

The Impact of Trauma and Toxic Stress on Infant and Toddler Development

Amanda Perez: Thank you, so much, Kelly, and welcome everyone to today's webinar. We are so glad you've joined us out there. My name is Amanda Perez. I'm a Senior Writer/Training Specialist at the Early Head Start National Resource Center, and I'll be your moderator today.

We have an agenda packed with lots of information that we hope will be helpful to programs supporting infants and toddlers who've experienced toxic stress. And I want to take a few minutes to review the objectives together. So, first, we want to identify some standards most relevant to this topic, as we think about toxic stress.

Second, we want to discuss the work of the Office of Head Start in supporting programs with infants and toddlers who've experienced toxic stress. And we'll also discuss a joint effort between OHS and the Office of Planning, Research and Evaluation or OPRE, the Early Head Start University Partnership Grants that focus on toxic stress. Fourth, we're going to focus here on the impact of toxic stress on early cognitive and social and emotional development. And finally, we want to offer some practical information on how programs can support children who have experienced or are experiencing toxic stress in their families.

Hope, everybody is in the right space, to do all of that we're planning today; we have assembled an expert faculty for today's webinar and I just want to introduce them briefly here in the beginning. So, first of all, we have David Jones. David is the Home Visiting Specialist with the Office of Head Start. We are so glad that you're here David, welcome.

David Jones: Thank you.

Amanda: We also have Dr. Aleta Meyer, a Senior Social Science Research Analyst at the Administration for Children and Families in the Office of Planning, Research and Evaluation. And she's in the division there of Family Strengthening. One of her areas of responsibility is research on toxic stress. We're really excited to have you here today Aleta to help us to define toxic stress and also to describe that University Early Head Start Partnership Project. Thanks for being here.

Aleta Meyer: My pleasure.

Amanda: Dr. John Constatino is the Blanche F. Ittleson Professor of Psychiatry and Pediatrics, at Washington University in St. Louis, Missouri. And he's colleagues there with Dr. Patricia L. Kohl. Trish is an Associate Professor in the George Warren Brown School of Social Work at Washington University. Together, John and Trish will help us understand, in a deeper way, the effects of toxic stress on cognitive and social-emotional development. Welcome John and Trish.

John Constatino: Pleasure to be with all of you.

Trish Kohl: Good to be here.

Amanda: And last, but not the least, I want to introduce Keri Young. She is the Vice President of Early Childhood Programs for Youth In Need, also in St. Louis, where she oversees both an Early Head Start and Head Start Program. And Keri's going to offer us her insight today on strategies to use in supporting those who care for infants and toddlers who've experienced TS. Keri, we're so glad you're here. Thanks for being here.

Keri Young: Thank you.

Amanda: We are going to jump right in today to our discussion with faculty and we're going to start with David. David can you say a little about the Office of Head Start's interest in toxic stress and what the Office of Head Start is working on around that topic?

David: Sure, Amanda. Hi everyone. On behalf of the Office of Head Start, I'd like to welcome you to today's webinar: The Impact of Trauma and Toxic Stress on Infant and Toddler Development, The Head Start Program Performance Standard 1304.20, 22, 24, 40, 52 and 53 requires that grantees ensure child health, development, safety and mental health needs are addressed, as part of the comprehensive services that they receive upon enrollment in Early Head Start.

In addition, creating partnerships with parents and promoting children's mental health in consultation with a licensed mental health professional is a must to ensure parents are involved in key decisions recommended by an experienced professional on behalf of their children. There is an abundance of research that encourages and supports the rationale for our intervening early, by conducting periodic assessments, ongoing observations and screenings to ensure we are increasing our chances of identifying, as early as possible, potential challenges children may have developed mentally, socially,

and/or emotionally. One of our goals is to ensure we do everything possible to maintain and sustain children's well-being. Some of that comes through intervention. But more often than not, we can address this by taking essential preventive measures. Similarly, it is essential that we engage parents in conversations about mental health and wellness to ascertain what is important to them and to ensure we provide additional information when necessary.

It is also important to create educational opportunities, through parent workshops, to enhance their knowledge and capacity to further support their children's development. A great example of this is working collaboratively with the parents to educate them about the effects of trauma and toxic stress. Pioneering work of Jack Shonkoff in the ACE study have helped us to recognize the potential negative impact of toxic stress on children's development and family circumstances. The Office of Head Start has learned more about the impact of poverty and provider stresses that can inform service delivery. This has led to consider reevaluating the role of mental health consultants to put in Early Head Start programs to ensure they're able to support programs during a traumatic event like Super Storm Sandy or just to assist them in dealing with prolonged or sustained traumas such as community violence.

As a result, the Office of Head Start and the Office of Planning, Research and Evaluation, a little more than a year ago, funded six Early Head Start University Partnerships to take a closer look at toxic stress. This is extremely innovative, as for the first time, our research is coupled with a collection of biological data, cortisol, saliva and hair sampling, which we have -- which we hope, will inform future practice as we develop short-term cognitive interventions supporting parent's ability to better understand, recognize, respond to, and buffer their children in toxic stress. I hope that you enjoy today's webinar. And that you find it useful to the work you are doing in your programs on behalf of children and families across the country. And now, Dr. Aleta Meyer will talk and discuss about OPRE's Early Head Start University Partnership Grants focusing on toxic stress. Aleta.

Operator: Aleta are you on mute?

Aleta Meyer: Hi. Yes.

Operator: There you are.

Aleta: Not anymore. Well, thank you, so much for the opportunity to share about OPRE's ongoing work with Early Head Start. And as David said, we have funded six grantees and you can see there the universities right here and they're all partnered with Early Head Start and I'll say a little bit more about

each of them in a minute. But, before that, I wanted to share what the overall goals are of these grants. One of the things that we want to do is to be able to identify children and families most vulnerable to stress. One of the things that I'm sure you know is that we all respond differently to stress and we might respond differently to stress at one point in time than another, and part of what we need to understand is which children and families are most vulnerable to stress. So, that's one of the goals of the grant.

The second is to look at the impact of adding promising parenting interventions that are aimed at buffering the effects of chronic stress on children's development and to see if they can have added value for children who are most vulnerable to stress. And also, we want to advance our understanding of development and applied development, and one of the best ways to understand people and children is to couple both developmental research with intervention research. So, we're doing all three of those things.

It's important I think to share with you the understanding of toxic stress that we've used to guide these grants. And -- So, I'm going to be reading the next two slides. So, toxic stress refers to strong, frequent and/or prolonged activation of the body's stress-response systems to major -- adverse experiences, such as extreme poverty, recurrent physical and/or emotion abuse, chronic neglect, severe maternal depression, parental substance abuse, and household chaos. In the absence of the buffering protection of adult support -- so, when there isn't that buffering protection of adult support -- there's a disruption of the stress-response system that then, in turn, can affect brain architecture and organ functioning which ultimately can increase the risk of developing stress-related disease and cognitive impairment into adults.

And so, while there's been quite a bit of work over the years on the impact of early life experiences on later health, there's quite a bit of new work that shows these enduring effects. And one thing that's important to know about these six grantees is that they all have been studying parenting, have been studying the effects of stress, before these grants and had kind of a way that they connected the dots. So, for example, some of the grantees really hone in on: How does the impact of poverty, chronic poverty, influence parents' abilities to be warm and responsive and maybe increase their harsh parenting -- how does that affect these things? Other grantees of ours focus more in on the role of attachment between parent and child, and how that can be affected by this chronic stress. Other grantees focus more on the role of child maltreatment in a parent's life and how that might affect their parenting. And so, I think one of the things that I hope you grasp from our having these six grantees is that there are different ways to think about how we can apply this new knowledge to the parenting interventions that we might be able to use to augment Early Head Start and that there're some important questions to answer.

So, each of the grantees has -- is implementing a 10 to 15-session manualized intervention that has structured and ongoing training and supervision programs. The six different interventions are listed here and they're all very promising. They all have very clear implementation strategies. A number of them focus very much on using video, coaching feedback with parents. Some of them use the group socialization time to provide that feedback on parenting. And some of these interventions are designed to focus on the entire population of kids in Early Head Start, and others are designed for kids who are screened and determined to be at higher levels of risk. And -- So, we will be -- as David said, we're in the second year of the grants. They're going to be starting their third. And so, they're rolling out their studies and I'm really looking forward to, in about two or three years, their being able to share with you what they've learned about these different interventions and their -- the way that it's influenced, the way that they think about parenting and children's well-being.

So, the six grantees, part of -- I think what's really wonderful about this group is that we've formed a consortium that includes the six grantees. So, the investigator team and the Early Head Start partners, staff from my office, staff from David's office, David's very involved, and -- so, part of what we're doing is working on collaborative papers and presentations. But we've also set out to do some specific work on aim one and aim three that I shared earlier. Aim one is to understand which of the children are most vulnerable.

And the third was to advance applied developmental science. And so, while we're all -- all the grantees have different designs, they have come together to identify measures that they're all going to be measuring at baseline. And so, to have this information across all six of the grantees will be really helpful, because we'll be able to look at risk factors that children in Early Head Start face and which children are at risk for this toxic stress. We'll be able to look at how do these risk factors influence children's social-emotional and behavioral well-being. We don't know a whole lot about children zero to three, and this really contribute much more detail about this. And then, also be able to look at that buffering role of parenting and to see how does parenting influence the ways in which environmental stressors and other kinds of stressors affect children's well-being.

So, I think it's a very, very exciting time. Today, the two presenters from Washington University, Trish Kohl and John Constatino and -- well, three presenters -- and Keri Young represent one of these six teams. And I think what you'll hear is they'll be describing the ways in which toxic stress affects cognitive and emotional-social development for toddlers -- and infants and toddlers, and the way that they're team, specifically, is looking at this. And -- So, I think it's very exciting. And so, I'd like to turn it over to John and Trish, now, for the next phase.

John: Aleta, thanks so much.

Aleta: Sure.

John: Thanks, so much, for that overview of the projects. I hope to sort of spend some time, as we go forward, not just on the issue of these being novel kind of studies in attempts to identify new ways to support children, but also to review what has actually been learned, in this realm, about strategies to really support children's early development, particularly, when they're in the context of high levels of stress. And one of the most important things to think about is that children who, by virtue of stress or for other reasons, end up with adverse life outcomes, or, particularly, adverse mental health outcomes that those are usually influenced by a host of factors. And -- So, just studying or addressing one factor, at a time, usually is not potent enough to account for all of the totality of influence on how either to result in an adverse outcome for a child or how to steer a child or a family off of that developmental course.

And so, one of the anchors of the work that we do, and it's represented by this emphasis on both the biology of development and on supporting a child's early experience that's encompass in all of these projects, is sort of captured by information that was disseminated back in the 1990s when child development experts started to learn. This is an example from Sandra Scarr who was the President of Society for Research in Child Development in the early 1990s. That really, it's very, very important to merge these two traditions of studying the biology of human development and the course of life experience of a child in understanding what their outcomes are.

And it's more than established at this point that both genetic factors and environmental factors contribute to children's personality, their social and their intellectual development. And then understanding the ways in which genes and environmental factors work together is very important in both identifying children in need of intervention and to tailor the interventions to their particular needs. Great examples are children who, by virtue of risk that can be in (inaudible) even just by a simple family history of knowing that there are liabilities to adverse mental health outcomes. That those children are going to be more vulnerable to the effects of stress and that they should be identified, in a sense of being protected if they are really at high risk for being exposed to the kind of stressors that David and Aleta have talked about. So, I want to turn the conversation over to Trish, at the moment, to talk about features of, really, what does every child need, and this maybe a review for many in the audience. But just to anchor the conversation, what does every child really need from the environment in order to grow and develop in a healthy way.

Trish Kohl: OK, thanks John. So, with -- you know, with nature and nurture, that matters, and so, I'm going to talk about that nurture or the environment. And certainly, no environment is perfect, but children can thrive in a good enough environment. And so, what does that mean? Well, it includes the emotional environment. Human relationships are certainly the building blocks of healthy development.

And a good enough environment provides for opportunities for children to develop secure attachments. A relationship between a child and caregiver that involves making the child safe, secure and protected is essential for young children. Predictable routines are one important part of this. Responding to the child's cues are another. Caregivers must also provide for experiences that children are able to interact with their environment. They need opportunities to explore the environment, in both self-directed play, as well as, in cooperation with others.

Now, before moving on, I want to -- I do want to mention one thing. As we think about primary attachment figures, we typically think of mothers. However, particularly in the absence, both, physical, or emotional absence of the mom, that primary attachment figure can be grandmother. It could be for kids in foster care. It could be their foster mother. It can be an aunt. It's somebody who's providing consistent and stable care for that infant or toddler. Of course, the good enough environment is one in which severe prolonged stress isn't there. What it is, though, is an environment that includes exposures to stimuli and experiences that promote healthy cognitive and language development. For instance, are there books in the home? Does the parent read to the child?

I was a practitioner for many years before joining academia and I worked mostly with parents of very young children. And it used to -- I'll be honest, it used to surprise me that sometimes the parents that I worked with didn't know that reading to their children is part of how a child learns to communicate and to read. They were instead waiting for the kids to go to school to learn how to read. So, you know, are there books in the home? Are there toys for the child to play with? And certainly, these don't have to be expensive high-end toys. There's lots of gadgets out there now that are about learning. But it's simply things that the child can engage with. You know, pots and pans make great music. Kids can play with pots and pans. A good enough environment also includes adults who model appropriate responses to interpersonal conflict.

Children need to learn to navigate situations where they don't get what they want, when they're mad at somebody. These situations arise every day. And kids need to learn that there are healthy and appropriate ways to respond. We'll talk later about exposure to violence as a risk for toxic stress. And when children live in households, when conflict is addressed through violence, that's unfortunately how they, too, learn to respond to conflict. So, a good enough environment is clearly one that's absent of violence. And basically, a good enough environment does provide the foundation for school readiness, and John's going to talk more about that now.

John: Yes, I think when people think about school readiness, they are often somewhat focused on academic abilities and cognitive functioning which is very important. But it's important for the concept of school readiness, of course, to think about not only the thinking brain but the emotional brain which

are -- overlap in certain ways and are separate in certain ways. So, making sure that one is focusing on the promotion of a child's capacity for social competence, competent peer relationships beginning at the time of school entry and their ability to do that. An important feature of social competence and that kind of readiness is also to have the actual words to encode emotions. Many children who have been either in environments that lack a lot of communication on an emotional level or that have experienced stressors that are, in many ways, unspeakable, lack the words to actually encode what they feel and to be able to share that with other human beings, and this a very important aspect of school readiness that can be promoted by parents, by home visitors, by family educators that are in the village that are surrounding them.

And then I think it's very important for children also at the time of school age to have had attention paid to the notion that relationships, one-on-one relationships with adults, although they are the foundation for every baby's early development, are not in themselves enough to allow that child to begin to build their own social networks and peer networks when they're young. So, thinking about not only that child's ability to interact with a singular adult caregiver, which can be scaffolded and helped by that caregiver, but the ability to manage three-way relationships, where it's not only that caregiver, but somebody else that's in the room. And having the experience and the competency to be able to manage in that kind of environment and having those kind of skills as they enter school.

Amanda: Thank you, so much Trish and John. And I just want to say that what I hear here, what you guys describe here so clearly echoes the voice of the Office of Head Start about what infants and toddlers, in particular, need for school readiness and success. So, you all may have seen this slide in trainings from the EHSNRC and other places. But we just see it as key to the foundation of social-emotional and cognitive development. School readiness in infants and toddlers, the strong caring relationships, the nurturing, predictable environments that Trish spoke off, those responsive adults and those secure attachments, absolutely. And here's another illustration of that. I know, you all are familiar. Having trouble with turning my slide here.

I know you all are familiar with this pyramid model, the Program Performance pyramid model. And you see here, again, at the heart of sort of what we build towards, that children's well-being and confidence at that top yellow pyramid. We see at the heart of this pyramid, as a whole, the wish to enhance those parent-child relationships, to nurture those relationships in a child's life, and the importance of secure attachment and strong relationships. I love the way our faculty also so clearly identifies that as the heart, too, of cognitive and social-emotional development. We want to bring our audience in here for a second. And we'd like for you to type in your response to the following questions. So, here it is. When you think of toxic stress, what word or phrase comes to mind for you? And to participate, just click that Public Chat tab on the bottom left of your screen and type in a word. What word comes to mind, if you think of the term toxic stress? We see some coming in right now. Some really dramatic words:

"Suffocation", "trauma," "violence," "tragedy," "pain," "abuse," "paralyzed." So, many things coming on, "overwhelming" is coming on quite a bit here. John, if you -- John and Trish, if you look at this, are any -- is anything coming to mind as you look at some of these comments?

John: Well, I think it's quite a collection and speaks to the -- in many different pathways for overwhelming a child, they have to be considered and that people have to keep their eye on. Even one of the ones that I just saw flash through the screen was "money." And I think -- you know, I think this speaks to the multiplicity of angles on stressful life events that can be overwhelming to children.

Trish Kohl: Yeah, I agree.

Amanda: Let me -- wow. Thank you, all so much for all that participation. We got quite a list going here.

John: It's an amazing list. This is a list we should save I think.

Amanda: Yeah, absolutely.

John: Yeah.

Amanda: Absolutely. We're going to go ahead and let that keep rolling here for a second. But I think as we're watching it, we can go ahead and have Trish talk to us a little bit, now, about different levels of stress. And how stress affects that healthy brain development that you all were talking about earlier, even the impact of all that stress and the environment at the physical sort of genetic level that John was describing.

Trish: OK, I'm happy to. So, I really like how the Center on the Developing Child at Harvard lays out the three kinds or the three levels of responses to stress: Positive, tolerable and toxic. Learning how to cope with adversity is certainly an important part of healthy child development. So, when we're threatened, our bodies, you know, they prepare us to respond by increasing heart rate, blood pressure, stress hormones such as cortisol. And so, when a young child's stress-response systems are activated within their environment of supportive relationships with the adults in their environment, these physiological effects are then buffered and brought back to baseline. The result then is the development of healthy stress-response system. However, if the stress-response is extreme and long-lasting and buffering

relationships aren't there, that can really cause problems that have lifelong repercussions for children. So, these levels of stress include the positive stress-response, which is a normal and essential part of healthy development. It's characterized by real brief increases in heart rate and mild elevation in hormone levels. Situations that might trigger this are, you know, the first day with a new caregiver, first day at kindergarten, or receiving an immunization, so, receiving an injection. A tolerable stress-response activates the body's alert system to a greater degree than a positive stress-response. And it can be the result of a more severe longer-lasting difficulty.

Some examples are the loss of a loved one, a natural disaster, a frightening injury. The activation of that stress-response is time-limited and buffered by a relationship with an adult who helps the child to adapt. The brain and the other organs recover from what might otherwise be some damaging effects. And then there's the toxic stress-response which we've been talking about today. And this can occur when a child experiences strong, frequent and/or prolonged adversity without adequate adult support. So, this kind of prolonged activation of the stress-response system actually disrupts the development of the brain architecture and other organ system. It increases the risk for stress-related disease and cognitive impairment well into the adult years, which John is going to talk about, momentarily. It's really important, as we're looking at this, that what may be tolerable to one child can actually be toxic to another, so, genetic variation, as well as, the child's past experiences play a role in whether the child experiences an adverse event with a tolerable or toxic stress-response.

So, moving on to the next slide. So, what are some risks for -- oops, I hit that twice, thank you. Some risks. So, living in certain physical and emotional environments for a sustained period of time can place children at risk for toxic stress. These risks include the accumulated burden of family economic hardship. We talked a lot about poverty today. And poverty, itself, doesn't necessarily have a direct relationship. Instead, it's that increased risk occurs through these other mechanisms such as parental stressors. A parents' burden of not knowing where their next pay check is coming from, how they're going to feed their child tomorrow, or the threat of an eviction, because they can't pay the rent, is overwhelming and impacts their responsiveness to their children, as well as, other parenting behaviors. It impacts -- so, poverty through parental stressors impacts the home environment and the life experiences of children.

Poverty also impacts toxic stress through the lack of access to resources. And I think it's really important that we think about access to resources from an ecological perspective; so, not only at the individual and family level, but, also at the community and neighborhood levels. We are really learning more and more about how community level factors really have an adverse effect on childhood outcome, high rates of crime, the lack of safe places to play, no nearby services that can act as a safety net for families. These are all risks for toxic stress.

There's other risks that include environmental ones that are often associated with low income neighborhoods, such as lead exposure. There's the inherited liability to developmental psychopathology, perinatal complications, as well as physical or emotional abuse and chronic neglect. Caregiver substance abuse or depression are also risk factors, in part, through their impact on parenting behaviors.

So, both substance abuse and depression are associated with parenting that lacks nurturing and warmth. That can be emotionally abusive as well as neglectful, and their parenting because involve the use of physical or harsh discipline. My own research on parenting among high-risk families has demonstrated that, you know, there are high rates of emotionally abusive parenting behaviors among depressed mothers. And one of the things that I have found is that it's actually this emotionally abusive parenting that has the most robust negative effect on their children's emotional and behavioral well-being. And that was even more. The contribution of emotional abuse was over and above that of both neglect and harsh discipline.

So, emotionally abusive behavior really has a strong impact on children's development. Exposure to community and intimate partner violence also increases the risk of toxic stress. And unfortunately, these aren't uncommon events. There was one survey that was conducted at Community Mental Health Partnership found that, almost a quarter, about 23 percent of parents reported their children had seen or heard a family member being threatened with physical harm. Another study found that almost two-thirds of young children in Head Start in Washington, D.C. had either witnessed or been victimized by community violence. This violence is unfortunately a part of many young children's lives.

I do also want to highlight that families often are experiencing more than one risk factor and, instead, that they are simultaneously contending with multiple risks. And in this cumulative risk absolutely increases then a child risk for toxic stress. And now, I'm going to turn it back over to John who's going to talk more about the impact of toxic stress on children.

John: So, we can begin with thinking about the effects of stressors that are overwhelming to a child on brain development and I think this is a topic that everyone wants as much information as possibly available on that. And I think it's important to first place it in a little bit of context that we've known for a very long time that very significant severe life stressors effect brain and behavior in very distinct ways. One of the best examples that all of you in the audience know about is post-traumatic stress disorder. Imagine an event that is so stressful and so overwhelming that it incurs repeated memories of the event, a proneness to hypervigilance across anything that is reminiscent of that event actually results in arousal of the autonomic nervous system and results in behavioral attempts to avoid any triggers to re-experience anything like that. This is a profound brain and behavioral response that we've known about for a long time.

So, it shouldn't surprise anybody that significant, accumulated or chronic stressors for a child can, of course, be at that level of severity and anything between that level of a very pure brain and behavioral response stress to, you know, across the spectrum of normal responses to stressful life events. So, we're early in the game in science now in understanding the exact nature of changes in brain structure and response to stress, but the research is starting to pour in on that topic.

And one of the most important elements of what we've learned, so far, is not only that stressful life events severe overwhelming kind of stressors have long-term effects on brain function, but also that there's a lot of variation, exactly as Trish was describing, that was what's actually tolerable to one child may be toxic to another. And, really paying attention to what those vulnerabilities are and learning what those vulnerabilities are, as we are trying to do, in this, sort of collection of projects, where we're trying to integrate knowledge of the biology of brain and behavior with promoting those sorts of environmental influences that are going to buffer children from these stressful life events.

Another thing that we know very well is that there's actually a dose-response relationship. In other words, the higher the dose or the number of accumulated stressful life events of that nature, on the sort of toxic level that Trish described, then, the stronger the response in terms of adverse life outcomes – all the way out through adulthood. And I've put on this slide a very recent article by colleagues at our School of Social Work that have very clearly established that fact, through studies that involve official reports of child abuse and neglect. And then finally, the idea that children who are exposed to chronic life stressors exhibit modifications in the expressions of their genes that are related to the stress response. And this is important because one can think that a genetic makeup is sort of -- well, it's, by definition, your genetic makeup is stable throughout your life and may relatively protect you or not protect you. But the other fact about the genome is that it's covered by molecules that either turn on or turn off the expression of genes. So, just because you have a given genetic makeup doesn't set you either scot-free, or nor does it assign you to a life outcome. But literally, the expression of DNA is modifiable over the life course in a way that I'll describe in just a minute here.

So, thinking about the biologic aspect of the stress response, and I'm not going to go into too much detail, but some of the audience may be really interested in how this works and may have heard some of these terms before and even for some of our, you know, young scientists, in our programs, it gets confusing about sort of which thing affects which -- which part of the system affects the other. And a sort of general understanding of this is that there's a cascade of effects that occur biologically in response to severe stressors in children. The stress hormone cortisol gets released and when that gets released, repeatedly, at high levels, over chronic sort of periods of time, it results in changes in gene expression.

And some of the genes whose expression is changed are actually the ones that are responsible for responding to the release of that stress hormone. So, there are changes that occur throughout the body and in the brain that are related to that kind of cortisol release. Those patterns of changed gene expression then, in turn, can result in reduction or even atrophy of neurons, nerve cells, brain cells, in the memory center of the brain and affects the circuits, actually, that connect the memory center, what you remember, what you think about, what you house as an internal model of life and social experience and how that relates to the emotional centers of the brain. So, that's a quick overview of the cascade of biological effects of stress.

Now, on the next slide, we talked about this model of post-traumatic stress disorder. And although some children actually do manifest full symptoms of post-traumatic stress disorder in response to stress, there is a slightly less, you know, spectacular manifestation of adverse responses to stress that occur in children, much more commonly in the form of disorders of emotion regulation. And so, the slide depicts the sort of cascade of effects, not on just the biology, but on behavior and distinguishes the kind of responses that are adaptive in response to a stressor and an emotional response to that stressor versus a non-purposeful behavior or maladaptive behavior that results from emotions that really cannot be regulated by a child and overwhelm the child and result in tantrum behavior or acting out or really disorganized behavior that does not allow them to respond to their environment in an appropriate or productive way.

So, just to go through this very quickly. Depending on inherited characteristics of a child which many people refer to as the child's temperament; some of the principle temperament factors are abbreviated on this slide. Harm avoidance: The extent to which a child tends to avoid harm. Novelty seeking, their responsiveness to reward, their proneness to persist or not persist in things that they are trying to achieve through the interaction with the environment. These are basic areas of variation between children. Children have different profiles that they're born with along these lines.

And so, some children are more or less likely to have very strong emotional responses to a given life event or stressor. Managing their emotional response is really aided by characteristics of their autonomic nervous system. By the presence or absence of a secure, mental representation of attachment, what they have derived from being in an attachment relationship. By the extent to which their character has matured, how do they see themselves as agents of their own destiny, how have they learned to cooperate with other human beings. All of which is learned in a secure attachment relationship. How are they at the ability to control impulses and what are their strengths and executive functioning?

So, children who are temperamentally prone to intense emotional responses and who don't possess enough capacity to manage those responses are going to exhibit non-purposeful behaviors in response to emotional arousal, or what to them is really an intolerable stressor. And these signs of emotion dysregulation are important for the people who are a child's caregivers, their home visitors, their family educators. The people who are really trying to support them to recognize when they see these kinds of signs. An emotion dysregulation may really represent, not only inherited liabilities to not being able to manage a given level of stress, but that the present stressors are really exceeding a child's capacity to manage the accompanying emotions that they're actually eliciting. So --

Amanda: Thank you; that's so helpful.

John: Sure.

Amanda: I'm sorry; that's so helpful and it's so helpful to sort of understand that, especially in our work, we talk a lot about self-regulation and how critically important that is, not just for emotional development, but as the foundation for school readiness. So, this explanation of sort of how those pieces fit together in a stressful environment and what folks might be looking for and concerned about is really helpful. We know that, prenatally, those brains are developing at such a rapid rate and I wonder -- I know there's not a lot of research on this, but I wonder what you can tell us here about what's known about the experience of toxic stress prenatally.

John: Well, again, I think what we know most is from animal studies. Unfortunately, it's -- the research on how to understand whether a prenatal event is resulting in a long-term disruption of brain or behavior in a child, is difficult because, oftentimes, when the prenatal -- when there are stressors to a mom in the prenatal period, that can be correlated with stressors that are occurring immediately after the baby is born. The child will -- after they're born, mom and baby are going home to the same stressful environment that they were exposed to prenatally.

So, it's very difficult to disentangle what the relative effects are. But animal studies have definitely indicated that even moderate levels of stressful life events on a mother result in changes in gene expression and neural circuitry of the newborn animals. And so, we're very interested in continuing to explore that. And I think the take-home message at this time is that moderating stress during pregnancy is an important aspect of really, you know, comprehensive prenatal care.

Amanda: Absolutely. Keri, I'm going to bring you in here. Keri Young is from -- with your vantage point as a director, as a program director, I wonder what you could tell us around sort of you all do to support expecting families, in particular, that might be relevant for us here.

Keri Young: Sure. Youth in Need works with expectant moms to support them before delivery to provide them with tools and strategies to be the best parents they can be. Some of what we do with families that helps with a pregnant mom's stress seems pretty basic, but aren't necessarily always things our families would know how to access or, that in stressful circumstances, seem less important. We offer support and education about their pregnancy, what to expect, and support them in accessing prenatal care. We emphasize the importance of taking care of themselves which, in turn, takes care of their baby. We provide resources and referrals to help them access medical care and insurance. And we work with expectant families to talk about what to expect once the baby arrives, how to integrate the new baby into the family help the baby-proof the house, and again, connect them with resources in the community that can help them with their needs.

We discuss child development, offer parenting classes and support groups, and focus very intently on the individual needs of each family. This is the key. We don't and can't provide a boxed curriculum for expectant families and expect the same outcome for each family. We really work to build relationships and get to know the family, identify strengths and helping families focus on those and how they can build on them, and identifying goals or areas to work on and how we can support them in that process. Only by building those relationships and getting to know families can we customized our service delivery to meet their needs and provide them strategies for dealing with stress.

Amanda: Keri, I love having -- hearing you talk about that because, in part, it is so much just a part of what's in the standards, around what folks need to be doing around serving expectant families. And I just love having the opportunity to hear that what folks are actually doing in that work is really providing a buffer for those children as they're growing. They're really beginning to start that process of attachment between that family, or they're supporting that attachment between that expectant mother and father and that child and just really working with them to sort of address the stressors in their lives in a way that's really supportive.

So, I appreciate that so much. We have another slide here that shows you again, and I wonder if we can ask you to talk a little bit more about your program there at Youth In Need, and sort of how toxic stress was showing up for you in your work there.

Keri: Thanks, Amanda. I'm happy to talk about our program, families experiences, and how we're addressing their challenges. Believing in the power of potential, Youth In Need's mission is to provide nurturing environments and educational opportunities, so children, youth and families will find safety and hope, achieve their goals, and build a positive future. Youth In Need is a social service agency that provides services to pregnant women, children, youth and their families through a wide range of services including Early Head Start and Head Start, in-school and out-of-school counseling services, and runaway and homeless youth services.

Youth In Need services focus around three broad areas: Prevention -- by offering services that help children prepare for school, and support and strength and families. Intervention -- by offering services that support children and families who are experiencing stress or crisis. And recovery -- by offering services to support children and families with therapeutic support to be successful in school and life. Youth In Need is headquartered in St. Charles, Missouri, a suburb of the St. Louis Metropolitan area. Youth In Need's Early Head Start and Head Start program offers services in St. Louis City, St. Charles, Lincoln, Warren, and Montgomery Counties. Youth In Need provides both home-based and center-based program options, in both Early Head Start and Head Start.

As you can see on the map, our service area covers an area an area in East Central Missouri that spans 100-mile distance from our St. Louis City location to our Montgomery County location. We provide services in geographically and demographically diverse areas from the urban core in St. Louis city, where Youth In Need serves a large number of new American populations who are just learning the basics of living in the United States, to Montgomery County, a rural area covered in farmland with few services and families who live far away from each other. Our staffs serve families who speak 27 different languages, and we are fortunate to have staff who speak all 27 languages and can provide direct services to these families in their native language. As we move west, St. Charles County families live in mostly suburban areas, though, some parts of the county you will find -- start to find more rural populations. Lincoln and Warren Counties are primarily rural with one city in each county with populations between 7,000 and 10,000 people. Montgomery County is a very rural county and its largest city, Montgomery City, has a population of just under 3,000. Youth In Need currently serves just under 750 children and their families. These numbers reflect recent reductions due to sequestration.

For the purpose of this webinar, we are focusing on Early Head Start, and Youth In Need serves a total of 423 Early Head Start children and their families with 192 in center-based and 231 in home-based. Youth In Need utilizes the creative curriculum in both our center-based and home-based program option, and uses Teaching Strategies Gold as our ongoing assessment tool. We are a year-around program with center-based services offered either from 8:00 to 2:00 or 7:30 to 5:30, based on community needs.

I'm going to focus in a bit more about our Early Head Start home-based program option, as that is where our research project is currently focused. Our Head Start home-based program option provides each family with a family educator who visits their home on a weekly basis for 90 minutes. Visits are comprised of a heavy focus on child development with particular attention paid to school readiness and helping parents gain the skills and knowledge to become their child's most important teacher. Visits also consist of a family focus, helping families identify their strengths and resources, and identifying goals and areas that they would like to grow in.

Social service is a big part of visits with family educators providing families with support and resources in the areas of writing a resume, interviewing, finding safe and affordable housing, budgeting, relationships, and a whole range of other services as identified by families. Support services in the areas of health, nutrition, mental health, disabilities and family engagement are also provided by family educators on a regular basis. Over the years, children and families have experienced different types and different levels of stress. But in approximately the last five years, these stressors have become more consistent and prolonged, and added together have resulted in our families reporting higher levels of stress and higher levels of frustration and struggles with being an effective parent.

The list on the PowerPoint is certainly not exhaustive of all of the stressors families are experiencing but are heavy-hitters for our program. Our program in St. Louis City experiences higher levels of community violence and we work hard to provide services to children and families during the daylight hours in order to keep our children, families and staff safe. Families have requested we keep evening activities to a minimum in St. Louis City. We also see pockets of community violence in our four-county region. For our new American population who have recently moved to the United States, they are learning all about a new country, a new way of life, and are learning basics like how to grocery shop, enroll your child in school, as well as how to access community resources.

For our rural communities, isolation is a high stressor. Families have fewer family and friends near by for support, and community resources are few and far between. So, all of these stressors, building up over time, staying consistent and prolonged, have lead to, as I mentioned before, parents reporting increased stress in dealing with these stressors and struggles in how to effectively parent.

We have seen an increase in both parent and staff reports around children with behavior concerns and an increase in the number of children showing developmental challenges including an increase in the number of children with diagnosed disabilities that we serve, particularly, in Early Head Start. Last year, we had a, particularly, horrible set of events happen with the child enrolled in our center-based program. For the purpose of this webinar, I will call him Johnny. Johnny lived with his mother and at the time of this event, Johnny's father was not particularly involved in his life and had been reported to us

that he was abusing drugs. Johnny's grandfather and his family were a particular support to Johnny and his mom. Johnny's mom was late one day to pick Johnny up, which was unusual, so staff began calling to find out what was going on and when Johnny would be picked up. We were horrified to learn that on her way to pick Johnny up from school, Johnny's mom had gotten in a car accident and passed away. At this point, Johnny's grandfather stepped in to care for Johnny and Johnny remained enrolled in his same center.

Youth In Need provided training and support to staff to work with Johnny, and play therapy was provided in the classroom for Johnny. With these supports, Johnny struggled emotionally but was able to maintain all developmental levels. Johnny's living situation change drastically as he moved in with his grandfather, his grandfather's pregnant wife and four children. Johnny and his grandfather became very close and had a fantastic relationship. During all of this, efforts were made to reach out to Johnny's father but at this time Johnny's father's situation wasn't stable and he felt Johnny's grandfather was the best placement for him. Days before the new baby arrived and about four months after the death of his mother, Johnny's grandfather suffered a heart attack and passed away. At this point, Johnny's father stepped in expressing interest in taking custody of his son. Johnny remained with his grandfather's family while the custody arrangement was worked out in court. Again, Johnny remained enrolled in his same center-based location but plans were being made for him to transfer to another location due to his father living in another city and county. Luckily, our service area covered that county. Johnny's grandfather's family spoke strongly about him remaining in his current center and Youth In Need was prepared to grant an acceptance to allow him to remain there, but after custody was awarded to his father, Johnny transitioned to our home-based program in another county.

This story is one of those story that seems too horrible to believe that really happened, but sadly it did. Youth In Need was able to provide Johnny and his family the support he needed for this period of time. And we feel that considering his circumstance allowed him to not only deal with this tragedy but also maintain stability in his developmental level. Youth In Need and Washington University have been partnering for many, many years on a variety of projects focused on improving the lives of children and families. Youth In Need is regularly a practicum placement for students enrolled in Washington University's Social Work program and Youth In Need's former CEO serves as an adjunct professor in this program. Both Youth In Need and Washington University are proactive in their desire to find effective interventions to help children and families experiencing toxic stress.

As a result of our previous collaborations, this grant opportunity seemed like a perfect fit and would allow us to gain experience with another evidence-based intervention with the hope of decreasing stress and the potential to contribute to the field of knowledge in this area. What was particularly exciting, as we entered into this partnership and began to look at how this project would be set up, was the focus on our home-based program and enhancing the socialization experience for children and

families. Let's be honest out in the Head Start world. The home-based program option is fantastic but parent engagement and activities outside the home, in particular, socializations can be a challenge. We had tried lots of different techniques to increase parent attendance with varying results and have to-date not found a perfect solution that increases attendance and then maintains that increased attendance. Utilizing the incredible years during socializations, we hope we'll give parents an extra incentive to attend regularly, as each session builds on the last and sessions are even more focused and specifically designed to support families, as compared to even Youth In Need's best socialization activities. So, we are hopeful that this will be an intervention that will be successful and that we can bring to full scale, once the research is completed.

Amanda: Wow, Keri, it's amazing to hear about your program and I think a lot of what you described sort of as you were thinking about Johnny there really helps us think about buffering. You weren't able to intervene in all the stresses of his life, although, of course, you were looking at that. You were working on those particular things when you could. But you were able to provide that consistent buffer for Johnny as sort of the caregivers changed in his life as he had so many profound losses, so early in his young life. And I think that that's what we're really getting to here is this idea that the program in itself can really provide a buffer to many of the stresses that we know that young children are experiencing. And of course, you've put a lot of other things in place to really support the children and families in your community.

We're looking now at this next slide. There it is. Protective factors and sort of how we support caregivers in buffering against stress for young children. We've talked some about a good enough environment. We've talked some about the importance of these relationships, again, with mothers and fathers and all kinds of attachments in that area. I wonder, John, if you could help us understand a little bit about executive function and character development here.

John: Sure. I think it's important to recognize that just because young children are young doesn't mean that they don't have thinking minds that are actually trying to work out what are the causes and effects of things, and what are the possible pathways through which I can come out the other side of a stressful situation or a stressful life event. So, honoring what a child has in terms of their equipment, what they're born with and what they've developed in terms of their thinking, it's very important to honor what they can do themselves to help understand a life event, to be given enough information but not too much that overwhelms them. But enough to allow them just as any of us would want to be, again, to derive a strategy in collaboration with the adults, the caring adults in their environment.

Another element that I alluded to before is character development. And one of the interesting things about character development, those are -- it's a term that's used a lot and seems kind of nebulous. One of the things about character development is that in the mental health literature, a strong character is really the antidote or the protective effect against, essentially, personality disorder over the course of life. And personality disorders are those disorders that render an individual quite disabled in the context of relationships.

And what's been learned over years of study have been that the two factors that predict a child's way out of that kind of a pathway are that they derive from their childhood a sense that they are responsible for their own destiny, that they are the agent of their own course, that is self-directedness. And also a strong sense of cooperativeness, that they desire and want to be connected with the world around them that is important and meaningful to them to have a sense of connectedness with others around them. And they learn this in the context of their relationships. They learn this in the context of how the adults in their life help them to manage stressful life events.

So, these are very important things to bank on in thinking about all of protective factors that can be brought to bear in supporting caregivers and children who are in tough environments. The other thing just to mention here is that, you know, we talked a little bit about how stress can damage a brain or change a brain in a way that makes it liable to adverse outcomes. It's also -- just to make it clear, it's also known that strong parental support and the emotional availability of parents and caregivers through a child's early life actually also has its own effects on brain development. The actual structure of brain development that are beginning to be understood, so that not only do adverse effect-- adverse experiences negatively affect brain development but positive experiences have a sort of equal and opposite influence on brain development. And I think it's important just to flag that as well.

Now, I think another element that is very important to think about, I think some of you might be thinking out there, "Well, OK, this is all well and good about, you know, making sure that the immediate familial and care giving environment of a child is tending to these basic principles of supporting a child's ability to handle stress. But what about those situations where there are stressors and life events that essentially no one has control over that are going to happen no matter how much buffering that we, you know, implement." So, thinking about things like Super Storm Sandy and, you know, chronic neighborhood violence that no family necessarily has a handle on. I think it's important to think about who is in that child's village and what can they do in the aftermath of a child's experienced of toxic stress.

So, we've talked a fair amount about eliminating toxic stress and buffering children. But I think this particular slide depicts a sort of matrix that it's important for all of us to think about. In other words,

who is in that child's village, that is on the left hand column. And what are the things that we should think about and sort of taking inventory of all the things that we could do even when highly stressful life events occur for a child. So, parents thinking about how they can improve their sensitive responsive caregiving even in the context of a stressful life event is an important way of reducing the level of impairment that is going to be, that the child is going to be liable to in the event of a stressful life event. In the second column, managing behavioral effects of toxic stress. We talked about PTSD symptomatology and emotion dysregulation. Thinking about how family educators or home visitors could identify this kind of behavior and help parents identify it, help them understand when that kind of behavior is occurring, and how to gently respond to that in a way that is understanding and recognizing that this is not just a behavior that's designed to disrupt the family or to retaliate or to make a parent's life difficult. But this is a sign or a symptom that a child is manifesting and trying to communicate in the best way that they can. And I think home visitors and family educators can really help parents identify and manage the behavioral effects of the stressor even when it can't be prevented.

And finally, in that third column, when home visitors, caregivers, family educators, parents are really identifying clinical level symptomatology like post-traumatic stress disorder, like severely dysregulated behavior, I think it's important for all of us to help parents identify resources for clinical level mental health care for their children and for themselves. Oftentimes, there are many unmet mental health needs with a family that impinge on a child's ability to manage and respond to stressful life events.

So, thinking about taking inventory of these other opportunities even after toxic stressors or supposed toxic stressors have occurred is a very important thing to do and not to think that all is lost even when these kinds of events occur. So, one of the things that we've really tried to do in implementing the Incredible Years Toddler Intervention program, this is an evidence-based parenting education program, is to focus on the elements that had been talked about in this discussion today. That is: Really building and focusing on a parent's ability to buffer their children's stress through supportive and responsive caregiving, through positive relationships. And these are really key factors in preventing toxic stress sequelae and buffering the events for children. The Incredible Years has been demonstrated to be effective in very high risk populations including those at high risk for toxic stress. It's specifically designed to improve children's emotion regulation, their trust, their security, and has been demonstrated in multiple randomized controlled trials to literally turn disruptive behavior patterns around in children.

And this is -- I think most of you in the call know that enduring patterns of disruptive or conduct problem behavior in children can be very difficult to change. And this particular parenting education paradigm has been

proven successful in changing that and improving that. And we want to implement this not -- so that we're not waiting until those disruptive patterns of behavior occur in children but to give parents these tools much earlier in life, much earlier in their children's lives before these patterns of behavior actually develop. So, Trish will talk for a moment on the status of the project and how it's going.

Trish: Thanks John. So, you know, the purpose of the project is certainly to understand when Incredible Years is delivered within the context of Early Head Start -- can we make an impact on stress? But another important part of the study is also understanding the fit of Incredible Years with Early Head Start and its fit with the parents. So, before you can think about, and Keri talked about, you know, the possible large scale implementation of Incredible Years within their program, well, yeah, we need to know does it impact stress, but we also need to know, you know, does it fit in this environment.

So, we've been paying close attention to the process of implementation and we've done focus groups with parents as well as done some surveys where we've got an anonymous feedback from them. And the feedback has been overwhelmingly favorable with their responses being, you know, this intervention is helpful or very helpful. But I've been most struck by -- and I have the opportunity to help lead the focus group, and that the overwhelming enthusiasm that the parents have demonstrated for the program; it seems to be really meeting a need and answering questions that they had that they may not have known that they had around parenting. They've really liked that, you know, they still fit really well within the context of the socialization visits and has provided them an opportunity to get to know other parents in a way that they hadn't had that opportunity before.

So, in addition to learning new material and learning new techniques, they're also building their social support networks which they really, really have found beneficial. You know, participation in parenting programs among vulnerable populations, among high risk populations, unfortunately, tends to be really low. In attrition rates, you can lose up to 65 percent of families who start parenting program. And we have not -- that's not been our experience. While, everybody -- you know, they don't always come to every one of the sessions.

The average attendance rate of the session is 62 percent, but they do tend to be -- to come back even if they've missed a session, so attendance rate. And that's another sign that, you know, parents are really responding favorably to this. The family educators have the opportunity to be involved. They come to the session to learn what the parents have -- learn what the parents have learned or learning. And they have just, you know, expressed an interest. They want to be involved and see a role that they can play in reinforcing what the parents are learning.

And likewise, the parents in the focus groups talked about how they would love to see the family educators reinforce what they're learning, during their home visit, that they feel that that would be an added value. So, we're seeing interest both from the family educators and from the parents which I think, again, is another really good sign of the fit between the Incredible Years and Youth In Need, and I would like to say with Early Head Start programs, in general. But now, I'm going to turn it over to John -- back over to John who's going to talk about the biological data.

John: Sure. Thanks, Trish. And before I do that, just for our audience to place in context if this wasn't clear before. Incredible Years is a group-based manualized parent training that occurs every other week in companion with the family socialization visits over the course of 12 sessions. And during most of the Incredible Years training that goes on with the parents, the children, the family -- the children in the family are provided by Youth In Need childcare but that's informed by the lessons that the parents are learning and that offers an opportunity to sort of allow the parents to observe and to take home with them certain elements that are going to reinforce the curriculum of the parent of the Incredible Years program. So, as we said earlier, the one side of the project is to implement some, hopefully, value-added element of experience for the families that, in this case, parenting education, that's going to be a player in buffering the stressors that the families in the Early Head Start programs are day-to-day involved with.

But the other side of it is to know early in the game, here, whether or not the biological aspect of the study is going well. And I'm happy to report that it really has been, so far very successful and very well received by the families. The families have been amazingly interested, themselves, in these aspects of putting together what's really supportive from the environment and understanding the biology of their babies, and so have been cooperative and very interested in the sampling of stress hormones, both through saliva samples of the children -- yes, we can get them from little babies -- also from hair samples.

And one of the things that we've already identified through the data that has been collected, so far, is that salivary measurements and hair measurements of cortisol are stable over time; they're reliable indices of stress that will help us understand, for many children, when they are in situations where stress levels and the stress response is at levels that are really unmanageable and overwhelming the biological system for managing those stressors.

So, I think we're going to have a great opportunity to integrate these aspects of understanding children's development. The other thing that I would like to just to -- in closing my remarks, would be to talk about, you know, the Incredible Years intervention is a parenting education intervention, but this is not to say that we believe this is either, you know, the only way to supplement Early Head Start or that

there aren't other wonderful things that can be done to buffer toxic stress in children. This is one of many projects. And I think that the idea is to think about -- and I wanted to take a moment to describe for the audience what I think also are very promising practices, some of which are already incorporated in some or many Early Head Start sites and others which are still in the sort of pipeline for research that are very important candidates for a sort of scaled array of interventions that, you know, in our lifetimes, hopefully, will be available to parents. Because, as I said earlier, it's not a one-stop shopping, not a single recipe for all children, but thinking about what are the needs of a child and family and how can we scale intervention to meet those kinds of needs. And I think all of us -- everyone in the audience is very aware of that. So, thinking about what I believe are very promising alternative strategies to reducing toxic stress including the very important element of prevention of child abuse and neglect which is not only a toxic stressor, not only preventable, but of all the causes of long-term psychopathology in children, it's one of the known causes that we have the most ability to prevent or change.

And as a child psychiatrist, I see this as a very, very important element in preventive mental health for children is to make sure, above all, that we do everything possible to prevent the occurrence of child maltreatment. So, population-level strategies that are promising include many forms of home visitation, including nurse home visitation and paraprofessional home visitation programs, the Triple P program, which Trish has a randomized controlled trial and there's a great body of research that involves that, that's a separate parenting education strategy that's scaled for the parent's needs and can be implemented individually to parents across a wide range of intensity. Manualized group-based parent training, as we talked about for the Incredible Years, a form of actual interactional therapy called Parent-Child Interactional Therapy which has a very strong research base and for parents for whom education and training itself is not quite enough, an actual therapeutic intervention to change the nature of the dyadic relationship and the interaction between a parent and child.

Going up the scale, child-parent psychotherapy is another spin on that the same theme and even more intense. And I think many people have recognized the value of high quality therapeutic early childhood education programs, programs that actually not only tend to support a family, but literally, intergenerational mental health care. We're starting to learn now, through very comprehensive studies that treating the mental health conditions of parents results in better outcomes in children. We know that now and it's very important to use that information and make sure that we avail, through the kind of comprehensive services that we all envision and avail parents to the kinds of interventions that are available to them. And oftentimes, because children and their parents have different insurance or different kinds of access to healthcare and mental healthcare, unfortunately, it's been -- there are barriers for getting the kind of mental health to the parents that they really need. And I think this is a very important thing to attend to.

We have modeled some of our intergenerational attempts to provide clinical mental health services in the Division of Child Psychiatry here towards the Tulane model for infants in foster care. And I really recommend further reading on that for those in the audience are interested in that, because that particular model directed by Charles Zeanah at Tulane University has resulted in reductions in abuse and neglect recidivism for young children in foster care at the level of 70 percent reduction in risk. This is a very important model to keep an eye on. Brown University has a separate model for children who are identified in the newborn nursery so, that identifying risk factors in the nursery rather than waiting, you know, later on until other risk factors arise to be able to know, from that point in time, that we can prevent to – lay a preventive intervention on the table for a family and really support them right from a time of being in the nursery. And of course, you know, at the extreme in a way that we would really like to prevent is foster care, but foster care also can be supportive and the work of foster parents is very important to support once a child has been placed in protective custody. So, I think I'll stop there and leave it -- turn it back over to Amanda.

Amanda: Thank you, so much, John. So many strategies out there, a lot of them are community-based strategies, folks that -- things that folks can really be advocating for in the community but also some things they're already naturally doing as a part of their programs, which we really appreciate hearing about. We do have lots of questions and answers coming -- I'm sorry, questions coming in and answers for all of you. But we won't be able to get to all of them today. I want to let folks know that whatever we're not able to get to, we will include, when we're able to post this webinar, on the website. So, we'll include those questions and the answers to them as well and those will be posted on the ECLKC when this webinar is posted. Keri, I wanted to open with a question for you. And the question here is what is recommended for staff or caregivers who have or are experiencing toxic stress? What do you with those staff when you see that in your program?

Keri: So, there's a couple of things that we do. The most important thing, just like with children, is to have a consistent relationship. And so, regular supervision with coaching and mentoring, so that you can talk through any stressors in a staff person's life and how they can handle those things and be in a classroom or be a home visitor and be successful with those parents. But also something that we've just recently started implement that we had huge success with is having an employee assistance program where we have various services available to our staff, whether it be counseling there's weight management; there's budget management, and it gives them an opportunity to, for free, access services to help support them. Just like we would give resources and referrals to our families, we want to give resources and referrals to our staff, so that they can work through the stresses in their life and we can help support them to be successful when they're working with children and families.

Amanda: Great, thank you. Here is a question a little bit for you Keri and a little bit for John, but why don't you start, Keri. When you discussed character development, John, you talked about the importance of giving infants and toddlers a sense of control. How do we give them a sense of control when there are stressful periods in their lives? We're talking about infants and toddlers here. Keri, what would you say to that?

Keri: I would say that, for infants, it's a little more difficult, because there's not as many clear things that you can do for them. But when I think of toddlers, to give them control is to allow them, to have, to make choices, to pick what area they want to play in, to pick what toys they want to play in, to have good opportunities for interaction with families or with caregivers. It can be families or a teacher or family educator. And so, for both infants and toddlers, to me what's important and gives them control is having stable relationships and having expectations around kind of stable schedules and those kinds of things.

So, if you can create, you know, when a child is in a center-based program option, making sure that for infants as much as possible, they have -- absolutely have regular staff in those classrooms, but have a fairly regular schedule. I know that that alters based on when they want to eat and have their diaper changed and go to sleep. But having that stability around scheduling and having regular caregivers who love and care for them allows them to have a sense of control in their life.

Amanda: John, would you add anything here?

John: Sure. Sure. And I completely concur with Keri. I think one of the overriding principles that we try to help parents with, and this is for infants and toddlers, is to follow the baby's lead. A lot of times, parents, in a well-intentioned way, want to fix things or want to sort of shutdown whatever, you know, negative event may have happened. But allowing a child to express themselves and following their lead, not only in play, getting in their hip pocket, we talk about, which is really hard for some parents to do because they feel responsible for sort of guiding and controlling things and making the environment and establish some kind of control over the environment. When really, paradoxically, what the child needs, oftentimes, is someone to follow them and to know that if they are going to make a move in one direction or another, somebody is going to be in their hip pocket and follow along.

We actually, you know, sit with the children and parents in one of the sections of the intervention program and everybody reads Runaway Bunny. And it's a -- I think for those of you know it. And, you know, this is a situation where a parent, no matter what that child's lead is, is going to follow along and going to hang in there with that child. So, that's the first thing I would say. The second thing is I would say that this goes all the way back to infancy, because even in early infancy, at six months. When a baby is born, they are biologically-driven to seek proximity to their environment, to their caregivers, and so forth. And the extent to which those caregivers respond to their bids for closeness and warmth and proximity is what gives them a sense of whether or not they are valuable, whether or not they are a capable of eliciting a response from the environment, whether or not they are competent. This is stage one of a secure attachment relationship. And what an infant at six to twelve months learns is: Am I going to elicit a response from the environment?

So, sensitive, responsive care giving, emotional availability. No matter how busy a parent happens to be, to be able to drop everything and respond to that baby gives that child a sense that I actually am competent to change the world around me and can be the director of certain aspects of the world around me. And that's a very important element that parents can foster, through simple mechanisms delivered in even short bursts of time, but giving the child that sense even at a very early age.

David: So, John and Keri, thank you both. I concur with everything that both of you said. And John, something you said reminded me that we've been talking about parents sort of holistically, but I want to bring in fathers, of course. Because when you have fathers that are present, involved and they're attuned to their children, you know, we talked early about representation of systems that children form. And I think there's something about the way in which fathers interact with their children, where they actually foster some of that healthy frustration tolerance. So, being in the hip pocket, so to speak, the way you described it, is I've seen fathers sort of sit back and let their children wrestle with a little bit of frustration, patiently waiting, watching and adapting, and then intervening just before it gets to be too overwhelming for the child.

John: It's a terrific example. I think it's absolutely true.

Amanda: Thank you, all so much. I just want to extend my greetings to David, to Aleta, to John, to Trish and to Keri today. Thank you, all so much, for this really rich discussion about sort of the depth of toxic stress and sort of how programs are already supporting. I think one of the important messages that you all kind of gave today is that folks in programs are really uniquely positioned to support families in providing protection for those young brains.

You do it through family engagement, through support and education of those families, really attending to their basic needs and well-being, as the buffer, the primary buffer in their children's lives. You do it through program structure that we were just talking about around consistency, regularity, routines, reliable support. You do it through the work you do with young children around social-emotional and cognitive development in building their problem-solving skills, their self-regulation, their executive functioning, to help them understand and really cope with a lot of the stressors in their lives. And finally, through the offer of mental health support and additional information and support in the community, in those cases where it's helpful and necessary to have those things of support for families.

I just can't thank all of you on the faculty enough today. Thank you so much for being here. And I really want to thank those of you in the field who are doing this difficult work. Have a great day.

Operator: And this concludes today's conference. Thank you, for your participation.