interviews lasted between one and four hours and were recorded and transcribed verbatim. Questions were open ended and explored a wide range of topics, including parental history, education, employment, health-care experiences, relationship and family formation, family planning and pregnancy, parenting practices, interactions with healthcare providers and schools, sources of information and care for children's health and vaccines, process of coming to question vaccines, and views of vaccination in general.

Transcripts were initially coded and analyzed thematically, and then as patterns were identified, I employed what Charmaz (2002, p. 678) calls constructivist grounded theory where data are collected and analyzed “to learn participants' implicit meanings of their experiences to build a conceptual analysis of them.” No questions related to perceptions of vaccines as natural or artificial; this framing of vaccines and immunity emerged through analysis. I draw mainly on interviews, but findings are informed by ethnographic data I collected from community events, listservs open to parents around the country, and meetings of national organizations that oppose vaccine mandates or support “natural living”, which includes rejecting vaccines. Providers all provide pediatric care and have a wide range of approaches to vaccination. Research protocols were reviewed and approved by the University of Denver Institutional Review Board. All names are pseudonyms.

#### 5. Constructing and protecting the natural body

When parents consider their children's health, they reference a significant division between natural and artificial, which they explain begins with pregnancy and birth. Even in technologically assisted pregnancies—with the use, for example, of fertility promoting drugs or in vitro fertilization—they describe feeling protective of natural birth. Some describe accepting other interventions around delivery but valorize the lack of medical technology in their children's bodies after birth. For example, Tracy, 20 weeks into pregnancy, experienced pre-eclampsia, a potentially serious complication, which was technologically managed. Yet, she recalls with relief how her daughter did not require interventions after birth. “She came out, she weighed exactly five pounds; she was breathing on her own. Never required being in an incubator or anything. She was perfect.” Gabriela, who refused additional prenatal testing after a screen for genetic abnormalities came back positive, remembers just knowing the fetus was fine and that her pregnancy would go well. “It was perfect. I knew it was. Yeah, I felt more intuitive when he was born than at any other time in my life.” Parents' insistence that pregnancies and newborns are perfect and naturally complete belies interventions that are used, before, during, and after pregnancy, or neonatal technologies. Yet, it signifies what they value in the experience.

##### 5.1. The natural birth and the naturally perfect baby

Birth is a powerful place in which parents identify the superiority of the natural, specifically as birth is valorized when free from

technological or medical intervention (Brubaker and Dillaway, 2009; Klassen, 2001). More than half of the parents in this study had at least one child born at home and almost all describe their extensive research during pregnancy and efforts to plan for their births, with the goals of maintaining what they saw as a natural delivery. Even as their efforts to craft a natural birth involve technologies not observable in nature, including birthing balls and tubs of water, the experience itself is characterized as the most natural of experiences, and often seen as empowering to women who could return to a more natural and intuitive state. Molly recalls of her son's birth: "I felt like I was in charge of my body...I felt like I could do anything. If I could go through that experience and, you know, push out this baby, I could take on the world, basically." Similarly, Marlene, a mother of four, explains, "Well, birth is such a defining event for women...There are some things we can't intellectualize away, and giving birth gets you way out of your mind and back into your body."

Parents see themselves as responsible for protecting the newborn body, which they see as uncorrupted and complete, albeit naïve to potential exposures in the world, of which vaccines are one kind. Illustrating this, Ruby explains of her son, "He's not circumcised, and he has no vaccines, because I was like, 'Look, you came out perfect. We're leaving you alone.'"

This view of babies means parents see infants as unlikely to handle vaccines well. In contrast, vaccine proponents argue that infants are capable of building immunity within hours of birth and that vaccines actually help that process. Vaccine researcher Paul Offit et al. (2002, p. 125) in a frequently cited medical journal article explain how and why newborns are capable of mounting an immune response:

When children are born, they emerge from the relatively sterile environment of the uterus into a world teeming with bacteria and other microorganisms. Beginning with the birth process, the newborn is exposed to microbes from the mother's cervix and birth canal, then the surrounding environment. Within a matter of hours, the gastrointestinal tract of the newborn, initially relatively free of microbes, is heavily colonized with bacteria.

Parents are unlikely to view birth as an experience "teeming with microorganisms," which may be inconsistent with it as beautiful, miraculous, and natural. These different views of birth and the newborn's natural state highlight the points of disconnect between parents and vaccine proponents. From parents' standpoint, the infant body is both naturally perfect and more vulnerable to negative consequences of intervention, which makes vaccines suspect. The newborn body as natural, complete, and pure lies in stark contrast with lurking needles and the perceived toxins within them.

## 5.2. Refusing newborn interventions

As birth is inscribed with symbolic meanings of being a natural and often superior state, many parents question why anyone would disrupt it with vaccines or other newborn interventions. Parents are asked to make medical decisions in the first moments of this new role, as newborns are often given antibiotic eye ointment to prevent against possible exposure to syphilis during delivery which could cause blindness, a synthetic form of vitamin K by injection to address a serious but rare risk of spontaneous bleeding due to a vitamin K deficiency, and the first vaccines against hepatitis B, intended in large part to prevent transmission from mother to newborn during delivery. For many parents, medical justifications for these interventions are unconvincing. For example, Janine

explains her choice to decline newborn interventions when her child was born to her female partner. "Like the eye ointment that they put in if the mom has syphilis. Well, she doesn't, so that is just dumb to do that. So, we didn't do that. And then the vitamin K for blood clotting felt irrelevant too. She is going to be at our house for eight days, I mean, why would she bleed out?"

Rates of refusal of vitamin K have risen sharply in recent years and are associated with home birth, midwife attended birth, and refusal of vaccines (Sahni et al., 2014). Refusal is fueled by perceptions that the intervention is unnecessary and that the manufactured form of vitamin K used is unnatural and thus unsafe. Illustrating the widespread perception that a synthetic or artificial vitamin is more dangerous than naturally occurring food-based vitamin K, one blogger asks and answers, "Is it a natural form of vitamin K such as would be found in leafy greens (K1) or butter (K2)? No, it is a synthetic vitamin K... Synthetic vitamins should be avoided as they can cause imbalances in the body and have unintended consequences." (Healthy Home Economist, 2014).

Heather, a mother of two, attended seminars on vaccines taught by a local naturopath and read extensively about newborn interventions. She explains, "I knew I didn't have any infections, so I didn't want to give him antibiotics or the vitamin K...I researched that and I just felt like the risk factors for him was very low." Rather than consent to a synthetic vitamin, Heather aimed to manage vitamin K through her own nutrition during pregnancy. "I had been taking alfalfa and vitamin K, things to increase my vitamin K in my blood, so that he would be less likely to have problems." Many women, like Heather, believe management of their prenatal bodies could protect their babies (Copelton, 2007), rendering newborn interventions unnecessary. Despite these efforts to provide protection without injection, maternal stores of vitamin K do not actually protect infants (Shearer et al., 1982). Counterintuitively, breastfeeding, which is promoted as a way to provide optimal nutrition to babies in the most natural way imaginable (Blum, 1999), actually confers less vitamin K than formula, making exclusively breastfed babies more vulnerable to bleeding disorders. Public health claims of the naturalness of breastfeeding may actually increase perceptions of vaccines as unnatural in contrast to breastfeeding, leading to greater distrust of vaccines (Martucci and Barnhill, 2016).

## 6. Rejecting vaccines as an unnatural mode of absorption

Several parents complained that the process of injecting into the body viral or bacterial matter is unnatural and undesirable. Almost all vaccines are given subcutaneously or intramuscularly, depending on the ingredients, viscosity, best mode for absorption to get maximum immune response, and age at recommended administration (Immunization Action Coalition, 2015). Parents understand that the way vaccines enter the body is different than the route antigens that challenge the immune system would usually take. As a result, these differences make vaccines questionable. Tara explains, "We have issues with the shots. Because when you go through the first two layers of the immune system and then the immune system goes, 'Oh, God! What is this thing in my body?' It causes—the immune system says, 'I'm not working,' and the immune system starts to shut down." Similarly, Gabriela explains, "I would love it if they would put more research into edible vaccinations so that it goes through the digestive system rather than directly—bang!—into the bloodstream."

Jake, a father of three, sees the mode of administration as inextricably linked to the efficacy of the immunity. What he sees as an unnatural mode of entering the body leads to inferior immunity. "When you inject something into a person, you're bypassing up to nine major organ systems that are supposed to protect you from

getting sick. So you can't call the vaccination or immunization a natural immunity. It's not." Jake explains his understanding of how the immune system processes pathogens and how vaccines interfere with this process:

If someone sneezes on me or I let my child get chickenpox by itself, or mumps, rubella, whatever these things are, even polio, now my body says, "Oh, that's already gone through the lymph channels. It's already gone through the mucus channels. It's already gone—so by the time it hits the blood stream, the immune system says, "Hey, we've already weakened this germ to the point where now we can kick its butt... And now once your body defeats that bug naturally... anytime anything else comes at the immune system, that first string gets released immediately, and now you have lifetime immunity. You don't need boosters. You don't need anything, because you've got it.

Highlighting the way he perceives the natural immune system as different from immunity from vaccines, which drives his decision to reject them, he continues, "Look. I don't care what you call it; that vaccine's never gonna do better than [what] my body can produce if my body's healthy enough to produce, so that's what we went with." Parents like Jake view the natural route by which viruses or bacteria enter the body to be most likely to cause a strong immune response. They reiterate their strong faith in the body's natural capacity to heal and protect itself as more reliable than vaccines.

## 7. Vaccines as artificial immunity

This view that natural immunity comes from infection and is thus superior is common, with many suggesting that vaccines are unnatural, inferior, and may actually undermine the body's natural immune capabilities. Promoting this view, osteopathic doctor and health product salesman Joseph Mercola, who hosts one of the most visited natural living websites in the world, advises parents, "There is a major difference between natural acquired immunity and vaccine-induced immunity. Obtaining natural immunity has far greater benefits, but this fact seems to be completely overlooked in the United States ..." (Mercola, 2012). Building on this logic, Margaret, a mother of two, explains her strong objection to vaccines: "When you basically inject a concoction into the bloodstream and you set up a permanent antibody response to where these antibodies are—they're like little soldiers in there; they basically are committed to keeping the immune system strong. But then [a vaccine] compromises the immune system. I mean, the body just doesn't have all the resources necessary to offset other things coming in." Patricia, a mother of eight, insists vaccines are entirely separate from the body's natural immune system:

Like we didn't come into this world, you know, requiring a shot, so—and it's sad, because it's our immune system... We have a God-given immune system and it's sad that the medical field doesn't recognize that. It's like, you don't have to shoot things into the body. It's like, wait a minute. We already have—what can we do to support what we already have?

Vaccines are designed to inspire the immune system to respond as though it were infected with a particular pathogen without the risk of the illness. This can mean that a virus is weakened so it may replicate but not cause illness (as in the case of measles, mumps, rubella, rotavirus, varicella), a virus is inactivated or killed so it cannot reproduce but can be recognized by the immune system (polio, hepatitis A, influenza), or that part of the virus or bacteria—like a surface protein or sugar—is used in the vaccine so the

immune system will recognize it and launch an immune response (as with diphtheria, tetanus, pertussis, HiB, hepatitis B, HPV, pneumococcal, and meningococcal) (CHOP, 2013b). Arguably, both immunity inspired by vaccines and immunity inspired by infection are both natural immunity. In all cases, the body's own immune system is launching an immunological response. Yet, the capacity for the body to remember and recognize that pathogen over time is sometimes lower with vaccine-inspired response than from becoming sick and recovering, and sometimes higher with vaccine (this appears to be the case for tetanus, HPV, HiB, and pneumococcal) (CHOP, 2013a). Gaining immunity from infection may lead in some cases to better immunity, but the cost of that immunity is illness and the complications that may accompany it, which can be serious and even life-threatening. Notably, none of the parents in this study expressed concern that infection with vaccine-preventable diseases could cause serious illness or death. Rather, they imagine ways they could support recovery and gain benefits of infection without significant risk. As one mother explains, "I just feel comfortable with them not being vaccinated. I try not to worry about it. You know, eat really well. I don't want to live my life in fear about it." Parents' beliefs that illness is the best way to develop long-lasting immunity and is thus preferable to vaccines, alongside their lack of fear of the disease itself can be seen clearly in the case of varicella (or chickenpox).

### 7.1. Natural infection and the quest for varicella

Parents—many of whom consent to other vaccines—broadly view the varicella (or chickenpox) vaccine to be inferior and unnecessary. Wanting their children to be immune to the disease, particularly because complications of infection increase as children age, parents often seek out wild virus varicella in hopes their children will catch it and develop natural immunity. Before the varicella vaccine was introduced in 1995, the U.S. saw about four million cases of chickenpox annually (CDC, 2012). The infection usually starts as a rash on the face that spreads to the rest of the body, and turns in to red bumps that eventually become blisters that crust over and fall off in one to two weeks. A child will often get 300 to 500 blisters during the infection, which are uncomfortable. It can also cause pneumonia (23/10,000 cases), severe invasive "strep" (group A streptococcal disease), commonly referred to as "flesh-eating disease," bacterial infection (5% of cases), decreased platelets, arthritis, hepatitis, and brain inflammation (1/10,000), and rarely, death (less than 1 out of every 10,000 cases). A woman infected early in pregnancy carries a two percent chance of having a fetus with abnormalities, potentially including scarring of the skin, limb deformities, eye damage, or mental retardation. Infection can also lead to spontaneous abortion and increased risk of death in infancy. Of the four million cases in the U.S. before the vaccine, about 10,000 people were hospitalized each year with complications, and approximately 100 people died annually (14PH, 2015).

Parents' resistance to the varicella vaccine stems both from their lack of firsthand experience with negative outcomes and a sense that the disease itself is not very serious. It also reflects a belief that interdependence between humans and infectious disease is natural. As Steph explains, "I know I'm just one person, but I don't know of anyone who's had severe complications, let alone died, from chickenpox. We've been existing with it for years."

Because of high rates of vaccination, parents are finding it increasingly difficult to find wild virus varicella. Parents like Steph insist, "I think I would be more inclined to stick her in a room with a kid I know who has chickenpox than I would be for her to get the vaccine between now and when she starts school." Yet, finding the virus can be a challenge. Katie, for example, explains, "There are lots of non-vaccinated kids I believe at [this private school] and there

was a huge outbreak of chickenpox—or not a huge, there was—a number of kids got chickenpox last winter and I was like “Can I bring my kids over?” Much to her chagrin, her children, she explains, “didn’t get sick, which I was bummed out about.”

The lack of easy opportunity for exposure has led to innovative strategies. Many phone doctors’ offices to ask if they have any patients with active infection with whom they could be put in contact. Others set up online forums for parents to share information about outbreaks. Some even attempt to acquire it through unusual means. In one notable example, a Nashville mother, offered a “fresh batch of pox” that she would ship on suckers that her infected child had sucked, or with spit on Q-tips” for \$50. As she explained of her efforts, “They can’t get (chickenpox) the normal way anymore of just naturally catching and just naturally getting the immunity for life” (Freedman, 2011). Although these sucked lollipops are unlikely to successfully communicate varicella, they could carry other diseases, including hepatitis, bacteria, or strep. Their sale shows how much parents want to obtain “natural immunity” from wild virus infection.

Parents so strongly believe in the superiority of natural exposure over vaccination, they will often ignore medical advice about risks. For example, Heather recalls she was strongly encouraged to give her son the varicella vaccine because he suffers from asthma, and may be at greater risk of complications should he become infected. Nonetheless, she refused:

I haven’t vaccinated [my son] for the chickenpox and I’m not planning to, and I’m really hoping that he can catch it soon because I want to get him a natural immunity to it... I don’t know how that works, but, [I’m] thinking maybe he would get a natural immunity to chickenpox whereas [the vaccines] don’t last very long—two years—and so they have to keep getting boosters.

Parents resent the loss of access to natural infection as vaccines have reduced wild virus infection. Many attribute the increasing number of vaccines to cultural, economic, and demographic changes in the family that undermine families’ abilities to care for sick children. These changes are cast as unnatural when compared to the nuclear family of the past they see as more natural. Sarah describes these changes. “We live in a different society. It used to be stay-at-home moms, you know, moms took care of the kids, dads worked, and it was—disease was just—you know, she’s sick, we take care of it.” Vaccines, many parents explain, are used because parents don’t have the time to care for sick children. Sarah explains infection is “probably a good workout for your immune system.” Lacking that, in part because of vaccines, children’s overall health may be worse.

A good rousing infectious disease—like what do we allow anymore? The common cold? Fevers of 102? No. That’s not acceptable... Days lost from work is like the main reason for preventing chickenpox. Lifelong immunity from chickenpox is not.

Because varicella is seldom life-threatening, it is a childhood illness that allows for more questioning than more dreaded diseases parents have never seen. Parents recall chickenpox as a rite of passage that was a natural part of the life course that has artificially been removed from children’s lives, to their detriment. Their nostalgia and strategies illustrate how natural infection becomes elevated as safe and superior.

## 8. Natural living as immune-promoting

Parents identify caregiving practices as central to immune promotion or recovery from illness, rendering vaccines less necessary. Natural living—through superior nutrition, neighborhoods, and lifestyle—is key to this. Parents who reject vaccines often tout their commitment to natural living, instead of vaccines, as immune-promoting. “Immunization through breastmilk” as one mother describes it, as well as consumption of organic foods are frequently mentioned as strategies to support children’s health. Reflecting the tenets of healthism, parents were quick to assign individual responsibility and control for health promotion. Weakness in immunity, which manifests by becoming sick, ties back to individual failures in natural living. Margaret elaborates. “We compromise ourselves through not eating correctly or taking care of ourselves, and that’s a hard pill for a lot of people to swallow, because a lot of people don’t want to give up their vices... so most people are gonna be prone to cancer and other problems.”

Children who are unvaccinated live in communities with generally high rates of vaccination, so they are largely protected from infection because there are fewer people who could carry those diseases and infect them. Communities with high rates of parents who opt out of vaccines see more disease outbreaks (Ernst and Jacobs, 2012), even as they are still generally protected by relatively high levels of community immunity. In contrast to wealthy communities in the U.S. where vaccines are more likely to be rejected, poorer communities globally with high rates of disease often have weak healthcare delivery systems, poor access to nutrition, and unclean water supplies. When confronted with information about disease prevalence, parents frequently assign blame for disease in the global south to factors they see as unnatural, like lack of sanitation and poor nutrition, rather than considering the accompanying low rates of vaccination and limited healthcare access. For example, Bob acknowledges high rates of vaccine-preventable illnesses in poorer countries, but rejects claims that lack of vaccines are the reason. “India, for example, between poor hygiene, sanitary conditions, [those diseases] would have come back anyway as a result of those conditions, because I mean, the living conditions are just horrendous compared to what other countries have.”

The willingness to attribute differences in infectious disease to variations in lifestyle reinforces parents’ view of disease as mitigated through their individual choices. As parents view foreign contexts as unnatural, contaminated, or risky, they see their children as free from risk because their “natural living”—facilitated by resources—protects them. Sanitation is not natural, but in fact is a technological innovation (Douglas, 2003). However, from parents’ perspective, disease transmission follows unclean conditions, which they recast as unnatural in contrast to their clean and natural lives. By viewing their lifestyle as protective against infectious disease, they can view their privilege as also natural—and feel confident rejecting vaccines.

## 9. Reshaping the discourse of vaccines and the natural

Parents’ strong preference for natural health over what they see as technologically mediated health is powerfully shaping the discourse around vaccines. Agencies and providers are adapting how they communicate with these parents—who have higher levels of education and income—about vaccines. This may reflect deliberate efforts to connect to parents around their concerns and customize messaging, which has increasingly become a goal for those who provide pediatric care (Leask et al., 2012; Pursell, 2009). One pediatrician provides an example of how she modifies her approach when talking to parents about vaccines to reference their

concerns about what is natural and artificial:

Another persuasion tactic that I use is I say, “Well, let me tell you about how, what a vaccine, how a vaccine works in your body.” And I use the word “natural” a lot and I feel like parents respond to that word. And I say, “You’re introducing a very mild or, you know, inactive form of this illness to your body allowing your body’s natural immune response to create protections for you for the next time you encounter this virus, or this illness. So your body is producing its natural reaction, so it allows you to protect yourself without actually getting the illness.” So that’s one of the ways in which I can try to persuade people, saying that it’s actually your body’s natural response to encountering the illness. But you don’t have to get the illness.

These terms are also driving public health messaging, which in visible ways is aiming to reach parents on their own terms. For example, the Colorado Children’s Immunization Coalition explains on the website for the statewide campaign, “Immunize for Good,”

In the past decade we’ve seen a shift toward green, eco-friendly and natural living. Many of us have worked to reduce our personal waste, preserve nature’s gifts, and keep toxins and anything labeled “artificial” out of our homes and our bodies...The truth is, all vaccine ingredients are tested together to be safe, and each ingredient is there to produce a stronger response in your baby’s body to immunity toward a specific disease. Some of the ingredients in vaccines have raised concern among parents and have increased the appeal of natural immunity, but the only way to get natural immunity to a disease is to acquire it through actual infection. This means that you have to get sick—sometimes very sick—to develop resistance. Vaccines, on the other hand, induce a natural immune response in the body without the suffering of getting sick with disease ([Immunize Colorado, 2014](#)).

The relative success of these messaging strategies remains unclear ([Nyhan et al., 2014](#)) but suggest providers and agencies aim to innovate to build trust and relationships to parents using different rhetorical tools ([Shelby and Ernst, 2013](#)). These efforts to use the vocabulary of the natural may persuade some parents, but many parents who still draw powerful distinctions between that which is natural and artificial remain unpersuaded. As one father explains,

Principally, from a physical standpoint, I’m against a vaccine because it won’t do what it is hoped to do...Even if they create this whole green vaccine thing... A) They can never make them. B) They never will make them. C) It still doesn’t work—even if it’s a healthy, you know, healthy vaccine, it’s still not gonna do better than you getting it naturally...to say that to strengthen my immune system, to inject something, whether it’s a green vaccine or not, well there—it’s not gonna do what it promises to do.

Even when unsuccessful in persuading parents, the willingness of providers and public health groups to adopt the vocabulary parents use illustrates their desire to close the gap between public health concerns for decreasing vaccination and parents’ concerns. It also shows how privileged parents are driving public discourse around these symbolic distinctions, and are receiving validation for their views.

## 10. Conclusion

Parents increasingly face a landscape of choices in which they are expected to act as informed consumers—of food, education, neighborhood, and healthcare. Parents who reject vaccines do so from a cultural position in which they aim to be good parents who will optimize their children’s health, even before birth. As parents describe their strategies, they reference the significance of a constructed division between the natural, which is superior, and the artificial, which undermines the natural state of the body. This dichotomy may not fully account for the process by which they make vaccine decisions at the time they make them, but it provides a powerful reference for what they think the decision means.

Maternal and infant mortality in birth or from childhood disease are arguably also part of the natural world. Yet, parents seldom see these as logical outcomes of a commitment to natural living. Rather, they draw support from a view that careful management of children’s health and active protection of their natural state of wellness will protect their children. This is in many ways a logical manifestation of the collision of the ideologies of healthism, which makes individuals responsible for health and illness, and of parenting, which holds them personally responsible for child outcomes more generally. As one mother explains,

There’ll never be a clear answer, but I don’t think if I vaccinated I’d have security in that knowledge either. I think either way, parents have to take the best half that they can figure...Just to blindly follow or not follow doesn’t seem wise to me, because ultimately I would be responsible.

Parents accept they are ultimately responsible for children’s health outcomes and take their choices seriously. As such, they prioritize their own values, perceptions, and beliefs over information communicated by experts.

Pediatricians and websites that aim to convince parents that vaccines are also natural and elicit a *natural immune response* aim to address these concerns. Facing parents with the high levels of resource and privilege, providers and public health agencies accept their terms and adapt their messaging to accommodate rather than challenge their world views. Yet in light of contemporary parenting norms that assign parents responsibility for children’s lives and health outcomes, parents will likely continue to question the necessity, safety, and efficacy of vaccines, particularly as they continue to be perceived as a manmade technology, artificially formed in ways that undermine the body’s natural abilities.

Rising rates of children without vaccination have real consequences. This can be seen, for example, during a measles outbreak that originated at Disneyland in December 2014, and infected nearly 150 people from 20 states and the District of Columbia, as well as travelers from Mexico and Canada (who subsequently infected more than 150 others in their home countries) ([Associated Press, 2015](#); [CDC, 2015](#)). Similar outbreaks in recent years demonstrate how vaccine resistance clusters and leaves pockets of disease susceptibility that carry consequences for others, particularly those who are too young to be immunized or are medically fragile ([Sugerman et al., 2010](#)). These real consequences serve as a reminder that individuals are never isolated in their own choices and require new strategies that connect individual values to community responsibilities.

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