DOC. 150

THE STATE OF OHIO,)
) SS:
COUNTY OF CUYAHOGA.)

IN THE COURT OF COMMON PLEAS

DENETA RUFFIN, et al., Plaintiffs,

v.

IVAN SAWCHYN, et al., Defendants.

Case No. 94589

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Deposition of CLAIR B. ERNHART, Ph.D., taken by the Plaintiffs as if upon cross-examination before James M. Mizanin, a Registered Professional Reporter and Notary Public within and for the State of Ohio, at the office of Charles Kampinski Co., L.P.A., 1530 Standard Building, Cleveland, Ohio, on Tuesday, the 19th day of January, 1988, commencing at 10:00 a.m., pursuant to notice.

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APPEARANCES:

Charles Kampinski Co., LPA,
By: Charles Kampinski, Esq.
and
Christopher M. Mellino, Esq.,

On behalf of the Plaintiffs.

Jacobson, Maynard, Tuschman & Kalur Co., LPA,
By: Anthony P. Dapore, Esq.,

On behalf of Defendant Ivan Sawchyn.

Ratimorszky, Rapoport, Spitz & Friedland Co., LPA
By: Dale R. Friedland, Esq.,

On behalf of Defendant Murray Davis.

Quandt, Giffels, Buck & Rodgers Co., LPA,
By: Robert C. Buck, Esq.,

On behalf of Defendant Leon Walker.

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STIPULATIONS

It is stipulated by and between counsel for the respective parties that this deposition may be taken in stenotypy by James M. Mizanin, and that his stenotype notes may be subsequently transcribed in the absence of the witness.

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CLAIR B. ERNHART, Ph.D.,

called by the Plaintiffs for the purpose of cross-examination, as provided by the Ohio Rules of Civil Procedure, being by me first duly sworn, as hereinafter certified, deposes and says as follows:

CROSS-EXAMINATION

BY MR. KAMPINSKI:

Q. Would you state your full name, please?

A. Clair B. Ernhart, E-r-n-h-a-r-t.

Q. Okay. And your address, ma'am?

A. 17429 Falling Water Road, Strongsville, Ohio, 44136.

Q. How old are you, Doctor?

A. 60.

Q. And if you would, run me through your educational background, starting with high school.

A. Olmsted Falls High School, 1949.

Q. Olmsted Falls High School?

A. 1949. University -- Heidelberg University -- Wait a minute. Olmsted Falls High School was '45. '49 was Heidelberg College.

Q. What degree did you graduate with?

A. Bachelor of Arts.

Q. Okay. Go ahead.

A. University of Missouri, 1953, Master of Arts, psychology.

MR. BUCK: You and I were in school there at the same time.

THE WITNESS: Missouri?

MR. BUCK: Yes. Go ahead.

A. Ph.D., Tulane, 1957, in psychology.

Q. (BY MR. KAMPINSKI) Was your schooling continuous from 1949 through 1957?

A. No. I took several years out and worked in an employment agency here in Cleveland and also with the relief agency for the City of Cleveland.

Q. What years would that be?

A. Those would have been '49 to '51.

Q. After your Ph.D. at Tulane, did you have any additional schooling?

A. No.

Q. Why don't you run me through your employment then?

A. All right.

Q. And I assume it started after your graduation from Tulane?

A. Yes. The professional employment, yes.

Q. Go ahead.

A. I went to St. Louis, Washington

University, and the University of Missouri at St. Louis for a period of time with some time out extending to 1970.

Q. What did you do there?

A. Mainly research, some teaching.

Q. In what area?

A. Psychology.

Q. Any specific subspecialty?

A. Child development.

Q. Okay.

A. The effects of such conditions as neonatal anoxia on early child development, effects of maternal attitudes on child development, concentrating primarily on development through age five years.

Q. In terms of neonatal anoxia, did you reach any conclusions in terms of your research as to whether or not neonatal anoxia had any effects on child development?

A. We felt that it did in terms of the data that we had. We now know, of course, that the research methods we were using at that time would not meet the criteria we now require.

Q. I guess you changed your mind then?

A. I don't know now. I have not looked at --

Actually, when we get into something like anoxia now, we're not really looking so much at that as we are at all the various etiological factors of which anoxia may be symptomatic, so we don't approach that topic in that way in present research methods.

Q. When you say you were doing research, did you have some type of position at these schools?

A. Yes.

Q. What was your title, what was your position?

A. I started as instructor and wound up as the assistant professor.

Q. What's the --

A. Associate professor, I believe. There are the economic ranges; instructor, assistant professor, associate professor.

Q. Did you actually teach or did you do research?

A. I did a little teaching but more on an informal -- I would take a course, teach a course in the summer or a night -- I did some night school teaching, particularly when my children were small and I did not -- there was a period out

there in that time period after my children were born, and during that time period I might pick up a course or two to keep myself professionally active, but on a very part-time basis.

Q. What period was that?

A. 1960 to 1963.

Q. So that from '57 to '70 excluding '60 to '63, you were doing research primarily then?

A. Right. After '63, I worked part time until '70, not full time.

Q. How many hours a week would you work?

A. Oh, maybe 20 hours. It would vary under different situations during that time period.

Q. What did you do in 1970?

A. I went to Hofstra University in Hempstad, New York where I took a full-time appointment as associate professor and taught developmental psychology and research methods and research design.

Q. What is that?

A. And statistics.

Q. Why don't you define that for me, please?

A. Research design, developing research in such a way that one can make valid inferences from the data obtained from a study.

Q. I'm not sure I understand that.

A. All right. Well, in order to conduct research effectively, one needs to take a number of conditions into account, such as the way the cases are selected, the method of treatment is applied, if it is a treatment-type study, the way cases are evaluated both in terms of the presumed etiological factors, and also the presumed outcome measures, the appropriate forms of statistical analysis, the way the cases are followed over time, assuming it's a study that follows over time. All of these kinds of issues are relevant to research design and research methods, and this is the area in which I concentrate at present.

Q. How long did you have that position as associate professor at Hofstra?

A. Until 1977.

Q. And then what did you do?

A. I came here to Cleveland at Case Western Reserve University Medical School with my appointment being at Metro General, Cleveland Metropolitan General Hospital.

Q. Explain how that works for me, if you are working for --

A. Okay.

Q. -- Case Western. How is it that you work at Metro?

A. The professional staff at Metro General are faculty of the University. We are one of the teaching hospitals of the University, which means that we do teaching, as well as the usual patient care kinds of services.

Q. But you are paid by Case Western?

A. I am on the payrolls of both institutions and part of my support comes from grant support.

Q. What percentage of your support comes from grant support?

A. Right at the moment it's about 50 percent.

Q. And who do you get those grants from?

A. The National Institute of Alcohol Abuse and Alcoholism, and the International Lead/Zinc Research Organization.

Q. And what percentages from each of those?

A. I'm not right sure at the moment. I'm in between budget periods.

Q. What was it last year?

A. All right. I would have to go back to my budget figures because we shift numbers of the

staff and expenses among these sources and I think I'm approximately 50 percent of the grant support from each of these two sources, but I would have to check exactly.

Q. What was it, let's say in 1983? Were you getting grants from both of them or just one at that time?

A. In 1983 it was not the NIAAA. It was the Institute of Child Health and Human Development.

Q. Were you getting grants from them?

A. Yes, I was.

Q. And what percentage would you say you were getting?

A. Approximately half.

Q. Half from each?

A. Right.

Q. How about 1981?

A. 1981 was the same as, I think, 1980. I'm not sure about 1981.

Q. Was there a point in time when you were getting all your funding grant wise from the lead industry?

A. No.

Q. Do you also obtain part of your earnings

as a result of work in litigation, legal cases?

A. Yes.

Q. And if you would, tell me when you started doing that?

A. Within the past year.

Q. You have never testified prior to the past year?

A. Not on a lead case. I did on an alcohol case, and I've been -- I've done so on intrauterine devices and on -- I think that's it for now.

Q. When is the first time that you were retained to assist on a lead case, not necessarily testify, but review, evaluate?

A. On a paid-consultant basis? It was in 1987.

Q. Have you done so where you haven't been paid for it?

A. Yes.

Q. When did you do that?

A. I've done that in -- well, I guess you would say EPA paid me when I have gone down there to give testimony in connection with some of the reviews that they were making for things like low lead in gasoline issues.

Q. How about reviewing any lead-related cases on behalf of the lead industry?

A. I have not taken specific cases. I have consulted for the lead industry without fee in connection with some of the lead standards, and I also serve as a member of the Steering Committee for a study of lead effects that is being conducted in Sidney, Australia, and that study is supported by the lead industry. They pay my expenses.

Q. When is the first time you got a grant from the lead industry?

A. I believe it was 1982, but I would want to go back to a lot of the information on that.

Q. The case that you were retained to review in 1987, what was that case?

A. There are several such cases, and I'm not sure whether I'm supposed to reveal confidences in this regard or not, but there are several in cities other than Cleveland.

Q. Well, why don't you reveal them and if your attorney reveals that you shouldn't answer them, I suppose that's the way we will go, but this is fairly typical, so if you would tell me what cases you have been --

A. Well, there is one in Baltimore.

Q. What's the name of the case?

A. The name of the children is Edmonds.

Q. Edmonds?

A. Edmonds.

Q. Okay.

A. They are twins. Chiquita and Chiquetta are the children's names, Edmonds, and I don't remember the name offhand of the defendant in that case. There is another one in Chicago.

Q. And the name of that one?

A. I would have to check on that one.

Q. Well, who were you retained by in the Baltimore case?

A. Daniel Witney.

Q. He is the attorney?

A. He is the attorney.

Q. Representing the defendant?

A. Yes.

Q. Have you testified in that case?

A. No. I've reviewed materials for him.

Q. Written an opinion?

A. Yes.

Q. You haven't been deposed yet?

A. No.

Q. So that case is currently pending?

A. Yes.

Q. And the case in Chicago whose name you don't remember, what attorney were you retained by?

A. I don't have it at my finger tips right now.

Q. Where do you have that information?

A. That's at my office.

Q. So that's something you could call and have your secretary check before we leave here today?

A. Certainly.

Q. Any other cases?

A. Those are the only cases of that nature.

Q. And both of them you were retained in 1987?

A. Right.

Q. All right. And the Chicago case, you were also retained by the attorney for the defendant?

A. Yes.

Q. Who were the defendants in the cases? Were they landlords or manufacturers of --

A. Landlords or the insurance companies representing landlords.

Q. And your opinion in each case was what, Doctor?

A. Well, the cases differ somewhat.

Q. What's your opinion in each one? Take them one at a time.

A. The opinion in the Baltimore case is that the performance of the children is not unduly low given the circumstances of their lifestyle.

Q. Regardless of any lead content, I take it?

A. Right.

Q. Okay. Go ahead.

A. The opinion in the case of the Chicago case is that there is not sufficient evidence of undue lead exposure and that the psychological evaluation of the children was not sufficient for the inferences drawn by the psychologist, and that there needs to be more work done on the case in order for there to be any substantiation of the plaintiff's position in that matter.

Q. Have you been deposed in that case or just written an opinion?

A. No, I haven't. I've written an opinion.

Q. Have you written any opinions in any other cases?

A. No.

Q. What is your opinion, Doctor, as to whether or not Deneta Ruffin had lead poisoning?

A. I'm sure she had lead poisoning. That is, everything that I have seen in the records indicates that she had lead poisoning.

Q. How severe was it?

A. It was a severe case.

Q. How do you rate --

A. But I'm not a physician and I'm not going to --

Q. We will get to that.

A. Fine.

Q. From your standpoint, how would you rate a severe case?

A. She had very high lead levels.

Q. What would you consider high lead levels?

A. 80 to 100 micrograms per dl blood, per deciliter.

Q. And her level was what?

A. May I go back to my notes?

Q. Absolutely.

A. All right. I don't have any question of her having been severely impacted in that regard. We have one reading at over one hundred. Other

readings are at 50, 46, apparently after kelation there. 46, we have looks like a rebound reading at 72.

Q. Prior to surgery it was well over a hundred, wasn't it?

A. Yes.

Q. Doctor, the notes that you are referring to now, those are written by you?

A. Yes.

Q. And used by you in preparing your report and evaluating this case?

A. Yes.

Q. And where did you get the information that you put into those notes?

A. I had a complete set of the medical records.

Q. Okay. That's what those notes outline?

A. Right. These are the notes that I made from it.

Q. Okay. If you would, may I have that?

MR. KAMPINSKI: Why don't you mark this, Jim, as Exhibit 1. While we're at it, why don't we mark your entire file.

(Plaintiff's Deposition Exhibit Nos. 1 & 2 were marked for

identification)

Q. (BY MR. KAMPINSKI) Doctor, I'm going to hand you what's been marked as Exhibit No. 1 and if you could just identify what that is.

A. These are the notes I made as I read the medical record last April.

Q. And they consist of how many pages?

A. Four pages.

Q. And then Exhibit 2 is what? Is that in your handwriting, also?

A. Yes, it is.

Q. And would you tell me what that is?

A. These are notes that I made when I was getting information about the new version of the Binet schedule that was used by Dr. Ownby in his evaluation at the time.

Q. The rest of the materials contained in this folder that you brought here are materials, I take it, that were provided to you by Mr. Kalur, is that correct?

A. Well, except for that from Dr. Drotar.

Q. That came directly to you?

A. Yes.

Q. You mentioned medical records. You don't have them here with you?

A. No. They were returned to Mr. Kalur's office.

Q. Was there anything removed from this file before coming here today, Doctor?

MR. DAPORE: Correspondence between Mr. Kalur and the Doctor.

Q. (BY MR. KAMPINSKI) Do you know the correspondence that was in those files?

A. No.

Q. Were there any matters in the correspondence that you relied upon in making your report?

A. No.

MR. DAPORE: Standard enclosures.

Q. (BY MR. KAMPINSKI) Was there anything else removed, Doctor, from the file?

A. No.

Q. Did you write any reports other than the one dated November 20th?

A. No, I did not.

Q. And no drafts of that report?

A. I had a draft which I disposed of. I wrote it originally on my word processor and then corrected it from the draft.

Q. Was it sent to Mr. Kalur for additions,

deletions?

A. No, it was not.

Q. Your word processor doesn't have a memory where that would be retained?

A. I don't remember if I retained that or not.

Q. So it may well be there?

A. It was mainly a grammatical change. It was not a substantive or content change.

Q. But it may be --

A. It may be on one of the floppies.

Q. But that is something you can check and let us know?

A. Oh, yes.

Q. Any other drafts that you prepared other than that one?

A. No.

Q. The lead levels that you have indicated exceeded a hundred prior to surgery resulted in what medically to Deneta? Did it result in encephalopathy?

A. I would rather not make a statement on medical diagnosis.

Q. Well, you reviewed the records?

A. I reviewed the records.

Q. Is that something that you were able to determine from the records?

A. I would assume that I did, yes.

Q. And what is that, Doctor?

A. I would rather not try to make a medical statement because I'm not a physician.

Q. I understand.

A. And I feel that it is not proper for me to make that kind of an inference. I can and will talk about what I do know with expertise, and that is child development and research design.

Q. In analyzing the effects of lead on a child, isn't it important to understand the significance of the medical injury?

A. Yes.

Q. And what is the significance of a swollen brain?

A. It is a severe condition, yes. There is no question of that.

Q. Well, does it have an impact on the intellectual status of --

A. It can.

Q. And can it have an impact on the behavioral status?

A. It can.

Q. And attentional status?

A. It can.

Q. Excuse me for being simplistic, Doctor, but if in fact you have a swollen brain, as Deneta did in this case, resulting in numerous operations and a shunt which is still in her head, and you have an effect that is demonstrated by even the psychologists retained by the defendant, that it has an effect on intellectual status, attention status, and you say it's possible that there can be a cause and effect, why in the world would you not attribute a cause and effect, Doctor?

A. I don't agree with you that the report by Dr. Drotar has indicated that there has been any notable effect.

Q. This child is in what percentile in terms of development according to Dr. Drotar?

A. May I look at these notes?

Q. Absolutely.

A. Her overall level of intellectual abilities are below those of over 90 percent of her age.

Q. And yet you indicate that there was no effect on this child, is that correct, Doctor?

A. I think one has to take into account --

Q. Is that correct, Doctor?

MR. DAPORE: I think she is trying to answer your question.

Q. (BY MR. KAMPINSKI) Well, you just told me that she is less than five percentile, right?

A. Well, it's over 90 percent -- the percentile would be less than ten percentile on the basis of this report.

Q. Well, excuse me, but I'm reading from the last page of his report.

A. Okay. Less than a fifth percentile.

Q. Right.

A. Now, may I answer the question?

Q. Go ahead, Doctor.

A. Okay. The child's performance is -- When you use a percentile like this, this is based on the norms for the test. That is the normative standardization sample, and the normative standardization sample consists primarily of white children, and it consists of a high proportion of children who are of middle socio-economic status, and who have -- It covers -- The standardization sample covers a wide range of children from this country. And when one takes a statement that a child is at the fifth percentile with respect to

his or her peers, where you define the term peers is what is relevant.

Now, this child is the fifth percentile for, if you would define peers as being all American children. However, she is at much higher than the fifth percentile if you define her peers as being black children of low socio-economic status, and this is an unfortunate situation, but it is a true situation, that this child comes from a background that does not give her the same chance with respect to whatever may be causing the differences between black and white children, and children of low socio-economic status, the majority of children in this country.

And thus, to take this kind of a statement as reflecting an impairment that's due to lead or whatever, requires that we have to look at what would we expect of this child if she had not been subject to the lead exposure and the consequent surgery and the circumstances of that illness, and we know that she is black. We know that she comes from a family where there are a number of problems. We know that her mother, to whom she apparently was attached, as shown by the medical records, this mother died in a rather

traumatic manner. We know that the child did not have any preschool education or training that might help to compensate for deficiencies in the home environment. We know these things, and knowing these things, I am not at all surprised that this child is functioning at what is the fifth percentile, based upon the norms of the test.

Q. So that the five brain operations that she was subjected to helped her, right? Or had no effect on her, is that what you're testifying to?

A. I'm not saying they had no effect.

Q. What effect did they have?

A. I'm not saying they didn't have --

Q. What effect did it have?

A. I don't know. But I do know that the effect is much smaller, if there is one, than is suggested by a simplistic statement that the child is at the fifth percentile as a result of her exposure to lead.

Unfortunately, we do not have adequately conducted studies using research methods that we now consider to be essential in this kind of research on children at this level of exposure.

Q. Well, where is lead concentrated in the brain, Doctor?

A. I don't know.

Q. What are the functions of the cerebellum?

A. The functions of the cerebellum?

Q. Yes.

A. Motor control, primarily.

Q. Is lead poisoning related to encephalopathy, that is, swelling of the brain?

A. Yes, it can be.

Q. Is it related to decrease in intellectual status?

A. It can be.

Q. Is it related to change in behavioral status?

A. It can be.

Q. Change in --

A. At high levels.

Q. Change in attention status?

A. It can be.

Q. Is cutting out the cerebellum or tonsils, does that have any long-term effects?

A. I would rather not express an opinion on that one.

Q. You don't know?

A. I don't have an opinion on that.

Q. Do you know?

A. I would assume it might have some, but I don't have the information. I'm not sufficiently expert in that area to form a statement.

Q. Does sickle cell anemia have any relationship to low IQ?

A. The evidence in the literature does not so suggest, but I don't know of any study that has made a systematic review of that. Sickle cell has not been related to this kind of deficit. We do know that iron cell anemia --

Q. We'll get to that in about two seconds, Doctor. But the next question I have of you is whether or not you have studies that reflect that orphaning of one parent causes a lower IQ?

A. I don't have studies of this sort.

Q. So when you make that statement, that is just something that you believe inherently?

A. It's something that I think a psychologist reviewing a child's record would take into account.

Q. Well, whether they would take it into account or not --

A. Or consider it to be -- It certainly cannot be beneficial to a child.

Q. The question is, though, do you have any

proof of, any documentation that orphaning causes a lower IQ?

A. I don't have that at hand.

Q. You suggested that iron deficiency does have an effect on IQ?

A. Yes.

Q. Could you tell me what evidence you have of that, Doctor?

A. Well, from very recent work done by people at Case Western Reserve; for example, Lozoff, L-o-z-o-f-f, and Wolf. Betsy Lozoff, Abraham Wolf, studies in children in Costa Rica.

Q. What's the name -- When were the studies published and what's the name of it?

A. I can send you copies of the case.

Q. Can you? You have them in your office?

A. Yes.

Q. When you say recent, how recent?

A. Within the past year, two years.

Q. Any others?

A. There are some others in the literature, but this is the one that I know best. It's a study that's been -- They were able, because of a low occasion, they were able to come back without some of the other factors that enter into some of

the research done in this country.

Q. What are the other studies?

A. I would have to pull the literature on that.

Q. Can you do that, Doctor?

A. Oh, certainly.

Q. Can we get an agreement that these items we're discussing will be provided to you and that you would provide it to me? And if you would, Doctor, why don't you make a list of these things as we go along so that we don't have any problem remembering what they are.

A. All right.

Q. You indicated that you would get me the names of the cases in Baltimore and Chicago.

A. Sure. Is it proper to, without violating confidentiality, to give out this kind of information?

MR. DAPORE: You can provide him the names of the cases and the attorneys. Those are matters of public record when the cases are filed.

A. Okay. Fine.

Q. (BY MR. KAMPINSKI) The Lozoff and Wolf article?

A. And the other articles on iron deficiency anemia?

Q. Yes.

A. Okay. Were there other items in there that you asked me if I could provide?

Q. Those are the ones that I remember, unless you recall some others.

A. I don't remember any others.

The year at which I first had a grant from ILZRO, International Lead, Zinc Research Organization.

Q. Just a little further on the iron deficiency problem. Isn't it true, Doctor, that when the iron levels return to normal, there is an almost immediate return to normal function?

A. Of general functioning, yes. The question is whether or not it also applies to IQ.

Q. Well, there has been absolutely no demonstrable evidence that suggests that there is any long-term effect after the iron has returned to normal, is there, Doctor?

A. I would like to refer you again to the Lozoff and Wolf --

Q. You have read it. I haven't. But does the article suggest that's the case?

A. The time period involved was not very long in that study and there is a need for follow up.

Q. Well, my question is a very simple one. Does the article suggest that even after returns to normal of iron, there is an intellectual effect?

A. It doesn't state that.

Q. Is that your opinion?

A. Nobody has done any work in that.

Q. In your review of Deneta's situation, was there a continuous iron deficiency or --

A. No, that was remedied.

Q. Then is it your contention that without such studies, her intellectual deficit was somehow caused by the iron deficiency?

A. We only know that that is another confounding factor. Whether it --

Q. Doctor, listen to my question. If you can answer it, I would appreciate it, all right?

A. Yes.

Q. Is it your contention that her episodes of iron deficiency somehow caused her to have a long-term intellectual deficit? Is it or isn't it?

MR. DAPORE: If you can answer it yes or no. If you can't, then you can explain it.

A. All right. It is a contributing factor, and it is very difficult in this situation to tease apart the extent of these various contributions to her performance.

Q. (BY MR. KAMPINSKI) And you say that without any evidence in the literature to support you in saying that?

A. I would produce the evidence for you.

Q. Okay. Just so I clearly understand what you are saying, Doctor, that if we take any individual lab person in the community, let's say in the area in which Deneta grew up, that we can predict that that particular individual will be in the lower five percentile in terms of IQ testing?

A. I won't say necessarily the lower five percentile. I would say that the person would certainly be well below the mean of the general population given that it -- you are talking on an average here?

Q. I'm talking about an individual person.

A. The individual persons will vary considerably from any area.

Q. You mean there are some smart black people; is that --

MR. DAPORE: Objection to that

characterization.

A. Of course.

Q. (BY MR. KAMPINSKI) Then how can you take any particular individual, Doctor, and say that that person should fall within a lower than average percentile than the rest of the world?

A. I'm saying that when we take into account such factors as race and socio-economic status, and I'll put the two of them together, that we can make a prediction with a certain margin of error as to where that individual is likely to fall. Now, that margin varies, of course, can be above or below the predicted value. It is possible, as you well know, for bright blacks to arise out of this kind of a situation. But all we can do is to work on what can we best predict would have happened to this child if she had not had the episode of lead poisoning.

Q. What was her attention deficit prior to the lead poisoning incident?

A. There is no evidence of attention deficit. It is unusual -- in fact, the medical records at the time she was in the hospital, which is all we have, she was about two to two and a half years old at the time. The medical records

or the nurse's notes indicate that this child was doing reasonably well, given the medical circumstances, during the course of her hospitalization. Her speech development was quite reasonable for the age by nurse's notes. That's all we had. No one asked for psychological testing at that time.

Q. What did she say that made you think that her speech development was just fine?

A. This is the nurse's notes. That's all we had, because no one tested her.

Q. Sure. Go ahead.

A. Okay. We have alert, talking understandably, smile and laugh, unsteady walk, alert, playing, smile, laugh, ataxic, active, alert, talking, smiled purposefully, three-word sentences. At that age, three-word sentences is a perfectly normal type of a competence.

Q. What were the words, Come here, Mama? What were they?

A. I would have to look and see what was there. I can't put words into her mouth.

Q. I'm asking you what words were there that lead you to suggest that --

A. Excellent verbal command for a toddler,

friendly disposition -- Friendly, sweet disposition, three-word sentence, easily understood. According to the mother she talked at one year, walked at one year, used whole sentence at two years, and this is the mother's report.

Q. That's pretty good, isn't it?

A. Yes.

Q. So that was pre-injury, right?

A. Yes.

Q. And you don't see any evidence of a change in that subsequent to her injury, Doctor?

A. There is a change. It is a kind of change that we see, and I see it in all of my own work, that we see happening to children as they progress from that age in the kind of environmental situation that this child has been in.

Q. Do you look at other members of the family to try to assist you in predicting the mental achievement of the child as it grows?

A. In my research, I do, and I think it would be very helpful in this case.

Q. So what would you expect, let's say, of a sibling who grew up under similar circumstances?

A. I would expect the sibling to be not

very different from this child.

Q. So if the sibling had a college education, would that affect you at all?

A. I would be very surprised.

Q. Would it affect your conclusions, Doctor, is my question?

A. Yes, it would.

Q. How about if the mother had a college education, would that affect your conclusions, Doctor?

A. What we're trying to do --

Q. Would it affect your conclusions?

MR. DAPORE: Let her answer the questions.

MR. KAMPINSKI: I would like her to.

Q. Would it or wouldn't it?

A. It would affect my conclusions and my predictions of what this child would have been without the lead poisoning, yes.

Q. And how would it affect it?

A. I would expect the child to be performing at a better level than she is.

Q. And would that then, if those situations existed, lead you to believe that the lead had more of an effect than is set forth in your report?

A. It would be a contributing factor, yes.

Q. Well, how much of a contributing factor, Doctor?

A. If this child had come from a college-educated family, say, with all of the middle-class features that we associate with that kind of a life style and had a performance like this, I would expect that something had happened previously. Although even then we do find children performing at this level, though quite rarely.

Q. And when you say --

A. In such a family.

Q. When you say something, now, you are referring to the lead ingestion?

A. It could have been. I don't know.

Q. That would lead you to believe it was lead ingestion more readily if you had that kind of a background, socio-economic background of the family, right?

A. My prediction of what the child would have been without the lead exposure would be different.

Q. Okay. Which would lead you to conclude that the lead exposure had much more effect on her

performance as is --

A. Lead or something else.

Q. Well, what something else? What else is there?

A. Iron deficiency is here. We have the -- the iron deficiency is involved, and we also have the circumstances of her home. We cannot expect -- we cannot predict the behavior or the performance of the children of college-educated patients to be the same as of children with this kind of a background.

Q. Where did I grow up?

A. I don't know where you grew up.

Q. Well, can't you tell by the way somebody progresses in their life where they probably grew up?

A. I would assume you grew up in a primarily middle-class home, but I don't know for sure.

Q. And would you guess that my parents were college graduates?

A. I don't know that.

Q. Would you guess that I had finished high school, for example?

A. Of course.

Q. Are all blacks low on their IQ tests, Doctor?

A. No. But the mean is lower.

Q. Do you know what Deneta's IQ might have been had she not had lead poisoning? Do you know, first of all?

A. There is no way one can know that.

Q. Have you ever seen a case of frank lead poisoning?

A. Yes.

Q. Where?

A. In St. Louis.

Q. When?

A. In 1958, '59.

Q. And what involvement did you have with that case?

A. I worked at Washington University School of Medicine and the case was one which I did an examination as part of my work as a psychologist there at that time.

Q. And then what did you do? Did you follow the case?

A. No, I simply had to assist in evaluating the case from a referral from a pediatrician.

Q. What are lead lines in the bones, doctor?

A. They show on an x-ray, you can see them on an x-ray of a highly lead exposed individual. You can see the effects of lead at the joints.

Q. And what do they signify?

A. They signify lead exposure.

Q. High lead exposure?

A. Yes.

Q. Were they present here?

A. I believe they were seen here, yes.

Q. Do you know what the presence of the enlarged third and -- well, enlarged lateral and third ventricles mean?

A. I would rather not give a medical opinion.

Q. Have you ever seen a case of brain swelling due to lead, Doctor?

A. I don't know what you mean by seen. I've seen such persons. I have not seen the brains.

Q. Okay. You have never -- you are not involved in clinical medicine at all?

A. No.

Q. All right. Have you ever observed surgical treatment for lead encephalopathy?

A. No. I don't normally observe surgery.

Q. Do you know what cerebral herniation is?

A. Not to the point where I can make a definition of it.

Q. How about subdural hematoma?

A. Yes. That's blood collection under the dura.

Q. And what are the effects of that, Doctor?

A. Pressure on the brain.

Q. And what are the effects of pressure on the brain?

A. It would depend, I presume, on how long the pressure is there and what is done about it.

Q. What's a --

A. But once again, you are asking me to be a physician while I'm not.

Q. I'm asking you to assist us, as you have been retained to do, in analyzing the effects on Deneta Ruffin of lead poisoning and the sequela to that.

A. I think there has been a neurologist involved in this case and I think you want that kind of information. It's appropriate to ask that person, if you want.

Q. I want to make sure what you are going to testify to when you get up on the stand. Now,

if you are telling me you don't know, that's fine. You can just keep answering you don't know.

A. Okay.

Q. What's a BP shunt, Doctor?

A. I don't know enough to answer that. I have a general idea.

Q. Do you know what it's used for?

A. To relieve pressure.

Q. Do you know what potential side effects there are from use of a BP shunt?

A. I would rather not answer that.

Q. Do any of the children that you have seen have BP shunts?

A. Not that I have seen in recent years.

Q. What is the outlook for, let's say a child after repeated exposure to lead?

A. At what level?

Q. Let's say the level that was observed in Deneta, in excess of a hundred prior to surgery?

A. There is a risk of developmental deficit.

Q. And just to make sure we understand what we're talking about, this girl exhibits evidence of developmental deficit, does she not?

A. Depending on how you use the data. She has a developmental deficit relative to the --

Q. You are talking about the cause. I'm just saying she has evidence of a developmental deficit. You are quibbling about what the cause of that deficit is.

A. I also would quibble about the use of your term deficit.

Q. What do you think this young girl can aspire to, given her testing by Dr. Drotar?

A. She will have trouble in school.

Q. And how about trouble having a job in excess of, let's say, a clerical-type job?

A. It's not very likely she will be able to have a position that's in excess of a clerical position.

Q. And you wouldn't consider that a deficit?

A. Once again, it's how you define deficit. Is it a deficit to be performing as ones peers with respect to socio-economic and family and so forth perform? Is it a deficit to perform as the large number of women that I see in my -- and she will be a woman -- as the large number of women that I see in my work at Metro General are performing? Whether you call this a deficit or not, I don't know.

Q. I'm asking whether you call it a deficit.

A. I would not call it a deficit in terms of the situation that she is in.

Q. So she doesn't have a deficit, Doctor, is that right; that's your testimony?

A. Depending upon how you define --

Q. I'm asking you how you define it, Doctor.

A. She has a deficit -- I'll usually qualify when I use a term like deficit. She has a deficit relative to the population as a whole. She does not have a deficit relative to her own circumstances.

Q. So when she was born black and to these particular parents and living where she lived, she was predestined to be, you know, a dumb kid who couldn't rise to the level of anything over a clerical position, right?

MR. DAPORE: Objection to the characterization.

Q. (BY MR. KAMPINSKI) According to you, is that right? Go ahead, Doctor.

A. She has a strong likelihood of not rising? I don't understand that. Obviously when we make these projections, we make them with a certain degree of error, a certain amount of variance about it. And there are fortunately some

individuals who go above a predicted value or a likely value, just as there are some unfortunately who fall below that. Our ability to predict isn't that good.

Q. What's the prevailing level of medical opinion on the toxic level of lead?

A. Where toxicity occurs?

Q. Yes.

A. At the moment the CDC standards sets it at 25 micrograms per dl.

Q. Who do you consider experts in the field of clinical lead poisoning?

A. Julian Chisholm.

Q. How do you evaluate her expertise?

A. It's a he.

Q. Julian?

A. Julian, right.

Q. Go ahead.

A. He is a very competent pediatrician who has done some considerable work in caring for lead-poisoned children, and has done considerable work on the composition of blood and the effects of lead on blood composition.

Q. Does he have any opinions with respect to the relationship between lead poisoning and

intellectual sequelae?

A. He feels that there is probably some relationship, but he is well aware of the severe problems in the research that supports that position.

Q. Who else would you consider an expert?

A. I would say Mary Fulton in Edinburg, Scotland.

Q. Who else?

A. Robert Bornschein, B-o-r-n-s-c-h-e-i-n, at the University of Cincinnati. There are others. Henrietta Sachs in Chicago, S-a-c-h-s. There are others doing research in the field, pediatric psychologists, pediatricians.

Q. Jan Lin-Fu?

A. Jan Lin-Fu is a person who has written frequently on the topic. She does not do research herself or has not done much, at least lately.

Q. How do you evaluate her expertise?

A. She has -- I don't think she has published much lately. She has published a considerable amount over time and she is knowledgeable in the lead effects area -- on the lead effects work in the 1970s.

Q. And --

A. And maybe early '80s. She hasn't been very active lately.

Q. What is her opinion with respect to --

A. She has worked primarily in the area of high lead exposure, high level lead exposure.

Q. Over 25?

A. Yes.

Q. And what's her opinion?

A. Her opinion is it's a definite risk factor for children, it's a definite problem.

Q. How about John Rosen?

A. John Rosen is a pediatrician who is extremely competent in blood work, somewhat like Julian Chisholm in this respect, and has worked primarily with high level lead exposure cases, and he works primarily as a pediatrician and his work is primarily related to blood imbalances.

Q. What does he believe with respect to the relationship of high levels of lead --

A. He believes high levels of lead are detrimental to child development.

Q. Vernon Houk?

A. Vernon Houk is a government official with, I believe, CDC. He is -- I believe he is a physician, but he is very active -- more involved

in the politics, I believe, of the lead effects field.

Q. How do you evaluate his expertise?

A. I have no judgment on it.

Q. And what does he believe with respect to the effects of lead?

A. I believe he was one of the authors of the presently active CDC document which lowered the acceptable level of lead for toxicity.

Q. How about an individual named Landrigan, Dr. Landrigan?

A. Landrigan is a pediatrician also who is now in public health work. He has done some research on the topic back in the '70s and it was research dealing with the effects of residing near a smelter, and the research is not being cited very widely at the present time.

Q. What do you think about his expertise?

A. I think at the time that he was doing it, he was doing just about what might be expected for that era. At the present time, the methods that he was using are now superseded.

Q. By you?

A. Not just by me.

Q. I see. How about Dr. Needleman?

A. Dr. Needleman is a child psychiatrist, and I believe he also has a background in pediatrics. He is at the University of Pittsburgh. Dr. Needleman -- I've had a long period of interaction with Dr. Needleman, as you probably know. And it is my feeling that Dr. Needleman, that his research on the topic is severely flawed.

MR. BUCK: Is what?

A. Is severely flawed, in the sense that the research methods, in the sense of inferences drawn from the research, in the sense of failure to consider relevant factors, in the sense of failing to report everything that he has done in his work. These, as I've stated, technically I believe to have a number of such flaws and I have stated these in memoranda to EPA, to the Agency for Toxic Substances and Disease Registry, and published papers and the like. It's no secret. There are problems there that I think have severely impaired the research upon which he is basing his opinion, and thus, I cannot give any credibility to statements that he makes.

Q. Is that why you tried to get a job with him at one time?

A. With him?

Q. Yes.

A. Yes. That was funny that you brought that up.

Q. Yes, that's real funny.

A. It was real strange at that time, and I have in my files we had a fairly friendly correspondence.

Q. You mean his research methods at that time were okay?

A. He had published material -- he had not yet published the severely flawed study at that time.

Q. When you say the severely flawed study, are you now referring to one that was submitted to the EPA?

A. There was a study published in the New England Journal of Medicine in 1979, and there have been enumerable spin-off papers from that by him.

Q. Is the '79 study the one that was flawed?

A. Yes.

Q. And you sought a job from him, you are saying, before that; is that right?

A. I believe it was before that.

Q. Okay.

A. In 1974 I published a paper with Joseph Parinno.

Q. We will get to that. And you are saying you sought employment with him before that, is that right?

A. I believe you asked me if I felt I would be interested to work with him. At that time I did not know, let's say, the manner in which he did research.

Q. At that time you weren't receiving any grants from the lead industry either, were you?

A. No, I was not.

Q. How about Dr. Graef? What do you think of his expertise?

A. He has not done research. He is a pediatrician, I believe, at Harvard who occasionally makes public statements on the matter.

Q. And as related to lead exposure and it effects, what are those statements?

A. He feels that lead at high exposure is detrimental to children.

Q. Are his research methods flawed?

A. As far as I know, he has never done research.

Q. How about Dr. Landrigan, were his

research methods flawed?

A. They would be in present time.

Q. Were Dr. Houk's research methods flawed?

A. As far as I know, Dr. Houk doesn't do research.

Q. Dr. Rosen?

A. Dr. Rosen's research is directed primarily to hematology, and thus not to child development.

Q. Well, but the effects of lead as it relates to child development, I thought you told me he believes it's relevant?

A. He has a belief in that regard, but his own research is not directed in that direction.

Q. How about Jan Lin-Fu?

A. She doesn't do research.

Q. How about Dr. Chisholm?

A. Dr. Chisholm relates to hemaglobin actually. He is analyzing my blood right now.

Q. How about his opinions then in terms of the relationship between lead levels to --

A. He bases his opinion to a large extent on the animal research, and animal research is another whole thing again, because one has to equate both the exposure component and the outcome

component if one wants to generalize from animal research to human research.

Q. So is his research flawed then?

A. His research is blood work, as I told you.

Q. How about his conclusions?

A. His conclusions based on child development are based on his reading of the literature. He places primarily emphasis in the animal studies recognizing the inconsistencies and the work on human studies.

Q. Does that mean that he's disregarded your studies or doesn't agree with them?

A. He doesn't say.

Q. What about Dr. Reigart?

A. Reigart?

Q. Yes. R-e-i-g-a-r-t.

A. I don't know that one. Can you give me a source, because I thought I knew the literature well.

Q. Well, if you don't know, you don't know.

A. I'm curious if there is something on the child development and lead area that I don't know about. And if you have a name, I should track it down.

Q. As soon as you depose me, I suppose I'll answer your questions.

A. I'm sorry.

Q. That's okay. Have you ever served on any government committees that set standards for diagnosing, treating or preventing lead poisoning?

A. No.

Q. When did you become involved in lead research?

A. My first published paper was in 1974. I was interested in it earlier. I was doing a prospective study in St. Louis and I thought it would be interesting to measure lead on these children because we were collecting so much other data. We took samples of hair and the hair analysis turned out bombed, so we never published that.

Q. Doctor, I was provided with your CV and I want to make sure that it's up to date in terms of your publications. It doesn't have a date on it. Could you tell me first of all what's the date of that CV?

A. I'm not sure. I would have to go by the last data entered.

Q. Just take a look and let me know if

that's complete with respect to your publications or whether there is additional ones not set forth there.

A. This is reasonably complete. I'm not sure. I've only done one publication since this one that I can think of offhand.

Q. Which one?

A. Under reporting of alcohol use in pregnancy, which is probably not relevant here.

Q. Nothing additional in respect to the lead industry?

A. No, not that I can think of.

Q. All right. What did you report in your 1974 paper, Doctor?

A. This was Parinno and Ernhart?

Q. Yes, it was.

A. And it was reported that there was a relationship between lead level and test scores on the McCarthy scales of reading ability.

Q. You did test score analyses of that, Doctor?

A. I did.

Q. You did findings on that?

A. Yes.

Q. That was when?

A. About 1981, I believe. I could get the exact date from here.

Q. Go ahead.

A. Or the publication date.

Q. Okay.

A. The analyses of course were done before the publication date.

Q. That's fine.

A. The reanalyses were published in 1985. They were done, I believe, in 1983, 1984.

Q. Was there one before the 1985 one or --

A. Well, there was a follow-up of that same group of children which was published in 1981.

Q. Well, let's go slow.

A. Okay.

Q. Your original paper with Parinno was 1974?

A. Correct.

Q. When did you reanalyze the results of that original paper?

A. In 1982, '83, along with the results published in 1981.

Q. Okay. So that you published some results in '81 of the same group of kids?

A. Yes. We followed that same group of children forward seven years later.

Q. When you say the same group, you started out with 80 kids, didn't you?

A. Yes.

Q. How many did you have in '81?

A. We managed to find 63 of those children.

Q. And when you re analyzed them for your '85 paper, how many did you have then?

A. It was the same data, re analysis of the same data, so there were no changes in the number of children. We did not see them again.

Q. So there were 63 in '81?

A. Yes.

Q. And you didn't see them again after '81?

A. No.

Q. You just re analyzed the data that you used in '81?

A. Right, and in '74.

Q. When did you -- And I may have asked you this, and I apologize, but when did you first apply to the lead industry for financial support?

A. It was after the publication of the '81 paper.

Q. After it?

A. After that paper was in press, so it must have been in '81 with the paper being in press in '80.

Q. That's when you first applied or when you first got funding?

A. When I first applied. I did not know of the lead industry association or ILZRO, or the possibility of support for industry at the time that I submitted the 1981 paper to pediatrics for publication.

Q. What was the opinion of others about your re analysis; for example, the EPA? Did they have any opinion with --

A. They had no problem with it.

Q. None?

A. No.

Q. Do they have an expert committee that reviews --

A. Yes, they do.

Q. And what did they think of your re analysis?

A. The expert committee considered the re analysis sufficient.

Q. Sufficient?

A. That it re-analyses were appropriate to

the -- these re analyses were conducted at the request of that committee.

Q. Right.

A. They considered that the re analyses were appropriate to the request made.

Q. It was inartfully asked and I apologize, but what was that opinion about the re analysis? Did they agree or disagree with it?

A. I don't know if you can say that you disagree with re analyses. The results were done.

Q. Did they agree or disagree with your results?

A. The conclusion that they drew, based upon my work and re analyses and work in review of Needleman's work and reading over other literature at that time was that the evidence at that time did not support the inference. I don't have the exact wording with me, but I can give it to you; did not support the inference that there was effects of lead at that level.

Q. You are sure of that, Ma'am?

A. May I send you a copy of that paper?

Q. I'm asking you if you are sure of that.

A. I may not have the wording exactly, but the essence of it was that the review of all of

this material did not support, when other factors are taken into account, the inference that lead affects child development.

Q. And what conclusion -- Where was that conclusion stated, in what paper or document?

A. It was stated in a report of that committee to EPA.

Q. And what did EPA conclude?

A. EPA took this material to what they call CASAC, and that's a s ientific review committee. CASAC is all upper case, an acronym. And that committee, CASAC committee, did not -- it accepted my re analyses, it accepted Needleman's re analyses, and it did not go further with the EPA expert committee. It did not have the EPA expert committee testify at that meeting which was in 1984, I believe, and thus EPA in essence, although they never so stated, did not carry forthwith the inferences drawn by its own expert committee.

Q. Was one of the members of that committee Jacob Cohn?

A. No.

Q. What relationship did Jacob Cohn have to that EPA study?

A. None.

Q. Did Jacob Cohn ever review your work?

A. Jacob Cohn at the request of ILZRO on my suggestion reviewed Needleman's work and my own.

Q. So he did review your work?

A. Yes, but not for EPA.

Q. Okay. I apologize. You are correct. What did he conclude about your work?

A. He concluded that neither study --

Q. I'm asking what he concluded about your work, ma'am.

A. Oh. He concluded that the study was not sufficient for the inferences drawn.

Q. All right. Why was that?

A. In part because the sample size was not large enough.

Q. And how many samples did he indicate that you had?

A. There were 63.

Q. Did you ever have your work reviewed by the National Academy of Science?

A. No.

Q. Who is Devore Davis?

A. I don't know the name.

Q. What is the manner in which you get

grants currently from the lead industry? I mean, explain to me how that works.

A. Surely. In June of each year I send them a proposal which is reviewed by, I believe, their member industries and their -- First of all, it's reviewed by their scientific advisory group and their member industries, and in those meetings, as I understand it, because I've not been present, they screen out a group of proposals that they feel are most suitable for support, and among those then they decide with their limited resources which ones they will support and what they can provide to a funding individual. So what else can I say?

Q. Are you saying that the lead industry has limited resources, is that what you are saying?

A. Yes, I am.

Q. Yes?

A. They have limited resources for research. What their resources are overall, I have no way of knowing. And I know that their resources for research are quite limited, or so they say.

Q. That's fine. What was the amount of your grant in June of '87?

A. Well, I received that grant, that

started as of January of this year.

Q. Okay.

A. And the amount including overhead is $55,000.

Q. What was it in '86? Well, I guess it would be January of '87.

A. I don't recall exactly. I can give it to you, but it's somewhere in the vicinity of $65,000 to $70,000 thousand.

Q. And what was it in '86 then?

A. Would you like me to send you copies of these awards?

Q. Yes. Would you please, from the time that you first got them?

A. All right.

Q. You mentioned, and I just want to clarify it, you mentioned earlier that you had been paid by the EPA, is that correct?

A. Well, they provide a nominal sum, like $200 for a couple of days to go down to research Triangle Park and participate in these workshops or seminars or whatever you want to call them.

Q. All right. So --

A. It's a nominal --

Q. Would it be correct for me to state this

in terms of sources of support, that you really haven't had any from the government; would that be accurate?

A. That's true.

Q. All right.

A. Well, I have my NI Triple-A grant and NICH grant. That's for a different purpose. That has nothing to do with the lead work. I do research on the effects of fetal alcohol exposure on child development.

Q. And that's for the National Institute of --

A. Alcohol Abuse and Alcoholism, or it may be Alcoholism and Alcohol Abuse.

Q. And the other one?

A. Is National Institute of Child Health and Human Development, and they supported some of my earlier work.

Q. These are governmental entities?

A. Yes, these are all part of the Public Health Service.

Q. All right.

A. I've also had, although it does not -- I have had support also from the March of Dimes. Their primary interest was in the alcohol work that I was doing, but their contribution is

acknowledged because some of the same cases are used in separate parts of my research.

Q. Have you ever done any research on what the state of the knowledge of the lead industry was on the effects of lead on people or children?

A. I'm sorry. I don't understand your question.

Q. Have you ever done any work or become privy to any knowledge that the lead industry had on the effects of lead on people or children, children included with people?

A. Well, certainly the people who are involved in ILZRO, which is the research organization supported by the lead industry. These people are quite knowledgeable in this field.

Q. I'm asking what you knew, ma'am, whether or not you became privy to the fact that the lead industry for in excess of 50 years has had knowledge of the detrimental effects of lead on people? Are you aware of that?

A. I have seen an article in the Journal of the American Medical Association indicating that members of the lead industry were aware that paint on cribs and toys, when it was lead-based paint, could be detrimental to children and, in fact, I

think at that time, according to the JAMA article, the industry was contacting manufacturers of cribs and toys to recommend that they not use that form of paint on those items.

Q. Are you aware of the fact that they were knowledgeable of that before they even put the paint on?

A. I don't go back that far. I haven't tracked back that far.

Q. You are not aware of that?

A. I'm not aware of that, right.

Q. What have been the foundations that have provided you with funds? You have mentioned ILZRO, right?

A. Yes.

Q. And that is what, what does it stand for?

A. International Lead Zinc Research Organization.

Q. Okay. Any others, any other foundations?

A. Well, the March of Dimes.

Q. Any others?

A. The public like health services, you know, the NI Triple-A and the --

Q. I'm talking about private foundations.

A. No, no other private foundations.

Q. How about -- is the ILZRO related to another organization?

A. Not that I know of.

Q. How about support from industry itself directly?

A. No.

Q. None?

A. No. They may have paid my expenses once to testify before EPA, but expenses only. I have not taken --

Q. Have they provided you support for research at all?

A. No.

Q. When you say they may have paid for, who; what part of the industry?

A. It may have been either the lead association or ILZRO that paid my expenses at one time to testify before EPA. Both were located in the same -- At that time, in the same office on Madison Avenue in New York. I don't remember which one picked up my hotel and plane fare.

Q. Okay.

A. But I have never received a fee.

Q. The lead association is what? Does it have a name?

A. Yes, but I don't have it at my fingertips.

Q. And they use the same office --

A. They did at that time. They don't now. The same building. They were -- I think they were really separate floors, but I'm not privy to what they do.

Q. What department are you in at Case Western?

A. Department of Psychiatry, and also I'm in the Department of Reproductive Biology.

Q. And are you in a department at Metro?

A. Yes. It's the Department of Psychiatry.

Q. You told me before you got funds from both Case Western and from Metro. Why is that?

A. It's a bookkeeping arrangement primarily, in that part of my grant monies comes through -- is administered through Case Western Reserve University. A part of my actual salary comes out of the operating funds of the Metro General fund.

Q. Does your department or have either of the schools or hospitals received funds from the lead industry because of your work?

MR. DAPORE: If you know.

A. Pardon?

MR. DAPORE: If you know.

A. Oh, yes. The grant of ILZRO is administered through what is called the Hospital Foundation which is a financial fund, I believe, of the hospital per se. It is a charitable organization which provides research grants and grants for other purposes for people who apply to it for that purpose. It also serves as a means of administering the grant in that I, and my department, can't accept that kind of a grant directly.

Q. Why not?

A. So they handle the administration and assume the overhead.

Q. Why not? Why can't you take it directly?

A. Because I don't think we're considered to be a tax -- with respect to taxes, we cannot accept a grant directly, a hospital foundation.

Q. I'm not an accountant, but if I understand you correctly, so that the monies that they can give you for your foundations, in order for them to be tax deductible for them, they would have to go through some charitable-type organization, but it winds up in your pocket?

A. Yes. Except that the hospital

foundation assumes a portion of the -- actually takes ten percent of the grant for overhead and administration and the like.

Q. Okay.

A. May I ask what's amusing?

Q. You can ask anything you want. And once again, I'll answer you the same as I did before. When it's your opportunity to take my deposition, I'll respond to it.

A. Okay. I'm sorry.

MR. DAPORE: I don't think that's called for, Chuck.

MR. KAMPINSKI: I do.

MR. DAPORE: She asked a perfectly legitimate question, what you saw amusing in her answer to your question. There is nothing amusing about that. It happens to be a fact of the way charitable organizations and grants to hospitals work.

MR. KAMPINSKI: Tell it to the jury. I'm sure they will be very interested.

Q. (BY MR. KAMPINSKI) What are the important problems, at least from your standpoint, Doctor, with the studies, regardless of who does them, on lead and the effects?

A. Well, they fall into a number of groupings. The primary ones in current research have to do with the methods of statistical analysis and most importantly the handling of other factors that influence development.

Q. These variables, I take it you believe that all of them should be attributed a certain weight in the equation that reaches some type of result that makes sense? Would that be a shorthand way of saying the way it should be done, an inartful way, but --

A. There are certain ways that one can handle this, in the analytic method and in the data collection manner and in the process of actually conducting this study, that can help to control what you might call threats to the validity of the study.

A study, for instance, would not be valid -- To take a kind of a simplistic example, if one were to try to assign a treatment to two entirely different groups and then test the result and say that it is due to the treatment, because if the two groups are initially different, then you cannot say that the effects are due to the treatment. That's a very simplistic and obvious

example of the kind of thing we're talking about.

When we get into some of these studies, we're looking at circumstances that are much more complex and much more involved than in that kind of a simplistic situation.

Q. What should a study control for in determining the effects of lead on intelligence?

A. It should control for just about everything else that can influence intelligence that you can readily measure and get information on unless you were able to rule it out.

Q. Tell me what those are?

A. For instance, you would rule out -- You wouldn't have to rule out race if you are working with an entirely white environment. If you are controlled by homogeneity, your example is homogeneous, or if you control by -- if you are considering a variable that is probably unrelated to the outcome, you don't need to control on it.

Q. Tell me what factors the study should control. Race is one of them, whether you have a homogeneous group or not; that's one of them. What else?

A. You make a control on economic status or surrogates or --

Q. What do you mean surrogates?

A. Socio-economic status is a real rough and crude index. If you are able to measure instead of socio-economic status, something like intelligence of parents, occupation of parents, education of parents, the quality of the homemaking environment, how the mother reacts to -- mother or other caretaker reacts to the child, conditions of that sort, you probably don't need to measure socio-economic status, because those are major direct determinants, where socio-economic status is a more indirect or rougher or cruder view.

Q. Okay.

A. You would also control, insofar as you can, parent intelligence, but you can't usually get mothers to sit down for a full hour and a half test, nor can you usually get fathers, so we have an inexact measure. We do a crude test on the mother. We would also --

Q. Why the mother?

A. Because usually she is the one you can get your hands on; she is usually available.

Q. I'm sorry. Go ahead.

A. You would also want to control, if you

possibly could, and we do in our research, on the way the mother reacts to her child as to stimulation in the home. We go to the homes.

Q. I thought that's part of the socio-economic aspect?

A. I mentioned socio-economic status, and then I said that within that there are a number of these other measures. Now, you can exclude some of these if you are covering that area of influence through other areas.

Q. Okay.

A. I would much rather use a measure like the home than I would a socio-economic status.

Q. Okay.

A. Like the quality of the home. It is an extremely powerful instrument.

Q. Go ahead.

A. Or device for measuring this.

Q. What else?

A. I would measure the effects of different things a mother does during her pregnancy, smoking, drinking, use of other drugs, including marijuana, and the more powerful illicit drugs.

Q. Go ahead.

A. I would take into account whether or not

the child was premature and the extent to which the child was even a few weeks pre-term, birth weight, other conditions, neonatal conditions, any marked -- any illnesses the mother had during her pregnancy, illnesses the child does have from the time of birth, through the time that you see the child.

Q. Go ahead.

A. Unusual stress circumstances during the early years, and I've included these in my research. What else? I believe that's pretty much the list of the major --

Q. How about lead?

A. Well, you were asking me to design a study to test the effects of lead?

Q. Yes.

A. Well, of course you would measure that.

Q. Oh, okay.

A. But these are the other factors that were involved and I thought that's what you were asking me for.

Q. All right. I understand what you are saying.

A. And I would use multiple measures of the lead insofar as they are available, because there

is variation on this.

Q. The socio-economic status, is that an important component in this model that you have set up for purposes of study?

A. It would be if you didn't have all the other things that I mentioned. It also would depend upon whether your sample was heterogeneous. If I took children range go the full range of what is available in Cleveland, I would have to give a lot more thought to that. Using children born at Metro, I don't have to give --

Q. How about the studies that you have done? Did you use socio-economic status as a variable?

A. No, I have not as such.

Q. I see. So that --

A. Because my populations have been pretty much homogeneous.

Q. Pretty much?

A. Well, you don't have absolute homogeneity.

Q. Well, out of the 80, how would you characterize --

A. You are going back to the Parinno study?

Q. Sure. '74 study.

A. I didn't know what you were talking

about.

Q. How many studies have you done? Two, right, '74 and '81?

A. I now have a very major study mentioned in here that was published last spring. Your source of information may not have seen it, but it's an extremely important study.

Q. According to you?

MR. DAPORE: Objection to being argumentative.

A. Yes.

Q. (BY MR. KAMPINSKI) How many subjects were in that study?

A. I believe it was over two hundred.

Q. And were they homogeneous?

A. With respect to socio-economic status, yes.

Q. All poor, all black?

A. Yes -- no. There were about 34 percent black. These were children born at Metro.

Q. All poor?

A. Yes.

Q. All parents without college education?

A. I don't -- I believe the education level was about ten years.

Q. Does that mean some had --

A. I don't know if any had any college at all. There may have been one who started. We don't work on --

Q. Did you control for socio-economic status on this recent study?

A. In the sense that they were all homogeneous, so they were all clinical patients at Metro General.

Q. Does that mean you didn't or you did?

A. I did.

Q. Did you control for socio-economic status in your 1974 study?

A. I did not have it as a variable. I did include maternal IQ and education, maternal IQ -- this was the first study.

Q. Did you control it in 1981?

A. Yes. Well, in the same sense. It was a socio-economic -- the homogeneous sample from the JAMA area of Queens, all black, all clinical patients.

Q. Would you consider the EPA as an expert body of opinion on the effects of lead?

A. I would say the EPA is fairly knowledgeable.

Q. How about the Center for Disease Control?

A. They have a fair bit of information at hand.

Q. How about the American Academy of Pediatrics?

A. The Academy as a whole or a sub-group selected to publish a paper?

Q. The Academy as it relates to their opinions regarding lead and the effects of lead.

A. I don't know.

Q. You don't know if they are an expert body of opinion?

A. I don't know.

Q. How about the National Academy of Science?

A. I don't know.

Q. Do you know what they say?

A. I have it in my files.

Q. What do they say with respect to the effects of lead on children?

A. They say that lead at a high level is detrimental.

Q. Who is Janet Yamin?

A. She was a graduate student of mine who did her Ph.D. at Hofstra when I was teaching there.

Q. Under your direction?

A. Under my direction, yes.

Q. What did she find?

A. She found some effects of lead, but when we re analyzed her data, as I did in the early 1980's, we did not have adequate data to correct for a problem in the blood data.

Q. What was the problem in the blood data that you corrected, Ma'am?

A. When you take a drop of blood and you put it on a piece of filter paper and you use the method we used at that time, which was the punched disk method, you take a punch and you cut a circle of the blood soaked, now dried filter paper and you use that for the analysis. After we completed the study, we learned that the extent to which that drop of blood diffuses over the paper varies as a function of hematocrit level. In other words, the thicker the blood, the less it diffuses through the paper.

Therefore, the lead that you would get from that punched circle is inexact to the extent that the hematocrit level areas and the function for hematocrit should have been done. But when we did the study, we did not know that. Hematocrit

information was no longer available in the clinics from which we had got the information.

At this time that this particular problem was brought to our attention by EPA's committee, Paul Muschak, to be exact, brought this up and showed it to us, and so we tried to go back and re analyze the Yamin data, corrected for the hematocrit problem, but the hematocrit problem wasn't there. Therefore, the results of her study are moot. We cannot say whether that study has any merit or not. Dr. Yamin did a good job with the work. We just didn't have the information.

Q. In '76 when she did it, you certainly believed it had merit, didn't you?

A. Yes, I did.

Q. You also weren't receiving money from the lead industry at that time, were you, ma'am?

MR. DAPORE: Objection.

Q. (BY MR. KAMPINSKI) Were you?

A. No, I was not. I was not when I published the paper in 1981, either, which was the follow up. May I explain?

Q. To your heart's content.

A. Well, in 1981 when I followed this same cohort of children forward, I found no effect of

that.

Q. Well, I thought we had already gone over that paper as being determined not to have validity by someone you yourself chose, isn't that true, ma'am?

A. I don't think that's the truth, no.

Q. I see.

A. That paper was limited, but it still had more information available than any other study to that point in time with respect to the persistence of effect.

MR. KAMPINKSI: Okay. Why don't we take about a five minute break.

(Discussion had off the record)

Q. (BY MR. KAMPINSKI) Just a few more questions, Doctor. In your 1974 report you attributed the effects of lead to IQ, did you not?

A. The effects of lead to IQ?

Q. That's correct. Didn't you?

A. I think you have that misworded. I attributed the effects of lead to IQ?

Q. Yes, didn't you, in 1974?

A. You mean I attributed the effects on IQ to lead?

Q. I'm sorry.

A. All right. Yes, I did.

Q. And you found, did you not, that the correlation to parents' IQ decreased as the level of lead increased, is that correct?

A. Yes.

Q. So that the higher the lead level, the less significant the parents IQ, is that correct?

A. The correlation of parent IQ and child IQ was lower for the high-lead group.

Q. Right. Is that correct?

A. Yes.

Q. That was your finding then?

A. Yes.

Q. And am I correct, Doctor, that in none of your papers and in none of your findings have you ever even attempted to rule out the effects of high lead exposure to IQ, is that correct? I mean, in all the reading I've done of your papers, I've never seen anything to suggest that high lead levels does not have an effect on IQ, is that correct?

A. I'm not sure I understand your question.

Q. Have you ever written or published anything anywhere that suggests that high levels of lead does not have an effect on IQ?

A. No, I have never stated that it does not have an effect, to my knowledge.

Q. And this is, or is this the first time that you have so stated in any document or writing?

A. I am not now stating that.

Q. Well, then --

A. I'm saying that there may be an effect, but it is a small effect.

Q. And how do you quantify that, Doctor?

A. It is extremely difficult.

Q. Well, how do you do it?

A. All right.

MR. DAPORE: Don't argue with her, Chuck. She is trying to answer your question.

MR. KAMPINSKI: I would like her to. And that's what I'm --

MR. DAPORE: Don't argue with her. Let her answer the question.

MR. KAMPINSKI: Don't tell me what to do, all right?

MR. DAPORE: If you are going to sit here and argue with her, she won't answer the question. I'm going to tell you that now.

MR. KAMPINSKI: Are you done?

MR. DAPORE: No, I'm not done.

MR. KAMPINSKI: Then finish so we can conclude here.

MR. DAPORE: Ask her the question.

MR. KAMPINSKI: No, no. Let's take this slow. Don't tell me what to do. If you have an objection, make it.

MR. DAPORE: I make the objection.

MR. KAMPINSKI: If you want to leave, do that, too. But don't tell me what to do.

MR. DAPORE: Well, I will tell you, Chuck.

MR. KAMPINSKI: No, no.

MR. DAPORE: I just did. Ask her the question, ask it politely.

MR. KAMPINSKI: And if I don't do what you tell me to do, what are you going to do?

MR. DEPORE: Then we will leave.

MR. KAMPINSKI: Now are you done?

MR. DAPORE: Yes, I'm done.

Q. (BY MR. KAMPINSKI) What do you attribute the high lead levels Deneta Ruffin had, in terms of the effects on her, what effect did it have on her, ma'am?

A. If it had an effect, it was a small effect.

Q. What was the effect?

A. I said if it has an effect -- I cannot say that it doesn't have an effect and I'm not saying that it does not have an effect. I'm saying that if it has an effect, it's a very small effect.

Q. Quantify it for me.

A. Given the rest of what we know now --

Q. Quantify it for me.

A. I can't quantify it precisely.

Q. As best you can.

A. Because I can't quantify precisely what this child would be if she did not have it, because that is a contrary-to-find conditional.

Q. As best you can quantify it.

A. I would say that the effect, if I could quantify it, and this is very hypothetical because there is an awful lot of ifs in it --

MR. DAPORE: Then if you don't have an opinion --

A. It would be extremely small.

MR. DAPORE: If you don't have an opinion and you can't quantify it, don't quantify it.

Q. (BY MR. KAMPINSKI) Then you don't have

any opinion as to whether this was an effect or what the effect was; is that what you are saying?

A. It's an undeterminable --

Q. Listen to my question, ma'am. If you don't understand it, I'll rephrase it as many times as I have to until you understand it, but I'll ask you to respond to it, okay?

A. I'll respond, but please try to ask it in a comprehensible and in a polite way.

Q. Had Deneta Ruffin not ingested lead, what would her IQ have been, in your opinion?

A. It would not have differed appreciably from what it is now.

Q. See, I don't understand those adjectives. I mean, would it have been 80, would it have been 100, would it have been 110, would it have been 83? If you don't know, tell me you don't know.

A. We can only answer in terms of probability. We can talk in terms of a range within which it would -- we can project what her IQ might have been. That is a range.

Q. Give me the probability of what range she would have been in?

A. She would be somewhere within the range, I would assume of --

Q. Give me numbers.

A. I would say somewhere, as best I can know from the information available, somewhere around 80.

Q. Okay. If -- and by the way --

A. On the basis of what I know and with a lot of error around it.

Q. Sure. And let's deal with some of that possible error. Am I being polite enough, ma'am?

MR. DAPORE: Chuck --

MR. KAMPINSKI: I want to be sure.

MR. DAPORE: Quit being sarcastic.

MR. KAMPINSKI: Do you have a problem with this, too?

MR. DAPORE: You are being sarcastic.

Q. (BY MR. KAMPINSKI) Do you have a problem with my questioning, ma'am? Is it all right?

A. As long as I can hear you.

Q. All right. Were you told anything about the parents?

A. It is my understanding that there was a -- that the mother is deceased.

Q. She wasn't deceased at the time of the

lead ingestion, was she?

A. No. She is clearly in the medical records as having been visiting her child and having been interested in the child. She did not have much understanding of sickle cell, but she was interested in the welfare.

Q. Were you told of the IQ of the mother?

A. I know nothing of the IQ of the mother.

Q. Were you told what educational level the mother had?

A. I don't know that.

Q. Were you told anything about --

A. I think it's worth finding out those things.

Q. We will go slow. Were you told anything about the educational level of any of the siblings?

A. No.

Q. Would that be important to you?

A. It would certainly help in reducing the error, the range of uncertainty.

Q. Okay. So you wrote a report without knowing that information, isn't that right, ma'am? I mean, you never asked for it?

A. I didn't have that information.

Q. Well, you didn't ask for it, otherwise

you would have gotten it I assume, right?

A. Right.

Q. Did you or did you not ask for it?

A. No, I didn't. I was working with the information available.

Q. But you already told us in your studies, I mean, that's information for you to know, isn't it?

A. I've never used the IQ of siblings in the study.

Q. You used the educational level of the parents?

A. Yes.

Q. And you told me you used it of the mother because she is usually the most accessible.

A. Yes.

Q. Why didn't you ask for it here?

A. It's my understanding it's very difficult to get people in this circumstance to take an intelligence test.

Q. How about how far she went in school; would that have assisted you?

A. It would have been somewhat helpful, yes.

Q. Where did she work, what kind of job did she have, what did she do for a living?

A. I don't know.

Q. Wouldn't that have been important to you, ma'am?

A. It could have helped.

Q. Why didn't you ask for it?

A. That's not a bad idea.

Q. Why didn't you ask for it before you wrote your report?

A. Because the information I was working with I think was sufficient to make a general statement.

Q. So that wasn't important for purposes of your determination then, right, the information that you didn't ask for, right?

A. That could have been helpful.

Q. Well, would it change your opinion if you knew any of that information? For example, if I asked you to assume, ma'am, that the mother had two years of college, would that affect your conclusions at all about what the projected likelihood would have been of this girl's IQ, Deneta Ruffin?

A. It might have.

Q. Well, does it? I'm telling you now to assume that. Does that affect your determination?

MR. DAPORE: She just answered the question. She said it might have.

MR. KAMPINSKI: I'm asking her to assume it.

Q. (BY MR. KAMPINSKI) How would it affect your determination? Would it change in terms of what you think Deneta's IQ might be?

A. We have been through this one before.

Q. I'm asking you to assume that.

A. It probably would have.

Q. What IQ do you think --

A. Are you telling me that the mother was college educated?

Q. That's what I'm telling you, that she had two years of college. Now I'm asking you what you say Deneta's IQ would have been?

A. It should have been -- the projected IQ would have been higher than what is here.

Q. Give me a number.

A. I don't have the figures to put into an equation right now.

Q. You gave it to us earlier. I'm asking you to give me a number now with this new information.

A. I don't have the constants or the values

to put in the equation at my fingertips.

Q. Would it go up five points, ten points?

MR. DAPORE: She answered the question.

A. I don't have a range at my fingertips right now.

Q. (BY MR. KAMPINSKI) You had a range at your fingertips for purposes of giving me what you expected her to be without a college education.

A. I was not factoring education into that at all.

Q. I know you didn't.

A. I was going simply on the basis of race and socio-economic status.

Q. I'm asking you to factor that in and give me an opinion.

A. I don't have a regression equation and a calculator in front of me.

Q. I can give you a calculator.

A. I don't have a regression equation.

Q. What is that?

A. A prediction formula that I would use to give a more precise figure.

Q. What's the formula?

A. It's one that you derive from data. I

have, you know -- I use the IBM mainframe for this kind of thing where I am looking at all of these things as they enter in all with a certain amount of error in the measurement.

Q. What did you enter into that IBM mainframe computer to give me --

A. I didn't enter into an IBM mainframe. I didn't need to for the small amount of information here, but if you had given me projected additional items such as education, and all the possible levels that you might have come up with today, or if you had brought up other conditions in here, father's education, grandfather's education, the learning problems of siblings in school and the like of that, then I would need to use a multi-factorial equation to generate a predicted value and a range of error around that predicted value.

Q. You have a right to read your testimony. You have a right to waive your signature. Your attorney can advise you accordingly.

MR. DAPORE: We will read it.

MR. KAMPINSKI: If you would get the information that I requested, and get it to Mr. Dapore, I would appreciate that. We do have a

trial date coming up so I would ask that you do that right away. Not that you have it this afternoon, but if I could have it this week. Is that agreeable?

MR. DAPORE: Sometime this week?

MR. KAMPINSKI: Yes.

MR. DAPORE: Sure.

MR. KAMPINSKI: Only one other thing that I would ask. If you do any additional analyses or make any additional conclusions, I can only ask you now that I would be apprised of those immediately, because we do have a trial date coming up and I certainly don't want to walk into the courtroom finding that you changed your opinion or there are different things. Is that agreeable?

MR. DAPORE: Of course, Chuck. You know it's required by the law.

I have read the foregoing transcript from page 1 to page 95 and note the following corrections:

PAGE:	LINE:	CORRECTION:	REASON:

_____
CLAIR B. ERNHART, Ph.D.

Subscribed and sworn to before me this day of , 1988.

_____
Notary Public

My Commission Expires:

THE STATE OF OHIO,)
) SS:
COUNTY OF CUYAHOGA.)

CERTIFICATE

I, James M. Mizanin, a Notary Public within and for the State of Ohio, duly commissioned and qualified, do hereby certify that CLAIR ERNHART, Ph.D. was by me, before the giving of her deposition, first duly sworn to testify the truth, the whole truth, and nothing but the truth; that the deposition as above set forth was reduced to writing by me by means of Stenotypy and was subsequently transcribed into typewriting by means of computer-aided transcription under my direction; that said deposition was taken at the time and place aforesaid pursuant to notice; and that I am not a relative or attorney of either party or otherwise interested in the event of this action.

IN WITNESS WHEREOF, I hereunto set my hand and seal of office at Cleveland, Ohio, this 10th day of February, 1988.

James M. Mizanin

James M. Mizanin, RPR, Notary Public
Within and for the State of Ohio
540 Terminal Tower
Cleveland, Ohio 44113

My Commission Expires: January 26, 1993.