Autism, Medicine, and the Poison of Enthusiasm and Superstition

John Thomas*

Science is the great antidote to the poison of enthusiasm and superstition.

Adam Smith¹

In the late 1990s, Andrew Wakefield, a British gastrointestinal surgeon and researcher,² began to formulate a novel theory about the relationship between the

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The first of those remedies [for social ignorance] is the study of science and philosophy, which the state might render almost universal among all people of middling or more than middling rank and fortune; not by giving salaries to teachers in order to make them negligent and idle, but by instituting some sort of probation, even in the higher and more difficult sciences, to be undergone by every person before he was permitted to exercise any liberal profession, or before he could be received as a candidate for any honourable office of trust or profit. If the state imposed upon this order of men the necessity of learning, it would have no occasion to give itself any trouble about providing them with proper teachers. They would soon find better teachers for themselves than any whom the state could provide for them. Science is the great antidote to the poison of enthusiasm and superstition; and where all the superior ranks of people were secured from it, the inferior ranks could not be much exposed to it.

Id.

² Rebecca Smith, Andrew Wakefield - the Man Behind the MMR Controversy, THE TELEGRAPH, Jan.
childhood measles, mumps, and rubella (“MMR”) vaccine and the onset of autism.  

He and a dozen colleagues conducted a study of eleven boys and one girl between the ages of three and ten.  

“We saw several children who, after a period of apparent normality, lost acquired skills, including communication,” observed Wakefield and his coauthors in a paper published in The Lancet in 1998.  

Wakefield’s team conducted a number of diagnostic procedures on the children, including ileocolonoscopy and biopsy, MRI, electroencephalography, and lumbar puncture.  

They concluded that all of the children had an “intestinal dysfunction” that was associated with “autistic-spectrum disorders” in a way that “suggests that the connection is real and reflects a unique disease.”  

They labeled that disorder “autistic enterocolitis.”  

Wakefield added that his study “did not prove an association between measles, mumps, and rubella vaccine and the syndrome described.”  

But, he warned, “If there is a causal link between measles, mumps, and rubella vaccine and this syndrome, a rising incidence might be anticipated after the introduction of this vaccine in the U.K. in 1988.”  

Before the publication of Wakefield’s findings, the MMR inoculation rate in the U.K. was 92 percent, nearly the herd immunity requirement of 95 percent necessary to immunize an entire community.  

Following the publication, the inoculation rate
dropped to below 80 percent. In 1998, the year of publication, there were fifty six measles cases in the U.K. By 2008, there were 1,348 cases and two confirmed deaths.

As the measles resurged, criticism mounted. When subsequent studies failed to find any proof of the connection between MMR vaccine and autism, ten of Wakefield’s twelve co-authors renounced the study’s conclusions. In addition, London’s Sunday Times reported that Wakefield had falsified his findings. On January 28, 2010, the U.K.’s General Medical Council (“GMC”) concluded what has been called the “longest and most complex disciplinary hearing ever held,” with findings that detailed Wakefield’s “callous, unethical, and irresponsible” conduct. In response, on February 2, 2010, The Lancet retracted Wakefield’s paper. In May 2010, the GMC barred Wakefield from practicing medicine in the U.K. by removing his name from the Medical Register. Finally, in January 2011, the British Medical Journal opined in an editorial that Wakefield’s paper in The Lancet had been an “elaborate fraud.”

While the MMR-Autism controversy wound its way through medical journals


12 See How the MMR Scare Led to the Return of Measles, supra note 11 (citing a drop in inoculation rates from 92 percent to below 80 percent following the publication of Wakefield’s paper).

13 See Deer, supra note 11.

14 Id.


16 Deer, supra note 11.


and ethics tribunals in the U.K., it presented in the court system in the U.S. With the 1986 enactment of the National Childhood Vaccine Injury Act, Congress created the Vaccine Injury Compensation Program (“VICP”). The Program provides an exclusive forum for claims for injuries caused by a number of childhood vaccines, including the MMR vaccine. The claims are resolved not by juries but by Special Masters.

The VICP consolidated the more than five thousand MMR-autism cases into the Omnibus Autism Proceeding. The Program’s special masters conducted hearings on six “test cases” and concluded in each that the claimants had not proven a causal link between the vaccine and autism. The U.S. Court of Federal Claims and the U.S. Court of Appeals for the Federal Circuit upheld the decisions that were appealed.

Neither the judicial decisions, the ethics findings, nor The Lancet’s retraction appear to have shaken the Wakefield faithful. Immediately following the GMC’s ethical decision, the National Autism Association announced on its website, “Parents of children

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24 Id. § 300aa-11(a)(1).
27 See generally Cedillo v. Sec’y of Health and Human Servs., 617 F.3d 1328 (Fed. Cir. 2010) (finding the evidence presented by the petitioners to be unreliable); Hazlehurst v. Sec’y of Health and Human Servs., 604 F.3d 1343 (Fed. Cir. 2010) (determining the Special Master made no error in considering the evidence presented and holding there was no causal link).
with autism around the world are calling the findings against Dr. Andrew Wakefield in the U.K.’s General Medical Council unjust and a threat to researchers investigating autism as a medical condition . . . Bravo to Dr. Andrew Wakefield.”

A visitor to the Age of Autism website posted this in response to The Lancet’s retraction: “[T]hose who will stand behind Wakefield . . . will remain standing proudly with integrity, truth, and honor . . . the [L]ancet will slide into a pool of ignorant denial . . . along with all their lies and cover ups [sic].” As recently as September 5, 2011, Age of Autism posted on its website, “The allegations against Wakefield remain grotesquely flawed.”

Perhaps most dramatically, the director of an autism advocacy group urged in a book published in the summer of 2011 that the world will place Wakefield’s name among “human rights dissidents” like Nelson Mandela. Moreover, as of January 2012, the online “We Support Andy Wakefield” petition bore 3,858 signatures.

Wakefield, who practiced what the British Medical Journal has termed “Piltdown medicine,” is still seen as a defender of human rights: “Before long, the world will

likely recognize that it was Dr. Wakefield, not his detractors, who stood up for the practice of medicine and the pursuit of science.”

Why is it that those who were swayed by a single study of twelve subjects cannot be “un-swayed” by dozens of studies of thousands of subjects? Is it simply, as Paul Offit, author of *Autism’s False Prophets: Bad Science, Risky Medicine and the Search for a Cure*, has opined that “while it’s very easy to scare people, it’s very hard to unscare them”? Or is it that Wakefield gives parents sufficient “enthusiasm and superstition” to resist the pull of science?

This article attempts to explain why many participants in the MMR-autism debate have refused to accept the greater weight of the scientific evidence. Part I briefly reviews autism prevalence over time. Part II examines the findings of the Wakefield ethics hearings and describes the beliefs of those who, despite the ethics hearings’ findings, remain unshakably committed to Wakefield and his work. Part III presents the theory of cultural cognition, which posits that people are psychologically disposed to believe what, given their cultural background, they deem honorable and to reject what they deem to be dishonorable to reject. That part concludes with the observation that the context of the MMR-autism debate made for the perfect cultural storm in which a group of “hierarchical individualists” were unlikely ever to reject the findings of an “in-group” messenger. As one participant in the debate has put it, “Well, I personally feel that vaccines are implicated in the increase in autism. And frankly, the [criticism of] Dr. Wakefield’s study doesn’t really alter my beliefs one way or the other.”

Part IV concludes this article with some observations about how science might coexist with research to Piltdown man – a paleontological hoax, lasting over 40 years in which fossilized fragments were claimed to be the “missing link” between man and ape. *Id. See generally* Brian Deer, *How the Case Against the MMR Vaccine Was Fixed*, 342 BRIT. MED. J. 77 (2011); Brian Deer, *How the Vaccine Crisis Was Meant to Make Money*, 342 BRIT. MED. J. 136 (2011); Brian Deer, *The Lancet’s Two Days to Bury Bad News*, 342 BRIT. MED. J. 200 (2011) (criticizing Wakefield’s claims about the MMR vaccine).

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34 Holland, supra note 31, at 229.
36 SMITH, supra note 1, at Vol. 1, 203.
enthusiasm, if not superstition, within the community concerned with the MMR-autism debate.

I. Autism Through the Years

A. Diagnosis

Swiss psychiatrist Eugen Bleuler coined the word “autism” in 1911 to describe the unrealistic thought processes that occur in dreams and fantasies.38 The word “autism” derives from the Greek word “autos” meaning “self.”39 Bleuler considered reality-based thoughts the norm and unrealistic, self-reflecting thoughts more refined.40 But, he also used “autism” to describe the thoughts of patients suffering from schizophrenia.41

Leo Kanner, who founded the world’s first child psychiatry program at Johns Hopkins and authored Child Psychiatry42 — the first text on the subject43 — published the first description of autism in his 1943 article, “Autistic Disturbances of Affective Contact.”44 He presented two case studies of “children whose condition differs so markedly and uniquely from anything reported so far, that each case merits — and, I hope, will eventually receive — a detailed consideration of its fascinating peculiarities.”45

Nearly four decades elapsed after Kanner’s seminal article before the word

38 ADAM FEINSTEIN, A HISTORY OF AUTISM: CONVERSATIONS WITH THE PIONEERS 5-6 (2010) (explaining that Dr. Bleuler distinguished the difference between logical or realistic thinking and autistic thinking).
39 Id. at 5.
40 Id. at 6. Bleuler believed that autistic thinking was normal thinking for both children and adults. Id. This was evident to Bleuler from dreams and pretend play of the non-autistic and the fantasies and delusions of the schizophrenic. Id.
41 Id. Bleuler originally included autism as one of what he called the “four schizophrenias,” which included: associated disturbance, affective disturbance, ambivalence, and autism. Id.
42 LEO KANNER, CHILD PSYCHIATRY (1935).
44 See generally Leo Kanner, Autistic Disturbances of Affective Contact, 2 NERVOUS CHILD 217-50 (1943), available at http://www.neurodiversity.com/library_kanner_1943.html. There is some debate regarding whether Kanner’s work was original or whether he borrowed from the work of Hans Asperger. See FEINSTEIN, supra note 38, at 11. For an example of Asperger’s work, see Hans Asperger, Autistic Psychopathy in Childhood (1944), reprinted in AUTISM AND ASPERGER SYNDROME 37 (Uta Frith ed., Uta Frith trans., 1991) (originally published in German).
45 Kanner, supra note 44, at 217.
“autism” entered the primary diagnostic instrument for the mental health profession, the Diagnostic and Statistical Manual of Mental Disorders (“DSM”).46 The first articulation of DSM was published in 1952, is the result of the efforts of the New York Academy of Medicine in the late 1920s to lead the medical community out of diagnostic “chaos towards a nationally accepted standard nomenclature of disease.”47 Perhaps because the drafting committee did not include child and adolescent psychiatrists, the manual did not include a diagnosis of autism.48 Rather, the closest diagnosis listed in this first rendition of DSM-I was “Schizophrenic reaction, childhood type.”49

Beginning in 1968, with the crafting of DSM-II, the American Psychiatric Association, drafters of the manual, began to make “progress in the classification of childhood and adolescent disorders.”50 The DSM-II drafters added a note observing that the “Schizophrenia, childhood type” disorder might include symptoms of “autistic, atypical and withdrawn behavior.”51

The first two iterations of DSM reflected the views of the dominant psychoanalytic and sociological thought of the time and “conceived of symptoms as reflections of broad underlying dynamic conditions or as reactions to difficult life problems.”52 DSM-III, on the other hand, bore the evidence of a revolution in the psychiatric profession in the 1970s that transformed disorder classification from “broad, etiologically defined entities that were continuous with normality to symptom-based, categorical diseases.”53 As a result, where DSM-I and DSM-II avoided “elaborate classification schemes, because overt symptoms did not reveal disease entities,” DSM-III reflected psychiatry’s attempt to “reorganize[] itself from a discipline where diagnosis played a marginal role to one where it became the basis of the specialty.”54 One of these diagnoses contained the first listing for autism: “Diagnostic Criteria for Infantile

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47 See generally AM. PSYCHIATRIC ASS’N, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS v (1952) [hereinafter DSM-I].
48 Dulcan, supra note 46, at 62.
49 Id.; DSM-I, supra note 47, at 28 (diagnosis 000-x28).
51 DSM-II, supra note 50, at 35 (disorder 295.8).
52 Rick Mayes & Allan V. Horwitz, DSM-III and the Revolution in the Classification of Mental Illness, 41 J. HIST. BEHAV. SCI. 249, 249 (2005).
53 Id. See generally AM. PSYCHIATRIC ASS’N, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (3d ed. 1980) [hereinafter DSM-III].
54 Mayes & Horwitz, supra note 52, at 250.
Autism." The criteria include “[o]nset before 30 months of age” and “[p]ervasive lack of responsiveness to other people.”

The move toward categorization reached its zenith in 1994 with the publication of DSM-IV. The manual introduced five related disorders: autistic disorder, Asperger’s Disorder, Rett’s Disorder, Childhood Disintegrative Disorder, and Pervasive Developmental Disorder Not Otherwise Specified (“PDD-NOS”). These five disorders are usually grouped together under the heading of autism spectrum disorders (“ASD”). The National Institute of Mental Health summarizes ASD disorders:

All children with ASD demonstrate deficits in 1) social interaction, 2) verbal and nonverbal communication, and 3) repetitive behaviors or interests. In addition, they will often have unusual responses to sensory experiences, such as certain sounds or the way objects look. Each of these symptoms runs the gamut from mild to severe.

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55 DSM-III, supra note 53, at 89.
56 Id.
57 See generally AM. PSYCHIATRIC ASS’N, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS IV (1994) [hereinafter DSM-IV].
59 Peter E. Tanguay, Autism Spectrum Disorders, in DULCAN’S TEXTBOOK OF CHILD AND ADOLESCENT PSYCHIATRY, 174, 174 (Mina K. Dulcan ed., 2010) (“[A]utism is defined by the presence of severe and pervasive impairments in reciprocal social interaction and in verbal and nonverbal communication skills.”).
60 Id. “The criteria for Asperger’s disorder are identical to those for autistic disorder . . . with the exception that there is no clinically significant delay in cognitive development or in the development of age appropriate self-help skills, and no significant delay in language development.” Id. at 177.
61 NIMH, supra note 58, at 4. “Rett syndrome is relatively rare, affecting almost exclusively females, one out of 10,000 to 15,000. After a period of normal development, sometime between 6 and 18 months, autism-like symptoms begin to appear.” Id.
62 Id. “The diagnosis requires extensive and pronounced losses involving motor, language, and social skills. CDD is also accompanied by loss of bowel and bladder control and oftentimes seizures and a very low IQ.” Id. (citations omitted).
63 Id. This diagnosis is used when there are autistic-like symptoms, “but the criteria for any of the more specific pervasive developmental disorders (PDD) are not met.” Id. at 2.
64 NIMH, supra note 58, at 5.
The American Psychiatric Association (“APA”) is currently at work on DSM-V. The organization is supervising field trials of the manual and will accept a third round of comments in spring 2012. The APA expects to release the final version in May 2013. This fifth incarnation will conflate the four autism-related disorders into a single diagnostic category of “Autism Spectrum Disorders.” The recommendation of a new category of autism spectrum disorders reflects recognition by the work group that the symptoms of these disorders represent a continuum from mild to severe, rather than being distinct disorders. An ASD diagnosis requires the finding of deficits in “social interaction and communication” and “the presence of repetitive behaviors and fixated interests and behaviors.”

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66 Id.
69 Id. (quoting Edwin Cook, M.D, a member of the DSM-5 Neurodevelopmental Disorders Work Group).

Autism Spectrum Disorder. Must meet criteria A, B, C, and D:

A. Persistent deficits in social communication and social interaction across contexts, not accounted for by general developmental delays, and manifest by all 3 of the following:

1. Deficits in social-emotional reciprocity; ranging from abnormal social approach and failure of normal back and forth conversation through reduced sharing of interests, emotions, and affect and response to total lack of initiation of social interaction,

2. Deficits in nonverbal communicative behaviors used for social interaction; ranging from poorly integrated-verbal and nonverbal communication, through abnormalities in eye contact and body-language, or deficits in understanding and use of nonverbal communication, to total lack of facial expression or gestures.

3. Deficits in developing and maintaining relationships, appropriate to developmental level (beyond those with caregivers); ranging from difficulties adjusting behavior to suit different social contexts through
B. Prevalence

In 2005, the journal Pediatrics published one of the first reports of autism prevalence in the U.S.\textsuperscript{71} The article drew conclusions from data collected by the U.S. Department of Education, Office of Special Education Programs (“OSEP”).\textsuperscript{72} OSEP tabulates state-supplied data regarding children enrolled in state special education programs.\textsuperscript{73} Since 1992, OSEP has mandated that all states report the number of children in special education programs who have been diagnosed with autism.\textsuperscript{74} These data, the “only available source for national [autism] prevalence estimates,” allow for the difficulties in sharing imaginative play and in making friends to an apparent absence of interest in people.

B. Restricted, repetitive patterns of behavior, interests, or activities as manifested by at least two of the following:

1. Stereotyped or repetitive speech, motor movements, or use of objects; (such as simple motor stereotypies, echolalia, repetitive use of objects, or idiosyncratic phrases).
2. Excessive adherence to routines, ritualized patterns of verbal or nonverbal behavior, or excessive resistance to change; (such as motoric rituals, insistence on same route or food, repetitive questioning or extreme distress at small changes).
3. Highly restricted, fixated interests that are abnormal in intensity or focus; (such as strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).
4. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment; (such as apparent indifference to pain/heat/cold, adverse response to specific sounds or textures, excessive smelling or touching of objects, fascination with lights or spinning objects).

C. Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities)

D. Symptoms together limit and impair everyday functioning.

\textit{Id.}


\textsuperscript{72} Id.

\textsuperscript{73} Id.

\textsuperscript{74} Id.
computation of prevalence rates over time among school-aged children.\textsuperscript{75} From 1994 through 2004, autism prevalence rates for children between the ages of six and twenty-one years increased by an average of more than twenty percent annually.\textsuperscript{76} The data for children aged three to five years, tabulated from 2000 through 2004, revealed a similar, though less dramatic, trend.\textsuperscript{77}

The authors noted that some researchers had theorized that the relatively recent identification of the autism disorder may have resulted in the reclassification of some mental health disorders to autism, producing a falsely elevated number of new autism cases.\textsuperscript{78} “Because there was no indication of decreases in one or another of these categories concomitant with, and of similar magnitude to, increases in autism classification prevalence,” the authors rejected a finding of “diagnostic shifting.”\textsuperscript{79}

The Autism and Developmental Disabilities Monitoring (“ADDM”) Network of the Centers for Disease Control (“CDC”) has published two reports on ASD prevalence.\textsuperscript{80} These studies reported prevalence findings in eight year old children, the point of “peak prevalence,” or the age at which most children [with ASD] have been identified.\ldots\textsuperscript{81} The 2007 report, tabulating 2002 data, found ASD prevalence to range from one in 300 to one in 100, and average one in 150 children.\textsuperscript{82}

\begin{itemize}
\item \textsuperscript{75} See id. at e277, e280.
\item \textsuperscript{76} Newschaffer et al., supra note 71, as reflected in online presentation of data here: http://www.taap.info/Gallup%202005.pdf.
\item \textsuperscript{77} Id.
\item \textsuperscript{78} Newschaffer et al., supra note 71, at e280 (noting possible “diagnostic shifting” from mental retardation and speech and language impairment to autism).
\item \textsuperscript{79} Id. (discussing why diagnostic shifting theories are not supported by data to explain the increase of autism cases).
\item \textsuperscript{81} Id. at 39.
\item \textsuperscript{82} Id. at 37; see CATHERINE RICE, CENTERS FOR DISEASE CONTROL AND PREVENTION, Prevalence of Autism Spectrum Disorders - Autism and Developmental Disabilities Monitoring Network, 14 sites, United States, 2002, 56 MORBIDITY & MORTALITY WKL. REP. 12 (2007), available at http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5601a2.htm [hereinafter RICE, 2002]. The study tabulated data from fourteen sites: In this study, six ADDM sites (Arizona, Georgia, Maryland, New Jersey, South Carolina, and West Virginia) reported the prevalence for children who were
\end{itemize}
The second report, reporting on 2006 data and published in 2009, found an increased prevalence of approximately one in 110 children.\textsuperscript{83} This represented an average increase in prevalence of ASD from 2002 to 2006 of fifty-seven percent.\textsuperscript{84} This report also revealed that prevalence for boys was 14.5 per 1,000 compared with 3.2 per 1,000 girls.\textsuperscript{85}

The 2009 report concluded with the observation that, “[a]lthough improved ascertainment accounts for some of the prevalence increases . . . a true increase in the risk for children to develop [autism] symptoms cannot be ruled out.”\textsuperscript{86}

The 2005 report in Pediatrics sampled only those children in special education programs while both ADDM studies sampled a modest number of sites across the country.\textsuperscript{87} In the summer of 2011, researchers from Yale and George Washington Universities published a study designed to augment the available evidence of ASD prevalence by sampling an entire population of elementary school children.\textsuperscript{88} Since 2001, in response to the recommendation of the U.S. Centers for Disease Control, South Korea has required the MMR vaccine as a condition to children enrolling in school, resulting in a ninety-nine percent vaccination rate.\textsuperscript{89} The researchers obtained eight years old in 2000 (born in 1992). An additional eight sites (Alabama, Arkansas, Colorado, Missouri, North Carolina, Pennsylvania, Utah, and Wisconsin) participated in the second study year, determining the prevalence for children who were eight years old in 2002 (born in 1994).


\textsuperscript{84} Id.

\textsuperscript{85} Id.

\textsuperscript{86} Id.

\textsuperscript{87} See Newschaffer et al., supra note 71, at e277; REPORT TO CONGRESS, supra note 80, at 11; RICE, 2002, supra note 82 (study utilizing data from states across the country including: Arizona, Georgia, Maryland, New Jersey, South Carolina, West Virginia, Alabama, Arkansas, Colorado, Missouri, North Carolina, Pennsylvania, Utah, and Wisconsin).

\textsuperscript{88} Young Shin Kim et al., Prevalence of Autism Spectrum Disorders in a Total Population Sample, 168 AM. J. PSYCHIATRY 904, 905-07 (2011). The study ran from 2005-2009 in a suburb of Seoul, South Korea, and included 33 schools with 36,592 students. Id. at 905.

data on all seven to twelve year olds in a South Korean community. They obtained information from both a group exhibiting a high probability of ASD, the “special education schools,” and a low probability, the “regular schools.” The researchers screened children and offered a questionnaire to parents of children who screened positive.

The study revealed ASD prevalence rates of 2.64 percent in the total population, with 1.89 percent in the general-population group and 0.75 percent in the high-probability group. The male to female ratios were 5.1 to 1 in the high probability population and 2.5 to 1 in the general population.

As the researchers noted, “There is a striking difference between our estimated prevalence of 2.64% for any ASD and previously reported estimates ranging from 0.6% to 1.8%.” But, they concluded that their use of “gold standard” diagnostic tools and careful examination of the data rendered their results valid, and would strengthen the design of future prevalence studies.

These reports present the questions whether ASD is increasing or whether only its diagnosis is increasing. At the very least, we now know that ASD affects a significant portion of the population: “Autism now affects more American children than childhood cancer, diabetes and AIDS combined.” As journalist Robert MacNeil has observed,

cdc.gov/mmwr/preview/mmwrhtml/mm5613a3.htm.

90 Kim et al., supra note 88, at 905.
91 Id. Of the students issued questionnaires, 103 students from the special education schools returned information and 23,234 student from regular schools returned forms. Id. at 907. The responses from the special education schools included 82 percent boys, while the regular schools included only 52 percent boys. Id.
92 Kim et al., supra note 88, at 905.
93 Id. at 908. The study noted a significant difference in prevalence rates from this group and prevalence rates previously reported through other studies at 0.6 percent and 1.8 percent. Id.
94 Id. at 907. The high-probability group studied included children who were enrolled in the Disability Registry or special education schools and those in regular schools with psychiatric or psychological service use. Id. The general-population sample included children in regular schools without psychiatric or psychological service use. Id. at 909.
95 Kim et al., supra note 88, at 908. The research team went on to note possible cultural variations for reported statistics as contributing to possible report bias, and that the “less than optimal participation rate” in the general-population research sample of 63 percent is another possible factor which limited the statistical applicability of the data. Id. A response rate approaching 80 percent is the preferred practice in epidemiological studies to limit the impact of reporting bias on data. Id.
96 Id. at 908-10.
97 PBS NewsHour: Autism Now: Exploring the 'Phenomenal' Increase in U.S. Prevalence, (PBS television
“[A] majority of . . . researchers . . . believe that wider diagnosis explains only part of the increase in autism numbers.”\footnote{Id.} Whether further explanation lies in environmental causes, infectious agents, or nutritional factors remains a mystery.\footnote{Id.} As one researcher put it, unraveling that mystery will take further research, including a peak into the human genome:

There are a variety of factors that could be influencing development, and they may play a role at different points in development. But I think multiple factors contribute not just across the population but within any one individual. So when I say that I think autism is multifactorial in its causation, I think that applies to even at the individual level so that it might take two or three susceptibility genes combined with two or three environmental factors at critical junctures.\footnote{Id.}

Might one of those environmental factors be the childhood MMR vaccine?

\section*{II. Andrew Wakefield, MD}

\subsection*{A. An Anatomy of a Scientific Fraud}

The GMC’s Fitness to Practice Panel convened on July 16, 2007 to consider Wakefield’s “conduct, duties and responsibilities” in conducting the study that resulted in \textit{The Lancet} publication.\footnote{Gen. Med. Council, \textit{supra} note 18, at 1-3. The Panel also considered the conduct of Professors John Walker Smith and Simon Murch, the two co-authors who had not renounced the study. \textit{Id.} The Panel focused exclusively on ethical inquiries and did not consider “whether there is or might be any link between the MMR vaccination and autism. \textit{Id.} at 2. When the panel considered the conduct of John Walker and Simon Murch it was a stated goal to take into account the particular circumstances that each professor faced at the “material times” to the relevant conduct and avoid making judgments with the benefit of hindsight. \textit{Id.} Among the stated “conduct, duties and responsibilities” that the panel considered was the duty to conduct research within ethical constraints. \textit{Id.} at 3.} The Panel, comprising three physicians and two lay people, met for a total of 148 days over a two and a half year period and considered the testimony of three dozen witnesses.\footnote{Id. at 2.
The Panel found a number of aspects of Wakefield’s conduct to be unethical. First, the Panel focused on conflicts of interest. Wakefield initiated his study after being retained by a law firm that represented parents alleging that the MMR vaccine had caused autism in their children.\textsuperscript{103} Wakefield accepted approximately $750,000 in compensation from the law firm without disclosing to The Lancet either the payment or its source, a “legal aid board” designed to underwrite access for the poor to legal services.\textsuperscript{104} In addition, some nine months before The Lancet published his paper, Wakefield filed a patent application on a single measles vaccine that could find success in the market place only if parents chose not to inoculate their children with the MMR vaccine.\textsuperscript{105}

The Panel also commented on Wakefield’s selection process for study subjects. The subjects were neither randomly selected nor were they, as Wakefield, claimed, “self referred.”\textsuperscript{106} Rather, most of the families were recruited through an anti-MMR campaign and most were clients of the plaintiffs’ law firm that had retained Wakefield.\textsuperscript{107}

The conduct of the study, itself, also troubled the Panel. Wakefield and his coworkers administered a number of invasive procedures upon the study subjects, including anesthesia, radioactive beverages, x-rays, ileocolonoscopies, lumbar punctures, MRIs, and EEGs.\textsuperscript{108} Because the subjects had not presented appropriate symptoms, the procedures were not clinically indicated.\textsuperscript{109} Rather, Wakefield had subjected the children

\textsuperscript{103} GEN. MED. COUNCIL, supra note 18, at 4.

\textsuperscript{104} Brian Deer, Exposed: Andrew Wakefield and the MMR-autism fraud, BRIANDEER.COM, http://briandeer.com/mmr/lancet-summary.htm (last visited Jan. 5, 2012) (stating that the amount billed by Wakefield was “£435,643 (then about $750,000 US)”). The U.K. legal aid fund was the source of the funds the law firm used to compensate Wakefield. Id. The U.K. legal aid fund is “run by the government to give poorer people access to justice.” Id.; see also GEN. MED. COUNCIL, supra note 18, at 4-7.

\textsuperscript{105} See Deer, supra note 104 (referencing the patent found during an investigation conducted by The Sunday Times); GEN. MED. COUNCIL, supra note 18, at 49-50 (outlining findings as to Wakefield’s conflict of interest concerning the patent and the article).

\textsuperscript{106} See GEN. MED. COUNCIL, supra note 18, at 103-05 (explaining the Panel’s conclusion that the children in the study were not “self-referred”).

\textsuperscript{107} Deer, supra note 104. The majority of the children involved in the study “had been pre-selected through MMR campaign groups . . . most of their parents were clients and contacts of the lawyer.” Id.; see also GEN. MED. COUNCIL, supra note 18, at 103-105.

\textsuperscript{108} Deer, supra note 104; see also GEN. MED. COUNCIL, supra note 18, (describing eleven out of the twelve children’s individual circumstances and the Panel’s findings).

\textsuperscript{109} GEN. MED. COUNCIL, supra note 18, at 11-42. The Panel found that the lumbar puncture that was administered was not clinically indicated for Children 3, 9 and 12. Id. In addition, the Panel found that Dr. Wakefield’s conduct was contrary to the clinical interests of ten of the twelve children. Id.
“to a programme of investigations for research purposes without having Ethics Committee approval for such research.” In addition, Wakefield falsely reported to *The Lancet* that he had presented this regimen to the hospital ethics committee. Moreover, to obtain “control” blood samples, Wakefield turned to the children who attended his son’s birthday party. There, without proper informed consent or parents’ authorization, he obtained blood samples from the attendees and “as a reward at the end of the party the children who had given blood all received £5.” Compounding the ethical violation, at a conference in California, Wakefield publicly referred to the event in “humorous terms” and expressed “an intention to obtain research samples in similar circumstances in the future.”

In sum, the Panel found Wakefield’s conduct to be “dishonest . . . irresponsible . . . [and] misleading.” The GMC then reviewed the Panel’s findings and characterized Wakefield’s conduct:

> The Panel made findings of transgressions in many aspects of Dr Wakefield’s research. It made findings of dishonesty in regard to his writing of a scientific paper . . . [and] in respect of the [Legal Aid Board] funds secured for research . . . Furthermore he was in breach of his duty to manage finances as well as to account for funds that he did not need to the donor of those funds. In causing blood samples to be taken from children at a birthday party, he callously disregarded the pain and distress young children might suffer and behaved in a way which brought the profession into disrepute.

The appropriate penalty, concluded the GMC, was that Wakefield’s name be stricken from the Medical Register, precluding him from practicing medicine in the

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100 Id. at 13, 16, 18, 24, 25, 31. The Panel made this finding for Children 1-6 and 9. *Id.* Children 8 and 12 were also found to have undergone investigation for Wakefield’s research without the Ethics Committee’s approval. *Id.* at 34-35, 37.

101 Deer, *supra* note 104. Dr. Wakefield made this false report in order to satisfy *The Lancet’s* patient-protection requirements. *Id.*

102 GEN. MED. COUNCIL, *supra* note 18, at 54.

103 *Id.* The Panel found that Dr. Wakefield’s was unethical and that he “. . . abused [his] position of trust as a medical practitioner.” *Id.* at 55.

104 GEN. MED. COUNCIL, *supra* note 18, at 54.

105 *Id.* at 44.

106 GEN. MED. COUNCIL, DETERMINATION ON SERIOUS PROFESSIONAL MISCONDUCT (SPM) AND SANCTION 8, available at http://www.gmc-uk.org/Wakefield_SPM_and_SANCTION.pdf _32595267.pdf._
Upon reading the Fitness to Practise Panel’s conclusions, *The Lancet* retracted Wakefield’s paper. The Journal found particularly damning the false claims that “children were ‘consecutively referred’ and that investigations were ‘approved’ by the local ethics committee.”

Following *The Lancet*’s retraction, the *British Medical Journal* took the extraordinary step of publishing an editorial entitled, “Wakefield’s Article Linking MMR Vaccine and Autism Was Fraudulent.” In that piece, the journal’s editors observed that Wakefield’s article was “fatally flawed both scientifically and ethically” and “was in fact an elaborate fraud.” The authors characterized Wakefield’s conduct in the starkest of terms: “Is it possible that he was wrong, but not dishonest: that he was so incompetent that he was unable to fairly describe the project, or to report even one of the 12 children’s cases accurately? No.”

The *British Medical Journal* editors pointed to the efforts of journalist Brian Deer in uncovering “the extent of Wakefield’s fraud.” Through a series of articles for London’s *Sunday Times*, Deer discovered fraud in each of the twelve cases reported in *The Lancet* paper. Indeed, “in no single case could the medical records be fully

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117 Id. at 9. Doctors who are not registered with the General Medical Counsel may not practice in the U.K. See [THE MEDICAL REGISTER, GENERAL MEDICAL COUNCIL](http://www.gmc-uk.org/doctors/medical_register.asp) (last visited January 28, 2012).


119 Id.

120 Godlee et al., *supra* note 21, at 64.

121 Id. at 64. Critics to the vaccine scare quickly pointed out the faults in Wakefield’s paper, including the lack of experimental controls, and that it relied on the beliefs and memory of parents. *Id.* The paper was finally retracted twelve years later. *Id.*

122 Id. at 65 (explaining that Wakefield’s paper was fraudulent, that he put in a great deal of effort to obtain the results he wanted, and his paper was full of misreporting).

123 Godlee et al., *supra* note 21, at 64. Seven years after first looking into the connection of the MMR vaccine and autism, Deer illustrated Wakefield’s fraud. *Id.* Deer used interviews, documents, and data that were made public at the General Medical Council hearings to show that Wakefield altered many facts about the patients’ medical histories in order to support Wakefield’s claim that he identified a new syndrome. *Id.*

reconciled with the descriptions, diagnoses, or histories published in [The Lancet].”

Although Deer and the GMC had unmasked the fraud, repairing the damage will take some time:

Meanwhile the damage to public health continues, fuelled by unbalanced media reporting and an ineffective response from government, researchers, journals, and the medical profession. Although vaccination rates in the United Kingdom have recovered slightly from their 80% low in 2003-4, they are still below the 95% level recommended by the World Health Organization to ensure herd immunity. In 2008, for the first time in 14 years, measles was declared endemic in England and Wales. Hundreds of thousands of children in the UK are currently unprotected as a result of the scare, and the battle to restore parents’ trust in the vaccine is ongoing.

Because “[t]o conclude that [a child’s] condition was the result of his MMR vaccine, an objective observer would have [had] to emulate Lewis Carroll’s White Queen and be able to believe 6 impossible (or at least highly improbable) things before breakfast,” one might expect that the revelation of fraud inexorably would lead Wakefield’s followers to reject his claims.

B. The Unshakably Faithful

1. The Followers

In November 2011, the National Autism Association (“NAA”) held its annual National Autism Conference, which it billed as featuring “the world’s leading experts on autism.” The autism expert who gave the keynote address was none other than

125 Godlee et al., supra note 21, at 65. Deer compared the children’s medical records with what Wakefield published by focusing on whether the research was true and found evidence of numerous falsifications. Id. The General Medical Council built on Deer’s findings and launched its own investigation that centered on whether Wakefield’s research was ethical. Id.
126 Id. at 65 (citations omitted) (describing the ramifications of Wakefield’s findings).
127 Snyder ex rel. Snyder v. Sec’y of Dept. of Health and Human Servs., No. 01-162V, 2009 WL 332044 (Fed. Cl. Feb. 12, 2009). Parents alleged their son contracted autism and chronic gastrointestinal dysfunction through the use of vaccines. Id.
128 See NATIONAL AUTISM CONFERENCE, NATIONAL AUTISM CONFERENCE PROGRAM GUIDE 3...
Andrew Wakefield.\textsuperscript{129} NAA’s biography for Wakefield omits any reference to the retraction of *The Lancet* paper, the GMC’s findings of fraud, or his loss of his medical license.”\textsuperscript{130} Furthermore, in its presentation of causes of autism, NAA’s website contains an “MMR” page that presents Wakefield’s research as if it remains to this day unimpeachable;

Dr. Andrew Wakefield first cautioned parents of the potential link between autism and the MMR vaccine in 1998. He raised fears that the MMR vaccination could trigger bowel disorders in susceptible children.

His studies have shown the presence of persistent measles virus in children with ileocolonic lymphonodular hyperplasia, which was shown repeatedly in children with developmental disorders. Dr. Wakefield’s work confirmed an association between the presence of measles virus and gut pathology in children.\textsuperscript{131}

The NAA has been unwavering in its support of Wakefield. In the hours following the GMC’s striking of his name from the list of those licensed to practice medicine in the U.K., the NAA issued a press release defending Wakefield and asserting that the GMC’s actions were but an attempt to suppress “science linking vaccines and autism . . . at the expense of children’s health.”\textsuperscript{132} Moreover, NAA is one of the organizations that sponsors an online “We Support Andrew Wakefield” petition that


\textsuperscript{129} See Conference Schedule, NATIONAL AUTISM CONFERENCE, http://nationalautismconference.org/fullschedule.htm (last visited Jan. 7, 2012) (noting that Wakefield was the featured speaker on the evening of the conference’s last full day, Saturday, November 12).


\textsuperscript{132} See Press Release, National Autism Association, National Autism Association Says GMC Actions Against Wakefield Show Lack of Scientific Integrity (May 24, 2010), available at http://www.nationalautismassociation.org/press052410.php (standing behind Dr. Wakefield and quoting the board chair, Lori McIhwain as saying, “The message is clear, scientists who dare to question the safety of vaccines do so at the risk of their careers.”).
declares, among other things, that Wakefield “is a man of honesty, integrity, courage, and proven commitment to children and the public health” and that his “research is rigorous, replicated, biologically valid, clinically evidenced, corroborated by published, peer-reviewed research in an abundance of scientific disciplines, and consistent with children’s medical problems.”

Some advocates of the link between MMR vaccine and autism did change position in light of revelations about Wakefield’s study. For example, Alison Singer, a senior executive of Autism Speaks, resigned from the group in January 2009 and urged it to use its resources to look elsewhere for answers because “looking where we know the answer isn’t is one less dollar we have to spend where we might find new answers. The fact is that vaccines save lives; they don’t cause autism.” In response, Autism Speaks dropped its opposition to the MMR vaccine and urged parents to vaccinate their children. In addition, the organization embraced an August 2011 Institute of Medicine (“IOM”) report that rejected any link between the MMR vaccine and autism.

The IOM report, the largest study of its kind ever undertaken, endeavored “to

133 WE SUPPORT DR. ANDREW WAKEFIELD, http://www.wesupportandywakefield.com (last visited Jan. 9, 2012). This website was created in order to show support for Dr. Wakefield as well as inform the public about Dr. Wakefield’s mission and the controversy surrounding it. Id. There are also several other organizations that support Dr. Wakefield such as Autism One, Autism Research Institute, Generation Rescue, SafeMinds, Schafer Autism Report, Talk About Curing Autism, and Unlocking Autism. Id.


Many studies have been conducted to determine if a link exists between vaccination and increased prevalence of autism, with particular attention to the measles-mumps-rubella (MMR) vaccine and those containing thimerosal. These studies have not found a link between vaccines and autism. We strongly encourage parents to have their children vaccinated.

136 INSTITUTE OF MEDICINE, ADVERSE EFFECTS OF VACCINES: EVIDENCE AND CAUSALITY 25-26 (Kathleen Stratton et al., eds., 2011), available at http://www.nap.edu/catalog.php?record_id=13164 (discussing the various diseases children were at risk of being infected with due to the unavailability of vaccines).

137 Geraldine Dawson, Ph.D., Message from the Chief Science Officer regarding the Institute of Medicine’s report on Adverse Effects of Vaccines, AUTISM SPEAKS OFFICIAL BLOG (August 26, 2011) http://blog.autismspeaks.org/tag/national-academy-of-sciences.
assess dispassionately the scientific evidence” concerning the safety of a number of vaccines, including MMR. The investigating committee examined both epidemiological data regarding the link between the MMR vaccine and autism and the mechanistic evidence, both clinical and biological, explaining the medical mechanism that might enable the vaccine to catalyze the development of autism.

In examining the epidemiological evidence, the committee considered twenty-two studies published between 1999 and 2010. Winnowing the studies to those exhibiting sufficient “validity and precision,” the committee concluded with a “high degree of confidence” that the epidemiologic evidence did not support a claim of a causal relationship between the MMR vaccine and autism.

The committee was able to find only four mechanistic studies examining the relationship between the vaccine and autism. Three of those studies demonstrated only that some children were diagnosed with autism after receiving a vaccine, but provided no evidence that the vaccine caused the onset of autism. Only a single study provided any evidence of a biological mechanism by which the vaccine might trigger autism, but in that study, the vaccinated child did not develop autism. As a result, the committee concluded that “mechanistic evidence regarding an association between MMR vaccine and autism as lacking.”

Coming on the heels of the Wakefield ethics investigation and The Lancet retraction, one might have expected the IOM report to put an end to suspicions about the relationship between the MMR vaccine and autism. But, that was not to be. Age of

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138 INSTITUTE OF MEDICINE, supra note 136, at ix.
139 Id. at 35.
140 Id. at 112-14.
141 Id. at 114.
142 Id. at 114. One of the studies was Wakefield’s Lancet paper. Id.
143 INSTITUTE OF MEDICINE, supra note 136, at 114-15. More specifically, those studies “did not provide evidence beyond temporality.” Id.
144 Id. at 115. Initially, this fact was unreported. Id.
145 Id. The publications did not contribute to the weight of mechanistic evidence. Id.
Autism, a group critical of the vaccine and supportive of Andrew Wakefield, rejected the study, largely because it “was paid for by the Department of Health and Human Services, the government agency which is also a defendant against the vaccine-injured in the government’s vaccine court.”146 Age of Autism warned that parents “should still be concerned.”147

Age of Autism is not the lone, remaining skeptic. Perhaps the most notorious among skeptics is model and actress, Jenny McCarthy.148 She rejected the Wakefield ethics investigation as “dubious . . . allegations”149 and added in a Huffington Post op-ed piece, “I have never met stronger women than the moms of children with autism. Last week, this hoopla [about the GMC’s Wakefield investigation] made us a little stronger, and even more determined to fight for the truth about what’s happening to our kids.”150 In her foreword to Wakefield’s 2010 book, Callous Disregard: Autism and Vaccines: The Truth Behind a Tragedy, McCarthy elevated the man to heroic status: “For hundreds of thousands of parents around the world, myself included, Andy Wakefield is a symbol of strength and conviction that all parents of children with autism can use to fight for truth and the best lives possible for their kids.”151

McCarthy is not the only celebrity supporting Wakefield. Recently, actor Chuck Norris published a commentary in which he declared that the “link between vaccines and autism” is a “biological certainty.”152 Given that certainty, the appropriate parental

147 See NEW IOM REPORT, supra note 146.
150 Id.
152 Chuck Norris, Link Between Autism, Vaccines ‘Biological Certainty’, WORLD NEWS DAILY (Nov. 4,
response is clear: “It is your health, and they are your children, entrusted to you by God, so be bold in ensuring their safety and welfare. You still have the constitutional right to refuse any health care you deem unnecessary.”

2. The Pace “Study”

In May 2011, the Pace Environmental Law Review published an article with no apparent relationship to environmental law: Unanswered Questions from the Vaccine Injury Compensation Program: A Review of Compensated Cases of Vaccine-Induced Brain Injury (“Pace study”). The authors reviewed all cases from the Vaccine Injury Compensation Program (“VICP”) of the U.S. Court of Federal Claim that resulted in a compensatory award, either by judgment or settlement. To identify court awards for vaccine-caused autism, the authors and their research assistants searched for evidence that the compensated child suffered “autism or autism-like symptoms.” To identify settlement awards granted for vaccine-caused autism, they conducted telephone interviews of the families, asking an adult in the household whether the child who received the award had “autism” or “autism-like symptoms.” The authors found eighty-three cases of “confirmed autism” among the 2,621 compensated vaccine injury claims. The authors concluded that “autism is often associated with vaccine-induced brain damage.” At a news conference conducted in front of the U.S. Court of Federal Claims in Washington, D.C., the lead author, Mary Holland, stated, “[w]e think this is the tip of the iceberg.”

Although not disclosed in the article’s authors’ footnote, all three authors sit on the board of an organization that alleges a link between vaccines and autism.


Mary Holland et al., Unanswered Questions from the Vaccine Injury Compensation Program: A Review of Compensated Cases of Vaccine-Induced Brain Injury, 28 PACE ENVTL. L. REV. 480, 482 (2011).

Id. at 480-83. For an explanation of the VICP, see supra notes 22-27 and accompanying text.

Holland et al., supra note 154, at 503. The research assistants were Pace Law School students.

Id. at 512-13 (discussing settled cases procedure).

Id. at 522, 527. Twenty-one of them were decided cases and sixty-two were settled cases. Id. at 504, 512.

Id. at 531.


Holland et al., supra note 154, at 408 n.1. All three are board members of the Elizabeth Birt Center for Autism Law and Advocacy. Board Members, ELIZABETH BIRT CENTER FOR AUTISM LAW AND ADVOCACY, http://www.ebcala.org/about/board-members (last visited Jan. 31, 2012).
Moreover, prior to the article’s publication, two of the authors had publicly rejected the GMC’s ethics findings and had professed steadfast support for Wakefield and his work. Mary Holland, for example, wrote a chapter entitled *Who is Doctor Andrew Wakefield?* that appeared in the book *Vaccine Epidemic.* Wakefield, she wrote, is a “human rights dissident” “who should be compared with Nelson Mandela.” She added that the GMC hearings were but the modern equivalent of the traveling medicine shows of yore, engineered to punish Wakefield “for his temerity to caution the public about vaccine risks and to urge them to use their own judgment.”


Dr. Wakefield has joined in a long, honorable tradition of dissidents in science and human rights. The world has benefitted profoundly from other courageous dissidents in science—Galileo, who argued that the sun is the center of the universe; Semmelweis, who reasoned that doctors must wash their hands to prevent transmission of infection . . . . In due course, the world has paid tribute to human rights dissidents, as well—Nelson Mandela moved from prison in South Africa under apartheid to become its most beloved President; . . . . Before long, the world will likely recognize that it was Dr. Wakefield, not his detractors, who stood up for the practice of medicine and the pursuit of science.

*Id.*

Dr. Wakefield was, and remains, a dissident from medical orthodoxy. The medical establishment subjected him to a modern-day medical show trial for his dissent. Dr. Wakefield’s research raised fundamental doubts about the safety of vaccines and the etiology of autism. Dr. Wakefield was punished for his temerity to caution the public about vaccine risks and to urge them to use
Co-author Louis Conte was more emphatic in his defense of Wakefield. Nothing, he stated in an interview on CNN following the GMC’s findings, could shake his beliefs about the link between vaccines and autism:

Well, I personally feel that vaccines are implicated in the increase in autism. And frankly, the [criticism of] Dr. Wakefield’s study doesn’t really alter my beliefs one way or the other. Parents who were observing their children regressing into autism after vaccination before Dr. Wakefield came on the scene. So, whatever occurs with his study is not necessarily anything that influences my opinions on the matter.165

Conte had also signed the “We Support Doctor Andrew Wakefield” petition by which he declared Wakefield “a man of honesty [and] integrity” whose “research is rigorous, replicated, biologically valid, clinically evidenced, corroborated by published, peer-reviewed research.”166

The very design of the Pace study was also compromised. There were no health care professionals or epidemiologists involved in study design, evaluation of the records, training of the law students who did the research, or interpretation of results.167 Moreover, those results prove little. The authors report that they discovered twenty-one cases among the court decisions with “language that strongly suggests autistic features.”168 But, of those twenty-one, five do not do not refer to the compensated child as having “autism,” “autistic” tendencies or behavior, or “PDD.”169 In many of

their own judgment. Dr. Wakefield was punished for upholding vaccination choice.

Id. (emphasis in original). In the traveling medicine shows of the nineteenth century, those selling patent “medicines” attracted customers by presenting their wares in as entertaining a fashion as possible. See Dr. Wilson’s Memory Elixir: Old-Time Traveling Medicine Show, DR. WILSON’S MEMORY Elixir MEDICINE SHOW, http://www.memoryelixir.com/history.html (last visited Jan. 31, 2012).

165 CNN NEWSROOM, supra note 37.
167 Holland et al., supra note 154, at 503-04.
168 Id. at 504. The authors and the law students “created a database of VICP published decisions that used relevant terms related to autism.” Id. The article, however, did not list what the “relevant terms” were. See id.
169 See Holland et al., supra note 154 at 505-510 (cases 1, 5, 8, 9 and 14). A diagnosis of autism requires findings of findings of “qualitative impairment in social interaction,” “qualitative impairments in communication,” and “restricted repetitive and stereotyped patterns of behavior, interests and activities.” DSM-IV, supra note 57, at 70-71 (Diagnostic Criteria for 299.00 Autistic Disorder); see infra notes 170-178 and accompanying text. The information that the authors
the other cases, the authors present language taken from a court summary of the claimants’ arguments. For example, regarding Case 2, the authors cite the following as evidence that the claimant was autistic: “Petitioners further maintain that the injuries resulted in . . . moderate autistic characteristics.”\textsuperscript{170} Similarly, regarding Case 17, the authors assert that the claimants “allege Sarah developed autism . . .”\textsuperscript{171}

Purporting to show a case possibly compensating autism, the authors also cite a case of a girl with Rett’s syndrome, which is genetically determined and could not be caused by vaccines.\textsuperscript{172} Another case was of a boy with tuberous sclerosis, another genetic disorder that also could not be caused by vaccines.\textsuperscript{173} Most of the remaining cases received the diagnosis of “autism or “autism-like” symptoms from the authors and the law students reviewing the records, none of whom received training from mental health professionals.\textsuperscript{174} Consider this case in which the researchers identified “autism-like” symptoms:

Jennifer is a severely mentally retarded individual with hyperactive and destructive behaviors . . . Her social functioning is extremely inappropriate: she is belligerent and sometimes aggressive; . . . she . . . practices self stimulating behavior; and she repeatedly bites her hand . . . She presents a danger to herself and to family members.\textsuperscript{175}

The current iteration of the \textit{Diagnostic and Statistical Manual of Mental Disorders}, DSM-IV, requires for a diagnosis of autism findings of “qualitative impairment in social interaction,” “qualitative impairments in communication,” and “restricted repetitive and stereotyped patterns of behavior, interests and activities.”\textsuperscript{176} The quoted language does not mention communication impairment. Moreover, autistic social impairment involves

\textsuperscript{170} Id. at 505.
\textsuperscript{171} Id. at 509.
\textsuperscript{172} See id. at 507 (case 9). \textit{See generally Rett syndrome}, PUBMED HEALTH, http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002503/ (last reviewed Nov. 12, 2010) (“Rett syndrome occurs almost exclusively in girls and may be misdiagnosed as autism or cerebral palsy. Studies have linked many Rett syndrome cases to a defect in the methyl-CpG-binding protein 2 (MeCP2) gene. This gene is on the X chromosome.”).
\textsuperscript{174} See Holland et al., supra note 154, at 504-11.
\textsuperscript{175} See id. at 504-12 (case 5).
\textsuperscript{176} DSM-IV, supra note 57, at 70-71 (Diagnostic Criteria for 299.00 Autistic Disorder).
limitations in nonverbal behaviors “such as eye-to-eye gaze, facial expression, body posture,” “failure to develop peer relationships,” and “lack of social or emotional reciprocity,” such as not engaging in social play or games. This subject’s only apparent social impairment is that she is “belligerent and sometimes aggressive.”

The authors’ presentations regarding settled cases contain similar inaccuracies. Seven of the identified claimants received their diagnoses from “[t]hird party medical, educational or court records confirming autistic disorder.” In none of these cases did the court find that the vaccine caused the autism or autism-like symptoms. Indeed, as in the following quoted language, in several of the cases, the authors quote language indicating that the diagnosing physician explicitly concluded that the vaccine at issue did not cause the autism:

[R]espondent’s report . . . suggests vaguely . . . that Kenny’s problems ‘can be attributed in part to other causes such as a family history of epilepsy, autism and tonsillar hypotrophy.’ . . . Dr. Spiro did not even purport to know what did cause Kenny’s seizure disorder, his basic point was that in his view the DPT did not cause it.

In the other examples, the court found the symptoms “not related” to, “totally unrelated” to, and “irrelevant” to the award granted. Yet, the authors cite these examples as evidence of a link between vaccines and autism.

In conducting the study for the law review article, the authors also violated a basic tenet of research ethics. Research involving human subjects conducted at an institution that receives federal financial support must be approved by an institutional review board (“IRB”). Research with human subjects occurs when researchers obtain

177 Id.
178 Holland et al., supra note 154, at 504 (case 5).
179 Id. at 515-21.
180 See Holland et al., supra note 154, at 515-21.
181 Id. at 505 (case 4).
182 Id. at 506-509 (cases 7, 12, and 16).
“[d]ata through intervention or interaction with the individual” or obtain “[i]dentifiable private information” about an individual. The authors conducted human research when they obtained information about settled cases by telephoning the homes of the claimants and speaking with parents or “caregivers” and compiling data that included parent and guardian names and occupations and the child’s age and living situation. Pace University, which sponsored the research, receives federal funds and maintains an IRB. The authors, however, did not obtain permission from the IRB to conduct their research.

Finally, the study, even accepting its results, does not offer evidence to support its conclusion that “autism is often associated with vaccine-induced brain damage.” The eighty-three cases that the authors identified comprise 3.7 percent of the 2,621 compensated vaccine injury claims. The authors did not identify these 3.7 percent by in-person diagnosis by mental health care professionals, but relied on their own abilities and those of the law students that assisted. The results, then, might be akin to the screening conducted by teachers and parents in other studies.

Housing and Urban Development, Department of Justice, Department of Defense, Department of Education, Department of Veterans Affairs, Environmental Protection Agency, National Science Foundation, and Department of Transportation. Id. The regulations mandate IRB approval of human subject research that is “conducted, supported or otherwise subject to regulation by any federal department or agency which takes appropriate administrative action to make the policy applicable to such research.” 45 C.F.R. § 46.101(a). As a result, research involving human subjects conducted by any institution that receives federal financial support must be approved by an appropriate IRB. See David A. Hyman, Institutional Review Boards: Is This the Least Worst We Can Do?, 101 Nw. U. L. Rev. 749, 750-52 (2007).

185 See Holland et al., supra note 154, at 524-26 (questioning family caregivers about the current condition of the child and how the vaccine injury impacted his or her family).
186 See Pace University Institutional Review Board (IRB), PACE UNIVERSITY IN THE CITY OF NEW YORK AND WESTCHESTER COUNTY, http://www.pace.edu/provost/information-faculty-0/pace-university-institutional-review-board-irb-0 (last visited Jan. 7, 2012) (explaining that the IRB was created to protect both the rights and privacy of human research participants in any research conducted by the Pace University community, including those outside individuals who wish to conduct research using the Pace University facilities).
187 See Unanswered Questions from Pace law Journal Study: Ethical Standards for Research on Human Subjects, AUTISM NEWS BEAT (May 20, 2011), http://autism-news-beat.com/archives/1671 (explaining that the IRB, established to protect the rights and interests of human subjects, was not consulted prior to conducting research and that this requirement is a well established ethical standard in the scientific community).
188 See Holland et al., supra note 154, at 531.
189 See id. at 527.
190 See, e.g., Kim et al., supra note 88, at 907.
Consider, for example, the recent study of the population of seven to twelve year olds in a South Korean community.\textsuperscript{191} Parents and teachers screened children by use of an “Autism Spectrum Screening Questionnaire”\textsuperscript{192} similar to the questionnaire that the Pace study authors employed.\textsuperscript{193} The screening diagnosed seven percent of the population with autism spectrum disorders.\textsuperscript{194}

The South Korean full population study found twice the screened prevalence that the Pace study authors found among the compensated cases. Certainly, the Pace authors are wrong in claiming to have found that autism is correlated with vaccine. Indeed, if the study proved anything it was that the VICP compensated pool does not exhibit higher rates of autism than does the general public. This did not, however, stop them from claiming to have viewed but the tip of an iceberg of autism cases among the vaccinated and calling for a Congressional investigation.\textsuperscript{195} As Louis Conte, one of the co-authors, had earlier observed, research discoveries are “not anything that influences [their] opinions on the matter” of the link between vaccines and autism.\textsuperscript{196}

III. Cultural Cognition, Science, and Superstition and Enthusiasm

A. The Culture of “The Vaccine Liberation Army”\textsuperscript{197}

How might one parent transfer “two lollipops and a wet rag and spit” across the country to another parent who has purchased them?\textsuperscript{198} “Tuck [them] inside a zip lock baggy and then put the baggy in the envelope :) Don’t put anything identifying it as

\textsuperscript{191} See id. at 905. In this study, parents and teachers conducted the autism screening. Id.

\textsuperscript{192} Id. at 905. Stage 1 used systematic multi-informant screening with the Autism Spectrum Screening Questionnaire (“ASSQ”), a 27-item questionnaire assessing social interactions, communication problems, and restricted and repetitive behaviors. Id. All parents were asked to complete the ASSQ; additionally, teachers were asked to complete the ASSQ for all children who had any ASD characteristics, as described in educational sessions led by the research team. Id.

\textsuperscript{193} See Holland et al., supra note 154, at 514. The Pace study used “The Social Communication Questionnaire,” (“SCQ”) which is a screening measure very similar to the ASSQ used in the South Korean study. Id.

\textsuperscript{194} Kim et al., supra note 88, at 3. Seven percent “screened positive”. Id.


\textsuperscript{196} CNN NEWSROOM, supra note 37.


\textsuperscript{198} Morgan Loew, CBS 5 Investigates Mail Order Diseases, http://www.kpho.com/story/15896021/cbs-5-investigates-mail-order-diseases (last updated Nov. 14, 2011, 12:45 PM).
pox.” 199 The asking price for such a parcel is fifty dollars. 200

The “pox” refers to the chickenpox, which is caused by the varicella-zoster virus. 201 Parents opposed to vaccinating their children arrange natural vaccination “pox parties” with a child who is suffering from the ailment. 202 If a child with the illness cannot be found, other parents will mail a “pox package” containing lollipops and other items coated in the saliva of a pox-inflicted child. 203

Some parents oppose the chickenpox vaccine merely because it is one vaccine too many and for an ailment that rarely presents a serious threat to health. 204 But, for many parents it is but one component of a “war” against a “vaccine culture.” 205 Consider, for example, the raison d’être of the Facebook group called Proud Parents of Unvaccinated Children: “For people, parents and family and friends of unvaccinated Children and adults! A place for Parents of vaccinated children to learn the truth, reverse and prevent future damage from vaccines!” 206 The group’s founder, Robert Schecter, contends that public health officials who urge the vaccination of children are but “paternalistic do-gooders” who “get satisfaction out of what they [falsely] believe to be helping people.” 207

Schecter has stated his views in more militant terms elsewhere. He also runs the Facebook page for another anti-vaccine group, The Vaccine Machine. 208 That group states

199 Id.
200 Erik Schelzig, Prosecutor to parents: Mailing chickenpox illegal, THE WASHINGTON TIMES (Nov. 6, 2011) http://www.washingtontimes.com/news/2011/nov/6/prosecutor-to-parents-mailing-chickenpox-is-illega/. “One of the Facebook postings from Wendy Werkit of Nashville offered a ‘fresh batch of pox in Nashville shipping of suckers, spit and Q-tips available tomorrow 50 dollars via PayPal.’” Id. Sending diseased substances through the mails is a violation of federal law. Id.
202 Schelzig, supra note 200.
203 Id.
204 PUBMED HEALTH, supra note 201. Chickenpox can lead to other, more serious ailments such as encephalitis, Reye’s syndrome, Myocarditis and Pneumonia. Id.
208 The Vaccine Machine, FACEBOOK, http://www.facebook.com/TheVaccineMachine?sk=info,
its agenda in starker terms: “The Vaccine Machine refers to the vested interests in medicine, industry and government dedicated to vaccinating our children by any means necessary. We stand in opposition to that machine.”

Schecter’s related website states as its goal the “[u]nplugging [of] America from the Vaccination Matrix.” Vaccine opponents will accomplish that because, even though the “establishment and their media dupes have the force of the state behind them . . . it is we who have the intellectual basis to defend current exemptions and to someday overturn the very idea of a vaccination mandate from which those exemptions must be sought.”

In a recent interview on BBC radio, Schecter conceded that a number of diseases have “disappeared” as a result of vaccines and that they might well return if a sufficient number of people refuse to be vaccinated. True to his libertarian philosophy, Schecter stated that he owed no “responsibility to other children” who might contract illnesses because of his refusal to vaccinate his own children.

Some communities have been able to approach Schecter’s vaccine-free goal. The schools associated with the Waldorf educational philosophy may provide the best example. The system was the brainchild of Hungarian philosopher Rudolf Steiner, who lived from 1861 to 1925. The Waldorf/Steiner educational philosophy derived from a notion of individual rights:

We are convinced that the mainspring of social life and health lies in the spiritual nature of man. Our complex and difficult civilization requires a fuller and freer inflow of the basic spiritual impulses. Such inflow can only take place through the individual human beings who are born into the world and unfold their faculties within it. Education in the widest sense of the word must open out the way. True education, therefore, whether of the child, the adolescent, or the adult, presupposes the deepest reverence and respect for the freedom of the human spirit in every individual.


209 Id.
210 Id.
211 Id.
212 Up All Night (BBC Radio 5 live broadcast Nov. 11, 2011).
213 Id.; Wheeler, supra note 207 (describing himself as a libertarian).
215 Id. at 60.
That emphasis on individual rights is inconsistent with reliance on vaccination to escape from disease.\textsuperscript{216} As a result, Waldorf schools boast a “strong cultural anti-immunization preference among thought-leaders” in its community.\textsuperscript{217}

Waldorf is the “largest independent school movement in the world,” boasting over 1,000 schools and 2,000 “early childhood centres” throughout sixty countries.\textsuperscript{218} The result of its libertarian position on children immunization can be dramatic. The children at the Waldorf school in the San Francisco Bay area, for example, have an immunization rate of 23 percent compared with the 97 in the surrounding county.\textsuperscript{219} Children from that school may, as one observer has worried, “emerge from their school to infect infants, immunocompromised adults, and people whose vaccinations didn’t take or have waned, with potentially fatal diseases.”\textsuperscript{220} But, those like The Vaccine Machine’s Robert Schecter will be untroubled because they own no “responsibility to other children.”\textsuperscript{221}

The anti-vaccine community has begun to join ranks. \textit{The Vaccine Machine} recently announced that it has “just begun teaming up with the good folks” at \textit{Operation Rescue}.\textsuperscript{222} Celebrity Jenny McCarthy, who founded \textit{Operation Rescue}, has characterized the

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We also understand why, among the best minds of our period, there exists a kind of aversion to vaccination . . . . This would constitute the indispensable counterpart without which we are performing only half our task. We are merely accomplishing something to which the person in question will himself have to produce a counterpart in a later incarnation. If we destroy the susceptibility to smallpox, we are concentrating only on the external side of karmic activity.

\textsuperscript{217} Id. (quoting Rudolf Steiner, \textit{Lecture: Karma of the Higher Beings}, RUDOLF STEINER ARCHIVE, http://wn.rsarchive.org/Lectures/ManfKarma/19100525p01.html (last visited Jan. 31, 2012)).

\textsuperscript{218} Paull, \textit{supra} note 214, at 65 (citations omitted).


\textsuperscript{220} Id.


GMC’s investigation into Andrew Wakefield’s MMR-autism study as “dubious . . . allegations.” Moreover, to this day she maintains that “Andy Wakefield is a symbol of strength and conviction.”

B. The Cultural Dimensions of the Controversy

1. Cultural Cognition

The debate concerning the link between the MMR vaccine and autism is not unique in presenting a controversy in which public opinion has not followed scientific consensus. Debates concerning climate change and the safety of nuclear power plants, for example, “have featured intense political contestation over empirical issues on which technical experts largely agree.” In recent years, Dan Kahan and his co-authors have explored the utility of the theory of the cultural cognition of risk in explaining the disconnect between scientific and public opinion.

The theory of cultural cognition “refers to the tendency of individuals to fit their perceptions of risk and related factual beliefs to their shared moral evaluations of putatively dangerous activities.” The theory posits that people are psychologically predisposed to believe what, given their culture, they deem honorable and to reject what they deem to be dishonorable.

The theory offers a number of postulates to explain why psychological

31, 2012) (announcing that Vaccine Machine and Generation Rescue are teaming up to bring parents vaccine-related information).

223 McCarthy, supra note 149.

224 WAKEFIELD, supra note 151.


227 Kahan et al., supra note 225, at 2.

228 Id.
predisposition might impact the perception of scientific evidence. First, people might simply selectively recall opinions supportive of their world views and repress contrary opinions. Similarly, they might “impute expert knowledge and trustworthiness” to messengers whom they perceive as sharing their views. Finally, predisposition might affect research. Certainly, we can imagine people combing the internet and choosing to land only on sources that support conclusions that they have already deemed acceptable. As a result, the authors posit the theory, “scientific consensus cannot be expected to counteract the polarizing effects of cultural cognition because apprehension of it will necessarily occur through the same social psychological mechanisms that shape individuals’ perceptions of every other manner of fact.”

In Cultural Cognition of Scientific Consensus, Dan Kahan, Hank Jenkins-Smith, and Donald Braman tested this hypothesis in a national sample of 1,500 adults. The authors first assessed the subjects’ cultural worldviews in two categories. The hierarchy-egalitarianism measure, or “hierarchy” scale, gauged attitudes about whether society should attempt to remedy “social orderings” based on gender, race, and class. The individualism-communitarianism measure, or “individualism” scale, assessed attitudes about whether society should be structured to minimize interference with individual liberties or to maximize the collective welfare. The authors then compared worldview measures with the subjects’ opinions on whether “most expert scientists agree” or disagree with statements about climate change, the safety of nuclear power, and gun control.

229 Id. at 4.
230 Id.
231 Id. at 5.
232 Id. at 5-6.
233 Kahan et al., supra note 225, at 6.
234 Id. at 7. The study asked participants to indicate on a six-point scale the extent to which they agreed or disagreed with statements such as, “Society as a whole has become too soft and feminine” and “We need to dramatically reduce inequalities between the rich and the poor, Whites and people of color, and men and women.” Id. at 7, 37-38.
235 Id. at 7. To assess placement on the “individualism” scale, participants were asked to indicate on a six-point scale the extent to which they agreed or disagreed with statements such as, “The government interferes far too much in our everyday lives” and “The government should do more to advance society’s goals, even if that means limiting the freedom and choices of individuals.” Id.
236 Id. at 7-8. Subjects were asked to evaluate whether experts are in agreement that “global temperatures are increasing,” “human activity is causing global warming,” “radioactive wastes from nuclear power can be safely disposed of in deep underground storage facilities,” and “permitting adults without criminal records or histories of mental illness to carry concealed handguns in public decreases violent crime.” Id. at 8.
The study confirmed the hypothesis that people of different cultural outlooks reached different conclusions about scientific consensus. Those with hierarchical and individualistic perspectives disagreed with those with egalitarian and communitarian perspectives about both scientific opinion and about the qualifications of fictional “experts.” “Because of culturally biased information search and culturally biased assimilation, a person is likely to attend to the information in a way that reinforces her prior beliefs and affective orientation.”

Kahan and some colleagues also tested the cultural cognition thesis in a study of attitudes about mandating that teenage girls receive the vaccine for human-papillomavirus (“HPV”), the sexually transmitted virus that causes cervical cancer. In 2006, the national Advisory Committee on Immunization Practices (“ACIP”) recommended routine vaccination for girls between ages of eleven and twelve. The prospect of including the HPV vaccine among those required to attend public schools has generated controversy. Proponents have argued that a mandatory HPV vaccine will save many lives. Opponents have countered with reference to concerns about the

237 Id. at 27.
238 Id. at 27.
239 Kahan et al., supra note 225, at 29 (internal citations omitted).
242 See id. See generally Trip Gabriel, In Republican Race, a Heated Battle Over the HPV Vaccine, N.Y. TIMES, Sept. 13, 2011 at A16, available at http://www.nytimes.com/2011/09/14/us/politics/republican-candidates-battle-over-hpv-vaccine.html. The governor of Texas, Rick Perry, came under fire for a regulation in Texas requiring that the HPV vaccine be administered to adolescent women. Id. The regulation, which was signed into law in 2007 by Perry, was controversial and some speculated that the requirement was simply another case of a political favor to Perry’s former chief of staff who worked for the pharmaceutical manufacturer Merck. Id.
243 See Cheryl A. Vamos, Robert J. McDermott, & Ellen M. Daley, The HPV Vaccine: Framing the Arguments FOR and AGAINST Mandatory Vaccination of All Middle School Girls, 78 J. SCHOOL HEALTH 302, 305-06 (2008) available at http://onlinelibrary.wiley.com/doi/10.1111/j.1746-1561.2008.00306.x/full (arguing that the HPV vaccine is 100 percent effective in preventing four of the HPV strains that are known to cause 70 percent of all cervical cancers). Proponents of the vaccine also conclude that requiring the vaccine can save health care dollars that would be subsequently dedicated to testing for and treating HPV once contracted. See id. at 306.
vaccine’s safety and “moral objections related to a vaccine mandate for a sexually transmitted disease.”

The authors hypothesized that those embracing hierarchical and individualistic worldviews would tend to oppose mandatory HPV vaccination both because the vaccine might encourage sexual behavior and because a mandate would preclude individual choice. Similarly, those embracing egalitarian and communitarian worldviews would favor a mandate as expressing tolerance for a non-traditional norm and because it would support the common good.

The authors again first assessed the subjects’ cultural worldviews on the hierarchy and individualism scales. They then assessed subjects’ views on mandatory HPV vaccine by asking them to agree or disagree with assertions like, “It is important to devise public health policies to reduce the spread of HPV,” and, “Universal vaccination of girls for HPV will lead girls to become more sexually active.” In addition, the authors identified attitudes toward fictional scientists offering opening opinions on the risks and benefits of the vaccine.

The results again revealed a relationship between worldview and beliefs about the vaccine and the messengers conveying information about it:

>Polarization grows where culturally diverse subjects see the argument they are disposed to accept being made by the advocate whose values they share, and the argument they are predisposed to reject being made by the advocate whose values they repudiate. In contrast, when subjects see the argument they are disposed to reject being made by the advocate

244 NCSL, supra note 241. In 2007, the governor of Texas issued an executive order mandating vaccination, but the Texas legislature overrode the order. Id. See also Katrina Trinko, How Many States Have Mandated HPV Vaccines?, NATIONAL REV. (Sep. 16, 2011, 4:26 PM), http://www.nationalreview.com/corner/277496/how-many-states-have-mandated-hpv-vaccines-katrina-trinko. To date, only two places have mandated the vaccine: Virginia and Washington, DC. Id.

245 Kahan et al. HPV, supra note 240, at 504.

246 Id.

247 Id. at 505. The two scales were “Hierarchy-Egalitarianism” (“hierarchy”), which consisted of 12 items, and “Individualism-Communitarianism” (“individualism”), which consisted 18 items, and both scales assess worldviews based on responses of ‘strongly disagree,’ ‘disagree,’ ‘agree,’ and ‘strongly agree’ to statements. Id.

248 See Kahan et al. HPV, supra note 240, at 505. The order in which the statements were presented was random. Id.

249 See id. at 505-07.
advocate whose values they share, and the argument they are predisposed to accept being made by the advocate whose values they repudiate, polarization shrinks to the point of disappearing.250

In sum, the results confirmed “that disagreements about the risks and benefits of HPV vaccination are shaped by cultural values, which exert their influence through the biased assimilation of information and through attributions of information-source credibility.”251

2. Anti-Vaccine Culture and Views on the Causes of Autism and Safety of the MMR Vaccine

The cultural cognition literature provides a framework by which to evaluate the MMR vaccine critics’ refusal to accept scientific consensus. Kahan and his colleagues have demonstrated that worldview predicts judgments about the credibility of scientific information.252 We know the judgment of the Wakefield faithful that, contrary to scientific consensus, the MMR vaccine causes autism.253 Given this, if we can identify the worldviews of the Wakefield faithful, we may be able to offer an explanation.

Recall that Kahan and his colleagues discerned position on the hierarchy scale by assessing whether subjects preferred society stratified according to immutable, individual characteristic such as “gender, ethnicity, and class.”254 Among others, the authors posed this statement to study subjects: “A lot of problems in our society today come from the decline in the traditional family, where the man works and the woman stays home.”255 Agreement signifies a hierarchical worldview.256

The anti-vaccine community embraces a hierarchical worldview, and especially the concept of “traditional family values,”257 which emphasize gender-based, family

250 Id. at 511 (emphasis in original).
251 Id. at 512.
252 See supra notes 225-251 and accompanying text (analyzing and supporting the hypothesis that people of different cultural outlooks reach different conclusions about scientific consensus).
253 See supra notes 128-153 and accompanying text (describing Wakefield’s followers).
254 Kahan et al., supra note 225, at 8.
255 Id. at 11.
256 Id.
Consider, for example, the counsel of actor Chuck Norris, one of the leaders of “a celebrity-driven campaign against vaccines” that legitimized Wakefield’s discredited views and “kept them in the public eye” in the U.S.\textsuperscript{259} Norris has argued that the decline of traditional family values is one of the major problems contributing to America’s “downward spiral.”\textsuperscript{260} As evidence of the diminution of these values, Norris observes that nearly two-thirds of children in the country under the age of five “are in some form of day care every week, living life apart from their parents.”\textsuperscript{261} Women’s forsaking their traditional roles has also contributed to America’s moral decline: “Nearly half of America’s labor force is women and of course many of these women are mothers.”\textsuperscript{262}

The cultural cognition theory’s second scale, the individualism assessment, gauges attitudes about individual rights versus governmental obligations. Kahan and his co-authors determined this measure by posing competing statements to subjects: “The government interferes far too much in our everyday lives” and “the government should do more to advance society’s goals, even if that means limiting the freedom and choices of individuals.”\textsuperscript{263} Agreement with the first statement signifies an individualistic worldview while agreement with the second signifies a communitarian view.\textsuperscript{264}

The objection to governmental intervention in individual choice lies at the heart of the vaccine opposition. These parents dispute “what they see as the dictatorial nature of the US vaccine programme, which, they argue, leaves them little choice over what is being put into their children’s bodies.”\textsuperscript{265} Advocates of this worldview find particularly troubling any communitarian notion that values the group over the rights of the individual. Indeed, they find “Phrases like, ‘needs of the population at large,’ ‘cost-benefits analysis,’ and ‘all that matters is that its victims number significantly fewer than those of the diseases vaccinations are designed to prevent’ . . . really frightening.”\textsuperscript{266}

undergo an intervention that may be irreconcilable with her family’s religious values and beliefs.” Id. at 26.


\textsuperscript{259} Wheeler, supra note 207.

\textsuperscript{260} CHUCK NORRIS, BLACK BELT PATRIOTISM: HOW TO REAWAKEN AMERICA 21 (2010).

\textsuperscript{261} Id.

\textsuperscript{262} Id.

\textsuperscript{263} Kahan et al., supra note 225, at 7.

\textsuperscript{264} Id.

\textsuperscript{265} Wheeler, supra note 207.

\textsuperscript{266} Anne Dachel, \textit{New York Times Reviews The Greater Good Movie Tells Vaccine-Injured Children to Drop Dead}, \textit{AGE OF AUTISM}, http://www.ageofautism.com/2011/11/new-york-times-reviews-
Robert Schecter, founder of the Facebook group *Proud Parents of Unvaccinated Children* and the website *The Vaccine Machine* has put this most simply: he believes that he owes no “responsibility to other children.”

The cultural cognition thesis would have predicted that the Wakefield Faithful would find the MMR vaccine troubling. Because they embrace the combination of hierarchical and individualistic worldviews, these “hierarchical individualists” tend to “perceive greater risks and smaller benefits” in the vaccine. In addition, the Wakefield faithful’s alarm about the governmental intrusion represented by a mandatory vaccine would unsurprisingly inspire them to be all the more critical of the vaccine.

Another variable is at play here. As recognized by the cultural cognition theorists, people tend to believe “sources with whom they have some ‘in group’ connection, and to deny the same to ‘out group’ information sources.” This “cultural affinity” or “cultural difference” either accentuates or mutes a listener’s response to the information source.

Wakefield probably could not be more “in” the anti-vaccine group. He is “dissident from medical orthodoxy” and had the courage to stand up for his patients, “the practice of medicine and the pursuit of science.” As Jenny McCarthy put it, “Andy Wakefield is a symbol of strength and conviction that all parents of children with autism can use to fight for truth and the best lives possible for their kids.” He is a “hero” to those standing with him outside the walls of medical orthodoxy.

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267 Schecter, *supra* note 221.
268 Kahan et al., *supra* note 225, at 8, 10 (using the cultural cognition thesis to examine subjects’ views on the HPV vaccine). Cultural worldviews that are based on individualism and hierarchical values would predispose an individual to see more risks with the vaccine and fewer benefits. *Id.* at 8.
269 *Id.* (hypothesizing that individualism would “dispose individuals to see more risk” with a mandatory vaccine “because mandatory vaccination intrudes on individual decision-making.”)
270 *Id.* at 9. Individuals generally assess the strength of an argument based on judgments about credibility. *Id.* Qualities of credibility are more readily attributed to sources with which individuals have an “‘in-group’ connection.” *Id.*
271 *See id.* (hypothesizing that the strength of arguments for and against mandatory HPV vaccinations would vary according to source affinity).
273 Wakefield, *supra* note 151, at iv.
Wakefield’s critics, as part of the vaccine “establishment” probably could not be more “out” of the anti-vaccine group.\textsuperscript{275} Indeed, Wakefield’s supporters characterize his critics as a component in a “vaccine machine” comprising “pharmaceutical companies, public health agencies, medical organizations and the government.”\textsuperscript{276} Those “fountains of misinformation” conspired to discredit Wakefield.\textsuperscript{277}

The context of the MMR-autism debate provided the setting for a perfect cultural storm: an “in-group” messenger presenting alarming information to a group of “hierarchical individualists” who simply could not credit his critics. As one of the authors of the Pace “study” put it, “Well, I personally feel that vaccines are implicated in the increase in autism. And frankly, the [criticism of] Dr. Wakefield’s study doesn’t really alter my beliefs one way or the other.”\textsuperscript{278}

IV. Conclusion

On November 21, 2011, the New York Times conducted an online, “Armchair Ethicist” discussion of this question: “Is it ethical for pediatricians to refuse routine care to families that do not immunize their children?\textsuperscript{279} The editor asked, “Will the whole thing devolve into yet another online debate on vaccination, and how society should handle the families . . . who (without medical necessity) skip the shots?”\textsuperscript{280} She predicted, “Yes, yes it will.”\textsuperscript{281}
The two hundred forty-eight comments posted over four hours replicated in the written equivalent of time lapse photography the entire spectrum of the vaccine debate.\footnote{Dell’Antonia, supra note 280. The \textit{Times} allowed comments from 1:00 PM to 5:00 PM. \textit{Id.}} Parents opposed to vaccination wrote of medical coercion,\footnote{See Kaminer, supra note 279. One commentator opposed to forced vaccinations stated, “[p]arents should be allowed to make their own health decisions for their children and not be forced into submitting to whatever passes for the conventional medical wisdom of the day, even when such conventional wisdom is cloaked in the lofty mantle of ‘public health.’” \textit{Id.}} parents who vaccinate their children complained about the non-vaccinators who pose a risk to the community,\footnote{Id. A commentator concerned about risk to the community stated, “I’d be afraid to send my kid to a pediatrician who spent a lot of time around kids who hadn’t been immunized. I almost died from measles as a child. I wouldn’t wish what mothers went through back then during a measles epidemic on any parent today.” \textit{See id.}} and pediatricians voiced frustration over the failure to vaccinate children.\footnote{See Kaminer, supra note 279. One physician stated, “While it [sic] exasperating for physicians to be in this situation—especially since the primary driver for avoiding immunizations was the fraudulent data published about the link to Autism—we are obliged to provide care.” \textit{See id.} Other pediatricians reported that they refuse to serve the unvaccinated: “I am a partner in a practice in Kansas City, MO that does not allow non-immunizers. We have a strict policy—no refusers and no alternative schedules. All immunizations must be on-time and per the CDC schedule.” \textit{See id.}} One comment succinctly summarized the culture gap between those who do and do not vaccinate their children: “I am a person who does not vaccinate her kids . . . I wonder how we can get better at coexisting OR we can choose not to be friends with someone whose values are so diametrically opposed to our own. That’s okay too.”\footnote{Dell’Antonia, supra note 280, at 1.}

The writer has cause to worry. That the debaters embrace “diametrically opposed” worldviews does present a barrier to useful discourse. But, in the words of the cultural cognition scholars, it “does not imply, however, that there is no prospect for rational public deliberations informed.”\footnote{Kahan et al., supra note 225, at 30.} But, to be effective, “communicators must attend to the cultural meaning as well as the scientific content of information.”\footnote{See id. at 30.}

The cultural cognition scholars have proposed several methods for attending to the cultural meaning of communications. First, communicators might employ “identity affirmation” by which they craft a missive in language that supports the listener’s cultural identity.\footnote{\textit{Id.}} Vaccine supporters have historically accused the anti-vaccine group
of putting their own children at risk and neglecting to consider the public good. Vaccine supporters might find their message more acceptable if they emphasized that choosing to be vaccinated liberates one from fear of disease.

Cultural cognition scholars also recommend “pluralistic advocacy” by which speakers “of diverse values on both sides of the debate” present scientific information.\textsuperscript{290} In the vaccine context, finding speakers outside of the “vaccine machine,” such as parents of children with autism, might be particularly helpful.

Finally, the theorists suggest “narrative framing” that emphasizes the context that presents an issue before an appropriate moral backdrop.\textsuperscript{291} Here, references to impending changes to the U.S. health care system might prove effective. The governmental participation signaled by the Patient Protection and Affordable Care Act\textsuperscript{292} is certainly inconsistent with an individualistic worldview. Indeed, opponents have characterized the legislation as an affront to personal liberty.\textsuperscript{293} A vaccine would assist an individual in maintaining health and avoiding that governmental intrusion.

In order to bring effective communication that closes the culture gap, we might have to rely on the natural reach of disease to fuse public and scientific consensus. In England in 1772, the Rev. Edward Massey presented to his congregation a sermon entitled, “The Dangerous and Sinful Practice of Inoculation.”\textsuperscript{294} Disease, he contended, was heaven sent and any attempt to prevent God’s will by vaccination was “a diabolical operation.”\textsuperscript{295} Massey represented a well-established tradition religious opposition to vaccination that spread to the New World, too.\textsuperscript{296} That opposition finally withered during Canada’s smallpox outbreak of 1885 when Protestants, who had embraced vaccination, survived the disease while Catholics, who had avoided the diabolical, did

\textsuperscript{290} See id. at 31.
\textsuperscript{291} Id.
\textsuperscript{295} Id. at 339.
\textsuperscript{296} Id. at 340-41.
not. One can only hope that it will not take a disease outbreak and a differential survival rate to convince modern day skeptics to embrace vaccination.

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297 *Id.* at 343-44.