



The Science of ACEs and Toxic Stress (Part 2) – Transcript

July 14, 2021

Jennifer Ryan: Hello and thank you for joining us today. My name is Jennifer Ryan and I serve as the Executive Vice President at Aurrera Health Group. We are proud to be supporting the ACEs Aware initiative on behalf of the California Office of the Surgeon General and the Department of Health Care Services. This webinar is part of a new series designed to take an in-depth look at research on the science of adverse childhood experiences and toxic stress. In our first segment, Dr. Nadine Burke Harris presented information that serves as the foundation for all of the work that we are doing through the ACEs Aware initiative. As she said, in order to be successful, the initiative must be deeply rooted in the science and based on evidence that has been firmly established through research.

Jennifer Ryan: As always, we want to thank those of you who submitted questions in advance, several of those questions will be covered during today's presentation and during the question and answer section. Attendees and the chat function are muted, but please submit any questions via the question and answer icon at the bottom of your screen. Our ACEs Aware team is standing by to respond to you directly and will also be sharing resources in the chat during the session. Finally, you will find a link to today's slide deck in the chat in case you'd like to follow along. If you run into any technical difficulties or get disconnected, we'll be posting the recording and the transcripts later this afternoon at acesaware.org. Now let's get started.

Jennifer Ryan: I always like to start off with a reminder of our mission at ACEs Aware. Our mission is to change and save lives by helping clinical team members understand the importance of screening for adverse childhood experiences and by training clinical team members to respond with evidence-based interventions and trauma informed care that will mitigate the health impacts of toxic stress. As a reminder, this webinar is eligible for continuing medical education and maintenance of certification credit. So please be sure to share the information with colleagues that may be interested, but unable to join us today. I am pleased now to introduce our accomplished presenter, Mr. Al Race. Al serves as the Deputy Director and Chief Knowledge Officer at the Center on the Developing Child at Harvard University. His focus is on how to use the knowledge generated by the center's work both internally and externally to transform the landscape in which science-based intervention for children and families can thrive and grow.

Jennifer Ryan: Al provides thought leadership for the Center's knowledge translation, communication and public engagement portfolios, and he leads the development of the strategic communications plans for the Center's initiatives, the National Scientific

Council on the Developing Child and Frontiers of Innovation. For the past 15 years, AI has worked closely with Dr. Jack Shonkoff, Director of the Harvard Center on the Developing Child and one of the preeminent researchers in the field of childhood adversity and toxic stress. We're very grateful that AI has agreed to join us for what I know will be a very informative session. Today AI will discuss the importance of addressing childhood adversity and its impact on long-term health outcomes based on their extensive research in this area. Now it's my pleasure to introduce AI Race.

AI Race: Thanks Jennifer and thanks to all of you for taking time out of your busy schedules to focus on the science of early childhood development with me today. Let me start with a confession, it may have been clear from Jennifer's introduction, but I am not a scientist. So now that I've destroyed my credibility right from the start, I'll add that for the past 15 years, as she said, I have worked with Dr. Shonkoff and some of the leading neuroscientists and developmental psychologists and other researchers to figure out how to translate what they know into information that the rest of us can actually use. So what I'm going to share with you today is the culmination of that work. Some core concepts that I hope will be actionable in your practice.

AI Race: I'm going to start with a simple idea and I know it's the same idea that grounds the ACEs Aware initiative, that advances in science are actually revealing the underlying causes of disparities in learning behavior and particularly in health and that understanding that science can help us create lasting solutions for children and families. We've known for a long time, that there are these huge disparities in outcomes for kids as they grow, mostly along the lines of social economic status. Those disparities result in some kids having longer and more successful and more healthy lives and other kids being at much greater risk of school failure, risky behaviors, illness and even early death. We've believed that some combination of parents and genes and positive experiences and negative experiences all shape how those outcomes are achieved, but we don't know why it's happening.

AI Race: Over the years a lot of theories have been put forward and ACEs is one of those and social determinants and schools and peers, even personal choices have been put forward as the reason for this, many of these are based on important social epidemiological data or well-founded hypotheses and some less so, but they still don't explain why. They don't explain the causal mechanisms that could help us think about solutions. Science is helping us to see that these factors do in fact affect child development and outcomes, not only that but they interact with each other, they shape each other. Even genes are influenced by the experiences we have and in fact, science is now helping us understand how these interactions work at the molecular level. Let me give you one example, this is from the rapidly growing field of epigenetics, which explains in a simplified way, how experiences actually get inside the body, into the cells and actually shape the expression of our genes.

AI Race: So here's how it works. This is a neuron, a brain cell, external experiences trigger signals to be sent between neurons, those release gene regulatory proteins that are sent down the dendrites, into the nucleus of the neuron. That's where the DNA is.

Those proteins attach themselves to the outside of the genes in a particular unique signature and that signature authorizes whether, how and when the instructions contained within each gene are expressed. So this is beginning to explain why even identical twins have different outcomes and behaviors, it's because their experiences are not identical and that shapes how their genes are expressed.

AI Race: So we've known for a long time about how early experiences affect brain development and this is a story that has shaped policy and practice around the world. The general ideas of brain architecture being formed through interaction with adults starting at birth if not prenatally, building on what came before with the foundation being either strong or weak for everything that comes later. The importance of serve and return interaction or contingent reciprocity as the scientists say, the back and forth interaction between adults and children actually causes those neural connections to form. Those connections are within regions and across regions of the brain, which comprises that brain architecture and the effects of excessive stress activation particularly when there are no supportive adults to calm the stress response can be harmful to the formation of those circuits, particularly in regions of the brain that are dedicated to higher level skills.

AI Race: The brain does not develop by itself, so it's time to connect that story to what's happening in the rest of the body. This past spring, we released this working paper with the number 15 on it there on this topic along with several briefs and there's going to be a video coming out soon. We think this is a very important body of knowledge because the science tells us that the very same things that support sturdy brain architecture also support the foundations of lifelong health and it's time to bring learning and health together. So let me show you what I mean. So the brain is connected to all the other systems in the body and all of these systems interact throughout the developmental period in response to experiences in the child's environment. Those can be positive experiences or they can be negative experiences. I'm going to use a scary or threatening experience as an example.

AI Race: So when the brain perceives a threat or some other kind of stressor in the environment that triggers the stress response. That's important, it's necessary for survival and it sets in motion a cascade of responses by other organ systems. So the brain triggers that response and manages it, the heart and cardiovascular system pump blood and oxygen through the veins, the gut and metabolic system turn food into energy, the neuroendocrine system maintains the delicate hormonal balance that we need and the immune system springs into action to defend against infection and potentially heal injury. So the body is like a team of highly skilled athletes, jumping into action, reading each other, responding to each other, all with a common goal and in this case the goal is protecting the body from whatever may be perceived as a threat, but all of these biological responses were designed to deal with short-term threats, they were not designed to stay on chronically and when they do there's a wear and tear effect.

- AI Race: Sometimes we think about it like a car racing its engine, so that's necessary to pass a truck on the highway, you need to be able to rev that engine, but if your car is sitting in the driveway and you're revving the engine for hours or days or weeks or months on end, that's going to eventually break the engine down. It's a similar phenomenon inside the body when all of these systems are activated at high levels of stress. This explains why it is that early adversity is related to the increased risk of all of these different conditions, asthma, heart disease, diabetes, obesity, depression, autoimmune disorders, even dementia, many other conditions. That's why it's so important to support families with young children, because it's as much about building a strong foundation for lifelong health, as it is about early learning and social emotional development or school readiness.
- AI Race: Several of these chronic diseases that have their roots in early childhood adversity, particularly in inflammation, which seems to be a common thread are also budget busters for healthcare. In fact, three of the five most costly adult diseases are associated with early life adversity. Cardiovascular conditions, diabetes and depression are three of the top five and together they cost the US healthcare system more than \$600 billion annually. So this matters because if we can reduce hardships and adverse experiences faced by families and pregnant women, that it's a promising pathway to enormous potential savings in healthcare costs but I want to be clear that not all stress is bad. That's why our national scientific council on the developing child created three levels of stress to explain the complexity of how stress works. Learning, how to cope with stress is an important part of child's healthy development, whether it's the stress of meeting new people or learning to walk or dealing with problems, when stress occurs to a young child within an environment of supportive relationships with adults, these physiological effects are buffered and brought back down, and the result is a healthy stress response system. That's what we call positive stress. Tolerable stress is when the stress has become more serious, but they're still buffered by supportive relationships. It's only when the stress response is activated for a long period of time that is severe level in the absence of protective relationships that it becomes what we call toxic to developing brains, and as we saw a minute ago, to the rest of the body as well.
- AI Race: So how does this fit into the concept of ACEs? Many of you are familiar with this concept of ACEs and the community and systemic adversity that is a part of the ACEs Aware initiative, and how these are linked correlational aid to poor life outcomes. We know there's a connection, we just don't know why. Toxic stress helps us explain why. Because these kinds of adversities trigger that toxic stress response, and the toxic stress response has that effect on all of those different organ systems, that's what contributes to all of these poor life outcomes.
- AI Race: Trauma has a lot of different definitions, and I'm not an expert on them, and I won't get into them in depth here. But we think of it more as sort of the psychological manifestation of experiencing those events and experiencing the events that cause toxic stress. Now, how do we respond to all this? There's a whole spectrum of

possible ways in which we could respond. Starting at the source, reducing those sources of stress, and doing the kinds of work that's happening across the state in California with ACEs screenings and referrals. At the more extreme end of people who have really experienced toxic stress and trauma, that the need for trauma informed care and intensive therapeutic interventions is clear.

AI Race: But you can see there's a gap here. And that's the gap of actually being able to treat the biological effects of stress, where the science is still in its early stages, even being to measure an individual's the effects of excessive stress activation is in its very early days in terms of research. So that's a gap that I think the research world is trying to fill right now. But even right now, there's still plenty we can do in terms of all those other areas on that spectrum of response.

AI Race: Now, having measures for individuals is important, because science is just screaming at us right now that everyone is different. So understanding heterogeneity or variation in sensitivity to context, is critical to rethinking how we address those social determinants or those adverse childhood experiences in individuals, rather than as a population wide response. So I'm using these charts to make a point. They're from a study by Kim Noble and colleagues that showed a consistent relationship between range in developing developmental measures and socioeconomic status. The higher the SES, the better the outcomes. There's really nothing new there. We've known that for decades. But when you reveal the actual data behind these trend lines, what you see is a huge amount of variation.

AI Race: Some individuals with low SES do extremely well. Some with high SES do poorly. So simply improving SES will improve the trend lines, but it will not necessarily improve outcomes for every child. And the same is true for the kinds of trend lines we see with ACEs. Now, another point that I want to stress comes from work we've done with pediatricians in our Innovation Network, on how to actually communicate about ACEs and stress with families that are going through it. So we developed the concept of toxic stress more than 15 years ago to communicate a complex biology of adversity in a way that conveys a sense of urgency to policymakers. But it had unintended consequences that are very relevant for pediatricians who are working everyday with families, because it can make people who are experiencing toxic stress feel like they are damaged goods beyond repair.

AI Race: So it's important to avoid that. So if you're talking with your patients about all this, for example, I'm going to give you a few tips that we learned from doing research on how to better communicate this concept. So the first tip is, it's really important to combine any discussion about the effects of stress with messages about the possibilities of resilience, that problems are not inevitable, that there are solutions. We make sure we don't say toxic stress will cause something. But we say that it can cause something. And it's also important to acknowledge how hard it is to be a responsive caregiver under stressful conditions. How badly it feels to have too much stress.

- Al Race: So this metaphor of being an overloaded truck is a good example of kind of empathizing with how bad it feels when you're so overloaded by stress. And then getting to solutions is about how we unload the burdens from that overloaded truck. So that can be a useful metaphor when you're talking about it. But whether or not you use that metaphor, it's so important to combine the ideas of resilience and hope and solutions with any discussion of ACEs and toxic stress. To emphasize the need for responsive caregiving with children, but also recognize that external factors can make it very difficult to do so.
- Al Race: And finally, to balance the need for systemic solutions with self-efficacy. So in other words, help people feel empowered, that they can do something about this, but also recognize the need for systemic solutions to help reduce those burdens. Here's why that balance is so important. We also tested social determinants argument for why paying attention to early adversity was important. And this blurb on the left here is what we showed respondents in the research. So living in a community with high rates of violence creates constant stress, et cetera. In order for doctors and communities to create services that address the root causes of stress, we need to know more about how environments cause stress and affect children's health and development.
- Al Race: This is sort of the classic social determinants argument. But what we found in our research was that using this argument, and this description reduced people's hope and sense of self-efficacy. And here's a quote from the research that it, "leaves people less able to see how positive development and health can be achieved following exposure to early adversity." Resilience is another topic that's very challenging to talk about. So I'm going to demonstrate how we do talk about it without making people feel like resilience is some trait that's inborn, like grit that you either have or you don't have. It's really important for people to understand that resilience can actually be strengthened by supportive relationships and skill building.
- Al Race: So the ability to thrive despite dealing with difficult circumstances is not a trait you're born with. It can be built over time with the right influences. It's the result of multiple interactions between the genes we're born with, and the experiences we have. That's why every child is different in how they respond to adversity and how they respond to intervention. We think of it as kind of like a scale like you see here where negative experiences, and we all have negative experiences in life, tipped the scale toward bad outcomes. But positive experiences tip it toward good outcomes. And that can help us think about the kinds of things that could tip any person's scale to the positive.
- Al Race: So things like responsive relationships, and a sense of mastery, supportive community services, and faith and cultural traditions also are known as resilience factors. These things can tip the scale toward positive outcomes. So the more things that we can pile on that positive side, the better. But it's not just about experiences, every scale has a fulcrum. And where that fulcrum is placed can make it harder or easier to tip the scale to the positive or to the negative. We think of the fulcrum as

sort of our genetic predispositions, which we now know can also be influenced by experiences, even prenatally.

Al Race: And we can move that fulcrum, which is the important thing to know here, that it's not fixed. It has a particular set point at birth. But over time, we can move that fulcrum by strengthening the adaptive toolkit of skills that people have to help them plan and make goals, meet those goals, move to plan B when Plan A doesn't work out and adjust to any kind of challenging situation. We think of them as executive function and self-regulation skills. But we can also address the structural conditions that make it harder for some people to thrive.

Al Race: I think this year has been a particularly obvious year for all the kinds of stressors that people are experiencing, because there sure has been a pile up over the past year. Whether it's economic insecurity, or a loved one dealing with COVID, or your childcare closed, you can't visit your family and your friends. And major structural problems like racial injustice are all stressors piling on that negative side, and some of us are more effective than others. So the degree to which we can address some of those larger causes of these stresses through policies and programs and community services, the better. Because if you look at this scale, which is now tipped toward the negative, it's important to recognize there are three ways we can tip that scale back toward the positive.

Al Race: One is to remove negative things from the negative side. The other is to pile on positive things to the positive side. And the third is to shift that fulcrum through responsive relationships and active skill building to give people the ability to strengthen their skills that enable them to adjust, adapt and cope. So I've covered a lot in a short amount of time. I'm going to try to sum that all up with three core principles from all of that complex science. Three principles you can take home and use. We call them design principles. That's a term that comes from the tech world where design principles are kind of like your North Star.

Al Race: If you keep coming back to these design principles and say, are we doing these things? How are we doing toward these things? Can we do better to the to address these things? That you will be able to design your programs and your services in a way that are more in alignment with what the science says children and families need to thrive. So these three things should have come clear through the earlier parts of this presentation, building responsive relationships, reducing sources of stress, and strengthening those core skills that we think of as executive function and self-regulation, the planning and goal-setting and adaptation and memory skills of an executive function.

Al Race: So these principles apply not just to children, but also to adults. So adults need relationships in their lives, they're a way of reducing stress and finding solutions to problems. Adults need those skills to provide the stable household that children need to thrive in. And everyone needs less stress in their lives, but particularly if you're experiencing significant adversity and they all interact with each other as well.

So if we have responsive relationships, that's a potent way of reducing the effects of stress. And it opens up bandwidth to work on those core skills. And having those core skills can also create stable environments, which reduces sources of stress.

AI Race: So you can see they all work together. And if we can provide these things for children and adult caregivers, then the children will develop in a healthy way and be more prepared for school. And adults will be able to provide responsive care giving to children as well as economic stability for the household.

AI Race: So what does that look like? So these are three principles you can keep coming back to and say, are we doing our work in a way that aligns with these principles, but what would that actually look like in a pediatric practice? So I'm going to share a few ideas that have come from our work with pediatricians, but they're just a start. I'm sure you can think of many other ways and many of the things you're already doing probably fit these categories, but what's most helpful is to take a good, critical eye to ways in which you could do better.

AI Race: Look for ways, areas in which your practice is actually not supporting these principles as strongly as you could. That's the space for innovation. So here are just a few ideas. For responsive relationships, actually coaching parents and caregivers on how to do serve and return interaction.

AI Race: We have resources on our website and there are others that can help parents understand the simple steps that they can take to engage in that kind of back and forth. Providing ideas for fun activities that parents and children can do together that support the establishment and maintenance of those responsive relationships. Those core skills can be developed through games and play-based activities that help children practice those skills at different ages.

AI Race: Also, just helping families establish regular routines is an important part of building those kinds of planning and goal setting type skills. Reducing sources of stress, one very potent way to do that is to help connect families to ways in which they can reduce the stresses in their lives like receiving services that help them meet basic needs.

AI Race: And even just identifying those sources of stress and thinking about what solutions might be is a way that pediatricians can help. So that's just a starting point, but hopefully this sort of triggers new ideas in your own practice for how you might apply these principles. I'm going to close with one more core idea that is in our most recent working paper and has come from the research on health in particular.

AI Race: And that's that experiences during the prenatal period and the first two or three years after birth may actually affect adult health even more than school achievement. So this is just in case you need any more justification for why your work with infants and toddlers is important and why it should be better connected with OBGYN.

- AI Race: This is an important headline because that means that services for three and four year olds are important, but are not early enough to have the greatest impact. And that's particularly true with health. So if we want to improve lifelong health outcomes, it's just as important to reduce stress for pregnant mothers and families with infants and toddlers, as it is to encourage better lifestyle choices in adulthood. And yet most of the medical advice relating to a lot of these chronic health conditions focuses on changing behaviors in adulthood.
- AI Race: Whereas we should be looking much earlier and trying to reduce adversity and stress early in life. And there are lots of studies that unsupport this finding and they are in our paper. So I won't go into them right now. And if you want to dig deeper, I would encourage you to go to our website because there's a lot more science there, including a guide to age appropriate ways of supporting executive function skills, our working paper, and all the other resources that are connected to that working paper.
- AI Race: And I'll also add, you'll see here in red here, is an extended URL for our website. We've just created a new area of our site where we've gathered materials that we think would be of special interest to those of you in pediatrics. So I encourage you to go take a look there and take advantage of those resources. And with that, I thank you for your time. I thank you for the opportunity to share this science and I welcome questions.
- Jennifer Ryan: Thanks so much AI for that very informative presentation, it was so helpful to hear about your research and how it underpins so much of the work that we're doing with ACEs Aware. I have a few questions that I'd like to pose to you that will dig in on a couple of the topics you've covered today. First, can you talk a little more about the origins of toxic stress? Does it result from certain types or sources of stress?
- AI Race: Great question. So toxic stress is really defined by the severity of the stressor, the duration of the stressor, the timing in development, when it happens and the availability of supportive relationships or lack thereof. These all interact with and combine with genetic predispositions. So it's really about the interaction of all of those factors more than it is any one particular source of stress.
- AI Race: The body doesn't necessarily differentiate between different kinds of stressors, only that something appears to be a threat and that, that triggers that stress response. So certainly there are some stressors that are so severe, experiencing extreme violence, for example, where they likely to affect anyone adversely, but even there, individuals are affected differently because of the interconnection of all those different factors.
- AI Race: So, brief experience with the availability of a supportive relationship and a genetic predisposition to perhaps lower levels of anxiety might lead you to be less effected by that extreme experience whereas, another child might be much more affected by it. Anxiety is a good example. So there are sort of genetic predispositions to anxiety and a child who is in anxiety provoking situations with that predisposition is going to be more affected than a child that doesn't have that predisposition in the same situation.

- Al Race: And the length of time they're exposed to that situation and the degree of support that they have all factor into the actual effect. That's why we think of toxic stress really as a toxic stress response. It's the body's response to a stressful event or stress provoking event. And so how the body responds, it depends on all of those different factors.
- Jennifer Ryan: Al, we know that having supportive relationships with parents and other caregivers is critical to building resilience. What are some of the other buffering supports that can help children manage the physiological effects of stress?
- Al Race: So there's a large body of research about protective factors and resilience factors, and I'm not an expert on that full scope of research, but it is out there. I mean, but I can say that there's a lot of evidence that supports in the community and supports in the family can help. So supporting families is a way of supporting resilience in children.
- Al Race: So, in addition to those responsive relationships with caregivers, and I want to emphasize that those caregivers can be inside the home, they can also be professional caregivers outside the home, providing those kinds of consistent, responsive, supportive relationships. But even beyond that, things like access to high quality services, like of course, healthcare and childcare, access to nutritious foods, green spaces, recreation facilities, being part of a supportive community like a faith community or any kind of community that's supportive of each other, those are all things that we can do as communities at a policy level and at a community level to help support resilience.
- Al Race: And then the other as I was describing is, helping individuals to develop and strengthen their executive function and self-regulation skills. So those are the skills that can help children and adults adapt to challenging situations, to create solutions, to find plan B when plan A doesn't work out, plan C even, and keep adjusting and adapting and having a long range view, remembering what your goal is and delaying gratification until you achieve that goal.
- Al Race: All of these things are part of that constellation of skills we think of as executive function and self-regulation. And they can be built over time through practice and scaffolding. So by giving people opportunities to practice those skills at a developmentally appropriate level for meaningful goals, goals that are meaningful to them at their stage of development, we can develop those skills starting in an infancy, but all the way up through early adulthood, because that's the part of the brain that takes the longest to develop. It involves the interconnection of circuits between multiple different regions of the brain.
- Al Race: And so each region has to mature. And then those connections between regions have to mature, which is why anybody who has a teenager at home knows that they're not fully developed in terms of their executive function skills at age 16 or 17, and that's why we can help. There's still an opportunity to help build those skills even

with young parents who may not have had that kind of opportunity when they were developing.

Jennifer Ryan: Thanks, AL. That was super interesting and new information to many of us. Can you also maybe provide a few examples of the games or activities that help children build executive function and self-regulation skills?

Al Race: Sure. Thanks. I mentioned that at the end of my presentation, that we have a guide on our website to developmentally appropriate activities that caregivers can engage in with children at different ages. So starting in infancy, babies are able to do things like lap games, peek-a-boo, that kind of thing and games where you hide something under a blanket, and they try to recognize that the object hasn't disappeared forever, that maybe it'll pop up again. They try to find it.

Al Race: Imitation games, making faces with each other, those kinds of things, those are actually laying the foundation for these skills. And then there's a tremendous spurt of development in these skills in the toddler years, in the preschool years. So toddlers are ready for more active games, things that require more inhibitory control, things like freeze dance, when you're doing a dance and then everybody has to freeze or remembering that certain gestures go with a song. The incy-wincy spider, right?

Al Race: And sorting games and imaginary play, those kinds of things. And then by the time you get to the preschool years, you can sort of ratchet up the complexity of them and the amount of memory that's required. You can do things like Simon Says, children can tell stories themselves. They can engage in active role playing games where they take on somebody else's role, which kind of forces them to understand another person's perspective, and to inhibit their own impulsive behaviors in order to be a part of that role and to remember the rules of the game. All of these things are foundational for executive function self-regulation. And then when you get into elementary school, they're ready for a card games, board games, things that require memory and strategy, and physical games that require attention. Even independent activities like those I-Spy books, where you have to really focus and pay attention and look for things in a picture.

Al Race: And then by adolescents, there are two factors that come into play. One, besides the increasing complexity that they're ready for, one is the increasing importance of peers, and the other is the increasing importance of meaningful external goals. So in other words, attaching your scaffolding of these skills to goals that are important to the teenager is a really important piece of this. So in other words, it might be getting a driver's license. Well, mapping out a process that can help them work toward getting that driver's license that they want so badly, and achieve some short-term goals along the way, can help them understand that there's a process for achieving long-term goals. And the fun doesn't have to stop either, right? So, sports and music and theater and strategy games, anything that causes people to take on different rules and inhibit their behavior and remember what they're trying to do, remember different steps of a process. Those are all scaffolding of these skills.

- Jennifer Ryan: And Al, are there tools available to help adults and other caregivers support children in building these skills?
- Al Race: That's a great question. Our center is focused on early childhood, so it's not a core area of expertise, but I will say we have worked with organizations that do a lot of work with adults, particularly around economic self-sufficiency. And one of the things that we learned together, was they were actually building these executive function and self-regulation skills with their clients, but didn't have that same terminology that we've been applying in early childhood. And so some of the things we've learned from them are things like simple framing documents, or outlines of a process, checklists, simple text reminders of appointments. Just easy ways to kind of scaffold the use of those skills, because the adults, again, it needs to be in a context of a meaningful goal. So in this case, it might be economic self-sufficiency, but for pediatricians it might be supporting their children, or something along those lines.
- Al Race: And so, giving them some way to keep track of the things that need to be done, and to follow a process toward achieving those goals, and to take a step back when they need to take a deep breath, reduce the stress, and think about possible solutions to a problem that's come up. Those are all kinds of strategies that you can use. But remember that it's also quite likely that young parents who have experienced a lot of adversity in their lives have probably developed very sophisticated survival skills in order to get where they are now. And we should be building on those skills, and not just starting saying, "Oh, you have a deficit of this or that." We should be saying, "Oh, you're really, really good at making decisions on the fly." Right? Because you've had to all your life make really quick decisions.
- Al Race: So, how can we use that and say, "All right, we're going to add onto that, and think about how can we introduce a little more planfulness to that decision-making? How can we give you some tools that you can use to pause and reflect, and then make a decision about what you're going to do?" So those kinds of scaffolding tools I think are what we've seen have been helpful.
- Jennifer Ryan: So, as I've learned in my work on this initiative, a lot of people sometimes confuse ACEs with the social determinants of health. Are ACEs considered social determinants of health? Why or why not?
- Al Race: Well, as you well know, the story of ACEs started with a study of 10 particular Adverse Childhood Experiences that were inside the family. Those would not be considered social determinants. Social determinants are more related to your zip code. They're more related to the things that happen outside the home that affect your life, that affect your health. So things like crime rates and violence in the community and green space and pollutants, noise pollution, all those kinds of things have been shown to have effects on development, but they wouldn't be considered ACEs in the traditional initial study. Now, ACEs Aware has expanded that definition among other groups, which is a very positive development, because it begins to take into consideration some of those things that are taking place outside the family that

have an effect on development. So even things like racism and discrimination, and as I mentioned before, environmental problems that are very often kind of racialized in terms of neighborhoods of color tending to have been exposed to more pollutants, because of zoning regulations and environmental regulations that go back decades. So, it's a very complex mix of factors that contribute to these social determinants. And I guess one other important thing to sort of tease out here, is that adversity and stress are not the same thing either, right? So there are forms of adversity, think about lead in the water, is a form of adversity that doesn't cause stress, but it certainly harms development.

Al Race: And so we have to take into consideration all of those factors, whether they're environmental or social determinants or policy factors, deeply embedded structural racism. All of these things combined with what's going on inside the home, to have an effect on development. And it's important to recognize also that what's going on inside the home can be a buffer against all of those things that are going on outside the home, in the same way that services outside the home can be a buffer for things that are going bad inside the home.

Jennifer Ryan: And that wraps up our Q & A. Thank you to our audience members who submitted questions. And of course, to Al Race from the Harvard Center on the Developing Child, for sharing his time and expertise. As we start to wrap up today, I want to encourage all of you to take the free becoming ACEs Aware in California training, that covers the science of ACEs and toxic stress in a clinical manner. How to screen for ACEs, and how to implement Trauma-Informed Care. Medi-Cal providers are reminded that you should submit an attestation form after completing the training, so that you can get certified to receive payment for conducting ACE screenings. And also, don't forget to sign up to be part of the ACEs Aware Clinical Directory. More information and links to our training site, the attestation form and the Clinical Directory can all be found on our [ACEsAware.org](https://www.ACEsAware.org) website.

Jennifer Ryan: We'll continue using your feedback to inform and plan future webinars. So please do complete the webinar evaluation that you'll receive later today in your email inbox. A recording of this webinar will also be available and emailed to all attendees, and posted on the website later today. Please do share it with any colleagues or others in your network who may be interested. Thanks again for joining us today.