Adverse Childhood Experiences: Effects on brain, behavior and clinical practice
Recorded August 8, 2019
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SpeechPathology.com Course #8980
- [Amy] And again, it is a pleasure to introduce our guest editor for this week's virtual conference. And Trisha Self is an Associate Professor and the Paul M. Cassat Distinguished Chair in Communication Sciences and Disorders Department at Wichita State University in Wichita, Kansas. She teaches courses, supervises and conducts research in ASD. She's a Board Certified a child language specialist with over 30 years of experience, working with children demonstrating complex communication needs including ASD. She's the coordinator of the Autism Interdisciplinary Diagnostic and Treatment, team lab at Wichita State University. So welcome, Trisha. It's an honor to have you with us this week.

- [Trisha] Thank you, Amy. As Amy mentioned, this continuing education event is in partnership with the American Board of Child Language and Language Disorders, also known as ABCLLD. And I'm on the board of the ABCLLD. I just wanna mention to today's attendees that if you think you have advanced knowledge, skills and leadership in child language, and are interested in becoming a certified child language specialist, you'll find resources at our website that describe that process. And the web address is www.childlanguagespecialist.org. Those of us who are specialists have found many benefits to being certified as an expert in child language. One being that we're all dedicated to ensuring that children receive high quality services. So I invite you all to become a specialist. And I'd like to thank you all for joining us today. We're excited about the week we have planned, each day participants will have the opportunity to experience advanced cutting-edge presentations focused on the topic of adverse childhood experiences, the effect of childhood trauma and communication. Today we are fortunate to have Angela Ciccia with us who will discuss adverse childhood experiences and their effect on the brain, behavior and clinical practice. Dr. Ciccia is an Associate Professor in the Department of Psychological Sciences, Communication Sciences Program at Case Western Reserve University. Her research focuses on
exploring the barriers to pediatric rehabilitation for children, especially for high risk, low income groups with a special focus on pediatric TBI. Dr. Ciccia is the co-chair for the Pediatric Rehabilitation Networking Group of ACRM, and an Editor-in-Chief for Perspectives of ASHA. Welcome Dr. Ciccia. And we’re looking forward to your presentation today.

- [Angela] Great, thank you so much for having me. And hello to everyone, to all of you that are joining us. I see we have a good group with us today. We may, if you experience a little delay, just know that our team at SpeechPathology.com is keeping track of us and will help us in any way if we get stuck. Just to remind you, I will take questions at the end because we have a good large group today. It’ll be easiest if you can type questions in as you have them. But I’m gonna hold answers until the very end. So having said that, we are gonna talk about adverse childhood experiences. As an introduction to kick off this week of really diving into how can trauma affect children and specifically the children that we are working with, with speech, language, cognitive, communicative disorders. Just to quickly just review my disclosures, again, I am a full-time employee at Case Western Reserve University where I do receive my salary.

And as was already stated in my bio, I’m the co-chair for the Pediatric Rehabilitation Networking group of ACRM, and an Editor-in-Chief for Perspectives. None of those positions have content represented here in today’s presentation. So just to review the learner outcomes, we want to talk about what ACEs are, or adverse childhood experiences. And we want to talk about whether or not, what are the conventional definition of ACEs. And what are the expanded definition of ACEs. And both how conventional and expanded ACEs impact development on the brain itself, as well as a variety of areas of behavior. And then we wanna briefly touch on how these ACEs can directly impact the clinical practice of speech language pathology, and set the stage for what will happen in the webinar over the rest of the week. Okay, so everyone in life
experiences stress, we all have stress. Sometimes stress can be good. Sometimes it can be bad in a tolerable way. And sometimes it can be toxic. So just to give an idea of the kind of stress we’re gonna be talking about today, I just wanna review three basic definitions. Positive stress, which not everyone will associate as being stressful. But positive events can also cause our brain and our chemistry to have a stress related response. So positive stress is a moderate, brief, and generally normal part of life. And learning to adjust to this positive stress is really important to development. So as the school year is beginning to start, I think that’s a great example of what could be a positive stress.

So going back to school, being able to see your friends, people that you know that you’re connected to and feel good about, that’s an example of a positive stress. We can even have positive stress getting a job or promotion you want, getting an award, someone recognizing you and saying hello when you might think they might not recognize you. So these are all examples of positive stress. Tolerable stress are things that we often might consider bad stress. But they’re brief and they don’t really interfere with the developmental process. They tend to not affect behavior negatively in the long-term, or brain and behavior development in the long-term. Tolerable stress you could have had, if speaking of kids that we work with, you could have had a fight with your friend on the playground. And that certainly gives you stress, gives you a feeling of stress. But many times we can help kids work through these issues, and then the stress dissipates. So this would be an example of what we call tolerable bad stress. And then there is toxic stress, and really toxic stress is what the focus of our talk about ACEs is gonna be today.

So toxic stress itself is a strong, frequent and prolonged exposure to stress. And that prolonged exposure to stress actually alters how the body responds, how the neurophysiology responds and how your brain wiring responds, and ultimately can affect health overall in the body. And so today, we wanna focus on toxic stress. I like
the quote that's on the screen, that just gives us an idea of what we think about stress. And that stress is like a spice, in the right proportion, it enhances the flavor of a meal, too little produces a bland meal, and too much may choke you. So it's that toxic stress that we're talking about, which is part of that quote that would give us too much that may choke you. And that's really what we wanna talk about today. So in order for us to really think about ACEs, I wanna start with a quiz. So this will introduce us to the topic of toxic stress and the things that the literature is talking about in ACEs. And so we're gonna go ahead and take a quiz. Now, I don't want you to write this publicly. But I want you to keep a little tally, just for yourself on a sheet of paper as we go through, and we're gonna use that to reflect on the content that we're talking about today. So we're gonna go ahead and get started with that.

So the questions that are coming, I want you to think about, in your own life, when you were 18 years and old or younger, how many of these things were true for you? And you would give yourself one or a hash mark for each one of these things that may have happened to you in your life. So the first question, did a parent or other adult in the household often swear at you, insult you, put you down or humiliate you? Or, act in a way that made you afraid that you might be physically hurt? Two, did a parent or other adult in the household often push, grab, slap, or throw something you? Or, ever hit you so hard that you had marks or were injured? Three, did an adult or a person at least five years older than you, expose you to any sexual violence? Four, did you often feel that no one in your family loved you or thought you were important or special? Or, your family didn't look out for each other, feel close to each other, or support each other? Five, did you often feel that you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? Or your parents were too drunk or high to take care of you or take you to the doctor if needed?
Six, were your parents ever separated or divorced? Seven, was your mother or stepmother often pushed, grabbed, slapped or had something thrown at her? Or, sometimes kicked, bitten, hit with a fist or hit with something hard? Or, ever repeatedly hit that lasted over a few minutes or threatened with a gun or a knife? Number eight, did you live with anyone who was a problem drinker, or alcoholic, or who used street drugs? Number nine, was a household member depressed or mentally ill? Or, did a household member attempt suicide? And there’s a question number 10, which is not showing up on the slide, which is, did a household member go to prison? So you have 10 questions there.

And those 10 questions are the foundation for the ACEs questionnaire. And if you want to look more deeply into how the ACEs studies first started, there are some resources listed at the end of the presentation. One place to start is the CDC, has a great set of ACEs resources as well. So if you go to the Center for Disease Control website, and just enter ACEs, you’ll be taken to a number of really wonderful opportunities to learn more about ACEs. So I want you to think about that score, the score that you have. And those types of scores represent the types of events that are considered conventional ACEs, or causing toxic stress. I want you to think not only about your score, but having now heard those questions to think about the children and family, in the families that you serve.

And I want you to consider if you know if these things are happening for the children and families that you’re working with. And then I want you to also think about, as we’re talking about this topic, and thinking about your own ACEs score, how you might think about this in your own clinical practice. And have you ever thought about how you might improve your awareness, knowledge and sensitivity on these issues for each individual child and family that you’re serving? Okay, so I’m the conventional ACEs that side, let’s talk about the conventional ACEs themselves. So as you can see from the quiz that we just did, there are some conventional ACEs, which I think a lot of people
might think about when thinking about episodes or activities that might cause toxic stress. These include physical and emotional, sexual or verbal abuse, alcohol or substance abuse within the household itself. Neglect, poverty, parent or guardian in prison, a mental illness in the household, a death in the household. And what was not apparent in many of the questions, but was there a little bit was housing or homelessness, and food insecurity. Now, the thing to think about for conventional ACEs is that these are things that can affect the child themselves, as we see here in the diagram. Or these are things that could be going on within the home of the child. More recent work has also talked about these things that are happening within the community that the child is exposed to on a regular basis, either when they're out in their yard, running errands with their family members, on their way to school, etc. So the ACEs themselves don't just have to happen to the child, but can happen to those around the child, or be things that are happening within the community that the child is exposed to. So that was the original study of ACEs, and to really think about what are things that are causing toxic stress. More recently, there's been an expansion of those conventional ACEs and consideration of things that are affecting the child, the home or the community, that we all have probably talked about, but may not thought as much about, how this could contribute to toxic stress. These are things like bullying in the home, in school, in the community that the child is residing in. Also, exposure to community violence.

And unfortunately, we've all seen examples of large community violence just over this past weekend. And then we also have exposure to systemic discrimination, systemic racism, institutional racism. And then also the generational effect of exposure to trauma, in that the exposure to trauma, as we're going to look at in a few minutes, actually changes, not only neuroanatomy and neurophysiology, but it can also change how an individual's genes are expressing themselves. And then that can be passed on from generation to generation. So all the things that are seen here really can result in toxic stress for a child. And as you can see from the list and the quiz that we went
through, that it’s not just the things that are happening to the child, but things that are happening to the parent as well. And even if the child may be protected, say, for example, from physical, emotional violence, or lack of food and nutrition within the home, and that the parent is attempting to shield the child from those things, that just the effect on the parent themselves, as you see here, in the middle of the Venn diagram, does affect the child. So we have to think more broadly, rather than just, is this happening to the child themselves? But is this happening around the child in a way that the child is exposed to it, which can indeed impact the child themselves.

So when we look at ACEs by income, one assumption that’s often made is that these ACEs are really predominantly happening to individuals of lower socioeconomic status. And really, that’s not true if we look at some data here, that almost everyone has exposure to at least one ACE, and that the more ACEs that you’re exposed to, in terms of total number is where we actually start to see some differences between higher and lower SES groups. So we see here in a higher SES group, and we have the citations down here, if you wanna look at the articles where this data was taken from. And you’ll see here along the bottom, the darker gray is showing zero ACEs, the lighter gray is showing one to three ACEs and the white area is showing four or more ACEs. The number four here is particularly important.

So there is a dose, what’s called a dose response relationship in the effect of ACEs, which means that the more ACEs you’re exposed to, the more likely there is to be negative impact on growth, development and outcome. And so a lot of work is focused on those individuals that are showing four or more ACEs in their background. But the reality is, most of us even if you can go back and think about your own score, that many people have been exposed to at least one. And any exposure to one of the ACEs listed in the quiz that we took, increases the likelihood of chronic health and disease issues and impact on negative outcome. And we’re gonna go into those details in just a minute. But just to look here, so in our higher SES sample, compared to our lower SES
sample, if we look at zero ACEs in the higher SES sample, we have 47% of the sample, so almost half, saying that they had not been exposed to ACEs, where that number drops only to 1/3 of the lower SES group. And then when we look here at one to three ACEs, we see 45% in the higher SES sample and 47% in the lower SES sample. So this is much closer together between these two groups. And we see a big jump in difference when we get to four or more ACEs, with only 8% of the higher income group experiencing four or more, and about a 1/4 of the group, just about, at 21%, showing a low SES group. And so, what we have here is that while everybody, regardless of socioeconomic status, people in general are exposed to ACEs. When we break that up more specifically, it’s those that are exposed to multiple ACEs where you start to see the differentiation in higher versus lower SES groups.

So, if we think about that, just in terms of our own clinical practice, we can think broadly about the populations that we're serving in the school districts that we're serving, or the clinics, or in our head start early intervention programs, what is the population that you're seeing? And what is the likelihood that the kids and families that you're working with may have been exposed to these things at some point in the past? Now, those were for conventional ACEs. So let’s just look at exposure to those expanded ACEs. Remember, those were things like bullying, systemic racism, generational ACEs exposure. So when we look here at some sampling, we have about 37% of individuals reporting that they have not been exposed to any of those expanded ACEs. But we have quite a large, 50% of the population, saying that they’ve had one to two of those.

And in this particular study, the white area is showing three or more at 13%. So if we put together any ACEs exposure of expanded variety, we see quite a large, more than half of the individuals having been exposed to them. Now, in this particular dataset, they looked a little more closely to those individuals that had not actually been exposed to any of those conventional ACEs. Violence, abuse, neglect, either in the home or
around the child and just looked at, were there any that actually had exposure to those expanded ACEs only? And they did have roughly 14% of individuals saying that they were only exposed to those expanded ACEs. So this is an area that's starting to get a little bit more attention. So we've, in the past, the research has really focused on those episodes of toxic stress of conventional ACEs and how those affected development. And more and more research is trying to look at, okay, well, what if they're not exposed to any conventional ACEs, but only the expanded ACEs? So I expect that we're gonna see a lot more of this work.

Okay, within those expanded ACEs, what were the most common things to come up? And really, and again, unfortunately, we've had an example of this in the news this weekend, was just witnessing violence and witnessing violence within the community. And that was at 40%, roughly 40% of the individuals that were reporting expanded ACEs, were talking about witnessing community violence. And then we were at 34 1/2% at either experiencing or witnessing racial discrimination. And then 27%, living in what they felt was in unsafe neighborhood. So again, just something to consider when thinking about who are the children and families that you serve, and what might they be exposed to, both in terms of conventional ACEs and in terms of expanded ACEs. So let's just think about, unfortunately, a lot of things, in terms of research and policy and making budgetary decisions for how people can use their money, they often want to know what the financial impact of the issue is.

So if we looked at the financial impact of ACEs. For a child that's exposed to, and this specifically looked at domestic violence, and this research comes from some colleagues of mine within our Urban Poverty Center here at Case Western Reserve University, the citation is here at the bottom. That for specifically children that have been exposed to domestic violence within the home, by the time that child reaches the age of 50, in comparison to children that have not been exposed to domestic violence, there's an average of $50,000 additional spent on care for that child. There's an
11,000, roughly $11,000 increase in medical costs that are being paid out of taxpayer funded health insurance, Medicaid, Medicare. There is almost a $14,000 cost associated with that child being a perpetrator of a violent crime themselves. And there’s also an associated $25,000, roughly in employment productivity loss that has been examined and found to be related specifically to the exposure to domestic violence. And so what this is saying is that the impact is larger than just on the child themselves. And we’re gonna look at what those impacts are. But these can be chronic health conditions, mental health diagnoses, and also delayed development and educational attainment.

So that leads us to, what are outside of the financial impact, what are the actual impacts of ACEs themselves? So, as I said, at the sort of towards the beginning of the presentation, the CDC has quite a few resources available on their website to go over ACEs, you can find the ACEs quiz, the interpretation of ACEs, so there's quite a bit there. And this is a pyramid that they've created to talk about, what are the impacts of ACEs themselves. So the initial impact of ACEs was directed towards chronic health condition. And that individuals that have four or more score in their ACEs score, have the most direct link to chronic health conditions. And these include chronic health conditions that are often in the news now, including diabetes, heart disease, high blood pressure, etc.

And although this does have a dose response relationship, so even exposure to one ACE increases the likelihood of the occurrence of a chronic health condition at some point in that person's life. For kids, that we not only have some of those delayed appearance of chronic health conditions, but kids exposure to ACEs have also been directly connected to academic outcome, in academic outcome, including things like attendance, behavior, or behavior violations during the school year, as well as chronic health problems. And one of the chronic health problems is mental health diagnoses and disorders. So in one study, they had indicated that there was almost a 500%
increase in suicide attempts by individuals that has experienced four or more ACEs. So it's quite widespread. So just to go over this graph here that we have. So you can see the whole life perspective here from conception all the way up to death here on this side. And then we have the occurrence of the adverse childhood experiences. What a lot of our slides are going to talk about in just a few minutes are what the impact of that ACEs are on social, emotional and cognitive development. We're going to go through some of those milestones here in a minute. But that also puts the individual at risk for health related risk behavior, most often thought to be connected to poor decision-making, poor planning and problem solving, to manage their own health concerns.

And then this then leading to disease, disability and societal problems, such as engagement with the judicial system. And then also, on top of that, a younger death, earlier death than individuals that have not been exposed to ACEs. So this is the general pyramid that the CDC is working from. And then we have gaps here, There's many things that are new in scientific awareness, is really what are the direct connections between adverse childhood experiences and developmental processes? And then also that jump from how does this either change in developmental trajectory or delay in developmental trajectory, relate to the adaption of risky health behavior?

So just broadly, when thinking about developmental outcome, as we said before, even as in chronic health conditions, but the number of ACEs has a dose response relationship, so that the more ACEs you are exposed to or the higher your ACEs score, the lower your developmental trajectory, so the more impact there is on the developmental processes. And this includes both structure and function of the brain itself, as well as the development of executive function, higher cognitive skills, language and communication. That is of particular importance to speech and language pathologist. So, I mean, you can see over here, right? The exposure to no ACEs is connected with a higher developmental outcome. Now, so here, this is just showing not
only just development itself, but also the effect on academic outcomes, attendance, behavior, performance, so that again, you see this dose response relationship here, as the number of ACEs goes up, the school performance and even attitude about attending school and participating in school, goes down. Now, recently, researcher’s looked at protective factors. And we’re gonna take a look at these towards the end of the presentation and talk about what they are, and have us consider as a group what we might do to support these protective factors. But as the number of protective factors goes out, this is also a dose response relationship.

So the more protective factors you have, the higher your school performance and attitude. So while we might not be able do much in terms of controlling the number of ACES that the child is exposed to in their home, there may be ways that we can support and facilitate protective factors to sort of offset the effect of the ACEs themselves. So just something to think about as we talk about this a little bit more in-depth. So I just want you to reflect, before we move into the specifics of how ACEs are impacting the children and families that we serve, what was your ACEs score? How does that connect with what the children that you are serving may be experiencing? And how we might think about these things with more attention and care than we may have previously. So, let’s go ahead and look at the effects on brain and behavior. So what are the effects on the brain?

And how does this impact language, cognition and communicative development? So the thing at the core of exposure to ACEs is the idea that exposure to toxic stress has results in the brain itself relying more directly on more primitive brain structures, like the amygdala, rather than our higher order cognitive cortical areas. And so we see here a graph that, generally speaking, when someone is not being exposed to ACEs, this is sort of the pyramid for how this is impacting development. So if our basic brain behavior and attention needs to focus on survival, and we are being taken care of, this then allows us to move towards brain areas that can be focused on emotional
regulation, managing the fight or flight response, and with that, our frontal brain circuitry is open and available for use. And so that we have social and emotional development happen. And then higher order cognition. And in this particular graph, for the individuals that made this, this is through the Ohio Department of Education, they are putting language here under the cognition so we could include language under that area. Now, this actually gets flipped on its head when the child is exposed to ACEs. And again, most of this work has been on conventional ACEs, individuals with ACEs score of four or more.

So that you see the brain structure and function is more focused on survival and meeting basic needs, rather than higher order cognition. And so with so much focus being there, there is a lot more activity in the areas that allow us to control regulation. And so you get this hypervigilance, hyperarousal and awareness of your environment around you so that if you need to fight for your own self, or run to keep yourself protected, that those limbic regions in the amygdala and the associated pathways are overly available for that to protect yourself. And when the amygdala and its associated pathways are really heavily being recruited, it actually shuts off the pathways to the higher cortical areas of the brain.

So that this limits the ability of the individual to develop socioemotional behaviors, and also higher order cognitive areas. And as I said, this graph is putting language under higher cognitive areas. So specifically too, when we look at different structural and functional scans of brains of adults that have been exposed to ACEs in their childhood, we see that they have a reduced volume within the hippocampus. And the hippocampus helps us with learning and memory. So that learning and memory skills tend to be decreased for individuals that have been exposed to ACEs. The hippocampus also helps the body regulate its response to cortisol. And cortisol is the stress hormone that gets released. And so there is some interruption in how the brain is triggering cortisol release for individuals that have been exposed to ACEs. Also, the
corpus callosum, which is a large white matter fiber tract that connects the two hemispheres of the brain, also shows a decreased volume for individuals that have been exposed to four or more of those conventional ACEs. And we know that interhemispheric connection is important for language, to put together both those left hemisphere and right hemisphere functions of speech and language. And so this reduction in corpus callosum may also be related to what we see in delayed language development for these kids. The cerebellum has also shown a decreased volume. And not only does the cerebellum do the traditional things that we think about in terms of motor coordination, there’s also a set of pathways that connect the cerebellum to the prefrontal cortex, or that home of our higher order cognitive functions.

And so that this could be accounting for some of the changes in dysexecutive skills that we see. And then, most importantly, for those executive skills, there is a smaller prefrontal cortex in total volume in adults that had been exposed to ACEs as children. And, of course, we need these areas for behavioral regulation, short-term memory, working memory, problem-solving, all of our executive function skills. Interestingly, also, there has been some work specifically about physically abused children, and that their orbital frontal cortex looks especially small.

And this is related a lot to emotional self-regulation, which can be tied to behavior problems and acting out because they can’t control their emotional reaction. In terms of function, the amygdala itself, while there’s no change in volume, is showing overactivity or hyperarousal in children that have been exposed to ACEs. So, the brain itself is being impacted, both in terms of its structural growth and its functional connection, and activation. And that that change in brain structure impacts the child’s ability to reach developmental milestones. Additionally, when we saw that look at lower socioeconomic status families, having more exposure to more ACEs, right? Not just one, but multiple ACEs, it is important to also note, so that we have this direct connection with higher chronic stress for low income families. And when you think
about the generational impact of that, and the brain structure and function changes for the parent, that that also limits their ability to have a facilitative rich language environment within the home. And certainly, I think most of us that are participating in this webinar today understand that that home language environment connection for those of lower socioeconomic status is well established. There's a direct connection here, then, to the development of the language network in the brain. But then also that this chronic stress, as we just saw in the diagram that we were looking at, limits the ability of the cognitive control networks of the brain to develop appropriately, which then further influences language and the language networks of the brain. So in a few slides, we're gonna look at language and communication specifically.

But before that, I just want to mention some of the behavioral impacts of ACEs themselves. And so because you have that sort of shut off of the connection between the amygdala and the limbic structures to the prefrontal cortex, you have reduction in development of executive function skills. So what does that lead to? Well, all the executive function deficits that you might know from several of the types of children that you serve, difficulty with task persistence, difficulty both with cognitive self-regulation, as well as emotional self-regulation, or those hot and cold executive function skills.

This can lead to reduced engagement or interest in school. And that often, for individuals that have been exposed to ACEs, we see many externalized behaviors. And so that specifically are defiance to adults, or individuals in authority, behavioral aggression, and for example, episodes of cheating. School attendance is a problem. Academic failure is a problem. And then once academic failure has occurred, and school expulsion has occurred, the likelihood of contact with the legal system increases, which puts the child themselves on a completely different path once they're engaged with the juvenile justice system. Now to specifically talk about the communicative impact of ACEs, it is important to note that approximately 26% of
children with speech and language disorders live in lower SES families. And so we know that poverty alone, as we showed in that graph, poverty alone we know impacts all aspects of speech and language development with a specific focus on the impact of the serve and return interaction. And so the parents language and communicative abilities themselves limit their ability to interact and respond, reinforce, and model the language development of their child. And that's just poverty alone, right? And that, really, when we add on these other ACEs, we add on the generational effects of those ACEs, as we talked about in the beginning. And then we add on the exposure to extended ACEs, such as bullying, we really have a lot of work to do ahead of us to really understand how much ACEs are impacting the language and academic outcomes of the children and families that we serve.

So, it seems like, boy, I've been giving a lot of bad news, as I've been going through all this. But the awareness of this allows us to change the conversation, not just within ourselves, but within a parent training, teacher training, training those around our children that we work with that have speech and language concerns. And that may also have ACEs in their background, and change that conversation from what's wrong with you, to what has happened to you. And that by understanding what has happened to you, we can help build up the skills that are those protective factors that can help offset the exposure to the ACEs themselves. So I just like these two quotes, child abuse casts a shadow the length of a lifetime. And it's easier to build a strong child than repair a broken man. And that's not to be gender exclusive. But we can say broken person there. Okay, so what is the good news? So there are protective factors. And these are related to resilience. And so that we know that building resilience helps offset the impact of ACEs themselves. And part of doing that is improving the parent-child relationship. And as we know from working with children and families, that oftentimes we are focused on training the parents to improve their ability to support the language and communicative attempts of their child, and also teaching ways to help improve natural conversational interactions between the parent and the child. And
actually, this improvement of the parent-child relationship is one major factor in building resistance to protect against ACEs. And really that's where we as speech language pathologists can really be critically thinking about how are we best capitalizing on training parents to support the communicative attempts of their children of all ages to help build their resilience to any of the ACEs that they may have experienced. Now this, I think, for a lot of us, we can easily think about early intervention and early intervention models as the family-centered model is the center of an early intervention approach. But remember that brain development is occurring through infancy, childhood, school age, teen years and into young adulthood.

And so as the children that we're working with get older, it doesn't mean that parent training becomes any less important, that we still need to consider how we can help, specifically related to speech and language, how we can help improve that parent-child communication, because it does really play a profound protective role for kids that have been exposed to ACEs. So just as we did at the beginning, I want you to tally up, so you have your ACEs score that you have from the beginning. And I'm gonna ask you some resilience questions that are considered protective factors. And so you can your own score. And then also think about how these protective factors could be enhanced by improving the language interaction between the parents and children that you're currently serving in your own clinical practice.

Okay, so I'm just gonna read these, I don't have these on a slide for you, but I'm just going to read them to you and I want you to keep track for yourself. Number one, I believe that my mother loved me when I was little. Number two, I believe that my father loved me when I was little. Number three, when I was little, other people helped my mother and father take care of me, and they seemed to love me. Number four, I heard that when I was an infant, someone in the family enjoyed playing with me and that I enjoyed it too. Number five, when I was a child, there were relatives in my family, who made me feel better if I was sad or worried. Number six, when I was a child, neighbors,
or my friends, parents seemed to like me. Number seven, when I was a child, teachers, coaches, youth leaders or ministers were there to help me. Number eight, someone in my family cared about how I was doing in school. Number nine, my family, neighbors and friends talked about how to make our lives better. Number 10, we had rules in our house, and we were expected to keep them. Number 11, when I felt really bad, I could almost always find someone I trusted to talk to. Number 12, as a youth, people noticed that I was capable, and could get things done. Number 13, I was independent and a go getter. Number 14, I believe that life is truly what you make it. So this is a follow up to the ACEs quiz, there is this resilience questionnaire.

And so our colleagues, for example, in social work and counseling, that may be directly assessing ACEs also directly consider the resilience questionnaire as a protective factor. And certainly while many of these issues, we would need to work closely with our colleagues in social work or counseling, there are ways, again, to think about how we as SLPs can support that parent-child relationship, and parent-child communication. So it has been established that that parent-child communicative relationship is a strong protective factor. That education on communication development and communication support does improve resilience, and can offset the effects of ACEs. To really consider that family-centered approach in communicative intervention.

And this goes beyond just the early intervention period. And keeping in mind that those brain areas of development continue into young adulthood. So that means engaging parents at all possible points is really, really important. And to include a responsible and caring adult in that child’s intervention when possible, and this can even be a teacher within the school or guidance counselor that has a close protective relationship for the child. So they just sort of get along, and the child feels like that someone that they can talk to, perhaps that's you as the speech language pathologist. This can also be an aunt or an uncle or grandmother, certainly, families come in all sizes and shapes.
And so we wanna be thinking about who that child trust, and who that child really seems to gravitate to that one relationship can make all the difference in terms of developing resilience. Okay, so I know I went through some of that quickly, there are references at the end of your slides that point you to most of the articles that I used in this presentation. As I said, the CDC is a great resource if you go to the Center for Disease Control, to look at their ACEs information. Also, the Children's Bureau for Child Welfare, also has some great resources. And even if you just go in and search ACEs, you get quite a few resources that can be helpful. There is a website called ACETooHigh, ACEsToo, T-O-O, High, H-I-G-H, that goes into some pretty good depth on very specific data for specific ACEs and specific outcomes. That's also where you can find a copy of the resilience questionnaire if you think that would be helpful to you. Okay, I'm gonna go ahead and take a look in the question box here and try to answer questions as they came up.

So Lindy, gave us a question, is there a correlation between selective mutism and a higher number of ACEs? Lindy, I think that's a wonderful question. Unfortunately, I do not know the answer to that. I do know that within ACEs, there is a correlation to a variety of mental health diagnoses, and an increase in the diagnosis of anxiety, depression and mood disorders. And so there may be something there in the literature related to selective mutism, I just don't have a specific reference to give you for that right now. Michael asks, is the 14% the definition of expanded ACEs? I think that's referring to, and Michael, you can correct me if I'm wrong. I'm gonna go back in my slides here. I'm guessing that this is related to this slide. And, this study had a separate set of data that was just looking at expanded ACEs themselves. And so 13% of the sample had three or more expanded ACEs, and of this whole group itself, 13.9 are reporting expanded ACEs by itself. I'm hoping maybe that addresses your question. Carol asked, where do expanded ACEs occur? So just as in, generally speaking, this is considered the array of possibilities for exposure to either conventional ACEs or expanded ACEs so that they can occur directly to the child themselves, within the
child’s home, or within the community. And certainly, we include not only the child’s neighborhood within that community, but also their school community within that community. So Carol, I hope that answers your question. Farrah, oh, there’s a question, can you review cortisol effects in the brain because the sound cut out. So what I was saying in that section of the presentation is just that the changes, the anatomical changes in the hippocampus have been also associated with a dysregulation in cortisol control within an individual. And actually, there’s some research to show whether it’s physical or emotional abuse, there may be some difficulties in down regulation of the cortisol system versus up regulation, we don’t really have time to get into all that. I just wanna make the point that not only does the hippocampus itself, which is involved in learning and memory change, but that it also can impact hormone release within the body.

Okay, I know we're at the one o'clock time period, and people need to go, the recording will continue. I can stay on for a couple more minutes and try to answer some of the remaining questions. And so if you need to leave, we certainly understand, and I'm gonna try to get to a few more questions for a couple more minutes and try to get to as many of these questions as I can. Victoria asks, how are some ways in which cultural differences affect experiences of children in poverty impossible form of resilience? How can we avoid overgeneralizing poverty challenge and finding appropriate cultural forms of support? Victoria, I think this is a really great question.

The literature on poverty generally talks about poverty being not only the child’s subjective experience of poverty, but also their experience of housing security. So how sure are they that they’re gonna have a place to sleep and have a consistent, safe place to sleep. Also, if they're going to have clothing to wear to school, that will keep them warm and dressed appropriately for the environment, as well as their access to food. And those have looked at across cultural groups. What I don't have in the literature are specific suggestions for individual cultural approaches to those specific
issues. Again, I think we might turn to especially the social workers in our lives, to help us talk about what they know about addressing poverty in a culturally appropriate way. For the children and families that we serve, I certainly don’t think that there is a one size fits all approach to this issue. And it’s gonna be very individualized to the child, the specific child and family that you’re working with. Amal asks, what is the SLP’s role as a mandated reporter? If a student or confides in the SLP about an ACE, what referrals should be implemented? What would be the legal status and what is ASHA's position? I would need to look up ASHA's position, I don’t have that right with me to be able to give you that. I think that in terms of mandatory reporting, we should follow the specific guidelines we have about safety and welfare of the child and use your internal institutional reporting procedures for both reporting conventional ACEs, and extended ACEs.

So for example, I know many schools have mandated reporting about bullying with their zero tolerance policies. So I think you should look within your institution for reporting guidance. In terms of referrals, I always think that if you are aware of an ACE, and I know later in this week, there’s gonna be some discussion of different trauma-informed approaches, specifically, using narrative and discourse as a way to address some of these issues. So you may wanna stay tuned for that later in the week. But certainly, as I said, our social work peers, and our counseling peers, school psychologists, would be really important to loop in. Again, I think many of the institutions we work for, do have guidelines for how to report these things, especially things like physical and sexual abuse, drug or substance use within the household. And then, as I said, I think more people are coming up with some pathways for how to deal with that for some of the expanded ACEs. Okay, I know we’re right at 1:05, which is about the time that they would like us to wrap up. Additional questions, I think will be collected by SpeechPathology.com and sent to me so that I can type up replies and the answers to those questions. So if you've posted a question, I will have a chance to
address those and send responses to those. Thank you everybody so much for taking the time to be here.

- [Trisha] All right, well, thank you so much, Angela, for joining us today. We really do appreciate you sharing your expertise, and taking the time to talk to us about such an important topic. And I'd like to thank all of our participants for joining us today as well and asking some really great follow up questions. So with that, we can go ahead and wrap it up there for today. Thanks, everyone.