

Parent Attitudes Toward Participation of Their Children in Polio Vaccine Trials

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One generalization stemming from this study is that persons of higher educational status tend to be favorable toward programs that employ scientific methodology to the end of improving the public health, whereas people with less education have difficulty in assessing objectives and seem less inclined to seek information that might help them to come to a logical decision.

✱ The public health officer is frequently faced with the task of securing public cooperation for programs or measures which must be established or carried through in very short order. He knows in a general way which segments of the population are likely to support particular measures and which segments are likely to be resistant or hostile. Data secured from a study of parental reactions to polio vaccine trials may be useful in indicating in somewhat greater detail than is usually available the factors influencing participation in such a program and the attitudes and characteristics of participants and non-participants.

Testing the Salk polio vaccine by inoculating hundreds of thousands of school children during 1954 entailed an intensive task of local organization in a relatively short period of time. After selection of the counties in which vaccinations were to be carried out, it was the task of local health officers to orient

school officials and parents to the proposed program and to arrange for the administration of the vaccine (by local physicians) and the maintenance of the necessary records. As in the case of other new vaccines, there were a number of unanswered questions about the Salk vaccine and some differences of opinion as to its probable effectiveness. It was taken for granted that some parents would have reservations about having their children vaccinated, and participation was invited on a voluntary basis with a presentation of the facts about the vaccine as the only means of inducing such participation.

This paper presents data on the factors influencing parental consent to participate in the vaccine trials, drawn primarily from interviews with mothers of second-grade children in five schools in a single county in Virginia. The county is partially suburban to Washington, partly rural. Although the area was not selected as "typical" in any specified respects, it is believed that the factors that influenced parents in this county were, on the whole, relevant to the decision of parents in other areas. The uncertainty facing parents in this county was, however, 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. Indeed, this was the

only county in the United States in which four neighboring areas withdrew from participation.

A brief chronology of the events and communications preceding the vaccine trial will provide a background for the data to be presented. General announcements (without mention of specific areas) were carried in major news magazines and in Washington papers in the fall of 1953. The first mention in Washington papers that counties in the area might participate came early in March, 1954. It was indicated that several cities and counties suburban to Washington might be involved, though early coverage dealt largely with a Maryland county where plans were most fully developed. The scheduling of inoculations in this county had been predicated upon availability of the vaccine prior to the spring recess of the schools. The vaccine could not be made available at the desired time, however, and the trial of the vaccine was first postponed and subsequently abandoned in the suburban Maryland county, even though orientation sessions had been held and consent slips distributed. Major metropolitan papers gave prominent space to this sequence of events and decisions. During March and early April several papers also carried feature articles by science writers describing the rationale for the vaccine tests, the nature of the Salk vaccine, and the methods of preparing and safety testing it.

Following abandonment of the tests in suburban Maryland, press attention focused upon the Virginia county in which the present study was conducted. Shortly thereafter, a nationally known radio commentator told his listeners that the vaccine had been found to contain live virus and warned them not to permit their children to receive the shots. In the county under study, the medical society and the health officer issued a joint statement squarely facing the

charges of the commentator, expressing confidence that a safe vaccine would be available and assuring parents that the vaccine would not be used if any doubts about safety remained unresolved. This statement was carried in full in the local suburban press and was prominently featured in abridged form in the metropolitan dailies. At the same time editorials in the major papers expressed confidence in the program and in the safety measures, specifically decrying the emotional attack made by the commentator. In short, the press reported some controversy over the use of the Salk vaccine, but was preponderantly favorable in its presentations about the program. In the following two weeks, however, one other city and one county which had considered participating in the program decided not to do so. This fact was known to many parents in the county studied and was clearly a source of doubt about the program for some of them.

To assess the factors influencing parental decision, mothers were inter-

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Table 1—Reasons Reported by Mothers for Giving or Withholding Consent (Per cent)

Main Reason for Consenting (101 Mothers)		Main Reason for Not Consenting (74 Mothers)	
	Per cent		Per cent
May prevent polio	66	Physical condition of child	30
Contribute to medical research	24	Parent believes shots unsafe	24
Medical authorities approve	2	Opposes "experimentation"	11
Other reasons	8	Controversy over program	9
		No proof of effectiveness	7
		Opposition of child	4
		Other reasons	15

viewed in the week between the deadline for returning the consent slips to the school and the commencement of inoculations. Interviewers used a previously pretested questionnaire; the interview averaged 20 minutes to a half an hour in length. The sample consisted of every third name from the rosters of second-grade children.* In the schools selected the proportion of parents giving consent ranged from 30 to 71 per cent.† In the larger suburban schools, the high proportion of parents giving consent made it desirable to increase the subsample of parents who did not give consent. This was done by taking every other name from the roster of those who had not given consent.

The total sample interviewed comprised 175 mothers, of whom 101 had given consent and 74 had withheld consent. Interviews were conducted in the home. If the mother was not at home a single return call was made. Only three

* As carried out in this county, all second-grade children were eligible to receive the vaccine. First- and third-grade children were designated as controls. Therefore, no question of the child's receiving a placebo was entailed.

† Two of the schools represented primarily rural areas, and three, suburban. One of the suburban schools was for Negro children, the other schools were for white children. The consent rate for other public schools in the county ranged from 21 per cent in a rural school to 85 per cent in a large suburban school.

persons designated for interviews refused to cooperate.

In addition to the interviews, data were secured from observation of the meetings held in the schools to inform parents about the vaccine tests. All questions raised by parents in these meetings were listed and analyzed as to content.

Hypotheses Underlying the Research

Numerous factors enter into a decision that involves permitting one's child to participate in a frankly experimental program aimed at preventing disease. While such decisions are seldom made wholly on logical grounds, many parents may be expected to balance the probability of gain against the possibility of harmful effect. Familiarity with the idea and practice of inoculations for prevention of communicable disease and the acceptance by parents of the importance of the scientific approach in medicine may be expected to exert favorable influences. On the other hand, misconceptions about the objectives and procedures of the vaccine trials may lead to withholding of consent. Of considerable interest was the question of how parents would attempt to increase their knowledge of relevant aspects of the vaccine trials and how they might resolve uncertainties.

Data relating to the following variables were secured through the interview schedule:

Sources of information about the vaccine itself
 Sources of information about the local vaccine trials
 Attendance at orientation meetings at the school
 Amount of consultation with medical and nonmedical personnel
 Precautions usually taken to protect family from polio
 The child's feelings about the shots
 Attitudes toward the program and its objectives

Factors Influencing Parental Consent

Reasons for deciding whether or not to participate in a health program designed to test a new vaccine may be quite complicated. Further, while people may be aware of some of the considerations which led them to a particular conclusion, they may not be at all aware of considerations which might have reversed their decision. Nor, for that matter, may they be aware of the fact that they have certain misconceptions and that they are therefore reasoning from false premises. Nevertheless, it is useful to know the reasons to which they themselves ascribe their decision.

Mothers who consented to their children's receiving the vaccine reported as their main reason the belief that the vaccine would be effective. Most of those who withheld consent said they did so because of particular health conditions of the child or because they were uncertain as to the safety of the vaccine. Thus, the ultimate physical well-being of their children seemed the overwhelmingly important consideration influencing parents regardless of their decisions.

It is obvious that many of the considerations which led some parents to give consent were accepted also by parents who withheld consent; yet they were not regarded by them as com-

Table 2—Educational Level of Mothers by Consent Group (Per cent)

	Mothers Who Gave Consent	Mothers Who Withheld Consent
	Per cent	Per cent
Grade school	8	26
Some high school	13	22
High school graduate	32	25
College (any amount)	47	27
Total	100	100

elling toward approval in the face of their doubts and fears. What then influenced these two groups? Two types of data are available: (1) data on certain characteristics, beliefs, and attitudes of the two groups, and (2) the mothers' reports on the factors that influenced their decision.*

Educational-Informational Level

Mothers who gave consent for their children to receive the vaccine tended to have a higher educational level (Table 2) and to be better informed about the vaccine than were those who withheld consent (Table 3). The marked difference in educational levels was associated with many differences in belief and attitude between the two groups as will be seen.

Leaflets describing the vaccine trials were sent home via the children at the time the consent slips were distributed and all but a few of the parents reported that they had received this material. Most parents received some information from other sources as well.

A large part of the difference in the

* The decision process, of course, frequently involved the child and the father. The mother was, however, our source of data, and our purpose was to discover what factors influenced her in the decision that was reached.

Table 3—Over-all Sources of Information About Polio Vaccine (Per cent)

	Mothers Who Gave Consent	Mothers Who Withheld Consent
	Per cent	Per cent
NFIP leaflets sent home from the school	99	92
Newspapers (alone or in combination with other sources)	90	74
Radio-TV (alone or in combination)	40	54
Magazines (alone or in combination)	29	16
Other sources	13	3
No sources of information reported, other than school	5	15
Number of cases	(101)	(74)

proportions of the two groups who derived information from various sources, of course, is related to educational background. Among respondents whose education had not extended as far as high school graduation, however, those giving consent were significantly more likely to have received information from other sources than were those withholding consent (e.g., on newspaper readership about the vaccine, the relative percentages were 77 and 54). It is noteworthy that more of the mothers who gave consent derived information from printed sources, while more of those who withheld consent heard some information over radio and television. The latter media had not been systematically used for presenting information about the program. A larger proportion of those who said they had received information through radio and television also reported that they had heard the commentator who warned listeners against the vaccine. For many, then, this may have been the sole source of information through these channels.

The differences between consent groups in initial source of information about local participation in the program are striking. Of parents who gave consent, two-thirds first heard about the participation of their county through

newspapers. Of those who did not give consent, only a third derived their initial information from this source. The major part of this difference reflects the difference in educational levels as will be seen in Table 4.

This table does indicate, however, that for each educational level those who gave consent were more likely to have learned about the local program through the newspapers than were those who withheld consent. This finding is probably a reflection both of when parents learned about the trials and of the more favorable orientation of those parents who were well informed. Those who had read about the program seem to have been better prepared to assess favorably the materials brought home from school by the child.

Consultation with Medical and Nonmedical Personnel

Parents who gave consent were much more likely to have talked with others about the polio vaccine shots than were parents who withheld consent. This was true not only with respect to consulting the family physician, but also with respect to discussing the matter with friends, relatives and neighbors, or with personnel in the schools.

Table 4—Source of Initial Information on Polio Vaccine Trials in Local County by Consent Group and by Education (Per cent)

Source of Initial Information	Mothers Who Gave Consent			Mothers Who Withheld Consent		
	Less than High School Graduation	High School Graduate	College	Less than High School Graduation	High School Graduate	College
	Per cent			Per cent		
The school	57	32	8	50	45	20
The child	..	..	2	8	..	..
Friends and neighbors	..	3	4	8	..	15
Newspapers	38	62	82	20	50	55
Radio-TV	..	3	4	8	..	5
Other	5	..	..	6	5	5
Total	100	100	100	100	100	100
Number of cases	(21)	(31)	(48)	(35)	(18)	(20)

Again, the differences with reference to consultation reflect in part the different educational distribution of the two groups, since college graduates were much more likely to consult others than were persons with only a grade school education. Among those who had not been graduated from high school, however, twice as many of the parents who gave consent, as of those who withheld consent, had consulted a physician.

Attendance at Orientation Meetings

One-third of the parents who gave consent attended the meetings con-

ducted by the Health Department for parents, but less than one-sixth of the parents who withheld consent attended. This immediately raises the question of whether it was primarily the favorably disposed parents who attended the meeting or whether attendance actually induced parents to decide favorably. The first alternative seems more largely to have been the case, as is evidenced by the fact that regardless of final decision 34 per cent of those whose initial impressions had been favorable went to the meetings but only 14 per cent of those whose initial impressions were unfavorable attended.

It cannot be assumed that the meet-

Table 5—Extent to Which Mothers Discussed Shots with Others by Consent Group (Per cent)

Persons with Whom Shots Were Discussed	Mothers Who Gave Consent	Mothers Who Withheld Consent
	Per cent	Per cent
Doctor or nurse	41	27
Friends, relatives, neighbors	61	39
School personnel	15	8
Talked with no one	28	47

ings did not serve a positive function. 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 (75 per cent of the former group versus 41 per cent of the latter gave consent). Moreover, many parents favorably disposed toward the program, yet harboring some uncertainties and anxiety, were apparently reassured by the answers given to their questions at these meetings conducted by the health officer and his staff.

Feelings About Polio and Personal Contact with Polio

Whether or not they consented to their children's participation in the test, most mothers regarded polio as the most serious of the diseases that afflict children. More than four-fifths agreed that "most people worry more about

polio than about any other disease that strikes children." Those parents who gave consent were slightly more likely to report that a close friend or relative had had polio, but the difference was not significant (36 per cent versus 28 per cent). Most likely this difference reflects the somewhat larger circle of friends of the persons of higher socioeconomic and educational status.

On the other hand, four-fifths of the parents who gave consent said they took some precautions to protect their children against polio, while the comparable proportion for parents who withheld consent was about three-fifths. Nowhere else are differences between educational levels more striking (Table 6). It appears, then, that concern about polio is slightly related to the giving of consent for vaccine shots, but is of minor significance except perhaps for those parents whose education did not extend as far as high school graduation.

Table 6—Reported Precautions Taken to Protect Against Polio by Consent and by Educational Level (Per cent) *

Precautions Reported by Mother	Mothers Who Gave Consent			Mothers Who Withheld Consent		
	Less than High School Graduation	High School Graduate	College	Less than High School Graduation	High School Graduate	College
	Per cent			Per cent		
Avoidance of crowded areas in season	33	61	61	20	39	80
Avoidance of epidemic areas	..	13	23	6	17	15
Special attention to health care	33	71	73	26	61	80
Polio insurance	5	10	10	3	11	5
Other	5	3	..	3	..	..
No precautions	43	16	6	66	22	5
Number of cases	(21)	(31)	(48)	(35)	(18)	(20)

* Percentages add to more than 100 since many parents took more than one type of precaution.

Table 7—Responses to Question on Safety by Consent Group (Per cent)

Are You Completely Convinced that Shots Will Be Perfectly Safe?	Mothers Who Gave Consent	Mothers Who Withheld Consent
	Per cent	Per cent
Yes	82	18
No	12	67
Undecided	6	15
	100	100

Doubts About the Safety of the Vaccine

Doubts as to the safety of the vaccine were clearly the most pressing reason for withholding consent. More than four-fifths of the mothers who withheld consent expressed doubt about safety in answer to a direct question (Table 7).

Why were so many parents in doubt on this score? True, there were widely circulated public statements from certain sources which were negative to the program. On the other hand, the weight of medical opinion, both nationally and in the local county, was strongly favorable. Some parents had very cogent reasons for feeling that their own children should not be involved (because of allergic conditions, for example). Others had consulted the family physician or other authority figures and had been left with just enough doubt so that they decided against the child's participation.

It is significant that doubts about the safety of the vaccine were equally frequent at all educational levels. Mothers who were college graduates were more likely to have heard specifically that live virus had been found in the vaccine, but were also more likely to have checked with their physicians and to have consulted other sources of information about the program. Thus, those high school and college graduates who were dubious about the safety of the vaccine were on the whole not sim-

ply reacting to rumors or to emotional statements against the vaccine, but were making reasoned judgments based on a substantial amount of information. This was not as true of the respondents with less education who expressed doubt about the safety of the vaccine. To a considerable extent they seem to have made up their minds with relatively little information.

Eighteen per cent of those who gave consent nevertheless had some doubts about safety. It appears that these persons were definitely of two minds about this matter, but resolved the conflict because of the strong hope that the shots would yield positive protection against polio (voiced by 78 per cent as their main reason for consent). Two-thirds had consulted their physicians about the shots—as against 37 per cent of those who were perfectly convinced that the shots were safe.

Opposition of Child to Taking Shots

One-tenth of the parents who gave consent and one-fourth of those who withheld consent reported that their child in the second grade was "very much against" the shots. Although only a few mothers gave this as the main reason for not approving of the child's receiving the shots, it may well have been a contributing factor in a number of instances. Opposition by the child was reported most frequently by parents whose initial impression was

unfavorable and who withheld consent (38 per cent reported the child strongly opposed). It will be recalled that these parents most often received their initial information about the program when the child brought home the announcement from school.

General Attitudes Toward the Program and Its Objectives

Responses to five statements with which the mothers were asked to express agreement or disagreement afford an indication of favorability to several of the major ideas embodied in the vaccine trials.

The proportion of favorable responses to individual items, on the part of mothers who had withheld consent, indicates that withholding consent was not a matter of disapproval of all aspects of the vaccine trials. Indeed, the responses to those items indicate that consent and nonconsent should not

be viewed as a sharp dichotomy, but rather as the reflection of different weightings of the issues involved and of the evidence with reference to these issues. In part the responses to these "agree-disagree" items reflect the orientations that led to one decision or another; in part, also, however, they probably represent rationalizations of the decision arrived at, whether or not the mother had previously been influenced by such considerations. The interrelationship between items 2 and 4 in this series is instructive in this respect. The two really bear upon the same point—that the vaccine must be tried out on many children before it is proved to be effective. To be consistent, then; any parent who agreed with item 2 should disagree with item 4. The latter item, however, is worded more emotionally, the former more in "objective" terms.

It is not surprising that those who consented to their children's receiving

Table 8—Responses to Items Reflecting Favorability to Program by Consent Group (Per cent)

Statement	Favorable Response	Per cent Giving Favorable Response	
		Mothers Who Gave Consent	Mothers Who Withheld Consent
		Per cent	Per cent
1. "Since the shots may not be effective, I don't think my child should go through the discomfort of having them."	Disagree	92	56
2. "A vaccine for polio can't be proved effective until it is tried out on many thousands of children."	Agree	89	77
3. "I don't like the idea of my child getting the shots from anyone but our family doctor."	Disagree	94	65
4. "They shouldn't try out this vaccine on children unless they know it will prevent polio."	Disagree	81	41
5. "I would want my child to have the shots even if the chances of their preventing polio were slight."	Agree	92	43

the shots tended to be consistent in agreeing with item 2 and disagreeing with item 4. Of those who withheld consent, however, roughly half were inconsistent, agreeing with the objectively worded item (an argument for their participation), but not disagreeing with the emotionally worded item (an argument against their participation). This illustrates one of the major problems in putting across new health measures, or for that matter any other type of measures; communicating the abstract idea behind a measure does not insure that the public will be able to dismiss a negative argument stated in emotional terms. The suggestion that a program involves "trying something out without knowing whether it will work" may cause distrust, particularly among those unfamiliar with the scientific method. In such instances a frank discussion of the complex nature of the problem in terms of the experience of the participants is often useful in achieving conviction which will withstand emotional attacks.

Responses to the five items are even more highly related to educational background than was giving or withholding of consent. Of those mothers who withheld consent, yet who had relatively favorable attitudes toward various aspects of the vaccine trials, four-fifths had graduated from high school, while of the mothers with less favorable attitudes, only one-third had graduated from high school. Further examination of the differences between mothers whose attitudes are generally favorable and those with unfavorable attitudes among the groups who gave and who withheld consent reveals that the "favorable" mothers who withheld consent are more like the "favorable" mothers who gave consent than like the remainder of those who withheld consent. In other words, higher proportions of the two "favorable" groups were initially favorable to the idea of their own child's

receiving the shots, attended meetings at the school, took precautions against polio, consulted their physicians, etc.

Why, then, did the one group not give consent? The reasons most frequently reported were classified under these headings: "Some physical condition of the child makes it unsafe for him to take the shots" (35 per cent); "controversy over the program" (19 per cent); and "general fears about the safety of the vaccine" (15 per cent). It is likely, also, that in some instances the attitudes of the father were less generally favorable and that his voice in the process of decision accounted for the withholding of consent.

Discussion and Summary

Interviews were conducted with a sample of mothers of second-grade children in five schools participating in polio vaccine trials in a single Virginia county. The county is partially suburban to Washington; its population is characterized by an appreciably higher educational level than the United States population as a whole. The local situation with reference to the polio vaccine trials was markedly atypical in that several surrounding counties and cities which had considered participating in the trials withdrew when it appeared that the vaccine would be ready somewhat later than had been anticipated. Despite these differences, it is believed that information derived from mothers interviewed in this county illuminates the factors which influenced the decision of parents in other parts of the county as to their participation in the vaccine trials.

The level of participation achieved in this county—nearly two-thirds of the eligible children—represents an exceedingly favorable response in view of the withdrawal of other suburban areas which were to have been involved. Further, a number of parents who did

not give consent refrained because of health reasons which they or their family physician regarded as cogent. Indeed, the overwhelming desire of parents interviewed was to do what would be best for their children. The major point of interest in the present research has been to analyze the various bases of assessment which lead to favorable or unfavorable response.

Mothers who had given consent to the participation of their children were found to be better informed about the nature of the trials, having read more and consulted more widely both with medical and with nonmedical sources about the vaccine. On the whole, those who gave consent had been initially favorable to the idea. Attendance at orientation meetings in the schools was both an expression of favorable attitudes and a means of resolving uncertainties. Parents who consented were also more likely to have taken precautions to protect their children against polio in the past. Most of the differences

in attitude and general orientation of parents who gave consent were associated with a very considerable difference in educational level and general socioeconomic status between the two groups.

In the instance of the polio vaccine trials, the chief consideration was that participation be sufficiently high to yield an adequate sample for assessing the effectiveness of the vaccine. It frequently happens, however, that programs for which there is a more impelling need for complete participation encounter the same source of resistances and the same apathetic responses from some segments of the population that was evidenced by a portion of the nonparticipants in the polio vaccine trials. Using the technics of social science research, it would seem fruitful to investigate further the methods of reaching and influencing those segments of the population which tend to be nonparticipants in such public health programs.

Larger Board for National Sanitation Foundation

With the election of 10 additional national leaders, the board of the National Sanitation Foundation has been increased to 15 members. Among the new appointments are Surgeon General Leonard A. Scheele, Joseph G. Molner, M.D., and William G. Fredrick, Sc.D., respectively commissioner and director of the Bureau of Industrial Health, Detroit Health Department. Each is a Fellow of the American Public Health Association as is the board's chairman, Henry F. Vaughan, Dr.P.H., dean of the University of Michigan School of Public Health.

Among the early plans of the new board is the development, in cooperation with Detroit's health, civic, and industrial groups, of a unique city-wide program for over-all environmental improvement. The program is to be planned at a coming "clinic" which it is hoped will develop a "pilot" program that may serve as a guide to other cities interested in improving their over-all environment.