

PUBLIC SCHOOLS AS LOCI FOR HUMAN  
EXPERIMENTATION: IMPLICATIONS OF USING  
PUBLIC SCHOOLS TO HOUSE THE POLIO  
VACCINE FIELD TRIAL OF 1954

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In 1954, schoolchildren all across the United States participated in one of the largest medical experiments in history. Organized and carried out in public schools by the National Foundation for Infantile Paralysis, the field trial tested the safety and efficacy of Jonas Salk's vaccine for poliomyelitis (polio). The trial's success was celebrated as a stunning and revolutionary triumph of science and medicine; just two years before, Americans had faced the largest epidemic of polio on record, permanently paralyzing twenty-one thousand individuals, but the trial's success signaled an end to this era.<sup>1</sup>

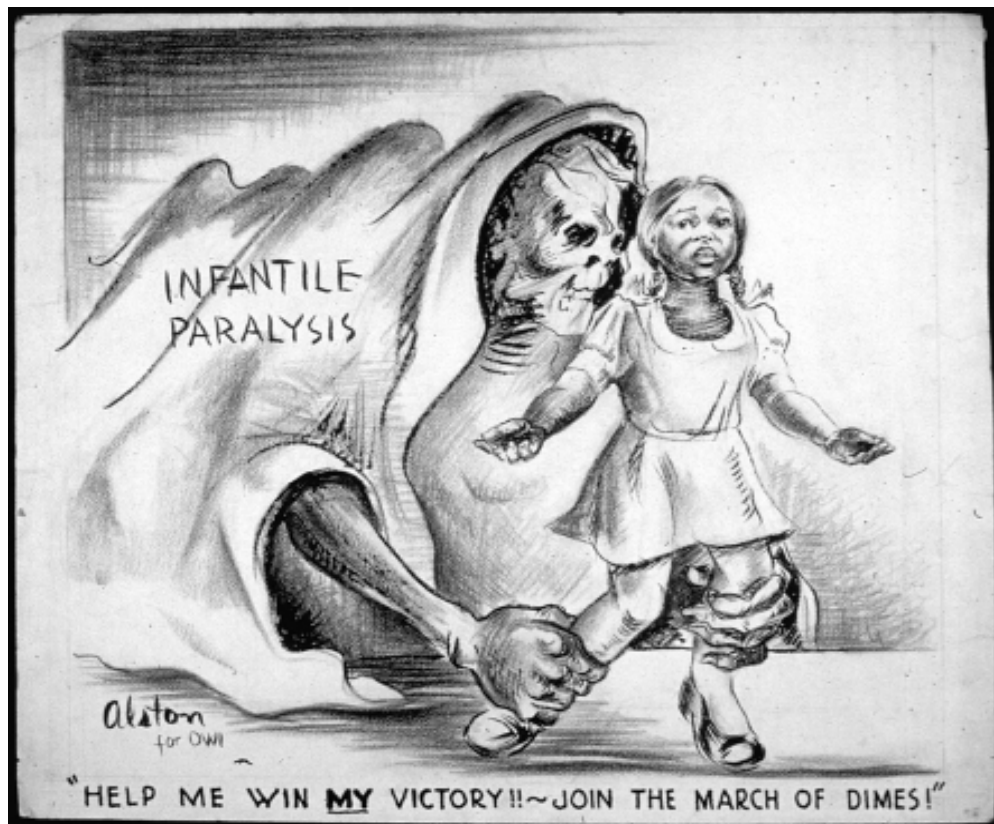
The story of polio in the United States is well told; there is a great deal of scholarship on the history of polio, the experience of living with the disease, the advent of Salk's vaccine, and the success and legacy of the field trial.<sup>2</sup> This paper, however, adds to the scholarship by providing a critical perspective on the role of public schools in shaping public perceptions of and participation in the trial. There has been no discussion to date on how schools as institutions played a significant part in human experimentation in the twentieth century.

Polio, and its defeat, is as thoroughly embedded in the history of American culture as it is in the history of medicine and public health. As historians James Colgrove and Daniel Wilson state, the image of a quadriplegic child dependent on the iconic "iron lung" respirator was deeply ingrained in the American conscious and prompted parents to keep their children away

## Public Schools as Loci for Human Experimentation

from public playgrounds, swimming pools, and movie theaters during the summertime.<sup>3</sup> The National Foundation for Infantile Paralysis (NFIP, known as the March of Dimes today) was crucial in making the disease a media sensation year after year and drumming up public support and funding for the development of a vaccine.<sup>4</sup> In addition, the fact that polio prevailed—on epidemic proportions—in such a scientifically advanced nation as the United States also motivated the quest for a vaccine.

The use of public schools in hosting the field trial in



In this cartoon commissioned in 1943 by the U.S. Office of War Information, the girl's struggle with infantile paralysis (polio) is likened to the country's struggle in the Second World War. Therefore, it is not surprising that fighting against polio—including participating in the vaccine's trial—assumed a nationalistic tone. Furthermore, the cartoon attempts to instill an intense fear of the disease in the viewer through depicting polio as monstrous.

## Public Schools as Loci for Human Experimentation

1954 is significant because while it was common for non-experimental vaccines to be administered in public spaces such as schools and community centers, human experimentation was, for the most part, carried out in clinical settings. Few historians have examined the role of schools in the field trial, and practically no one has questioned the implications of using schools as opposed to clinical settings for human experimentation.<sup>5</sup> In fact, despite public schools having been used multiple times throughout the early- to mid-twentieth century as loci for human experimentation, historians of bioethical issues have not examined this phenomenon either.<sup>6</sup> The most closely related scholarship in the history of bioethics is perhaps the work examining the use of institutionalized children (children living in orphanages or asylums), prisoners, and college and university students as research subjects in the twentieth century.<sup>7</sup>

Thus, this paper sheds light on the implications of using public schools as loci for the polio vaccine field trial. Indeed, the use of public schools made the experiment appear more akin to a mass vaccination campaign rather than what it truly was: a field trial testing the vaccine's safety and efficacy.

The paper begins by exploring why, despite the fact that an explosion of experimentation following the conclusion of the Second World War in 1945 occurred almost exclusively in hospitals, schools were used nonetheless as sites for the polio vaccine trial. It then describes how the use of public schools altered perceptions of and participation in the trial. Conducting the trial in a school setting as opposed to a clinical setting prevented parents from making an informed decision on whether to allow their children to participate because there was a dearth of adequate information about its experimental nature. Moreover, the use of public schools contributed to the nationalistic perception that families had a moral obligation to participate for the utility of one's community and country. Furthermore, the public nature of schools caused parents to make their decisions based in part on what others, such as their neighbors and friends, were choosing

## Public Schools as Loci for Human Experimentation

to do. And finally, the authority inherent to schools and school officials in local communities legitimized the trial as something students should take part in. In effect, schools as public spaces have connotations and significations quite different from those of hospitals and doctors' offices, and these distinctions influenced the perceptions of the polio field trial and should continue to inform our understanding of research ethics.

### CLINICAL SETTINGS AS CONVENTIONAL SPACES FOR EXPERIMENTATION

The rise to prominence of biomedicine and the medical profession during the early- to mid-twentieth century resulted in a concomitant increase in human subjects research, and the clinical setting became the primary location in which cases of experimentation took place. During the early decades of the twentieth century, research units were established in existing hospitals, and new, research-specific hospitals were built.<sup>8</sup> As historian Susan Lederer notes, clinical research was such an integral part of the medical profession and of the hospital setting by this time that clinical investigators argued that “patients actually received *better* care [in research hospitals] than patients in a hospital where research was not a priority.”<sup>9</sup> Indeed, Lederer writes that Rufus Cole, Director of the Hospital of the Rockefeller Institute for Medical Research in 1927, asserted that “the rich and the poor... rushed to fill the available [research] hospital beds, because they had learned that the best medical care was available in institutions where patients were studied scientifically.”<sup>10</sup> Historian David Rothman concurs that research hospitals were where the explosion of human experimentation occurred. He states, “Subjects were now more likely to be a group of patients in a particular hospital rather than neighbors or kin.”<sup>11</sup> Physicians regularly administered new drugs to sick patients in research hospitals who were looking for anything with “therapeutic potential.”<sup>12</sup>

Given the prevalence of human subjects research carried

## Public Schools as Loci for Human Experimentation

out in hospitals during the early- to mid-twentieth century, it is surprising that schools served as a site of experimentation. An explanation may be found in how the public viewed the role of schools in children's health and how there was an existing relationship between schools and vaccination campaigns.

### SCHOOLS AS EXISTING SITES FOR MEDICAL CARE AND EDUCATION

Beyond providing a large, convenient supply of participants, public schools were perceived as a logical space in which to carry out the polio vaccine field trial because they played a significant role in the health care of children in the late nineteenth and early twentieth centuries. Medical and cultural historian Richard Meckel describes how urban primary schools were directly involved in monitoring and improving the health of schoolchildren from around 1870 until the beginning of the Great Depression in the late 1920s.<sup>13</sup> Despite the fact that around the 1930s schools shifted away from medical provision, schools remained active as guardians of children's health in the mid-twentieth century, offering students health education and acting as intermediaries between children and community health services. In fact, schools played an important role in children's health when it came to polio in particular.

The role of schools and teachers in children's health in the 1930s is apparent from an article entitled, "Responsibility of the Teacher for Child Health," published in 1937 in the journal *Childhood Education*, the self-described "Magazine for Teachers of Young Children." The author states:

Adequate health care for children represents a combination of family and community interests and responsibilities. The home is the center of the child's life and the parents chiefly determine what provision is made for the health of the family. However, those responsible for ed-



## Public Schools as Loci for Human Experimentation

ucation of the child outside the home must of necessity share in supporting and continuing this provision. This can best be done in close rapport with the family, with family-health workers, and with other specialists in the field of child health—pediatricians, nutritionists, mental hygienists, and dentists.<sup>14</sup>

Ensuring that a community's children were in proper health was a collaborative effort among parents, teachers, and health care providers. It is telling that the article describes students as under the “care” of their teacher, not merely the instruction.<sup>15</sup> Teachers were charged with including in their students' education health behaviors that either reinforced what was being taught at home or, more notably, supplemented or corrected what was being taught at home. The author writes, “[The] responsibility devolves upon the teacher for continuing the health direction and guidance initiated in the home, and, sometimes for helping children to establish in the school health attitudes and practices that will stimulate parents to make more adequate health provision in the homes.”<sup>16</sup> In other words, public schools were an opportunity for the state or for the community to actually educate parents *in addition to* children on the health behaviors they should be carrying out at home. Furthermore, teachers were instructed to “informally” observe for signs of poor health in their interactions with students, which, given the frequency with which they saw their students, was seen as a practical measure teachers should take. Teachers would subsequently participate in “joint health conference[s]” with a physician, each student, the child's parents, and the school nurse.<sup>17</sup>

The responsibilities of teachers in 1937 were similar to those of teachers about a decade later, when polio epidemics were most severe.<sup>18</sup> An article entitled “If Polio Comes” that was published in the *National Education Association Journal* in 1950 outlines what the role of teachers should be in the nation's fight against polio.<sup>19</sup> The essay aimed to educate teachers about the

## Public Schools as Loci for Human Experimentation

disease and point them to additional literature available from the NFIP (including *A Highschool [sic] Unit on Poliomyelitis*) so that teachers could “clear away misconceptions” of the disease in “science classes and in contacts with parents.”<sup>20</sup> Therefore, just as in 1937, teachers were educated in the practices parents could implement at home and were expected to help disseminate this information. Teachers were also instructed to look out for symptoms of the disease and to notify parents and physicians of any findings:

Only the teacher, aside from parents, can make a daily check on the individual child. Even the parent does not see a child with quite the same perspective as the teacher. This does not mean the teacher can replace a doctor or school nurse—it is recommended that post polio patients have a physical examination every six months for a year or more. But the teacher has the advantage of seeing children daily at work and play in the school...The watchful eye of a teacher who has been alerted to these signals can be the first to detect a slight limp, an unsteadiness of hand, or a change in posture.<sup>21</sup>

Further, polio was a visible disease in part because its chronic nature meant that many of the children who were infected still attended school (or returned after a period of time). In effect, teachers and students alike knew first-hand what the disease “looked like,” and it became something they experienced in school. For example, *Our Schools*, a publication of the West Virginia Education Association, discussed how teachers and students had a responsibility to help children infected by polio restore the convalescent’s sense of self-confidence and to “prevent [the inflicted children from] developing an inferiority complex and a feeling of disability.”<sup>22</sup> Thus, schools played a significant role in children’s health in the decades before the polio field trial, and they also served as sources of authority and information on

## Public Schools as Loci for Human Experimentation

polio. In effect, it may have been perceived as logical that schools served as spaces in which polio was defeated.

As government-owned institutions and centers for communities, public schools also served as sites for mass vaccination campaigns run by city health departments throughout the twentieth century. For example, schools were among the locations such campaigns targeted to immunize susceptible children against diphtheria during the 1920s. In fact, newspaper articles from this decade report the use of schools for vaccination campaigns in cities all over the country, including Long Beach, California; Newburgh, New York; Providence, Rhode Island; and Washington, D. C.<sup>23</sup> Vaccination campaigns against smallpox were also located in public schools. An article from *The Los Angeles Times* in 1951 describes that the annual drive planned to visit 105 schools and vaccinate about 35,000 students.<sup>24</sup> In addition to serving as sites for vaccination campaigns, many public schools required that their students receive vaccinations in order to attend. This requirement was deemed constitutional in 1922 as a result of the United States Supreme Court ruling of *Zucht v. King*.<sup>25</sup> In this way, schools were not only seen as existing sites for medical care and education, but the youngest members of the public were also accustomed to receiving vaccinations *in* schools as well as *for* schools.

Lastly, schools may have been perceived as the appropriate space in which to carry out the field trial because the experiment was testing a vaccine, not a medical procedure or pharmaceutical drug. In other words, hospitals served as the primary sites for human experimentation, and these trials were conducted on sick patients who enrolled in the research projects with the hope of—as Rothman describes it—“therapeutic potential.” Vaccines, however, were understood as a preventive measure that healthy individuals could partake in to remain *out* of the hospital. The manner in which the public during this time period understood vaccines in relation to human experimentation is worth further exploration.



## Public Schools as Loci for Human Experimentation

While public schools appeared to be the most logical space in which to carry out the trial, what follows is a description of the implications of using schools on the public's perception of and participation in the trial.

### SOURCES OF AUTHORITY AND INFORMATION ON THE FIELD TRIAL

Carrying out the trial in schools as opposed to clinical settings caused the media, the NFIP, and schools to be parents' primary sources of information, not physicians. In effect, it is questionable as to what extent parents' decisions in agreeing to participate in the trial were adequately informed. While there was a great deal of information available to parents to help them make their decisions, these sources were primarily journalistic accounts of the trial or, essentially, propaganda from the NFIP. A 1958 study entitled, "Parental Reactions to Communications on the 1954 Polio Vaccine Tests," examined the sources of information parents received and concluded that beginning in 1953, newspapers and magazines regularly contained educational articles written by journalists with titles such as "D-day Against Polio," "Mass Polio Tests," "The Fight on Polio," "Tracking the Killer," "The Great Test," "Polio: At Last the End of the Crippler," "Closing in on Polio," "Vaccine Safety," and "Polio Pioneers."<sup>26</sup> In addition, children brought home from school a letter from Basil O'Connor, President of the NFIP, explaining the importance of participating in the trial; a leaflet explaining the nature of the vaccine and the trial; and a consent form which was to be filled out and returned to school.<sup>27</sup>

Based on these newspaper and magazine articles, not surprisingly, the objectives of the trial were fairly ambiguous. Officially, the NFIP stated that the vaccine had already been proven safe and that the field trial was merely validating its efficacy. To be sure, Salk had performed a number of successful though small-scale trials throughout the early 1950s to test his potential vac-

## Public Schools as Loci for Human Experimentation

cine, including at the D.T. Watson Home for Crippled Children and at the Polk State School.<sup>28</sup> Given how rare and geographically variable polio was, however, a large trial lending enough statistical power was still needed to prove the vaccine's success definitively.<sup>29</sup> Indeed, an article published in *Parent's Magazine* in 1954 describes how trials carried out among both monkeys and humans showed that the vaccine was safe and stimulated antibody production, but "at least 500,000 children must [still] be vaccinated in order to procure reliable evidence on the effectiveness of the vaccine."<sup>30</sup>

However, some articles diverged from the NFIP's official stance that the experiment was testing the vaccine's efficacy, claiming that the vaccine's efficacy *had already been* proven. For example, an article published in *Better Homes and Gardens* in 1954 asserts that the vaccine has already been proven effective: "The Salk triple vaccine...has proved safe and effective against all three strains in some 5,000 preliminary tests." Similarly, an article published in *School Life* states that the vaccine "has already been tested for safety and effectiveness, first in studies with laboratory animals and then with nearly 700 individuals."<sup>31</sup> Oddly though, the same article contradicts this assertion, conceding, "Whether the vaccine is highly effective, moderately effective, or ineffective will be proved conclusively through the forthcoming mass tests with children."<sup>32</sup> The lack of agreement and clarity in describing the scientific objectives of the field trial proves that the trial's experimental nature was not adequately captured in the information parents received and processed.

In addition to the ambiguity concerning the trial's objectives, the information parents received did not adequately describe legitimate safety concerns that physicians and researchers who were familiar with the production of the vaccine had possessed. Indeed, many doctors, including Albert Sabin who went on to produce the orally administered version of the polio vaccine, thought that Salk's vaccine was not ready to be used on a mass scale.<sup>33</sup> Their concerns originated from the difficulty

## Public Schools as Loci for Human Experimentation

some pharmaceutical companies had in inactivating the virus; in fact, Cutter Laboratories unsuccessfully inactivated the virus during production for widespread use in 1955, unintentionally causing hundreds of children to become infected with the disease.<sup>34</sup> Nevertheless, there was no mention of the various safety concerns related to the vaccine's production in these articles or in the material sent home from the public schools.

Furthermore, there was some doubt as to whether parents even understood the full extent of the information sent out from the schools and the NFIP. A study featured in the article "Parental Reactions to Communications" assessed, "'The reading ease' score placed the N.F.I.P. printed materials in the 'difficult' reading category comparable to textbook materials used in colleges." Since over one-third of the mothers in the study had less than a high-school education though, the study surmised, "It seems safe to infer that many of them must have had a great deal of difficulty in reading and understanding the printed materials sent to them from the schools."<sup>35</sup> The study also suggested that the sources of information that the schools and the NFIP relied upon were "middle-class oriented," indicating that parents of a high socioeconomic status were more likely to allow their children to participate in the trial.<sup>36</sup> Even so, 43 percent of parents of low socioeconomic status gave consent for their children to receive the vaccine, suggesting that there were still many parents who may not have adequately understood the information they received about the trial.<sup>37</sup>

These sources were crucial though, since they were largely what parents based their decisions on; most parents did not talk about the trial with their family physicians, who, like Albert Sabin, may have been less biased and more alert to the fact that there were legitimate discernable concerns relating to the experiment. A study entitled, "Parent Attitudes Toward Participation of Children in Polio Vaccine Trials," interviewed mothers in 1954 during the week after consent forms were sent back to their children's school but before the start of the trial, asking where

## Public Schools as Loci for Human Experimentation

the mothers learned about the trial and why they decided to allow their children to participate in it or not.<sup>38</sup> The study found that 41 percent of mothers who gave consent had discussed the trial with a doctor or nurse; 61 percent had discussed the trial with friends, relatives, or neighbors; 15 percent had discussed the trial with school personnel; and 28 percent of mothers discussed the trial with no one.<sup>39</sup> Evidently, not only did less than half of the mothers who gave consent talk with doctors about the trial, but most mothers were more likely to talk with their friends, relatives, or neighbors instead. This finding is perhaps not surprising given the fact that the trial was conducted at schools rather than in hospitals or doctors' offices. Conducting the trial in schools forced parents to have to seek out more legitimate information from their family physicians independently, which they would have done only if they did not believe the information presented in the media and sent from the schools was adequate. In fact, almost 30 percent of mothers who gave consent talked with no one, suggesting that almost a third of consenting mothers were satisfied with what they read and heard from the media and from their children's school.

Orientation meetings conducted by each community's department of health did provide parents with additional information and an opportunity to ask questions to medical authorities. Indeed, the "Parent Attitudes Toward Participation" study found that "among parents who had initially been undecided, those who attended an orientation session at one of the schools were significantly more likely subsequently to give consent than were parents who did not attend." However, the meetings were led by health officials presumably supportive of the trial and were held in public settings and in large groups, which perhaps prohibited some parents from asking questions because they were less inclined or comfortable to do so in such a setting. Moreover, the group setting most likely influenced some parents to participate through the "bandwagon effect."<sup>40</sup> Orientation meetings also prohibited a more personalized discussion of how a parent's

## Public Schools as Loci for Human Experimentation

child would be affected by participating in the trial. Thus, it is worth noting that only one-third of parents who gave consent attended these orientation meetings.

The carrying out of Salk's field trial in schools rather than in clinical settings compromised the degree to which parents were able to make informed decisions as to whether to allow their children to participate in the trial. The information they received was primarily from the media, the NFIP, and schools, which did not fully capture the experimental nature of the field trial. In this way, the lack of unbiased and complete information made the trial appear as more of a mass vaccination campaign than as a mass human experiment.

### PUBLIC SCHOOLS AS ENGENDERING OBLIGATORY PARTICIPATION

The use of public schools as loci for the trial also transformed the act of participating into a community deed or obligation. That is, the trial became perceived as a community event in which all members of the public came together and played their part in fighting against a childhood disease. Polio in particular brought communities together, perhaps more so than any other disease of the time; not only did the disease disproportionately affect young children and was potentially deadly, but it also ravaged the United States at a time of intense nationalism. This perception of the trial, which public schools had a hand in generating, had the effect of subtly coercing families to participate.

The celebration and spectacle that coincided with the trial contributed to the perception that participating in the trial was a communal or nationalistic act. Historian Jane Smith discusses how children and parents lined up in schools and were given the vaccine (or the placebo) one by one, as the media took pictures and onlookers smiled in wonder:

Whether the clinics were set up in the auditorium, class-



## Public Schools as Loci for Human Experimentation

room, gym, or on the open lawn, the photographers took the same pictures: the line of children waiting to get their shots; the wide-eyed little cowboy sandwiched between a nurse who held his shoulders and a doctor who pricked his arm; the brave little girl who grinned at the needle; and then the group of proud survivors, broad smiles stretching the cheeks that still glistened with tears, each right hand pointing to the left upper arm to show where the magic shot had been given.<sup>41</sup>

In many ways, participating in the trial could be considered as a display of solidarity with one's community, since people were literally standing in line *together* to play a role in finding a cure to polio. The intense nationalism of the epoch also caused members of the public to view participating in the trial as an obligation for the nation's wellbeing; just as individuals were called upon to shoulder their part in the onerous war effort during the



A teacher's message for her students regarding their historic role in the fight against polio.

## Public Schools as Loci for Human Experimentation



Children received the NFIP's "Polio Pioneer" badges after participating in the trial.

Second World War nearly a decade earlier, individuals were now called upon to assume their part in the name of scientific advancement.<sup>42</sup> In an image now iconic of the polio trial, a teacher stands in front of her students next to a blackboard which has written on it: "Making History. We are among the first children ever to be given Polio shots. So we are really making History today. We are lucky." This image suggests that the teacher assumed that everyone in the class was participating in the trial. It also demonstrates how children were told that it was a privilege to participate in the trial—just as the consent form mailed home to parents was in fact a "request to participate form"—and that teachers perceived participating as a classroom responsibility to "make history."<sup>43</sup> Another iconic image used for propaganda purposes by the NFIP shows children who had already received the vaccine lined up with their "Polio Pioneer" certificates, which were produced and distributed by the NFIP. The image is another demonstration of how much community spirit participation in the trial involved.

This idea of partaking in the trial as a community effort is also not so subtly expressed in the media and from the NFIP. A number of scholars have noted how the NFIP marketed par-

## Public Schools as Loci for Human Experimentation

ticipation as a moral deed; Basil O'Connor, President of the NFIP, stated in his letter to parents that the success of the trial depended on their cooperation.<sup>44</sup> Furthermore, many newspaper and magazine articles emphasized the vast number of volunteers who were coming together to help carry out the trials; the “No more polio after '54?” article describes:

...country health officers, medical societies, mayors and selectmen, newspaper-radio-TV executives, the Foundation's 3,100 chapters, P.T.A.s [Parent-Teacher Associations], other civic and community groups—in fact, every agency that could educate or activate—were drawn into the program.

In size and detailed planning—right down to trailers for the local theater and buses to take the children to the vaccine clinics—there's never been anything quite like it before!<sup>45</sup>

Therefore, given how greatly the trial was marketed and perceived as a community event and a major contribution to the country's scientific advancement, even though children were required to present signed consent forms, parents were “softly” coerced into participating as well. In other words, parents were influenced to participate not by force but by a pervasive sense of obligation.

### CONSENT: A PRODUCT OF PUBLIC DECISION-MAKING

Conducting the trial in a public space such as schools also caused the decision to participate to be the product of public, not private, decision-making. In other words, because the trial was so large and in such a public setting, entire communities were faced with the decision of whether to participate. Consequently, parents were influenced by their neighbors, friends, and relatives, and it was publicly evident whose children ultimately did partake

## Public Schools as Loci for Human Experimentation

in the trial and whose did not. In this sense, the public nature of the trial introduced an additional component of soft coercion to participate, since parents knew that their decision would be known and judged by their community.

As previously mentioned, the “Parent Attitudes Toward Participation” study discovered that parents talked with friends, family, and neighbors about participating in the trial more than discussing it with their physicians, which suggests that parents either were influenced by other parents or had influenced others when making their own decisions. Furthermore, given that orientation meetings were formatted as large groups, parents had the opportunity to learn about the trial together and then decide whether to participate together. In fact, the “Parent Attitudes Toward Participation” study also found that parents were greatly influenced by the news of what counties around them were doing: in one county in Virginia, the authors write that “the uncertainty facing parents [was] markedly intensified by the fact that several other counties in the immediate area had planned to participate in the vaccine trials but, for reasons relating to the scheduling of the trials, had decided to postpone them indefinitely.”<sup>46</sup> The opposite—being more likely to participate because others were participating—was surely the case as well.

It is also important to recall that, as aforementioned, mass vaccination campaigns had been historically carried out in public spaces such as schools, community centers, or other popular gathering places. For example, New York City health officials carried out an enormous smallpox vaccination campaign in 1947 in response to the presence of a novel case in the city. As a result, about 6.35 million people were vaccinated, and about 1.2 million of them received their vaccinations at locations organized by community organizations or employers. Moreover, companies such as Eastman Kodak, Trans World Airlines, Union Carbide, and Wanamaker’s all brought in city health department physicians to vaccinate their employees, and the department store Lane Bryant offered to house clinics for the public.<sup>47</sup> Giv-

## Public Schools as Loci for Human Experimentation

en that the trial was conducted in schools—a similarly public space—this existing association between mass vaccination campaigns and public spaces had the effect of casting the polio field trial as more of a mass vaccination campaign.

### SCHOOLS AS LEGITIMIZERS OF THE FIELD TRIAL

Lastly, a subtler but still significant effect of conducting the field trial in public schools was that the authority inherent in schools and school officials helped legitimize the trial and give parents reason to participate. As aforementioned, schools were spaces in which health behaviors were taught for the benefit of both parents and children. To reiterate, teachers were instructed to educate children and parents about how polio spread and what preventive measures were needed to be taken at home. In this way, schools espoused a certain degree of authority in a child's health, even though they were not spaces in which doctors practiced. Given this trend of teachers acting as a tacit authority in children's health, when teachers disseminated leaflets and consent forms to children to take home to their parents, it is probable that parents were more inclined to participate in the trial because the trial's information derived from teachers.

Schools and school officials also acted as “gatekeepers” of participation in some instances, either supporting children's participation in the trial or preventing their participation altogether. For example, in describing how the NFIP selected towns and schools in which to carry out the trial, historian Arnold Monto notes, “Preference was given to jurisdictions with well organized health services as well as to regions where there was expressed interest in participation, especially from school officials, since schools would be the point of access to the children.”<sup>48</sup> On one hand, this statement affirms that some school officials expressed their interest in having the trial carried out in their schools. On the other hand though, Monto's assertion indicates that there were cases in which school officials did not want





This publication by Polio Prevention, Inc., which was most likely an organization lobbying against the polio vaccine, alerts readers that several school districts, most notably the Los Angeles public schools, decided not to participate in the field trial. Although the legitimacy of this organization is unknown, in actuality, there were health officials worried about the safety of using the vaccine on a wide scale. Moreover, this publication demonstrates that school officials had a great deal of power in influencing public opinion about the vaccine.

## Public Schools as Loci for Human Experimentation

their schools participating in the trial. For example, in response to the Cutter Incident of April 1955, Colgrove writes, “Cancellations occurred primarily in [New York City’s] Spanish-speaking communities, in which press coverage of the incident had been highly critical, and in schools where the principal was either indifferent or hostile to the vaccine.”<sup>49</sup> Regardless, in either case, school officials had a say in whether the trial was brought to their schools. Depending on what this decision was, parents of children in these schools not only were allowed or denied access to the vaccine, but they also most likely perceived their administrators’ act of either welcoming or preventing the trial from coming to their school as an endorsement or a rejection of the trial. In this way, the actions of school administrators also influenced parents’ participation in the trial.

### CONCLUSION

The use of public schools instead of clinical settings as loci for the polio vaccine field trial in 1954 had a significant impact on how members of the public perceived and understood the nature of the trial. First, carrying out the trial in public schools prevented parents from making a fully informed decision of whether to allow their children to participate because parents lacked unambiguous, unbiased, and complete information concerning the experimental nature of the trial. Second, the use of schools contributed to a sense of communal and nationalistic obligation to participate. Third, the public nature of these schools caused parents’ decisions to be a product of public rather than private decision-making, as they were influenced by friends and neighbors and their community at large. Finally, the authority schools held regarding children’s health—and in the community at large—legitimized the trial. For these reasons, the trial appeared more like a mass vaccination campaign than a large-scale vaccine experiment.

The National Foundation for Infantile Paralysis most

## Public Schools as Loci for Human Experimentation

likely chose public schools as loci for the trial because the civic institutions offered a conveniently reachable population that could receive subsequent check-ups in addition to second and third administrations of the vaccine. Moreover, students in the first through third grades (approximately ages six through eight) were the most at-risk cohort of the population to be infected with polio. Admittedly, the NFIP did not choose schools as a means to entice greater participation, but it is important to consider the consequences of carrying out such experimentation in this setting compared to other environments. For example, clinical settings, both functionally and symbolically, served different purposes and have different meanings than schools. Consequently, clinical settings were more appropriate for ensuring that human experimentation was carried out in the most ethical way possible. Indeed, from an ethical perspective, schools fracture the doctor-patient relationship so crucial to medical decision-making, as conversations with physicians normally aid patients in determining the risks and benefits of participating in experimentation. Schools, however, prevent this style of privacy and personalization; in such a public setting, therefore, parents were unable to make a completely voluntary decision as to whether to allow their children to participate in the polio field trial. Without a doubt, understanding how public schools influenced the ethics of the polio vaccine trial will contribute to our knowledge of research ethics and our medical practices in the future.

## Public Schools as Loci for Human Experimentation

<sup>1</sup> David M. Oshinsky, *Polio: An American Story* (New York: Oxford University Press, 2005), 161.

<sup>2</sup> Jeffrey P. Baker, “Immunization and the American Way: 4 Childhood Vaccines,” *American Journal of Public Health* 90 (2000), 199-207; James Colgrove, “Immunity for the People: The Challenge of Achieving High Vaccine Coverage in American History,” *Public Health Reports* 122, no. 2 (2007), 248-257; James Colgrove, *State of Immunity: The Politics of Vaccination in Twentieth-Century America* (Oakland: University of California Press, 2006); Arnold S. Monto, “Francis Field Trial of Inactivated Poliomyelitis Vaccine: Background and Lessons for Today,” *Epidemiological Reviews* 21, no. 1 (1999); Oshinsky, *Polio: An American Story*; John Rodman Paul, *A History of Poliomyelitis* (New Haven: Yale University Press, 1978); Jane S. Smith, *Patenting the Sun: Polio and the Salk Vaccine* (New York: William Morrow, 1990); Daniel J. Wilson, *Living with Polio: The Epidemic and its Survivors* (Chicago: University of Chicago Press, 2005).

<sup>3</sup> Colgrove, *State of Immunity*, 115; Wilson, *Living with Polio*, 4.

<sup>4</sup> Mass participation in the field trial was due in part to the public’s intense fear of polio that the NFIP helped generate. Indeed, the public feared polio so much that people actively sought the experimental vaccine. A letter from an official of the United Nations International School (UNIS) in New York City to Dr. Leona Baumgartner, the Health Commissioner of New York City, is demonstrative of this point. The official had failed to apply to the city’s Department of Health in a timely fashion, jeopardizing the school’s ability to participate in the field trial. As a result, the official pleaded with Dr. Baumgartner:

As you may know, this School is open to children of United Nations staff members, delegations, specialized agencies, accredited press and also to non United Nations children who live in or in the vicinity of Parkway Village, Jamaica...In view of the special character of our School and its connexion [sic] with the United Nations, I would very much appreciate it if you could see your way to include the UNIS in the current programme.

In other words, the official was so desperate to have UNIS students participate in the field trial (presumably with the consent of the students’ parents as well) that the official tried leveraging the prestige associated with the United Nations to prompt a favorable outcome. Nevertheless, in her response to the letter, Dr. Baumgartner admitted that a great number of other schools and individuals had requested to have their students and children take part in the field trial as well, but unfortunately, she had no control regarding who was

## Public Schools as Loci for Human Experimentation

selected to participate in the experiment. See Benjamin Cohen to Dr. Leona Baumgartner, New York, NY, April 20, 1954 and Dr. Leona Baumgartner to Benjamin Cohen, New York, NY, April 28, 1954 in New York City Municipal Archives, Accounts 90-116, Box 294, Folder “Poliomyelitis – Salk Vaccine.”

<sup>5</sup> For perhaps the most detailed account available on how schools played a role in the trial, see Smith, *Patenting the Sun*.

<sup>6</sup> In the 1920s, New York City public schools were used to test a mass scale diphtheria vaccine, and in the 1960s, schools across the United States were used to test various vaccines for measles and mumps.

<sup>7</sup> For accounts on the use of institutionalized children as experimental subjects, see Allen M. Hornblum, *Against Their Will: The Secret History of Medical Experimentation on Children in Cold War America* (New York: St. Martin's Press, 2013) and Jonathan D. Moreno, “Protectionism in Research Involving Human Subjects,” *Ethical and Policy Issues in Research Involving Human Subjects*, National Bioethics Advisory Commission, Vol. 2 (2001), I3-I21. For an account on the use of prisoners as experimental subjects, see Nathaniel Comfort, “The Prisoner as Model Organism: Malaria Research at Stateville Penitentiary,” *Studies in History and Philosophy of Biological and Biomedical Science* 40, no. 3 (2009), 190-203. For accounts on the use of university students as experimental subjects, see Heather Munro Prescott, “Using the Student Body: College and University Students as Research Subjects in the United States during the Twentieth Century,” *Journal of the History of Medicine* 57 (2002), 3-38 and Susan E. Lederer, *Subjected to Science: Human Experimentation in America Before the Second World War* (Baltimore: Johns Hopkins University Press, 1995) and Jonathan D. Moreno, “Convenient and captive populations,” in Jeffrey P. Kahn, Anna C. Mastroianni, and Jeremy Sugarman, eds., *Beyond Consent: Seeking Justice in Research* (New York: Oxford University Press, 1998), 111-130. Throughout the twentieth century, university students volunteered as research subjects for experiments, but as several scholars have noted, the degree of voluntariness should be questioned given the subtly coercive environment in which the university students lived and studied.

<sup>8</sup> Lederer, *Subjected to Science*, 127.

<sup>9</sup> *Ibid.*, 127.

<sup>10</sup> *Ibid.*, 127.

<sup>11</sup> David J. Rothman, *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making* (Basic Books: New York, 1991), 25.

<sup>12</sup> *Ibid.*, 25.

<sup>13</sup> Schools, particularly those in large cities, were sites of Progressive Era (1890-1920) reforms that provided children with preventive care, medical services, and health education. See Richard Meckel, *Classrooms and Clinics: Urban Schools and the Protection and Promotion of Child Health, 1870-1930* (New



## Public Schools as Loci for Human Experimentation

Brunswick: Rutgers University Press, 2013). See also Diane Allensworth et al., eds., *Schools and Health: Our Nation's Investment* (Washington, D.C.: National Academies Press, 1997); David Tyack, "Health and Social Services in Public Schools: Historical Perspectives," *The Future of Children* 2, no. 1 (1992), 19-31; Elaine M. Gustafson, "History and Overview of School-Based Health Centers in the US," *Nursing Clinics of North America* 40 (2005), 595-606.

<sup>14</sup> Hortense Hillbert, "Responsibility of the Teacher for Child Health," *Childhood Education* 14, no. 1 (1937), 405.

<sup>15</sup> *Ibid.*, 403.

<sup>16</sup> *Ibid.*, 403.

<sup>17</sup> *Ibid.*, 403-404.

<sup>18</sup> Andrew D. Cliff, Matthew Smallman-Raynor, and Barry Trevelyan, "The Spatial Dynamics of Poliomyelitis in the United States: From Epidemic Emergence to Vaccine-Induced Retreat, 1910-1971," *Annals of the Association of American Geographers* 95, no. 2 (2005), 269-293.

<sup>19</sup> Sally Lucas Jean, "If Polio Comes: Thru Instruction and Observation, the Teacher Can Help Protect the Child," *National Education Association Journal* 39, no. 4 (1950), 268-269.

<sup>20</sup> *Ibid.*, 268.

<sup>21</sup> *Ibid.*, 269.

<sup>22</sup> *Ibid.*, 269.

<sup>23</sup> "Immunization Work Permitted in 2 L. B. Schools," *Vegetarian and Fruitarian* 27, no. 1 (1928), 29; "Preventing Diphtheria," *New York Times*, August 3, 1927; Alton S. Pope and Clarence L. Scamman, "Diphtheria Immunization in Providence," *Journal of the American Medical Association* 88, no. 8 (1927), 563; "School Vaccination Clinics Continued," *Washington Post*, September 11, 1934.

<sup>24</sup> "Smallpox Vaccinations Begin in City Schools," *Los Angeles Times*, January 4, 1951, A1.

<sup>25</sup> *Zucht v. King* 260 U.S. 174 (1922).

<sup>26</sup> E. Grant Youmans, "Parental Reactions to Communications on the 1954 Polio Vaccine Tests," *Rural Sociology* 23 (1958), 379.

<sup>27</sup> *Ibid.*, 380.

<sup>28</sup> Smith, *Patenting the Sun*, 139.

<sup>29</sup> Baker, "Immunization and the American Way," 203.

<sup>30</sup> Ruth and Edward Brecher, "Are We Expecting Too Much Too Soon From the New Polio Vaccine?" *Parent's Magazine & Family Home Guide* 29, no. 7 (1954), 31.

<sup>31</sup> Henry Lee, "No More Polio After '54?" *Better Homes and Gardens* 32, no. 3 (1954), 38, 40, 43, 220, and 257; Hart E. Van Riper, "Polio Vaccine Tests in the Schools: In the Hope of Ending Polio," *School Life* 36, no. 5 (1954), 69-70.

<sup>32</sup> *Ibid.*

## Public Schools as Loci for Human Experimentation

<sup>33</sup> In contrast to Sabin's version of the vaccine, Salk's vaccine for polio was via inoculation. See Harry M. Marks, "The 1954 Salk Poliomyelitis Vaccine Field Trial," *Clinical Trials* 8 (2011), 225.

<sup>34</sup> Paul Meier, "Safety Testing of Poliomyelitis Vaccine," *Science* 125, no. 3257 (1957), 1067-1071.

<sup>35</sup> Youmans, "Parental Reactions to Communications on the 1954 Polio Vaccine Tests," 383.

<sup>36</sup> *Ibid.*, 379.

<sup>37</sup> *Ibid.*, 381.

<sup>38</sup> John A. Clausen, Leila C. Deasy, and Morton A. Seidenfeld, "Parent Attitudes Toward Participation of Their Children in Polio Vaccine Trials," *American Journal of Public Health* 44 (1954), 1530.

<sup>39</sup> *Ibid.*, 1531.

<sup>40</sup> *Ibid.*, 1531.

<sup>41</sup> Smith, *Patenting the Sun*, 267.

<sup>42</sup> *Ibid.*, 162-163.

<sup>43</sup> Sarah Marie Lambert and Howard Markel, "Making History: Thomas Francis, Jr, MD, and the 1954 Salk Poliomyelitis Vaccine Field Trial," *Archives of Pediatrics and Adolescent Medicine* 154 (2000), 515.

<sup>44</sup> *Ibid.*, 515.

<sup>45</sup> Lee, "No More Polio After '54?" 257.

<sup>46</sup> Clausen, Deasy, and Seidenfeld, "Parent Attitudes Toward Participation of Their Children in Polio Vaccine Trials," 1526.

<sup>47</sup> Colgrove, *State of Immunity*, 76-77.

<sup>48</sup> Monto, "Francis Field Trial of Inactivated Poliomyelitis Vaccine," 14.

<sup>49</sup> The Cutter Incident of April 1955 occurred after the field trial had concluded, but during wide-scale production of the vaccine for mass immunization. Nonetheless, the ability of principals to either welcome or deny health officials' immunization efforts is notable. See Colgrove, *State of Immunity*, 120.

### Images:

Page 62: "HELP ME WIN MY VICTORY!!~JOIN THE MARCH OF DIMES," cartoon, 1943, Charles Henry Alston, National Archives and Records Administration, via Wikimedia Commons, [https://upload.wikimedia.org/wikipedia/commons/a/a9/%22HELP\\_ME\\_WIN\\_MY\\_VICTORY%5E%5E-\\_JOIN\\_THE\\_MARCH\\_OF\\_DIMES%22\\_-\\_NARA\\_-\\_535617.jpg](https://upload.wikimedia.org/wikipedia/commons/a/a9/%22HELP_ME_WIN_MY_VICTORY%5E%5E-_JOIN_THE_MARCH_OF_DIMES%22_-_NARA_-_535617.jpg) (accessed December 23, 2016).

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## Public Schools as Loci for Human Experimentation

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