



Interview Article

Educational and learning capital of a renowned scientist: results of a retrospective qualitative interview study with Prof. Albert Ziegler

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Abstract

In this interview, the concept of "Gifted Young Scientist" was deepened through an in-depth example, thanks to the [Journal for the Education Gifted Young Scientists](#) academic journal, which opened an important field by combining the field of gifted education with the field of science education. The living example here is Professor Albert Ziegler, who is an important academics in gifted education worldwide. He wrote nearly 300 articles and books and produced important products. He has produced important theories in the field of gifted people. In this interview, he was asked questions based on examples to better understand his own theory. He contributed to the understanding of the concept of "gifted young scientist" by giving examples from his own life. What factors influence when gifted young scientist emerges as a capital. His experiences at the doctoral stage and the role of factors in the theory are explained. In particular, mentors have a very important influence on the emergence of gifted young scientist. In this interview, Prof. Albert Ziegler talks about his influential mentors in academic development and their behavior. It is seen that he also mentioned the routines and habits of his academic life. In addition, tips for new trends for academics studying in the field of gifted education are mentioned for readers.

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Interview with Prof. Albert Ziegler



Albert Ziegler is a professor and important academics at gifted education His academic career; 1990-1994: Research Associate at the Max Planck Institute for Psychological Research, Developmental Psychology Department, 1994-1999: Scientific assistant at the Heller chair at the Ludwig Maximilians University in Munich, Institute for Educational Psychology and Empirical Education, 2000-2001: University professor for educational psychology at the Johann Wolfgang Goethe University in Frankfurt, 2001-2011: University professor for educational psychology at the University of Ulm, 2002-2011: Foundation and management of the state-wide research and advice center for gifted people in Baden-Württemberg 2002-2007: Head of the University Didactic Center

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Mahsa Amiri: You know, popular journal (JEGYS) is about the education of talented young scientists. Prof. Ziegler, you also started your career as a young scientist at some point. In your later career, you made significant contributions to talent research. In this interview, we would like to apply one of these theories to yourself: Educational and Learning Capital (Ziegler & Baker, 2013; Ziegler, Chandler, Vialle, & Stoeger, 2017). In one of your studies, you show that top scientists had more educational and learning capital at the beginning of their scientific careers than less successful scientists (Ziegler, Debatin, & Stoeger, 2019). But what about yourself? Perhaps young, talented scientists can learn from your example what is important at certain stages in one's career in order to become scientifically eminent later on.

Prof. Ziegler, you also started your career as a young scientist at some point. In your later career, you made significant contributions to talent research. In this interview, we would like to apply one of these theories to yourself: Educational and Learning Capital (Ziegler & Baker, 2013; Ziegler, Chandler, Vialle, & Stoeger, 2017). In one of your studies, you show that top scientists had more educational and learning capital at the beginning of their scientific careers than less successful scientists (Ziegler, Debatin, & Stoeger, 2019). But what about yourself? Perhaps young, talented scientists can learn from your example what is important at certain stages in one's career in order to become scientifically eminent later on.

Albert Ziegler: Unfortunately, there are more than 250 scientific definitions of giftedness. Fortunately, there are many useful ones, although we cannot say which one is the best. In this interview, I will use the term to refer to young people for whom a learning pathway to eminence in a scientific field can be identified. These are people who can become really good in science and are still at the beginning stages of their career. For example, the PhD period can represent such a career phase.

Mahsa Amiri: You define a learning pathway in your new publication on the nonagonal dimensions of talent development (Ziegler & Stoeger, 2019). But let's talk about your time as a PhD candidate going forward. You write in your scientific papers that for the successful development of talent, both exogenous learning resources, which lie in the environment of the talent, and endogenous resources, which lie in the person of the gifted, are important (Ziegler & Stoeger, 2017). You call exogenous resources educational capital, and endogenous resources learning capital. A crucial form of educational capital is economic educational capital. What was it like for you back then?

Albert Ziegler: Fortunately, I had enough economic education capital during my doctoral studies. I was offered a position as a Research Fellow at the Max Planck Institute for Psychological Research (MPI) immediately after my graduation. The salary gave me enough financial leeway to be able to focus fully on my doctoral thesis. In addition, the MPI financed my research and all necessary research resources, including state-of-the-art software, which was not a matter of course at the time.

Mahsa Amiri: Cultural educational capital is the appreciation of education and learning in a person's environment. Was it appreciated in your environment that you aspired to an academic career?

Albert Ziegler: I can answer this question with a definite yes. This was the case in my family environment, for example. My father had also already committed himself to science and my wife, I was newly married at the time, was doing her doctorate in theoretical physics at the same time as me.

The MPI was an elite institution. Despite the relatively small number of scientists in comparison to large universities, we were the fifth most cited in psychology worldwide during my doctoral studies. There was a wonderful spirit of research there, which inspired all of us young doctoral students. The directors Professor Weinert and Professor Heckhausen were world-renowned scientists and top scientists from all over the world regularly visited us.

Mahsa Amiri: Scientific careers are also dependent on the help of other people, or as you call it, social educational capital.

Albert Ziegler: In this respect, too, I was quite lucky. For one thing, my family supported my scientific career. After all, it is not to be taken for granted that they agreed to my moving to another city when the opportunity arose to do a doctorate at an elite institution. I was then only at home on weekends, and my wife tolerated that I read a lot and evaluated data on the computer, for example. Scientist marriages can be quite demanding. On the other hand, of course I had wonderful social support at the MPI. I had fantastic role models and mentors. But we doctoral students also supported and motivated each other. We conducted joint research studies, discussed our research papers and gave each other feedback. I was also introduced at that time to what was called the hidden rules of science, which includes a lot. This ranges from knowing how to address senior scientists to knowing how many of your own

publications should be written in English and how many in German if you want to have a professorship later. And finally, at the MPI we were accepted into the social network of the scientific community. Some of the best German and also world-class scientists have been guests or permanent staff members at MPI for short periods of time or sometimes for longer periods of time. Even today, a quarter of a century later, it is still possible that an old colleague from the MPI invites me to contribute a chapter to a book he or she publishes. Such connections are incredibly valuable for any career in science.

Mahsa Amiri: Infrastructural educational capital is a term for materially implemented working conditions, i.e. computers, workstations, access to libraries, etc.

Albert Ziegler: Infrastructural educational capital was of course exceptional at the MPI. It had one of the best libraries for educational psychology and developmental psychology in the world. Computer and software equipment had been incredibly good for the time. But we were also spoiled in other ways. For example, we had a laboratory where we could have utensils made for experiments, which I used for my developmental psychology experiments at the time. But we also had a photographer who produced the images necessary for some developmental psychology experiments. The MPI had excellent, spacious offices, also for its doctoral students. We had lecture and meeting rooms, and actually everything one could wish for at that time. In addition, there are other things that also come under infrastructural educational capital. In my home, these included a fully functional workstation with Internet access and locally available statistical, mathematical, and library software. That was not a matter of course at the time.

Mahsa Amiri: You attach great importance to didactic educational capital. What was the quality of your teachers, lecturers or mentors like back then? Did you actually have some back then?

Albert Ziegler: I had mentors, some of the best you could ask for. Above them all was Professor Franz Emanuel Weinert, the director of the MPI. In Germany, an MPI is always built around a top scientist, who then receives top equipment and top staff. Such an MPI is thus created especially for an outstanding scientist and then dies again, so to speak, with that scientist when he or she becomes emeritus. Conversations with Weinert, who many considered a genius, were incredibly helpful for me as a young scientist. Of course, one did not have frequent conversations with him, but the conversations one did have left a strong impression. I also had other mentors on a daily basis. Dr. Merry Bullock was a Canadian-born scientist and project leader at the MPI, with whom I worked on a daily basis. From her I learned an incredible amount about designing and conducting scientific studies. When I met her, she already had the experience of a few hundred (!) studies. Another mentor was Dr. Andreas Helmke. In a way, he had been my discoverer. When I was still a university student, he had invited me to a research internship at the MPI. The fact that this went well and that I had made a very good impression was the reason why I was offered my position by Prof. Weinert. Dr. Helmke himself was a really excellent scientist, who generously shared his knowledge of educational psychology, but also his scientific know-how. This included, for example, how to write scientific articles, which unfortunately has become an art in its own right. Some good works of young scientists might never be published because, for example, he has not mastered the APA style. So his work does not even make it into the reviewing process. In this respect, I was very lucky to have such great teachers and mentors.

Mahsa Amiri: It is fair to summarize that as a young scientist you had fantastic exogenous learning resources or educational capital at your disposal. But you yourself write that endogenous resources or learning capital are also important resources that lie within yourself. An interesting resource you postulate is organismic learning capital, i.e. physical conditions such as health, fitness, healthy sleep, etc. What was your situation at that time?

Albert Ziegler: I had no health problems whatsoever. Since I did a lot of sports, I was also physically very fit. During my university studies I had earned some extra money as a playing soccer coach.

By the way, it was unexpected for me that many scientists were much more sporty and enthusiastic about sports than I first thought. For example, we used to meet regularly at the MPI to play soccer in a nearby park. Even today, I still find it amazing when you have the greatest opportunity to meet one of the famous professors in private at major international conferences: in the morning at 6:00 a.m. in the fitness studios, that's where they hang out at this early time.

Mahsa Amiri: By telic learning capital, you mean motivation. I assume that you were extremely motivated as a young scientist?

Albert Ziegler: Yes, it was simply a fantastic time. In my dissertation I examined the development of logical thinking from childhood to adolescence. In addition, I was involved in studies on the development of intelligence and scientific

thinking in primary school children. We did studies with top experts from different fields. These were world class musicians, world class chess players, and a case study with the best bridge player in the world. It was extremely stimulating to make discoveries in scientific studies in data that no human had ever seen before.

Mahsa Amiri: By actional learning capital you mean the action repertoire available for further learning and development processes. What about you? Did you already have the right learning skills for everything you need to be able to do as a young scientist?

Albert Ziegler: In retrospect, I think my action repertoire was certainly very good, but you are probably never satisfied. For example, we had many English-speaking visiting scientists at the MPI and the exchange with them was very profitable. But our English as non-native speakers could always be better. Or I had read a lot of scientific literature, but of course it is never enough and there are always interesting papers you miss. It was the same with my statistical knowledge for example. I had taken many voluntary courses at the university. In addition, I had learned statistical procedures far beyond what we had to master during my studies. But for my doctoral thesis I had to read up on mathematical simulations. So there, too, you never stop learning. What was very helpful in my actional learning capital was that I was also very interested in other sciences. This is extremely beneficial for research in one's own field. Especially knowledge from the theory of science.

Mahsa Amiri: Episodic learning capital means experiences that one has gathered and can gather, which are helpful for further learning and development. What was your situation there? Were your experiences of your first scientific attempts positive and helpful?

Albert Ziegler: A lot of knowledge remains inert, i.e. we have book knowledge, but we don't learn to apply it properly. Fortunately, I always had the opportunity to carry out small research studies during my university studies and also to evaluate them statistically. I was already notorious among my fellow students. When they saw me from a distance, some took to their heels. They knew there was a chance that I would want to give them a small questionnaire or a reasoning assignment for one of my studies. But this experience was extremely helpful, because not everything that had been thought up about studies worked out. Building up a rich experience base is a very good start into a scientific career. You just have to live science, then every single episode of your life can also become a scientific learning episode.

Mahsa Amiri: Attentional learning capital in regard to the development of scientific skill means the attention given to science: both quantitatively and qualitatively.

Albert Ziegler: If I first address the quantitative aspect, it was simply that I had an incredible amount of time available as a research fellow at the MPI to do science. Practically everything was perfect. For example, I lived in a guesthouse that was only a 3-minute walk from the MPI. If, for example, I had taken 30 minutes longer to get to the institute and 30 minutes back home each day, that would have cost me almost two months' work per year, based on an 8-hour workday. Do the math. But of course, a working day was not an 8-hour day because it was simply far too much fun to be scientifically active. I was once asked how many hours I work on average per day. Somehow I did not know what to say. I don't see it as work, much more as pleasure. Thus, I am very grateful to my society for giving me the opportunity to do for a living what I wanted to do anyway.

Mahsa Amiri: Thomas Edison once said "Genius is one percent inspiration and ninety-nine percent perspiration." In our interview today, it became clear that you had a great deal of educational and learning capital. Would you therefore say, "Genius is one percent inspiration and ninety-nine percent educational and learning capital?"

Albert Ziegler: Learning resources are very important. But it also depends on what we make of them. And if we don't have enough, we can also try to build them. Often you just have to make the best of what you have. And people are resourceful. I know colleagues who had much worse starting conditions than I did, but they became great scientists by making optimal use of what they had. I therefore believe that the optimal use of our resources is as or even more important than how many resources are available in total.

Acknowledgment

This interview was conducted by Prof. Albert Ziegler, an important academic in the field of gifted education. It contains his important views. It has been published to make significant contributions to the field. Thank you for this interview.

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