

## Rachel K. Clifton\*\*

- Born 10/5/1937 in Burkesville, Kentucky
- B.A. in Elementary Education (1959) Berea College, M.A. (1960) and Ph.D. (1963) both in Child Psychology from the University of Minnesota

### Major Employment

- Assistant Professor, Associate Professor, and Professor at the University of Massachusetts: 1968-present

### Major Areas of Work

- Perceptual-motor and cognitive development, psychoacoustic studies

### SRCD Affiliation

- *Child Development* Editorial Board (1977-79), Editor of *Monographs of the SRCD* (1993-99), Governing Council Secretary (1979-85)



## SRCD ORAL HISTORY INTERVIEW

Rachel K. Clifton\*\*

Interviewed by Marvin Daehler  
At University of Massachusetts  
March 5, 1993

\*\*Rachel Clifton changed her name to Rachel Keen in 2002

Daehler: I'm Marvin Daehler and I'm here on March 5, 1993 to talk with Rachel Clifton as part of the oral history project for SRCD. I'm going to be asking a series of questions that are provided by the guidelines for that oral history. We're here at Tobin Hall, Department of Psychology, on the University of Massachusetts's Amherst Campus. We're glad to have you Rachel.

Clifton: Good morning Marvin.

Daehler: We'll begin, I guess, with the first question. The first questions are concerned with your general background. One of the questions is to talk about your family background and childhood and adolescent experiences that might be of interest, for example, things like where you were born, and where you grew up, and what your schooling was like, and your early work history.

Clifton: I was born in Burkesville, Kentucky a very tiny town with 2000 population and so my early schooling was in I think a very ordinary, typical, small town school. My mother was an elementary school teacher. This in fact, was a big influence on me, both in terms of my later goals and interests in child development and also in just being very educationally influenced.

Daehler: So you spent all of your childhood and adolescent years in this small town?

Clifton: The first seventeen years of my life.

Daehler: It was not a one room school house or anything like that?

Clifton: No we were in town, such as it was. So I went to school in the town. My mother actually taught school in a one room school house in the country and she used to take me to school with her.

**Daehler: Before you were old enough to go to school?**

Clifton: Yes and also because in those days the school in the country started in July and finished in March so the children could help in the planting of crops. So in July and August of every summer, even when I was old enough to go to school I was not in school. My mother would often take me, her form of day care I guess. She would take me with her to the country school. Of course I really didn't have to do lessons but I had fun and the other children at school accepted me and I was sort of a pet. I was pretty small. She didn't take me after I got older, so I was probably 5, 6 or 7 years old.

**Daehler: Did you have any early work history in this local town?**

Clifton: Yes. All through high school I worked in the only drug store in town that had the only soda fountain, with the only ice cream and coke available.

**Daehler: So it was a gathering place for the community then?**

Clifton: Yes, right.

**Daehler: That's how you became so sociable.**

Clifton: I dipped a lot of ice cream, served a lot of Cokes.

**Daehler: OK, anything else about your childhood years or high school years that you wanted to comment on?**

Clifton: Well I would credit both my father and my mother for giving me an orientation towards education and having a profession. I graduated from high school in 1955. So this was the era where a lot of females of my age were getting the message to stay home or to get married and start families. That wasn't the message that either one of my parents gave me. The message was that I should be able to pay my own way, I should have a profession. It was fine to get married, they weren't against marriage, or against having a family not by any means, but going to college and having some sort of work was considered to be the thing for me to do.

**Daehler: Your mother obviously went to college or at least spent some time in college.**

Clifton: Oh yes.

**Daehler: Did your father as well?**

Clifton: No. My father did not even graduate from high school, which wasn't at all uncommon I should hasten to add in that town at that time, it was typical. On the other hand he was extremely well-read. I would describe him as self-educated. So there were always maps of Europe on the wall, talk of foreign affairs, we subscribed to Life Magazine, Look Magazine, Colliers, the outside world was always talked about.

**Daehler: Were there any brothers or sisters?**

Clifton: Older brother - eight years older, older sister - four years older, so I was the last of three.

**Daehler: You were the youngest then. College experiences, what was your college life like?**

Clifton: Well at the age of 17 I left Burkesville, Kentucky. I went to Berea College, which is a small college in Berea, Kentucky. And there I graduated with a degree in elementary education. I had my teaching certificate from the state of Kentucky. I've already credited my mother as a role model for

why I chose elementary education. But when I was at Berea, basically I had a liberal arts education. I knew I wanted to work with children but it bothered me that I always thought the education courses were stupid, even though this was my major. So when it came to be my senior year everybody at Berea trained in elementary education, was supposed to go back to the hills of Kentucky and make their contribution. A teacher of mine in human development had been to the University of Minnesota. She said, "You ought to think about graduate school", and this is in January of my senior year.

**Daehler: Who was that teacher?**

Clifton: Her name was Opal Wolford. I literally had not ever considered anything but graduating and trying to find a teaching position somewhere in Kentucky, but she urged me to think about graduate school. So I decided I would apply to graduate school, but at that point I was still thinking of myself in education and that's the department I applied to in most places. I applied to Peabody, to Duke, to I don't know, several places. She also told me to apply to the Institute of Child Development at the University of Minnesota, so I did. When it came down to actually choosing where to go I decided that I was really more interested in children per se than I was in more educational courses. So that's why I chose the Institute, really not having a clue as to what it was like.

**Daehler: I think most of us who have grown up in rural backgrounds didn't know graduate schools existed until some particular individual might have told us about it. The junior or senior year of college is when we typically learned about those things. We've already indicated some of the origins of your interest in child development, is there more that you wanted to say on how you got interested in studying children?**

Clifton: Not really. Being an elementary education major actually gave me a lot more contact with children than I would have had, if I'd been in psychology. There was a psychology department at Berea and I had one intro course. So I went to graduate school in child psychology having only one intro course.

**Daehler: In psychology.**

Clifton: In psychology, right. So I had really no background. The psychology department at Berea was not an experimental program, there were only two faculty members and I didn't think very highly of it. It was also not a well-established department and not too highly regarded on campus. On the other hand the elementary education was highly regarded because it was seen as a way to produce these excellent teachers for Kentucky or the Appalachian region.

**Daehler: Berea was a cooperative school in the sense that you went out and worked as well as....**

Clifton: Well you didn't go out and work, you worked on campus. There was no tuition, there's still no tuition, but in lieu of that everyone is required to work ten hours a week. So it made it very egalitarian. There were also no scholarships because basically you could just about pay your room and board, because they paid you when you worked.

**Daehler: Did the work you do relate at all to your interest in child development?**

Clifton: Yes. Whatever your major was, Berea tried to find you a job that was related, and of course when you were a freshman, the freshmen were stuck with cleaning the toilets, and being janitors and working in the dining commons. But once you passed your freshman year and had chosen a major, they tried to make it suitable to your major. There was an elementary school that was associated with Berea College, where you did your practice teaching and so on. My job was the playground supervisor.

**Daehler: So you got to observe a lot of children.**

Clifton: Observe and interact with kids a lot, yes. Plus having the practice teaching. So when I got to graduate school at the Institute I realized quickly that I'd had a lot more contact with children than a lot of people there who had been psych majors. I always thought that was an advantage.

**Daehler: I'm sure it was. You mentioned one individual who was significant in your choice about going to graduate school, were there others either as an undergraduate or in graduate school, once you got to graduate school? Who were you mentors, the people that became your significant leaders or provided guidance for you?**

Clifton: Well the Institute was really a revelation; I hadn't a clue as to what graduate school was like. So when I arrived in the fall of 1959, the Institute had a new director who had arrived at the same time that I did, Harold Stevenson. Well Stevenson talked with all the new graduate students and for me this was a very significant interview. He looked at my records, I had applied to the institute claiming that I only wanted a master's degree, which was true, because I didn't see myself going any further than a masters. I thought I'll go to the Institute, I'll get a master's and then I'll go and teach elementary education. So that's what I had said on my plan. I'd never get in now. If anyone said that on their application, they would be immediately rejected. But it was different in those days. So Stevenson looked at my record and he also noted the fact that I had straight A's throughout my four years at Berea. I was the top student in my class in high school of course, which didn't account for much, but at Berea I also was. And he looked at my record and he said, I'll never forget this sentence, he said "Ms. Keen I think you should set your sights a little higher." This is one of those "PING" experiences where you say, "Oh, really?", new thought. He in fact was very influential in my career. Shortly after Stevenson came, the second year I was there, he became my advisor. The second year I was there the Institute got one of the very early training grants in 1960, the NIMH training grants for pre-doctoral students. Well Stevenson immediately handed me a pre-doctoral fellowship.

**Daehler: Those were good for the rest of your academic career.**

Clifton: Yes. I had it the rest of my three years. I finished in four years and I had it for the last three years. So Harold was always very instrumental in pushing me to think about other things and to do other things.

**Daehler: Were there other faculty or other students that you particularly think of in your graduate education.**

Clifton: Herb Pick came on board, unfortunately just my last year. So I never had a class with him, but I talked with him a lot and he's a dear friend. Also he was on my Ph.D. dissertation committee. At the Institute nobody was in infancy, in those days. Although I did my dissertation with newborn infants, nobody at the Institute was doing research with newborns.

**Daehler: Infant research did not exist for the most part at that time?**

Clifton: Almost anywhere in the country it was just beginning. Oh Mervin Bergman I would also say was extremely influential.

**Daehler: Oh sure I remember, being a former student at Minnesota too, I recognize these names very well. You might want to comment on who Mervin Bergman was.**

Clifton: Mervin Bergman was the head of the shop at the Institute and I think he still is. In fact Harold Stevenson recognized Mervin's abilities right away and probably gave him raises and promoted him as far as he could. Mervin helped everybody design and build their equipment. He taught me to solder. He was very, very influential on all of us who were doing research there. For my dissertation I had to build a sucking apparatus to measure newborn sucking. What to do? Well you go to Mervin and you say, "How can I measure newborn sucking?" and he comes up with a device that works and helps you build it. So he was truly remarkable in his impact on a whole generation of graduate students including you.

**Daehler:** I think it's interesting that you comment on him. I think most of us don't realize sometimes the technical support that we receive or training that we sometimes get in a field that can be influential on our later career.

Clifton: I hung out in the shop a lot because I appreciated this training.

**Daehler:** Are there any other broad political or social events that influenced your early career or subsequent?

Clifton: No, I don't think so.

**Daehler:** Politics really wasn't a big issue until probably the Vietnamese era.

Clifton: But I was already out of graduate school. I didn't see that affecting my career decision.

**Daehler:** This was still before the time in which there was a lot of push in terms of research support for children and research on basic processes. I think that push came a few years later.

Clifton: Well I would say from about the mid 60's on.

**Daehler:** We'll move on here and talk a little bit about personal research contributions. You've already mentioned you were interested in learning in babies, but summarize again your primary interest in child development at the beginning of your career.

Clifton: Well my dissertation was on newborn infants. So I've had a long-standing interest in infants. I am still working with infants in 1993 and I graduated in 1963, so infants have been the focus of my work throughout. Of course, I've done a study with puppies and I've worked with human adults a lot, and also with children at various ages, but certainly the bulk of my work, 90% of it, has been with infants.

**Daehler:** But you certainly were a pioneer, in work with newborns at the time. Were there any other people? None of your faculty members, as you indicate, were working in this area. What got you interested in newborns?

Clifton: There was an article by Bronstein, from Russia, that described how you could look at newborns habituating to sound and I was fascinated by that. That's what I decided to do my dissertation on. So it really came from reading. It's true that I was one of the earliest people, because when I began my dissertation in 1962, there was almost no infancy literature. Fantz had done his original study; also Lew Lipsitt at Brown was doing work and continued to do infancy work from then on. So Lipsitt's lab and Kessen's lab were just starting up really at the same time. So I would say Kessen's lab at Yale and Lipsitt's lab were the two places that were doing a lot of infant work. Oh, and Wagner Bridger at Albert Einstein and then, Susan Rose came into that lab. So those three places in the country were doing infancy research, but not at Minnesota.

**Daehler:** Harold Stevenson was always bringing people to the Institute, were they among the groups of people that you heard and interacted with while at Minnesota?

Clifton: Yes. In fact two people I can remember quite vividly. One was Bill Kessen. He came and gave a talk that was very influential for me. I remember at some point he confessed that one reason that he liked to study infants was because they were such fun, and I remember being struck that this guy from Yale could say he was studying infants because they were such fun, and I thought, Oh OK, it's all right to say that when you're somewhere giving a talk. Of course Lipsitt I met very early on in my career when I went to the first SRCD meeting that I attended. And I met Frances Graham who had also done

infancy work. She wasn't doing infancy work at the time I met her, but she had done ground breaking work on the brain injured high-risk infants in the 1950s.

**Daehler: You've already indicated that you began your career studying infants, you are still studying infants.**

Clifton: Let me add one other person that visited the institute, Harriet Rheingold. I believe she was at NIH at that time she visited and she was working with Jacob Gewirtz. So they came and they were talking about infancy research as well. So you're quite right, I think the visitors that came through were a key role in developing my interest in infancy research.

**Daehler: They sustained your interest as well as gave sort of legitimacy to your efforts to continue working in that area.**

Clifton: That's right.

**Daehler: You've already indicated that you started with infants, you're still working with infants and that's clearly one of the strongest continuities in your work. Are there some other continuities that are reflected in your work?**

Clifton: I would say that I've always been interested in brain-behavior relationships. My dissertation was on habituation to one repeated sound, then discrimination when a new sound was introduced. I was much influenced by Sokolov and his book on the orienting response. One reason that I was interested in habituation of the orienting response was because he hypothesized that a neuronal model was built up and this was located supposedly in the cortex. Although I've never done neurophysiology research, it's been a lasting thread of interest. It was also why I was interested in the precedence effect.

**Daehler: It's still relevant to your interest in auditory perception.**

Clifton: Right.

**Daehler: Have there been any major shifts in your interests over the years.**

Clifton: Yes, a couple. I would say from 1963 to about 1976 I was concentrating a lot on newborns using heart rate as a measure, so I was into psychophysiology and looking at habituation and orienting and conditioning.

**Daehler: Traditional learning?**

Clifton: Yes, right. Of course throughout this, once I finished graduate school, if I had to pick a single person as my mentor, professional mentor, it is definitely Frances Graham.

**Daehler: This was as a post-doc?**

Clifton: As a post-doc. I spent almost as long with her as I did at the institute. I finished my Ph.D. in four years, but I had a post-doc for three years. So I learned about psychophysiological measures and also just having daily contact with a person I consider one of the greatest scientists that I've ever known had a deep and lasting impact on me. That was at University of Wisconsin. She was in pediatrics in the medical school. So that experience at Wisconsin really characterized my work for the next decade far more than what I had done in graduate school (except for my dissertation), because I was doing psychophysiology, I was looking at orienting, I was looking at conditioning, I was using newborns.

**Daehler: So you were able to add the psychophysiological component to your interest in basic learning processes.**

Clifton: That was the purpose of the post-doc. I had wanted to use heart rate as a response measure when I was in graduate school, but I read enough about it that I realized I didn't know enough, and I didn't have the equipment actually. So it was easier to build the sucking apparatus than to build a polygraph from scratch.

**Daehler: Or to analyze the data from it.**

Clifton: And I realized I didn't know enough to analyze the heart rate data. So the purpose of the post-doc was to get the money for this additional training. I applied to NICHD and the stated purpose was to learn how to do psychophysiology work with newborns.

**Daehler: So that was your first phase and major set of research projects. Then you moved into a different phase for a little bit.**

Clifton: Yes, it was really while I had a sabbatical at Stanford in 1975 and 1976 and I was at the end of a grant phase, so I was writing a grant renewal. It was a lot of fun, I just spent a lot of time in the library and I thought OK I want to do something really different. I wrote a grant to study the precedence effect and the development of the precedence effect in infants, again because of the brain-behavior relationship that I could see. I submitted that and it got disapproved, but I was not disheartened, I was angry, because the review sheet clearly showed that these people didn't even know what the precedence effect was and hadn't understood it at all. I was at a disadvantage though, because I was on a study section at the time, the old experimental psych study section, which has been broken up and reconstituted at this point. This was the study section that had previously funded my grant. When I submitted this renewal, because I was on that study section, it had to go to another one, and it went to communication disorders or something like that. They simply didn't understand it. It was a split vote, there were two people approved and eight disapproved or something like that. So I re-wrote the grant and my cover letter said please send this to human development not communication disorders and then it was approved with a score high enough to be funded.

**Daehler: And you've been doing research in the area of auditory perception almost ever since?**

Clifton: That's right because the precedence effect is an auditory phenomenon. For the next decade then from like 1977-1978 up until about 1985-1986, I was doing work on auditory localization, spatial hearing and the precedence effect in infants.

**Daehler: Then from there you went into?**

Clifton: Well, I would say motor and cognitive development and that's the phase I'm in now. So I see my career as in these three phases. A very interesting thing happened when I tried to change research topics. NSF was in those days funding the precedence effect work. When I wrote a renewal and submitted it and I said I'm not doing the precedence effect, and I propose these other things, the study section said, "Well you've done such wonderful work on the precedence effect we don't know why you want to go into anything new." And again it made me very angry and I called the program director and I said "If you want to kill science, that's the way you kill science, by telling people never to try anything new." So then I went back to NIH and I got it funded over there. But I think in fact, in having been on three different study sections, I think there is a real tendency to tell people, if you have success in a certain research area, don't venture out and try something brand new. For example when I submitted my current grant where I requested this opto-track device that measures motion in three dimensional space, study section questioned my expertise and this was just two years ago. What did I know about recording things with this opto-track system, would infants really accept the ireds (infrared emitting diodes) that you have to put on their hands and so on? So again I would say that every time I have tried to change directions the funding apparatus has lagged. I have always had to go back two or three times to get what I wanted.

**Daehler:** That's an interesting point. In some ways the change in directions is not great, I mean you're still working with the same population, you're still using sophisticated technical support projects, but you had to prove your expertise in each of those areas before you could get funding or at least justify it. It's not like you're moving to a whole different work.

Clifton: Exactly but like on the auditory grant they said you need a consultant, you don't know anything about audition. Which was true I'd never had a course in auditory perception, but goodness I was reading a lot.

**Daehler:** It's interesting the evaluation is almost like you can't teach yourself and become skilled in these areas.

Clifton: Which we both know that if you just do what you were trained to do in graduate school, your career will be short.

**Daehler:** The field will never progress.

Clifton: Any successful person has to keep changing their research direction every once in a while. As you say I didn't even see it as a very big shift, although in the one case it was going from orienting and conditioning into auditory perception. It was true I had no formal training in audition but I was teaching myself. It was the same thing with the motor system, you have to prove yourself all over again, because they question what you know about this new research you are proposing.

**Daehler:** The other thing that strikes me is how important, at least for that first shift, your sabbatical was. And it may have been on your second shift as well, I don't know, but opportunity to do that self-education is important.

Clifton: Absolutely critical. For example, when I made the shift into motor development I spent a sabbatical at the Applied Psychology Unit in Cambridge, England where I worked all year with Alan Wing who had a similar device to the opto-track and he was well known in motor control. He didn't work with infants, he worked with adults and with patients who had motor difficulties, like Parkinson's, but his expertise was in motor control. So I did spend a whole year with him, I did research with him, we analyzed the data, and I learned a lot. So your absolutely right Marvin, sabbaticals are the time to re-work yourself and bring your skills in a new direction. It's been truly critical.

**Daehler:** What would you say have been your strengths and the weaknesses of your research and theoretical contributions, as well as the general impact of your work?

Clifton: You know that's so hard. Usually the pink sheets (grant reviews) say, "When is she going to get a theory?" I think that my weakness is clearly that I do not come up with theoretical ways to think about auditory development in children or I certainly haven't come up with any theory of reaching or how infants develop reaching or any other kind of motor control, for that matter. So definitely my weakness is I have not come up with any grand theory about what I'm doing. A lot of my research is theoretically motivated, but I wouldn't say that I have produced any significant theoretical advance. I think my strength is being a very good observer of behavior, I love being in the lab. I personally run some subjects in every study. I try to be in the lab a lot especially for piloting, I'm always there for the piloting. I'm pretty good at figuring out what works and what doesn't work. I think my strength is really in intuiting what the baby is going to do and being able to concoct a situation where they will perform extremely well. I think that's my strength.

**Daehler:** Your strength comes out of your long tradition of observing.

Clifton: Yes I think so.

**Daehler: And then being able to develop specific procedures that will capture what you want to learn about.**

Clifton: I enjoy that phase of the research too. It's really a challenge when something doesn't work. You pilot this apparatus that doesn't work, so how do you get it to work? It's sort of like being convinced that the baby can do something, but it's up to the experimenter to be able to reveal it. I find that a lot of fun.

**Daehler: What would you say the impact of your work has been at this point? And let me say one thing right away, you have among the field a number of excellent former graduate students. It's clearly been an impact at that level. You might want to mention a few of those individuals.**

Clifton: Yes, when I think in terms of my graduate students certainly Tiffany Field and Susan Goldberg and Barbara Morrongiello right away come to mind. They've all made significant contributions of their own. Then in terms of post-docs, I've had a lot of post-docs, almost as many post-docs as graduate students. Very early on when I first arrived at the University of Massachusetts, Andree Pomerleau and Gerard Malcuit were both my post-docs in the early '70's. They are French Canadians, now on the faculty at University of Quebec, Montreal. They have certainly both contributed significantly to the field. Then I also think of Dan Ashmead who has gone on to do a lot in both auditory development and motor development. Marsha Clarkson who is one of the leaders in auditory development at this point was not only my post-doc but she was a very long time research associate of mine in the 1980's.

**Daehler: All of them are continuing to be very productive researchers.**

Clifton: They're on editorial boards, they receive grants, they make significant contributions to journals. They're seen as real leaders in the field. Of course Tiffany is much more famous than I am. I like to introduce myself as Tiffany Field's advisor and people say, "OH!" They're impressed.

**Daehler: Well that's clearly the impact of your work on your students. Is there some other level in which you think there has been some impact on the field?**

Clifton: Fran Graham and I were very pleased at the Psych Bulletin article we wrote in 1966, "Heart rate as a component of the orienting response." That became a "citation classic" in the 1970's. So that was very influential and was actually published when I was still a post-doc. In terms of research contributions, I think an article I did in Child Development 1974 on heart rate conditioning was the first to show that newborns responded to absence of a stimulus in extinction. That was at a time when people were really saying that the newborn could not be conditioned. My feeling was that people had tried to condition motor responses but the motor system is very immature. If you want to show conditioning then pick a response system that's more mature.

**Daehler: In evidence of your observing skills.**

Clifton: I knew at that point that infants' heart rate change was a very sensitive measure of what was going on in the environment. So that worked very nicely. Then I guess more recently all the stuff on the precedence effect. I don't know that it's had much impact but I think it's good work, and it led me into a whole new field where I'm doing work with adult perception. It was an observation I made during the infant work that led directly to the adult work. I discovered a new phenomenon that other researchers actually refer to as the Clifton effect.

**Daehler: At the time in which the last tape ended we were talking about significant contributions and Rachel was talking about the Clifton effect.**

Clifton: OK. The Clifton effect is an auditory phenomenon having to do with the precedence effect. Do you think I should explain what the precedence effect is?

**Daehler: It probably wouldn't hurt.**

Clifton: It can be explained very simply. Imagine you have two loud speakers, just like your stereo at home, and if you put the same output through both loud speakers but one output is leading the other slightly by a few milliseconds, you don't localize the lagging sound, you hear only one sound source at the leading side and you are sort of unaware that there is any sound coming out of the lagging loud speaker. This is called the precedence effect because you only hear the leading or preceding sound. The Clifton effect is very simply if you suddenly switch the lead and lag sides you can hear sounds out of both sides for a few seconds. It's as though you inhibit the echo or the lagging sound. Your brain does some sort of analysis on the sound, and if it decides the lagging thing is indeed an echo it begins to inhibit that sound. This led me to view the precedence effect as having some cognitive components as opposed to being due to low level, hard wired brain stem effects (the current view at that time). Anyway, it was an observation that I made while running the infant research and I thought, well that's an interesting thing. It turned out to be a new phenomenon and was called the Clifton Effect. I began later on collaborating with a colleague in Communication Disorders named Richard Freyman and we have had very good luck in getting that adult psychoacoustic work supported for about the past six years. I have this new field of research and I started going to Acoustical Society meetings and they are unaware of my reputation in the infant world. And people in the infant world are unaware that I do anything with adults, so it's kind of interesting.

**Daehler: What directions of research did you think were the most wrong-headed or the least successful?**

Clifton: During the early 70's maybe from '72 to '75, right before my sabbatical at Stanford I was doing this work on conditioning in infants. Although I did have good luck doing the conditioning study with newborns and I was pleased with that, I was also doing some other conditioning work. It wasn't working and I decided it wasn't very interesting and that was really when I decided to change directions and look at something else. A lot of other people were changing direction at that time too. I think Lew Lipsitt gave up on conditioning infants too.

**Daehler: You've had a lot of funding over your years, including research career awards over the last decade. Do you want to comment a little bit about how important that has been?**

Clifton: Yes Marvin, it has been utterly critical. I could never have done the research that I have done without the funding, starting from a pre-doc at Minnesota in 1960 through having a three year post-doc from NICHD from '63 - '66. Then when I first started here at the University of Massachusetts I immediately applied for an NIMH small grant and I got that. Then I went on from there to applying for bigger grants. Then in 1981 I applied for a research scientist award from NIMH and that was renewed in 1986 and then again renewed in 1991.

**Daehler: So that has been a critical part of your getting as much work done as you have.**

Clifton: Absolutely.

**Daehler: You've been on a number of different study sections as well, is it three?**

Clifton: Yes I was on one in the 1970's, the old experimental psych study section. That was very interesting to be on, because I think me and Dave Zeaman were the only members who were doing work with children. Everybody else was in animal work or human adult work. Then I was also on an NIMH study section called cognition, emotion and personality. That was from I think '83-'86. Currently I'm on HUD 1, the Human Development 1. I also served four years on the March of Dimes, study section, a private foundation. I've always felt that you had to give back something, if you're getting money. If you're asking other people to review your work then you ought to be willing to review other people's. So you know, have a sense of obligation.

**Daehler:** You had some personal comments about the importance of funding new directions of research and so forth. Do you think there's been any other impact that you've had in terms of shaping the directions in which funding policy has proceeded?

Clifton: Certainly the people on study section have a big responsibility because they're cutting research off. If you turn something down for a journal that is just that study and the person can usually find another journal that will publish it if it's any good. On the other hand when you're turning people down for grants this has much more grave consequences. So I've always felt an enormous responsibility. I don't really consider it fun to be on the study section.

**Daehler:** So generally your sense is that there's a lot more good grants come in than can be funded?

Clifton: Yes definitely.

**Daehler:** That you just wish that there were more resources provided researchers.

Clifton: I think that's particularly true right now. It's pretty rare now that we actually review bad grants. What is true is that certainly good solid research is not receiving funding. This is very depressing, you know you come back from the meeting and you know that you reviewed 40 or 50 grants and maybe five will get funded and five more that you'd love to see funded won't be.

**Daehler:** You think that that is really inhibiting progress in the field then?

Clifton: Yes, I do. Of course everybody always yells for more funding, but grants are getting very expensive and the funding of the grants hasn't kept up with the expense of doing research. Then there are more people in the field and they are good people. So it's just a highly competitive situation.

**Daehler:** OK. I'm going to move a little bit to your activity at the University of Massachusetts and the institutions that you've worked at. It might be best starting off by asking, where have you worked besides the University of Massachusetts, anywhere else?

Clifton: Almost nowhere else. After my post-doc I went to the University of Iowa because my husband, Charles Clifton, was there. I had a half-time research associate position there.

**Daehler:** So this was from 19...

Clifton: Oh, about '66-'68. So for a couple years I was at Iowa's Institute of Child Development.

**Daehler:** You went there after your post-doc at Wisconsin?

Clifton: Yes. Right. So we were not at Iowa very long. Chuck was there longer than I was, because that was his first job after graduate school. In 1968 we came to the University of Massachusetts, the same year you did Marvin.

**Daehler:** Yes, we've been here a long time.

Clifton: I actually think it's a great advantage to stay in one spot, because you can build your lab. If you're not continually moving around I think it's very healthy for your career. I've actually never felt a desire to move. Sabbaticals however are extremely nice, they are very very important to put you into a new environment with new colleagues every seven years. I consider sabbaticals really critical to continued professional growth, as well as going to meetings like SRCD. I haven't felt stultified by staying in one spot for many years, have you?

**Daehler:** No, not at all. I would agree with that whole heartedly. In terms of the university, in what ways has it helped you to reach your achievements and in what ways has it been frustrating? In what ways has this department and this program in developmental psychology here been influential?

Clifton: I have a lot of good things to say about the way the university has treated me and also the department and in particular my developmental colleagues. I'll start with the university first and work down to the colleagues. When I came here in 1968 I had one child and within a month of arriving, got pregnant with a second child, so I didn't want to work full time. I chose to work half-time. I worked half-time from '68 to '79, which meant that my course load was two courses instead of four. But at the same time I never felt like I was a second class citizen. I had grants, I had graduate students; I think a lot of people in the department actually didn't realize I was half-time.

**Daehler:** I don't think I remembered. I knew there was a period of time which you were, but I certainly didn't think it was that long.

Clifton: In fact I was promoted to Associate in 1974 and in '1976 I was promoted to Full Professor. Even when I was half-time non-tenure track, I was a full professor.

**Daehler:** So your progress wasn't impeded at all in terms of promotions.

Clifton: No, because promotions are not tied to being tenure track, they are tied to what you've accomplished. During that time I was Associate Editor on Child Development from 1977 - 1979. I was Associate Editor on Psychophysiology from 1972-1975, and I was on study section from 1974-1977. I felt that my career was going more slowly than if I were full time, of course, but it was going 'at the pace that I felt was right for me when the kids were little. I think there would be a lot of departments, a lot of universities that would not allow a part-time person to progress; they would treat you as a lecturer, they would not promote you. They would take complete advantage of the fact that you were non-tenure track, but I just never felt second class at all.

**Daehler:** Any frustrations while you were here?

Clifton: The usual. Maybe I should continue on down though about why I felt good about the university and the department, because of course it was the department personnel committee that would have to put forward my promotions and so on. I think one of the biggest impacts on me has been the fact that the developmental area acquired in the early '70's almost the form that it has today. So Marvin, you came in '68, Nancy Myers was already here, Dan Anderson came about 1970 and Bogartz came...

**Daehler:** '72 or '73.

Clifton: Yes. Early on we achieved the growth that we have now and people have come and gone, and they've been important. For example, Ed Tronick and Carolyn Mervis were here for a number of years. But there's been the core of us that have been here and these are the colleagues that have really counted for me over the years. I always felt extremely supported.

**Daehler:** Then we moved into a new building in 1970 as well.

Clifton: '72, right.

**Daehler:** At facilities that helped in terms of carrying out your research.

Clifton: Yes for one thing the new building had an anechoic chamber, which proved to be very critical in the precedence effect work with adults. Yes, right away after coming here I had beautiful lab space, with sound-proof rooms, double walled and sound deadened, and there was also a lot of equipment that went along with getting a new building. In fact it was a great boost I think to all of us, to get a

new psychology building, shortly after the department had expanded, doubled in size. So it was very exciting in those early days, still is, but it was exciting from the start.

**Daehler: Were there any particular frustrations that you've experienced.**

Clifton: No I can't think of anything in particular to be honest; I can't remember any time that I was going and asking for something that was being denied.

**Daehler: You've always been encouraged to get more research support.**

Clifton: Yes. Even though I was non-tenure track, I never felt threatened in that position, like well in a year you could be out, because I had to be re-appointed every year on this non-tenure track.

**Daehler: So when did you finally achieve tenure?**

Clifton: 1980. And you'll recall I graduated in 1963. So being half-time did slow me down. Not many people take that many years to become tenured.

**Daehler: But given that you were half-time, even given that, your tenure position came at approximately after about seven full years of work at the university.**

Clifton: Well the tenure came after I was already full professor. They could not tenure me until I went full time. When I did go full time in 1979 I was immediately tenured the next year in 1980. Because they simply couldn't do it before; I think if they could have tenured a half-time person, they would have done it. But the rules of the university are, you can't receive tenure if you're not full time. I wasn't worried about that decision. I thought if they wanted to get rid of me they've had lots and lots of chances.

**Daehler: One of the questions asks about your experience as a teacher. We talked already your training of graduate students. So you may not want to comment too much about all that, but courses you've taught. Again the issue of tension between research and your teaching.**

Clifton: Well I've never felt there was that much tension between research and teaching except of course when you have a heavy teaching load it takes away the time from doing research. So it's only a time factor, but for many years I taught Psych 350, which is the large undergraduate child development course.

**Daehler: And I know that you were well received by the students.**

Clifton: I really loved teaching that course, because I always felt a commitment to kind of spread the word. The people taking it were largely non-psych majors. It was perhaps the only psychology course they had beyond Psych 100. A very popular course. I taught it in Mahar Auditorium a couple of times, and there were 500 people. That's how many the building would hold. So 500 people would sign up. I always saw that as an opportunity to speak with people who were going to be parents and this would be the only time maybe they ever had a professional person talking to them about child development.

**Daehler: Any other particular courses that you taught that come to mind during your career.**

Clifton: I've always enjoyed teaching the graduate course in perceptual development because I always learn as much as the students. It's the way to keep up with the literature and forces you to read a lot and organize the material. The hardest thing is deciding what you're going to have the students read out of the mass of material. It gets harder every year, there's more stuff.

**Daehler: I know the feeling.**

Clifton: It used be easy. Back in the 70's I always felt that I could give them an exhaustive list of what was out in perceptual development.

**Daehler: And even though you are on a NIMH career award, you are asked to teach at least one course a year, as part of your obligation to the University. How about applications? Do you see your work as having any applications, or as having influence in the field in terms of putting theory into practice?**

Clifton: I don't think my own research has much practical implication, but the whole field of infant research has had a huge impact on how parents regard babies now.

**Daehler: Parents and professionals.**

Clifton: Parents and professionals, how they regard infants. When I started off in the early 60's if you looked in pediatric text books, and I did, very little was known about infant hearing, especially newborn hearing. They thought that newborns couldn't see and couldn't hear. There was fluid in their ears, they couldn't hear for the first three or four days of life. We know this is nonsense, they're actually hearing quite well even in utero for the last month or two of gestation. I think that what infancy research has revealed about the cognitive development of infants and the perceptual development of infants has definitely filtered out into the lay public, and that's good. I've given interviews to Parents Magazine and to Working Mother and others on a number of occasions, where I have been asked to say specifically what does my research tell mothers. But those interviews have a minimal effect. However, I think the whole enterprise of what we know about infants has had a tremendous impact on child rearing.

**Daehler: So your individual research activity has not had such a major impact but as part of that whole body of research it has had a dramatic impact.**

Clifton: Yes. I can't pull out anything that I personally have done and say well this changed the way they care for high-risk infants. I will say this, I feel a real responsibility when parents bring their infants to my lab to make part of that visit educational for the parent. So you want to be sure that they know what the purpose of the study is. We do a lot of debriefing, we rewind the tape, we play the video tape back so the parents can view what their infant did and then we explain how this would be scored and what we're trying to find out and so on. What's really fun, is for the past few years, I've been doing this work where I have presented sounding objects in the dark and observed the infants reaching for the sounding object. Parents are always really amazed that their baby can actually do this, because while they are in the session it's pitch black so they can't see what the infant is doing. We can see with our infrared cameras and we video-tape using the infra-red camera. The parents always really enjoy viewing the tapes and are very surprised that their infant is so sensitive to the sound and is able to do this task. So that's fun.

**Daehler: I want to move to the area of SRCD since the organization is particularly interested in your experiences with SRCD and what role you've had in its development. When did you join SRCD?**

Clifton: While I was a graduate student, and I bet you did too. At Minnesota there's quite a bit of pressure for graduate students to join SRCD.

**Daehler: I went to my first SRCD meeting as a graduate student and it was at Minnesota.**

Clifton: I joined in 1962 and my first meeting was 1963, which was the spring of the year I was graduating in June. That first SRCD meeting was so exciting. First of all it was in San Francisco and I'd never been to San Francisco. There was a huge group of graduate students who went out with the faculty. I remember just being enthralled because for the first time I think that was where I met Lew Lipsitt and his graduate students. I also met other students like Marshall Haith and Phil Salapatek and so on. Of course you could fit all of the infancy researchers in half a hotel room at that point.

**Daehler: How many were there do you think?**

Clifton: How many people were at that SRCD? I don't know, but the meetings were just terribly exciting, I was in a state of high excitement. Also that's the point where Harold Stevenson introduced me to Frances Graham. We met and talked. That must have been in April and she said, "Oh quick, write a post-doc application and come and work with me." So that was the seed of that, and I remember flying back on the plane to Minneapolis sitting beside Harold Stevenson and saying, "Well, what should I do?" because I'd already job interviewed. I was getting job offers, and I said should I turn down these job offers so that I can write an application for a post-doc on the chance of being funded, and he said "Yes, certainly!" That was definitely what I should do. I guess that's how secure he felt that I would get it and Fran felt I would get it. Then later I went for a visit at Wisconsin, and she said, "Well I'll have funds to cover you until November on my grant if you don't get it." But I took the chance.

**Daehler: So again SRCD provided an opportunity to meet significant others in the field with whom you were familiar by name but not by person yet. And this opportunity definitely continued your excitement in terms of conducting research.**

Clifton: I would say that I regard SRCD as continuing education. That's the place that you go to learn absolutely new things, and see what's happening in other areas, but it's also where you renew your contacts and you find out the latest ideas and the latest technical advances and so on in the field that you're actually working. For example now motor development is one of my interests, so I'm busy setting up meetings with Esther Thelen and Dan Ashmead and so on. We'll get together in New Orleans at this meeting to talk about what we're doing in our labs.

**Daehler: So the conventions really help to meet a scientific goal in your program. Are there other scientific activities that the society has had an influence on?**

Clifton: Well of course through the journals and I was Associate Editor on Child Development from 1977-1979. Then I was Secretary from 1979-1985. Sitting on Governing Council is really an education too.

**Daehler: OK and tell us a little bit about that.**

Clifton: I found out so much about SRCD. I had viewed SRCD from a completely egocentric viewpoint. I love the journals and I love getting and reading and submitting my own stuff to the journals and I love going to the meetings, but I had never thought about SRCD really beyond that. On Governing Council was when I really discovered how proud one could be of that organization. It is utterly committed, always has been, to inter-disciplinary work. If you think that's important, and I do, then you're in the right society, because that's been a commitment since 1933 when it began. It's been a continuing struggle as to how to maintain the inter-disciplinary balance within the society. Also, I don't think I was very aware of the Washington liaison office and the activities of SRCD in trying to form public policy and keep the membership aware of what was going on in Washington.

**Daehler: So that was already in operation before you came on board?**

Clifton: That was in place, absolutely. Yes. I think there was a social policy committee before the Washington liaison office. There was certainly an inter-disciplinary affairs committee. I was just unaware of those activities. I had never been on any of those committees, so I was really struck by the diverse activities that SRCD was engaged in.

**Daehler: Were there any particular problems or any particular achievements that were part of your time at SRCD?**

Clifton: I think as with so many societies from 1979 to 1985 was the point where publication costs were really spiraling and Child Development went from four issues a year to six issues a year during that period. Everything was becoming more expensive. There was grave concern that dues were going to go so high, we were going to lose members, and we wouldn't be able to afford to offer very low membership rates to students, which has always been a big commitment of SRCD. I think we were struggling with finances and the person who I think is due the most credit for facing these concerns is Dorothy Eichorn. She was the Executive Officer during that period, she had been for many years. My term was just a small chunk of her whole term of being Executive Officer. I remember she demanded that a financial committee be set up and it was, because she was bearing the burden of SRCD's finances on her shoulder alone. She really did need to have that responsibility spread right around amongst three other members of the society, so the finance committee was formed during that period. She did a great job, we stayed solvent, but at that point people were talking about whether we would have to close the Washington liaison office, and maybe we shouldn't publish the abstracts. In fact I don't think SRCD has lessened its commitments or its activities at all. Those were kind of tough years financially I think, for a lot of societies. I don't know, but I think things are probably better now.

**Daehler: So certainly stabilizing the society in some sense moving from a small group organization to a committee operated organization.**

Clifton: Yes, supporting diverse activities.

**Daehler: Do you think there were any other important changes that took place in SRCD during your association with it?**

Clifton: It's gotten bigger. Back in the 60's it seemed that there were, oh I don't know, maybe 500 to 700 people would come.

**Daehler: And you could attend the meetings that you wanted to attend.**

Clifton: If you saved any programs from those years, they're these thin little pamphlets and you could manage to go to every single thing you wanted to hear, and now it's always a huge choice about where you should go. So it's very rich. I always feel that here I am at SRCD with my 400 closest friends, because there are so many people that you want to see and talk to and so many sessions to go to, that it's pretty frantic.

**Daehler: Some people really like the fact that it's biennial, it makes it really special, rather than having an annual and I assume that you go along with that.**

Clifton: When I was on the Governing Council there was always talk of should we go to a yearly meeting, but then it was always resisted. Interestingly enough from 1933 it was always biennial, so it would be a break with a 60 year tradition, to go to an annual meeting. Those of us in infancy don't really feel the loss because the infancy conference meets on the off year. So we always have a nice conference to go to in the spring. I don't know what the rest of you do.

**Daehler: Well it gives the opportunity for regional conferences too.**

Clifton: Yes. Which are important.

**Daehler: They can be very valuable and not so expensive, at this day and age when expenses are hard to cover.**

Clifton: And students can participate really easily in a regional meeting. So I wouldn't want to change the biennial aspect.

**Daehler:** Let me move more generally to the field of developmental psychology and let you comment about the changes that have taken place in it, the continuities and discontinuities, how you've participated in those and how you feel about them.

Clifton: OK. I think of course the field of child development has gotten a lot more diverse and I think we're also making some headway in theoretical advances and I think that people are technically much more sophisticated than they used to be. So I really see the field striding ahead. I think it's a very exciting time to be a graduate student entering the field of child development. One difference is that when I was in graduate school, again, Harold Stevenson told us that he didn't feel we knew enough at that point to be saying telling parents how they should raise their children. We didn't have enough knowledge at that point and we should get ourselves into the laboratory and discover some things. Now of course that was in the early 60's and you have to remember that actually Parents Magazine was sort of associated with SRCD. At least I think so. Also people at the Institute had written columns and done things in the popular press. In fact the Institute when I arrived was named the Institute of Child Welfare, which certainly has an applied ring to it. Stevenson changed that while I was there to the Institute of Child Development and I think that was part of his philosophy at that point. I know that he has changed, because now he has written some popular pieces lately about math education and what might be done to help math education in this country. But I think that the whole field has probably changed too, in the sense that people who do work in infancy have something to say to parents. I think all of us feel more comfortable in saying, OK yeah, we've been in the laboratory and I think we know enough now to communicate some things. But it's kind of funny that people in the 1930's were not shy about telling parents how they should raise their children. I think there was a period after that when people didn't want to say very much and now it's swung back the other way.

**Daehler:** You see that as a good.....

Clifton: I think that's OK because I think that we can translate research findings into things that are relevant for education, relevant for child rearing. We have to always throw in the word of caution. Nothing's the last word, but yes, I see us in a phase now where we are communicating with the public.

**Daehler:** Where do you see the field going in the future? Or where do you fear it might go in the future?

Clifton: Well you know there's an emphasis right now in Washington on how science has got to be more applied and it's got to have ties with industry, with technology.

**Daehler:** Some return.

Clifton: Some return and of course psychology probably won't have much technological return, but it should have return in other applications. In a way I guess my fear is that in order to get grants and get money you have to sell yourself as having this applied side. You might not be able to deliver on it. So let's say that in 1995 or approaching the year 2000, if people in Washington say, OK you said you could do X, Y and Z and you're not able to do that, there could be a real backlash then. They'd say we put all this money into this field of child development or whatever, or psychology in general and what have we got out of it.

**Daehler:** OK, so you're talking about it more generally, about....

Clifton: Field of psychology. But I include child psychology in that.

**Daehler:** You don't have any concern about at least requesting that people begin to address some of these applied issues.

Clifton: No I don't.

**Daehler:** But your concern is that some of the consequences, or return, or reward on that may not be what we promised.

Clifton: That's right. Congressmen and senators might get one idea in their head about what we were supposed to deliver and they vote this big budget for NIH and so on. Then what concrete things can you accomplish? It's not like putting a space shot up to the moon or something. You don't have anything so definite often. I think psychology is particularly prone to that criticism, that there's not a product that we're going to be able to point to and say, look we cured cancer, look we cured polio, look we put something on the moon. Psychology is just not that kind of field. So I am concerned that there may be expectations that we helped them develop, but then we can't follow through on.

**Daehler:** And that might extend through education, and current concerns about education.

Clifton: Exactly. We might try some things that simply don't work. Head Start went through a really rocky period where people were saying, well they're short term gains that disappear in a year or two. Then thank goodness for longitudinal studies, as they discovered in fact there is a long lasting effect, but it took a very long time for it to be revealed and it was revealed in interesting ways that the original people who designed Head Start hadn't even thought about. I guess if I have a fear for the field right now it's probably that.

**Daehler:** Well let us see. Do you have other personal interests, family or others that have been influenced by your work?

Clifton: Just really quick I'd like to say that being married to a psychologist has had a very large impact on me. The fact that we do share being in academia and the fact that we're both very understanding of one another's time constraint problems etc. is a benefit. Then of course the fact that I have two daughters and they have been an education. They've definitely had as much impact on me as I have had on them, and they continue to.

**Daehler:** They teach you things sometimes you don't want to learn about but also many things that you're glad you've had the opportunity to learn about.

Clifton: Yes. you certainly learn things about yourself, but because I'm in the field of child development, especially when they were growing up and through adolescence, I felt that I was learning a lot from them about child development that I wouldn't have learned in any other way except that. So they certainly had an impact.

**Daehler:** Let me ask another question, general framework. One if you were starting over again in the 1960's would you pursue this direction again, would there be any other direction? Secondly if you were telling a new student to start out now in the field what would you tell them in terms of direction?

Clifton: I'm very happy with the way my career has turned out. I'm still fascinated by research. I'm still deeply committed to the whole field of child development and children continue to fascinate me. So I wouldn't change anything for myself, but in terms of guiding someone else I think every individual person has to figure out what they're really committed to and go with that.

**Daehler:** So it's got to be their own excitement, what gets them excited.

Clifton: Yes, I can tell them why I'm excited about what I'm doing but they must discover for themselves what they find exciting.

**Daehler:** If you were starting out in the field right now, would you pursue the same direction?

Clifton: Yes, I don't think we've exhausted what we can find out about infants.

**Daehler:** This seems to be a theme reflected in all of your answers.

Clifton: I think so.

**Daehler:** Well thank you Rachel.

Clifton: Well thank you Marvin.