

The Grieving Brain

January 19, 2022



Loss of a loved one is something everyone experiences, but we have had little scientific perspective on this universal experience. Renowned grief expert, neuroscientist, and psychologist and APS Fellow Mary-Frances O'Connor shares groundbreaking discoveries about what happens in our brain when we grieve, providing a new paradigm for understanding love, loss, and learning. In this interview she also discusses her upcoming book, *"The Grieving Brain: The Surprising Science of How We Learn from Love and Loss."*

Unedited transcript:

[00:00:11.090] – Charles Blue

One of my all time favorite series of books is *The Wizard of Earth Sea* by Ursula K. Le Guin. It follows the adventures of a young wizard named Ged who grows up to become the most powerful wizard of his world. Ged's final challenge is to confront another wizard who's found a way to never die and is spreading this secret across the land, which, it turns out, is not a good thing. What Ged realizes is that the only way to never die is to never truly live. Death, he eventually finds out, with all its grief and sorrow, is a pretty small price to pay for living an entire life. Now, I find this a heartening message.

Even so, when I've been faced with the loss of a loved one, I still felt profound grief. It makes me wonder what happens in our brain when we grieve? Why do we respond and feel the way we do? I'm Charles Blue with the Association for Psychological Science, and you're listening to Under the Cortex. In a new book coming out in February 2022, The Grieving Brain: The Surprising Science of How We Learn from Love and Loss, renowned grief expert, neuroscientist and psychologist Mary Francis O'Connor shares some groundbreaking discoveries about what happens in our brain when we grieve, helping us understand love, loss, and learning.

[00:01:36.190] – Charles Blue

Dr. O'Connor. Welcome to under the Cortex.

[00:01:39.140] – Mary-Frances O'Connor

I'm so delighted to be here, Charles. I love this podcast.

[00:01:42.540] – Charles Blue

Fantastic. Let me begin by asking what inspired you to write this book?

[00:01:49.090] – Mary-Frances O'Connor

Know, I could say that I was trying to fill time on sabbatical, but that's not really true.

[00:01:54.310] – Charles Blue

But a good answer.

[00:01:56.470] – Mary-Frances O'Connor

I really wanted to bring the science of bereavement those articles and facts that I dig into every day, I wanted to bring that to the general public. I think that there's not an awareness of how much we actually do know about grief and grieving. And this felt like an opportunity to get into the shoes of the general person in the US. Or around the world, and how would I try to describe what is happening to that person so that it's understandable?

[00:02:33.030] – Charles Blue

Perhaps it would really help if we just took a step back and answered what seems a really basic question what is grief?

[00:02:41.970] – Mary-Frances O'Connor

Well, grief is a natural response to loss, and that really can encompass a lot of different feelings, but also a lot of different physical reactions and even sort of cognitive reactions. So you hear people say, I feel like I'm just walking in a fog. That can be a part of grief, or I'm so angry and it's so hard for me to

connect with other people around me who haven't experienced loss. That counts as grief, too. So it's a pretty wide ranging individual response that can be as different as every relationship we have.

[00:03:21.150] – Charles Blue

I get that point. When there was a loss in my family, so many people close to this person really reacted quite differently. You could almost guess that they were having completely different experiences or had experienced something different to begin with. So grief really manifested in a whole variety of emotions all at once.

[00:03:41.670] – Mary-Frances O'Connor

That's absolutely right. And some of the earliest work that we saw from the psychological community. Even Freud wrote about Grieving really was just trying to describe the what of grief, what is the experience like from the internal side and of know. Poets and sculptors have been trying to do this since millennia, but we've actually been able to move a little further than that and see patterns in what's happening in people as well.

[00:04:13.010] – Charles Blue

There's a popular vision of grief, and that is that it kind of happens in stages. There's this offhanded five stages of grief. Seems like a convenient description, but is that true?

[00:04:26.790] – Mary-Frances O'Connor

Well, it came out in 1969, and Elizabeth Kubler Ross was a psychiatrist doing amazing work at the time. The idea that one could even study terminal illness or grief and the psychological response people were having was really groundbreaking. But she was working with the best science she had at the time, which was the clinical interview. Well, what we know from more modern research is the five stages of grieving is not actually a linear process and is partly because of this difference between grief and grieving. So grief is all of those things she described anger and bargaining and denial and acceptance. It does encompass all those things, but it doesn't happen in a linear process. There isn't a specific order to the experiences that we have except that acceptance continues to usually go up in people and yearning usually continues to go down.

[00:05:27.530] – Charles Blue

But it seems also that grief is a really long lasting experience. It's not something that you can put an end date to. So why is it so hard for people to understand that a loved one is gone forever?

[00:05:43.550] – Mary-Frances O'Connor

I think this is one of the most difficult misconceptions about grief. And even when I talk to medical residents or they're always trying to pin me down. Yeah, but how long does it no, but really and I try to explain it doesn't really work that way sometimes. An analogy I think that makes sense is when did you get over your wedding day? Right. That's not really a question that makes sense.

[00:06:10.980] – Charles Blue

No.

[00:06:12.390] – Mary-Frances O'Connor

Right. It's an event that happens and changes us profoundly. It changes our community, it changes our relationships. And, you know, the death of a close loved one is very much the same way. But in terms of what's going on in the brain, the brain is a predictive organ. That's why we carry it around. That's why we devote so much glucose to us. It's trying to tell us what's going to happen next. And from the time we're pretty little, we learn when mom leaves, she's going to come back again. Right. And every day when you kiss your spouse before they leave for work, we assume we're going to see them again. That attachment belief is very strongly encoded because we wouldn't be able to function in the world if we didn't believe we were going to see them again. So we know now more about the epigenetic changes that happen during bonding. The parts of the brain that are used to sort of harness dopamine and oxytocin to keep us coming back to our loved ones. Well, death, thankfully, is a very unusual situation. And so for the brain to wake up and not see that person lying there next to you in bed that you've woken up to day after day after day, it doesn't make sense to assume that they're gone forever.

[00:07:33.210] – Mary-Frances O'Connor

This attachment belief is very strong. It takes many days of experience, many weeks, many months to understand, to change our habits, to know what it means now, to carry that person only in our hearts and minds, and to continue to restore then a meaningful life.

[00:07:54.390] – Charles Blue

Okay, it's no secret to many people that I'm a bit of a science fiction geek. Proudly so I think back to Star Trek The Next Generation, and there was that synthetic human, the android named Data. And when someone he knew had died, he made a comment that my neural pathways had grown accustomed to her presence.

[00:08:17.470] – Mary-Frances O'Connor

That is such a wonderful way to put it, isn't it? Many people tell us, I feel like part of myself is gone. And what we really are learning now from understanding how bonding works, understanding how we represent the self and how we represent the other, especially an attachment figure that there is overlap in the encoding of the self and the other. For example, in voles we just recently discovered, there's a whole set of neurons that are devoted to when you approach your partner. This is work by Zoe Donaldson out of University of Colorado, Boulder. So in these pair, bonded mate for life voles, there's a type of neuron that is devoted to approaching your partner, and there are more of them when the partner has been with you for longer. And so in these different ways, we see it may not just be an analogy to say that we've lost something that is part of us, as though part of us is gone, but rather it could reflect exactly the way that the brain is trying to encode relationships.

[00:09:28.950] – Charles Blue

If we could dive in it a little deeper. What's actually happening inside the brain as we grieve?

[00:09:36.310] – Mary-Frances O'Connor

Well, one of the things is that grieving is very complex. So if grief is just that sort of one off moment, that wave that knocks you off your feet, then grieving can be thought of as this change over time. And we mostly have studies of grief and not of grieving. That is to say, there are very, very few studies that look at an individual who's bereaved at more than one time point. So in the infancy in a way, of the neurobiology of grief. What we do understand about grief, the emotion is certainly that it involves all sorts of different areas of the brain. But one area that seems important in bonding, we know this from both human and animal neurobiology is the nucleus accumbens. And this brain region is in the basal ganglia. It's very deep in the brain and has to do with reward processing. So our loved ones, it turns out, are extremely rewarding, right? You know this just from having loved ones. But there's another way that we mean reward when we use it as psychologists, which is to say it is a response so that we will do whatever we did again, right?

[00:10:51.540] – Mary-Frances O'Connor

So get back in touch with them again, see them again, reach out to them. And many people describe this as a type of craving, craving for our loved ones. And when you talk about craving, it feels like you're almost talking about being addicted to your loved ones. And I think the discovery that I've had over time is that there's another way to interpret that. So if you were deprived of water, you would feel extremely thirsty. No one would say you were addicted to water. And I think that the yearning we have for our loved ones is very similar. This is a biological need that we have for these attachment relationships and this is the yearning motivation that occurs naturally in their absence. And this nucleus accumbens region is known to be critical for bonding in animals. It's also seen in fMRI studies when people look at a picture of their child, of their romantic partner. And what seems to be possible is that this region is working somewhat differently, perhaps in people who are not adapting as well after the death of a loved one. I use this interpretation sometimes that grieving is a form of learning.

[00:12:12.730] – Mary-Frances O'Connor

We have to learn that this virtual reality we're carrying around in our head, where our loved one is there or is out there somewhere, we have to learn that that's not really true anymore. And then we also have to learn how to meet our attachment needs, which are critical, critical for survival. We have to figure out how to meet those attachment needs in the absence of this person we loved so very much. So reward is also trying to shape, I think, our learning behavior. And potentially there are people who are having more difficulty with this.

[00:12:51.830] – Charles Blue

Is there a difference then, in healthy grieving versus very unhealthy grieving? Clearly people approach it differently. And what about people who really have a hard time coming to terms with it?

[00:13:05.340] – Mary-Frances O'Connor

Well, the DSM Five Tr just in this year in fact, will include prolonged grief disorder as a diagnosis with a set of criteria. So in acute grief, we expect that people will describe to me, this is the worst I've ever felt. And we still consider that to be within the normal range. But over time, if a person isn't able to get food on the table for their children for dinner, or they're not able to get out to work the way that they have held a job for a long time, or sometimes even if they are just sort of mechanically going through the motions. But life is meaningless. Or there's a great deal of disconnection between you and anyone else, then those are times we recognize that something unique is going on for this person. And importantly, we've developed treatments that can help get them back on track.

[00:14:05.550] – Charles Blue

I also then wonder that there are many belief systems around the world that attempt to lessen the sting of death, essentially deal with this grief. Do the religious and the non religious contend with the same emotions when they're dealing with loss?

[00:14:22.530] – Mary-Frances O'Connor

Oh, that is such an interesting question. I'm not an expert on religiosity or religious coping, but I did have a graduate student who's now got his PhD. Roman Politsky. And another Ava. Stelcer and they were interested actually, in this question. And what they knew from the literature was that people who had a way of understanding death as a part of life, they did seem to have less severe grief over time. But it didn't have to be a religious view. That could have been, say, even an agricultural view, so to speak, or a philosophical view, just the way that they understood death as a part of life. So in this study, they were particularly interested in there are many components to religion, aren't there? There's both having a religious community, which is pretty distinct, isn't it, from having sort of personal religious feelings or a personal relationship with God. So what we learned from this study is that the support of a religious community can be very helpful. Now, this isn't surprising because social support in general is very helpful, but that personal religiosity can almost be problematic, not for everyone. But for example, there are individuals who have a very negative personal experience feeling that maybe they're being punished, for example, that this person was taken away from them because of something that they did that they need to atone for.

[00:15:54.120] – Mary-Frances O'Connor

So religiousness is important, but seems to have a very complex relationship to how we grieve.

[00:16:02.530] – Charles Blue

I could go on forever, and I have so many questions. There was one that kind of struck out at me that have you looked at what happens when a grieving person genuinely feels guilt? Suppose someone is in a car accident and they feel it's their fault, or there's an illness or some way that this person feels that more than just a loss, that somehow they're responsible.

[00:16:26.080] – Mary-Frances O'Connor

Yeah, this is a very important aspect, I think, of what happens for a lot of people. And the way I describe

it as maybe a larger category is the would have, should have, could have. Right. So this is all the things that I should have done differently, that the doctor could have done differently if only the government had done X. This is very typical, especially early in grief. These are questions that just run through our head. And I think if the brain is genuinely trying to learn this person is truly gone then maybe trying to prolong this would have, should have, could have reality actually takes away from although it is more painful the reality that this did happen and that we don't have a lot of control over how things are going to turn out and that I have to find a way to carry them with me. Maybe in the things that I value, the things that I do in my life, the way I show up for relationships with people I have now. There has to be a way now to find, to go forward, which is.

[00:17:36.950] – Charles Blue

A beautiful segue into what can we do to restore a meaningful life while grieving. What allows us to marshal on?

[00:17:46.870] – Mary-Frances O'Connor

This is a good question. Although I think if listeners are in acute grief, often even just the idea that life could move on feels very foreign. I think that this can be an intensely lonely and difficult experience for people. And as we try to support those around us who are grieving, it is important to remember that they don't really need advice. So grief is a natural response to loss and in the vast majority of cases we will find a way forward. But we can't necessarily cheer them up, we can't necessarily help them move forward. We can talk with them about what is their experience like now and what are the difficulties that they're having, the emotions they're having, the questions that they see as unresolved, but mostly just to tell them that we are there with them, that they are doing the very best they can in extraordinary circumstances.

[00:18:54.810] – Charles Blue

Fantastic. That's a great way to wrap things up. And I would like to thank Mary Francis O'Connor for joining me today. You have a book coming out in February 2022. Can you quickly tell us about it?

[00:19:05.460] – Mary-Frances O'Connor

I do. It's coming out February 1. Very exciting for me. I hope something that the general public will find interesting and people may find a new lens, a new way of talking about their experience through this neurobiological perspective.

[00:19:21.480] – Charles Blue

And that is the Grieving brain. The surprising science of how we learn from love and loss. This is Charles Blue with the association for psychological Science. Thank you for joining me.

[00:19:31.640] – Mary-Frances O'Connor

Thank you so much, Charles. This has been great.