

Transcript of Cerebrum Podcast— Watering Memory Trees

Guest: Dorthe Berntsen, Ph.D., is a professor of psychology at Aarhus University, Denmark. Her major research interest is autobiographical memory, which she studies in healthy cognition, in relation to mental disorders, and developmentally across the life span. She has pioneered and written extensively on research about involuntary (spontaneous) autobiographical memories. She is the leader of Center on Autobiographical Memory Research funded by the Danish National Research Foundation, hosting about 30 autobiographical memory researchers from different parts of the world.

Host: Bill Glovin serves as editor of *Cerebrum* and as executive editor of the Dana Foundation. He was formerly senior editor of *Rutgers Magazine*, managing editor of *New Jersey Success*, editor of *New Jersey Business* magazine, and a staff writer at *The Record* newspaper in Hackensack, NJ. Glovin has won 20 writing awards from the Society of Professional Journalists of New Jersey and the Council for Advancement and Support of Education. He has a B.A. in Journalism from George Washington University.

Bill Glovin: Not that long ago, let us say 1950, life expectancy in America was 65 years old for men and 70 years old for women. In 2019, it is about 15 years longer. What does this mean? For one thing, there are a lot more people who suffer from a disease that is common to aging, namely Alzheimer's disease and other forms of dementia. This, of course, poses all kinds of problems for society. How will this growing population be cared for as life expectancy continues to expand? Are there ways to treat the problem? What kind of a strain is it putting not only on families, but on our health care system.

Hi, I'm Bill Glovin, and welcome to this month's *Cerebrum* podcast. To help us explore some of these issues, we have Dorthe Berntsen, who has agreed to talk to me by phone from Denmark, where she is a professor of psychology at Aarhus University and a pioneer in the field of autobiographical memory research. She is also the co-author of our most recent *Cerebrum* article, "Watering the Trees," which you can find at dana.org. The article examines the latest research and what is called retro environments which includes new communities that are cropping up in the US and Europe, and which offer elements of reminiscence therapy.

Reminiscence therapy is a treatment that uses all the senses, sight, touch, taste, smell, and sound to help individuals with dementia remember, events, people, and places from their past. As part of the therapy, which includes music, objects and sense are you used in various activities to help individuals recall their memories.

Welcome to the *Cerebrum* podcast Dorthe, can you describe what involuntary autobiographical memory is, and compare it to other types of memory?

Dorthe Berntsen: Sure, an involuntary autobiographical memory is a memory about something you have experienced in your personal past. A memory that comes to mind without you trying to have it. It spontaneously pops up in consciousness. Often in response to some features in the environment or in the situation that triggers the memory. Some sort of similarity between the ongoing situation and the content of the memory.

Bill Glovin: Why is this research important?

Dorthe Berntsen: It is important for many reasons, but one reason is that it shows how central the connection is between our personal past, as it is stored in our memory in the brain, and our present surroundings. Because it is very much the ongoing situation, the present environment that to a large extent determines what pops up in our consciousness without us trying to remember it. These spontaneous recollections are very dependent on the current context. That means that by changing the context, you can also change the content of what people spontaneously remember. That is one reason why they are important.

Bill Glovin: Any other reasons?

Dorthe Berntsen: Well, they are also important because they are in many disorders they have, like clinical disorders they found to be dysfunctional. People are reminded of things they would rather not think about. Therefore, they are also studied in relation to depression and post-traumatic stress disorder. But, generally in everyday life, they are predominantly positive in healthy individuals. I think they are very common. Also, we have on average about 20 involuntary autobiographical memories per day. It seems to be a very basic mode of recollecting our personal past.

In relation to dementia, they are important because people with Alzheimer's disease have difficulties remembering their past in a controlled and strategic way when they are asked questions. They have difficulties searching their memory for answers to the questions if they are asked to describe their life. They have difficulties finding events to talk about, when they have such an intensive top down controlled manner. Whereas memories may pop up in their mind, especially if they are in an environment that reminds them of the earlier paths of their lives. Or if they are you know, handed optics that correspond to say the

1950s, the 1960s. If they hear music, they can associate with these earlier parts of their life.

The reason why earlier parts of their life are important in this context is because there is a lot of evidence that these earlier memories referring to the earlier years of life are better preserved in Alzheimer's disease and dementia than more recent memories.

Bill Glovin: Can it have any effect on improving short term memory?

Dorthe Berntsen: I do not think so. I cannot see exactly how it would improve short term memory. Because it is the ability to remember things that happened a long time ago. But that can also have positive effects on many things, such as supporting a sense of identity, well-being. Also, gives something to talk about and connect with other people by sharing memories from earlier parts of one's life. Maybe other people with memory problems as well, like older people with dementia maybe chatting or being able to talk about how things used to be. When they are shown objects, like concrete objects or when they are back in an environment that can remind them of these remote past events.

Bill Glovin: One of the things that your article talks about are these retro environments that are cropping up in the US and Europe. Which are basically communities that offer elements of the past. And are they things that. Well, I'm sure they improved someone's quality of life in terms of helping them reminisce and socialize and have positive feelings about the past. But, do they have any therapeutic value?

Dorthe Berntsen: In terms of treatment? Is that what you mean?

Bill Glovin: Yes.

Dorthe Berntsen: We do not know, because to the best of my knowledge this has not been studied. I mean, these retro environments have not been compared in any systematic way with more conventional modern environments. We have no evidence that they would have a treatment value. But, there are outside of these retro environments, there is a literature, there is a research program one could say. Known as reminiscence therapy, where it includes a lot of different kind of activities that has to do with trying to stimulate people so that they remember things in their past. Stimulate people with dementia so that they become able to remember things in their past. It can be music, it can be objects, it can be conversations, either individually or in groups.

These kind of interventions or kind of therapies, the effects of these have been examined through most of the traditional intervention methodologies, randomized control trials. And the findings from these studies are mixed, although there seems to be some evidence that there are some long-term effects of participating in various types of reminiscence activities.

But, according to a recent *Cochrane* review, the effects depend on the way the reminiscence therapy is given, and whether it takes place in care homes or in communities. But, there is some evidence that reminiscence therapy can improve quality of life, cognition and communication, and probably mood in people with dementia. But, we need more systematic research to better understand these effects, to find out who is most likely to benefit from this kind of therapy.

One problem, with these conventional randomized control trial studies, is that they are only interested in measuring the long-term effects. I think the retro environments are constructed to create and to generate effects here and now, to improve a person's abilities to communicate and how to perform in daily life, here and now, to interact here and now. They are not constructed to generate long term effects to cure dementia. They are developed to help people here and now have a positive life and to increase their well-being. There are quite a lot of effects that reminiscence therapies can do for someone here and now.

Bill Glovin: What would have to happen for these studies to become more effective? Or is it even possible?

Dorthe Berntsen: I think it is possible. The problem is it is a very small field. There has not been a lot of studies. If there is one thing one I can say, it is that we need more studies. We need studies with bigger sample sizes. There has been usually quite small sample sizes. There is also a lot of differences in the way these reminiscence therapies are being conducted. Such as, whether it is individual based therapy, or group-based therapy. Whether they involve objects or photographs, or music, or whatever tools may be involved. So, there is a lot of methodological differences. I am sure a lot could be done to have a more focused research endeavor. I especially think it is important to be able to do this with larger sample sizes and in a more controlled fashion. Sure, there is a lot that could be improved in these studies of longer-term effects of reminiscence therapy.

Bill Glovin: This seems to have enormous potential. Yet, I have seen you say in previous lectures that involuntary autobiographical memories have been

pretty much ignored by the memory field, at least outside of psychology. Why was that, or is that?

Dorthe Berntsen: Well, I think it is because of several reasons. One, is that it is of course hard to control involuntary memories, it is hard to study. We cannot ask people to come into the laboratory and retrieve involuntary memories, and we cannot ask people directly. Because it would not be spontaneous recollection. We had to develop methods where we could induce spontaneous recollections in people, in a laboratory. This has taken some time to develop.

: Another thing I think, is that it is maybe more philosophical, I do not know. But, cognitive psychology has had a strong focus on goal directed processes. It has from its beginning in the late '60s, when the first cognitive psychology book was written. It had a strong focus on goal directed thinking and controlled thinking. Maybe, because it presented itself as an alternative to the more associative understanding, represented by a behavior reason where the mind was just a stimulus response machine. The mind was not even studied, it was just interested in seeing these automatic responses.

Cognitive psychology from its outset, defined itself very much as the study of more controlled, planned, and cognitive processes. Problem solving type of processes. And memory was also considered that way. It was considered as some sort of problem solving, when you get a memory test or a question. Which requires you to search in your memory, then it is sort of equivalent to trying to solve a problem.

There was a lot of focus on these controlled processes, and less focus on the things that were uncontrolled. Such as spontaneous memories, day dreaming, mind wandering, that kind of thing. It has come more part of main stream research more recently. But for a long time, these kind of processes were largely ignored in cognitive psychology. Whereas they were studied and at least observed quite a lot in clinical psychology. Because often it is these uncontrolled processes that bother people and make it harder for them to function.

There, the involuntary memories were observed, and they were studied in terms of so-called intrusive memories. Memories that come to mind in an unpleasant way and remind you of maybe traumatic or stressful experiences you have had in your life. They are some things you would like to avoid thinking about, but you cannot stop thinking about them. The memories keep coming back to you and so forth. In clinical psychology, with the focus on distress, worries, intrusions, rumination,

and these uncontrolled processes which receive much more interest. Instead of standard cognitive psychology which was pretty ignored for a long time, and yet they are very central to daily life. Which has nothing to do with distress or mental disorders. It's simply a basic mode of remembering the personal past in our daily life. I do not think we could exist without it and we are very dependent on having these spontaneous reminders of things that maybe happened yesterday, or a year ago. They help guide us in our daily life and help us update our knowledge and orientate both spatially and socially.

Therefore, if you suffer from dementia and have lost access to your more recent past. Where the memories from your more recent past have been wiped out by the disease. Then you very easily feel disoriented in a modern environment, because that modern environment does not fit the kind of residual memories and knowledge you have. The memories and knowledge you have left are something that happened maybe 20, 30, 40 years ago. This is what is most accessible to you. But, for those to come to mind, you need these cues that you can connect to them, kind of the features that can trigger them.

Therefore, it seems that the modern environment would not have a lot of them, these everyday objects from the 1950s. Therefore, it seems as a promising strategy to develop such retro environments, where the surroundings are filled with these things that could potentially stimulate your residual memories and knowledge and give you something to talk about. To remind you of who you were and the generation to which you belonged, with the kind of challenges you had at that time. Because, it is important to have a sense of identity and a sense of community. Feeling belongingness and also, maybe being able to communicate with your peers from the same generation about how things were.

Bill Glovin: Sure. I would think one of the obstacles in research would be the idea of false memory. With actually even knowing if what you are recalling is accurate.

Dorthe Berntsen: Oh yeah.

Bill Glovin: Does that factor in?

Dorthe Berntsen: Yeah, that is true, absolutely. Now, it is true for all autobiographical memory research. Because, autobiographical memory research is concerned with remembering real life events. Which was how the whole field was started. It was a focus on studying memories for experiences which people had had in their past. As an alternative to lots and lots of

experiments studying memories for controlled laboratory material, like word lists or pictures maybe. Word lists have been used in many, many laboratory experiments. And they have the advantage that you know if people remember were right or wrong, because as the experimenter you know exactly which word list you have shown to people. You can make controlled recognition tests and recall tests and so forth.

The problem is the ecological validity of these kinds of studies. Can you actually generalize to real life events? And can you ever create a situation that resembles something that happened 20 years ago? Often the delay in these word list experiments are very short. It may be minutes, it may be days, even that is relatively rare, days or weeks. But it is certainly not years. But, often when we remember the personal past, we remember something that happened several years ago, 20 years ago or even 30 years ago. How can we generalize from these word list experiments to this kind of memory phenomenon?

And indeed, the research in autobiographical memory, discovered phenomenon that would never have been discovered with word list experiences. Such as the tendency middle age and older people remember more events from their young adult hood than from their surrounding periods. We have a tendency to remember more events from the period between when we were 15 to 30 years old, then memories from our 40s and 50s. If we ask people who are 60 for example, they would prioritize the memories from young adulthood. That would never have been found, that affect is called reminiscence bump, would never have been found in word list studies conducted in a laboratory.

There is another intriguing phenomenon, called childhood amnesia. Which is the fact that we don't remember events from roughly the first three years of our lives. When we ask people to think of their earliest memory, it is rarely something that happened before age three. And obviously that phenomenon would also not have been discovered in studies using word lists in a laboratory, with a delay of minutes or a few days.

Of course, those kinds of studies have other advantages, in terms of more control and rigor. But lack this ecological validity and has also overlooked phenomenon for the same reason. But you are right that a weakness of autobiographical memory research, including autobiographical memory research with people with dementia is that we do not know what really happened in their lives. Of course, something can be corroborated by

talking to relatives. But obviously many things can be hard to document that this really happened. Although there are some ways around it.

Bill Glovin: In terms of the field. I read that you are the founding director of something called the Con Amore. Can you explain what that is, and is that helping kind of grow the field?

Dorthe Berntsen: I hope. It is a center funded by the Danish National Research Foundation, which is a foundation that generously funds what they call Centers of Excellence for a 10-year period. Roughly nine years ago, we were lucky enough to get such a center grant here in Aarhus, Denmark to build a center for autobiographical memory research. We called it Center on Autobiographical Memory Research. The abbreviation is Con Amore, because that is Latin, and in Danish academia at least I think maybe also in the north of Europe, Scandinavian in general, it means something in academia you do out of interest and love for the topic. That's why we chose this acronym, Con Amore (which stands for Center on Autobiographical Memory Research).

We have existed now for nine years, and we do research across many different aspects of autobiographical memory, both with clinical groups, aging, and young children developmentally. It boasts experimental work and more naturalistic studies. We study autobiographical memory from many different angles. We are also interested in cultural differences, and like I said, clinical aspects of autobiographical memory. What happens in depression or post-traumatic stress disorder? It is within psychology, interdisciplinary across these different fields of memory research. We have had several conferences over the years, where people in the field of autobiographical memory have come here and presented their work. Yes, hopefully that has helped the field to grow.

Bill Glovin: Last question. Would you recommend one of these retro environments to someone who might ask you about it in terms of, "Is there something where I should put my parent?" I would not do that without knowing the environment, without having visited it. I would not do it based on some you know, abstract assessment, theoretical assessment. I think it is important to go there, having a sense of what it is like. How well is it done? I mean, that is only one aspect of a nice nursing environment, good nursing environment.

Of course, there are many other aspects that must be taken into account. Such as the personal and how resourceful a place it is otherwise. But, I think the idea is very interesting, and I think it is potentially very promising. In that sense, I would recommend it, but of course there are

many other aspects of certain environment that must function for it to form a good environment for a person with dementia, a good and safe environment.

Dorthe Berntsen: One thing would be cost, I'm sure that would be a factor.

Bill Glovin: Okay, well, I think this is a great place to end. I really cannot thank you enough for the fascinating article, "Watering the Trees." Which you can find on dana.org. Our guest today has been Dorthe Berntsen, who has graciously agreed to clear her busy schedule and speak to us from Denmark. I thank you again very much. I wish you luck in this very fascinating field.

Dorthe Berntsen: Thank you very much, thank you for calling.

Bill Glovin: You can find this podcast as well as all our other *Cerebrum* and Dana podcasts, articles, our blog, and our new series of outreach videos at dana.org. Once again, I'm Bill Glovin, editor of *Cerebrum*, and thanks for listening.