

Transcript:

Conversations on Economic Inclusion
The Effects of Toxic Stress on Youth and the Economy
Federal Reserve Bank of Cleveland

Participants:

Dr. Andrew S. Garner
Case Western Reserve University School of Medicine

Host:

Dionissi Aliprantis
Director Program on Economic Inclusion
Federal Reserve Bank of Cleveland

Dionissi Aliprantis:

I'm Dionissi Aliprantis, the director of the Program on Economic Inclusion at the Federal Reserve Bank of Cleveland. Today we have with us, Dr. Andrew Garner.

Dr. Andrew S. Garner:

So my name is Andrew Garner and I am a practicing primary care pediatrician. I'm also a clinical professor of pediatrics at Case Western Reserve University. And I am a faculty associate at the Schubert Center for Child Studies at Case Western Reserve University.

Dionissi Aliprantis:

So you came to Case Western Reserve University School of Medicine, after you completed a PhD in neuroscience in 1996, followed by a doctor of medicine with distinction in neuroscience in 1997. You completed a residency in pediatrics at the Children's Hospital of Philadelphia, and you are a leader in the field of adverse childhood experiences and the childhood toxic stress response literature. You're also very involved with the American Academy of Pediatrics, the chair of their leadership work group on the early brain and child development.

Dionissi Aliprantis:

And you've co-authored some very influential reports. So a 2012 technical report titled, The Lifelong Effects of Early Childhood Adversity and Toxic Stress. Also a 2021 policy statement titled, Preventing Childhood Toxic Stress: Partnering with Families and Communities to Promote Relational Health. And in 2018, you co-authored a book titled, Thinking Developmentally: Nurturing Wellness in Childhood to Promote Lifelong Health. So we are very lucky to have you with us today. And I was curious if you could just tell us a little bit about your background and how you got interested in neuroscience.

Dr. Andrew S. Garner:

Absolutely. First thank you for having me. Well, I've always had this interest. It's the interface between biology and behavior, between the brain and the mind and between neuroscience and psychology. And so I always had this somewhat unique perspective on child development that it's the manifestation of brain development. And that is one of the true joys of being a primary care pediatrician, is having a front row to seeing brains develop and children grow into their skills. I also probably say that I've been interested in mental health. Like most families, my family tree has been touched with shades of mental

illness. Nothing probably diagnosed, but looking back as a child, you wonder could have things been done to mitigate or perhaps even prevent those difficult times.

Dionissi Aliprantis:

I guess I'd be curious to know then when I think about your work today as a practicing pediatrician, what do you see as the goals of your work and how do you define success in that work?

Dr. Andrew S. Garner:

Well, as a primary care pediatrician, my goals are probably somewhat unique within the broader field of medicine. All doctors want to keep their patients healthy, but we have to acknowledge that healthcare systems get paid the most for fixing the broken, that's what we get paid to do. And so generally speaking, the healthcare system is a deficits-based system where we have all kinds of taxonomies and procedures for determining what's wrong with you. But as a primary care pediatrician my first and foremost priority is trying to keep kids healthy in the first place. Be it immunizations and car seats and shared reading, pediatricians are much more interested in partnering with families to literally build healthy children over time.

Dionissi Aliprantis:

To start getting into that world of developmental science, I was wondering if you could speak a little bit about the origins of, I don't know, the focus or attention given to this issue of toxic stress. Maybe you could define toxic stress for me and in the field of developmental science, can you tell me how people started paying attention to this or thinking about this?

Dr. Andrew S. Garner:

I think historically there are two epidemiologic studies. So these are studies that are population based and are retrospective, that really forced folks to look more closely at the developmental origins of adult health and disease. And interestingly, they were both dismissed as quackery pretty much by a scientific establishment because they didn't fit nicely into contemporary models of health and disease. So the first was this thing called the Barker hypothesis. So Barker was a British epidemiologist who in the late 18, or rather late 1980s and early 1990s noted a correlation between fetal conditions. Things like intrauterine growth retardation, low birth weight, and prematurity, and so-called metabolic conditions later in life. Things like hypertension, coronary artery disease and the non insulin dependent diabetes mellitus.

Dr. Andrew S. Garner:

So this idea that in utero events could be impacting outcomes decades later was just really outlandish. And Barker was largely ridiculed and ignored, but his work really laid the foundation for an entire field of study in saying that what happens in utero and in early childhood does not stay in utero and early childhood. That there're ripple effects across lifespan. So this suggested that there must be some form of biological priming or embedding that allow these early experiences to be influencing outcomes decades later. Then in 1998, Dr. Felitti, who was an internist and Dr. Anda, who was another epidemiologist at the CDC, they published the Adverse Childhood Experiences Study. So Felitti was actually an internist who was running a Kaiser Permanente obesity clinic.

Dr. Andrew S. Garner:

And he had a real problem because all his superstar patients, the ones who lost huge amounts of weight using his program would invariably regain the weight back again. And so he is like, "I don't understand

why my superstars are the ones that are rebounding back." And so he felt he must be missing something. So he decided to use a standardized social work interview and he discovered that almost all of them had traumatic experiences in childhood and early life adversity. And he was really astonished by how frequent this came up. And so he asked his colleagues to do the same and they found similar results. And so he went to Robert Anda again, an epidemiologist at the CDC and said is it really possible that childhood adversity is this common and could this really be linked to poor outcomes down the line? And that was the nexus for this Adverse Childhood Experiences (ACEs) Study.

Dr. Andrew S. Garner:

So the Adverse Childhood Experiences Study looked at over 17,000 middle class, middle aged, most of them were in their 50s Americans. They were living in the San Diego area and they asked them if prior to the 18th birthday, they had any of 10 different types of childhood adversities. And so the 10 different adversities and these were just things that they had noticed were common. There weren't anything especially magic about these. There are other adversities as well, but the ones they looked at were three forms of abuse, physical, sexual, and emotional abuse, two forms of neglect, physical and emotional neglect, and five measures of household dysfunction. So they were looking at parental mental illness, parental substance abuse, intimate partner violence, separation or divorce, and an incarcerated household member.

Dr. Andrew S. Garner:

And what they found in this, and again, this population that you think was pretty well to do often again, and most of them had had some college education. About two thirds had at least one adverse childhood experience and about 20% had more than four adverse childhood experiences. So they wanted to try and come up with a way to try and quantify this adversity. And so they came with this thing called an ACE score. And so an ACE score basically was you got one point for each of those 10 different categories of adversity. So the ACE score now is something that's used widely to try and identify adversity in childhood. And I think it's really important for people to understand what the ACE score means. It was an initial measure looking at adversity, but it's actually a relatively poor measure of adversity.

Dr. Andrew S. Garner:

And what I mean by that is we know that there's a tendency to repress adverse experiences and traumatic experiences. So there are issues with recall, so probably it underestimates the adversity because of recall. It also underestimates adversity because of the issue of repetition. So if you are abused once or abused every day for a year, you still get one point for that type of abuse. And then there's also issues with redundancy. So if your father was say an alcoholic, but your mom preferred heroin, that's still one thing for substance abuse. So the point is an ACE score is a relatively poor measure of adversity, but nevertheless, they were able to see a dose dependent and statistically significant graded effect that the higher your ACE score, the higher risk for just about any poor outcome you can think of.

Dr. Andrew S. Garner:

I don't mean to overstate it, but really we're talking about things like obviously mental health conditions, we're looking at chronic diseases like heart disease and diabetes. We're looking at things like risky behaviors, substance abuse, that sort of thing. And then even educational attainment income and even early death. And so again, we should be clear, these are associations and are being done at the population level. So that does not mean that you're sitting there thinking, "oh my God, my ACE score six,

I'm hosed." That's not what this is saying. This is saying that at a population level, that increases your risk and there are other risk factors and protective factors to go into that equation. We'll talk more about those protective factors in a minute, hopefully. But the point is that clearly there is something going on in early childhood when you have these stressful experiences that can become biologically embedded and influence outcomes decades later.

Dionissi Aliprantis:

So can you talk about that? So it is something pretty incredible, the ways that what happens in childhood doesn't necessarily stay there. So can you talk about some of the mechanisms at play here? So I'm thinking of the biology of stress and it seems like there's been a lot of new discoveries in this literature and how that connects here.

Dr. Andrew S. Garner:

Absolutely. And so now I think we do need to define toxic stress. So toxic stress refers to the ongoing unmitigated biological responses to threats that happen in the absence of social, emotional buffers. So toxic stress is not about the precipitants or the triggers that's important, it's really about the body's stress response to those events. So again, it's an important distinction because we tend to think about different stressors or triggers, but those range from distinct catastrophic threats like violence or bullying to ongoing chronic conditions like poverty or exposure to racism. And the events or triggers can be very subjective, so one child hears a dog barking and things, "Ooh, puppy let's play," and another is, "Keep that beast away from me." And so some of that has to do with their previous experiences. And on the other side too parental encouragement might be perceived as being very supportive or it could be perceived as applying undue pressure.

Dr. Andrew S. Garner:

And so you're going to have a hard time getting objective handle on a wide range of adversities, unless you start looking at the response. Because the biological response is something we can begin to quantify and observe objectively. We adapt to chronic stress at the molecular, cellular and behavioral levels. It can truly change who we are. And this adaptation is sometimes called allostatic loading. So in physiology, there's a concept of homeostasis. So homeostasis is manifest in the body's desire to maintain certain levels and within a normal range to maintain vital functions. But the question is what happens if those allostatic mechanisms cannot keep up with the change? We begin to exhaust our ability to get back to normal and we begin to break down. And so that's been sometimes referred again, this idea of allostatic loading.

Dr. Andrew S. Garner:

So that's one mechanism through which adverse child experiences and the toxic stress that they precipitate can become biologically embedded and increased poor outcomes down the line. And there's a related concept there, and that's an important one called behavioral allostasis. So sometimes the way to get back to normal is through behaviors, that [inaudible 00:12:53] help us cope with stress. So for example people smoke and drink and eat and have sex, that all turns off the stress response in a short term. And so they could be considered adaptive from a toxic stress perspective, but clearly they can become health harming over time, particularly if they become addictions or our default means of coping with stress. So one of the really insightful precipitants of the ACE study once told Dr. Felitti, "Doc, it's really hard to get enough of something that almost works."

Dr. Andrew S. Garner:

So all those things almost work. Whether it's smoking, having sex, they almost work and so it's very easy to see how they can become addictive. They become our default means of coping, but in the long run, they can be health harming. So I should put out though that not all forms of stress are toxic, so only those that are prolonged or frequent or extreme because there's no social, emotional buffering to turn it off and bring it back to the baseline. So in the presence of safe, stable, nurturing relationships, stress responses can actually be positive, and build resilience and skills to deal with future adversity in an adaptive manner. So for example a 15 month old who can't express themselves may have a tantrum and we respond to the non-verbal cues and a two year old, who does a face plant while running we're going to offer consolation.

Dr. Andrew S. Garner:

And even a middle schooler who has an overwhelming project, we're going to help them break that down in little bits that seem a little more manageable. So the point is that positive stress is not the absence of stress. We don't want to put kids in a stress free bubble, we actually want to give them the skills they need to adapt to adversity in a healthy manner moving forward. So I think that's an important point because in society we tend to let kids know in a million different ways that strong emotions are bad. You're not allowed to feel that way, you're not allowed to have strong emotions. If you do there's something wrong with you and that's really not healthy, big emotions are okay, but they demand a distraction.

Dr. Andrew S. Garner:

And I think there's three different kinds of distractions, there're healthy distractions, there're escapes and there're unhealthy distractions. And so the healthy distractions are the kids' passions, we want to tap into the drawing and the reading and the music and the dance and the sports and the Rubik's cube and the chess, because they build skills and often generalizable skills, which are going to help them down the line. But some distractions are escapes, passive entertainment like YouTube or TV or video games and they're potent distractions, but they're not really helping you build new skills. So they're fine now and then- we all need ways to blow off steam now and then. But if they become a default mode of coping, then we're start cutting into the time. And then of course we talked about unhealthy distractions, that's the behavioral allostasis we talked about where they may be adaptive initially, but clearly there are health harming in the long run.

Dionissi Aliprantis:

Yeah. You think about the ways that we evolved in a very different setting than the one that we live in now. And so these responses that in that other setting probably were very, as you said, adaptive very helpful, they can be very maladaptive now. I'm curious if you could speak a little bit about toxic stress and brain development and especially the way that there's this phrase or expression that these early experiences can get under your skin. And I'm wondering if you could speak about that and what is the evidence and the research on that.

Dr. Andrew S. Garner:

Sure. So the Barker hypothesis and ACE study demonstrated those early experiences are becoming embedded, they're somehow altering these life course trajectories. The question is how, like you're saying, and so it's almost as if, and I like to picture it this way, there're these wide arrays of child experiences, both adverse and nurturing, I should say, and then there's this proverbial big black box.

And then decades later we have these adult outcomes, some of them are good, some of them are bad. And so it's really like what's going on inside the box? And I think we would say there are at least two main developmental sciences that help us look inside the box. The first is this idea of epigenetics. So epigenetics literally means above the genome and what it refers to are changes in gene expression that are not related to changes in the actual sequence of the DNA.

Dionissi Aliprantis:

Sorry. As someone whose biology could use a little tuning, can you explain what that means? A change in someone's DNA that isn't about the sequencing, what does that mean?

Dr. Andrew S. Garner:

So a gene can either be turned on, which means it ends up being transcribed and translated into a protein that does a job, or it's turned off, it's not turned on. And there are nuances here, some genes can turn on in greater manners, but the point is the way you want to think about it, the genome in general is the gene's either turned on and expressed or the gene's not turned on. And so if you think about the genome that way, there are many different types of genes, some genes get turned on and turn on a whole set of cascade of other genes. So we know in development, there's some genes that turn on and now you're going to get a limb there. So there are some genes that are master switches that have cascades of other genes.

Dr. Andrew S. Garner:

So they turn on this gene turns on a whole bunch of other genes. There are some genes that are almost circadian, they go on and off very dynamic. So that makes sense. We have some circadian rhythms, so some genes come on, some genes go off, so they're very dynamic over time. But there's some genes that are programmed early and then they persist across the lifespan. And so that's an important thing to understand is that what happens in early childhood, again, it can affect what happens down the line, there's almost an imprinting. The idea of epigenetics though, is that what turns on those genes on and off is the environment. So that's critically important because we tend to think of the genome as being fixed, that was the old model. If you inherit these genes, you know what your destiny is.

Dr. Andrew S. Garner:

And there are models like that. If you know anything about Huntington's disease, we know that if you inherit that gene it's pretty likely you're going to have problems down the line, but the vast majority of genes are not like that. We know that the environment plays a role and can determine whether or not that gene gets turned on or not. So this is really liberating. So if you inherit a gene that makes it very likely for you to be an alcoholic, but the environment never turns that gene on, well, it's not really much of a risk. So this is really good news that the genome is almost somewhat plastic and we can do things to determine, and the other way they put it, the American Academy of Pediatrics says, "Epigenetics is not your parents' genome." The idea being that just because you inherit the same genes as your parents, does not mean that they're going to interact in the same way, the same permutations of genes are going to get turned on because of how the environment impacts that.

Dr. Andrew S. Garner:

So that epigenetics is a good example. So we know that if there's significant adversity early in life, there can be methylation patterns. So what I mean by that, there're actually little methylation marks on the DNA that turn that gene on and off. And so experiences can actually change methylation patterns and

determine which genes get turned on and turned off. The good news is that those methylation patterns do not appear to be again, they can be very long lasting, but they can be reversed. And so if there is adversity in childhood, but there are opportunities, particularly relational opportunities, things like breastfeeding opportunities just to touch and to nurture, we can reverse those methylation patterns. And so that's probably the good take home message here is that yes, toxic stress is real, adversity can become biologically embedded, but relational health can change that.

Dr. Andrew S. Garner:

And so that was the one way is epigenetics. The second way is the way the brain forms. And so there's five general principles about brain development that help organize things at least for me. So the first is that brain development is experience dependent, and that's very clear. So the way the brain works is obviously there's things that happen, stimuli that happen in the exterior, gets translated into neural activity, neurons fire in a certain pattern. And there's this phrase that neurons that fire together, wire together, the idea being that experience determines how the brain forms. And then there also is this pruning that happens where all those connections that are forming over time, if you're not using them frequently, you lose them. So if you don't use it, you lose it.

Dr. Andrew S. Garner:

And so both in terms of building the original connections and pathways in the brain, and then how they are honed over time, they are very experience dependent processes. So experience matters. Second thing you have to remember though, is that it's really cumulative. So the brain is built like a house it's built from the bottom up. And so if we have an unstable foundation where the original pathways are really aligned more towards stress responses as opposed to social responses, that's going to determine how the eventual house or how the brain looks down the line. So deficits beget deficits and strengths beget strengths, and so there's a cumulative effect there. The third thing I would say is the brain's really integrated. So we tend to think about different skills as being separate. So we got cognitive skills and we got emotional skills, we got very different things.

Dr. Andrew S. Garner:

That's our meager attempts to understand the brain. Most skills actually are multidimensional. So if you think about affect regulation, there's a lot of things that go into that. And so it's probably better to think about the brain more as a spider web, where if you tickle it here, you're going to have a response there. And that's important in terms of development too, because I think about brain development almost like playing a game of solitaire. So if you're ever playing a game of solitaire, if you don't get all the aces, you're only going to get so far. And so if you're missing certain skills, you're not going to get very far. And we know that from life experience too, we know people that are brilliant, but you don't want to work with them.

Dr. Andrew S. Garner:

And we know people that may not be the sharpest knife in the drawer, but you'll give their shirt off your back. Those are just good people. It's also dynamic. And this is an important thing because the brain, we talked a little bit about how there's plasticity in the genome, the brain we know is very plastic. And by plastic, we mean it literally is able to reshape itself on the basis of experience. And we know that because you can teach an old dog new tricks. But there's actually two different plasticity in the brain. There's synaptic plasticity, which means if this cell's talking to this cell, you can change how much

they're talking to each other. So, it's like they're screaming at each other or they're whispering each at other. And so, you can turn up the volume there.

Dr. Andrew S. Garner:

And so synaptic plasticity is lifelong, so that's good news. So, an old dog like me, I can still learn new tricks. But there's also cellular plasticity. So you can have one cell synapting with another cell just once or 1,500 times. And so you can make multiple connections on the cell. So that's like going from one person shouting to a stadium shouting, way more powerful. And so cellular plasticity is way more powerful, but the problem is we start out with lots of cellular plasticity and it declines over time. And so that declining plasticity means it's a lot harder to change things down the line. We got to get things right the first time it's really hard to change things. And then the most important thing I want to stress about brain development is it's asynchronous. So this makes sense, it doesn't develop all at the same time.

Dr. Andrew S. Garner:

The problem is particularly when we're talking about stress, the on switch for the stress response, which is the limbic system in particular, this little almond size thing called the amygdala. It develops relatively early in development, which makes sense. Evolutionarily, you want to shoot first and ask questions later, or there may not be a tomorrow. But as we get older, we want to be able to step back and begin to think about what our options are. And so the off switch for the stress response is thing called the prefrontal cortex that is right behind our eyes. And some people have said, that's the seat of civilization, that's what makes us human. Our ability to think abstractly, to prioritize, to decide this is more important than this, and it also allows us to regulate our emotions. And so that's the off switch for the stress response. But the problem is that doesn't mature at least structurally completely until you're 24. And so-

Dionissi Aliprantis:

That's kind of old.

Dr. Andrew S. Garner:

It is kind of old. So the on switch is screaming through most of development and the off switch is finding its voice. And so that's why you can see if there is some significant adversity in childhood, it may be a lot harder for those kids to turn off that stress in and of their own, they need those safe, stable, nurturing relationships to help learn. And so really it comes down this idea of affect regulation. So at birth, the nexus, the locus of affect regulation is the caregiver. But then as the child grows, even very early on- six weeks they get a social smile and now there's a dance going on. And so now it's the diad, it's the dance back and forth between the caregiver and the child. The point is you asked how can experiences in childhood, and I would say not only adverse experiences, but also nurturing experiences, how they become biologically embedded. I would say they can change who we are at the molecular, cellular and behavioral levels. And examples are epigenetics for molecular changes, developmental neuroscience for cellular changes and behavioral allostasis for how we adapt to change and stress.

Dionissi Aliprantis:

Okay. Great conversation. And being at the Fed, I'm now going to bring it to the labor market. So we're going to go from just trying to think about this very meager attempt to understand the brain, which is, as you said, a super fascinating subject and even just thinking about the dance between a newborn and its caregiver. I was wondering if you could speak a little bit about the association between ACEs and

adult outcomes and especially any focus or any thoughts you might have about participation in the labor market and people's ability to do that.

Dr. Andrew S. Garner:

The takeaway I would say is that, that unmitigated adversity in childhood has the potential to change who we are. And so ACEs have the potential to alter learning, behavior and health across lifespan. And so all those features are going to clearly impact on a person's economic productivity. The fact that the thinking and analyzing and emotion regulation part of the brain, isn't completely mature until you're 24. suggests, it's never too late for youth development, it's never too late. There's still plasticity in there, we can still make a change, but it also says that boy, if we want to improve outcomes decades down the line, we got to get things right the first time. We got to really invest in childhood, invest in the families that care for kids.

Dionissi Aliprantis:

I was wondering if we could now turn a little attention to this idea of relational health. So we talked a little bit about toxic stress and you described the way that we can react to environmental stressors. That can be okay, that can be maybe even positive, but it can also be toxic. But you point out that toxic stress, this whole framework is problem-focused. It's focused on what happens biologically without any mitigating social or emotional buffers. So you had a recent policy statement where you were emphasizing the potential of focusing on relational health and you see that as a solution-focused approach. I'm wondering if you could elaborate on that. What do you mean by relational health and what do you mean by it being solution-focused?

Dr. Andrew S. Garner:

I would define relational health as the ability to develop and sustain safe, stable and nurturing relationships. So relational health is a capacity and it reflects skills that are hopefully built over time. And it's dyadic, it's two person and it's often intergenerational. So what I meant in that policy statement is that toxic stress really helps us define the problem. So many of our society's most intractable problems, including disparities in economic productivity, but also education and otherwise, they're rooted in our shared biology, but the divergent experiences and opportunities. And relational health really helps us define the solution. The individual family and societal capacities to develop and maintain safe, stable and nurturing relationships, they also buffer adversity and build the skills needed to be resilient, healthy, and productive citizens and the safe, stable and nurturing caregivers for the next generation.

Dr. Andrew S. Garner:

I would say that minimizing adversity is necessary, but it's not sufficient. And there's good data to support that. So there was a study published by Christina Bethel on the flourishing of kids. And she defined flourishing as being, are they curious, do they complete tasks and do they stay in control? Let me be clear. That's a high bar, I'm not sure I meet that bar most days. And so what it really is getting at is this idea of executive function, which is the prefrontal cortex we were talking about. And so she defined this measure of flourishing, and what it showed was that there are more kids flourishing that have high adversity and high family resilience and connection than kids that have no adversity, but little family resilience and connection. So I think what this really drives home, at least for me, and again, this was a light bulb moment for me is that we tend to think of adversity and nurturing experiences as being two ends of one axis like its experience. The reality is there're two completely different axes that coexist in kids' lives every day.

Dionissi Aliprantis:

Yeah. So you could have a really adverse experience one moment, and then a couple moments later, you could have some really nurturing relationship or some really nurturing experience.

Dr. Andrew S. Garner:

Absolutely. And it's that restorative thing that's so incredibly important. It's so incredibly important. So again, you're the economist, I'm not the economist, but if I'm going to model this, I'm going to say they're two different axes and they both map into a third axis, which is wellness. So if you have obviously high ACEs, well, that's the negative side there, whereas fewer ACEs is the positive. And then more positive child experiences that's the positive there and then fewer negative. And then wellness from low wellness to high wellness is going to map onto that. And I think that's important, because if we just consider an ACE score, you might predict that kid would do relatively poorly in terms of being well. And if you factor in that they've had few positive child experiences, you might predict even do worse, but if you factor in the positive, they may actually fair relatively well.

Dr. Andrew S. Garner:

And that's what Christina Bethel's data shows is that if you have adversity, but you have those nurturing relationships, you may actually do pretty well. And then this is the kicker for me though, the reverse is also true. So just because you have material wealth and you have these positive experiences does not necessarily mean you're in the clear. So if you have few adverse experiences and then you factor and you have some great positive experiences, well then yeah, you're probably going to do pretty well. But if you have low adversity, but you have low relational health, you're going to not do as well. And that's clear from her data. And so that's why this is so important to me personally, is that it's not just about those kids, it's about biology. We all need relational health to reach our full potential.

Dionissi Aliprantis:

Yeah. And I think it also is pretty exciting because I think it points to things we can do. These are things we can control, we can control aspects. Like you said, I don't think we can control all aspects of kids' environments, so some of those are going to be because of their choices and not ours too. But the point is we still can control certain aspects of it that could really matter for their outcomes. And so I'm curious, could you talk a little bit about that? So in your policy statement, you talk about safe, stable and nurturing relationships and you say they are a biological necessity for all children. I think in the ways that you just described, how does it make you think about our institutions right now, educational social service and how we might be able to adjust them or improve them so that kids' outcomes improve, especially in my case, thinking about the labor market?

Dr. Andrew S. Garner:

I think that the potential mutations are transformational, potentially transformational. And let me just step back a second here, we're talking about, geez, how can we make kids be resilient and help them to thrive? Kids shouldn't have to be resilient, you know what I mean? We need to fix those structural barriers that prevent kids from fulfilling their potential. No question. At the same time we now know that more kids will thrive if we bake in some good. So it's not enough just get rid of the bad, we got to bake in some good and making it easier for families with children to be in relational mode and not in survival mode. And so that's transformational, I think for several reasons, first of all, it's clearly too generational.

Dr. Andrew S. Garner:

So I think a lot of people will have good hearts for the kids, bless their souls, but man, I'm not going to do anything to help those parents. Well then you're shooting yourself in the foot, because even as a pediatrician, I have very little impact on that kid's life. I see them for 15, 20 minutes or something like that. My only leverage is actually have a relationship with the family. And then hopefully, then that will translate into what they're doing with their child. The other thing I would say, it needs to also be developmental and I alluded to this a little bit when I was talking about the fact that affect regulation is a moving target. And so Bruce Perry and Oprah Winfrey just published a book about *What Happened to You?*

Dr. Andrew S. Garner:

And Bruce Perry is a child psychiatrist. And he talks about this neuro sequential model, and it's based on how the brain functions, but it breaks it down pretty easily for people. And he talks about you have to regulate, then relate, and then reason. If we're emotional, we're freaked out, we're not thinking clearly we can't even access words. You know what I mean? And so we first have to have affect regulation and ability to regulate. And again, that's a moving target. It starts out by us partnering with parents and caregivers so they can regulate their emotions and believe me, that can be hard. If you never had someone show you how to regulate your emotions, it's hard to give something you never had. So we have to be honest that we'll have good days, you'll have bad days.

Dr. Andrew S. Garner:

We need to be helping caregivers originally regulate. And then the next step is this relate. And so this is in a biological level really cool right now because we're learning more and more about this thing called bio behavioral synchrony. So there's work of Ruth Feldman and others that look at when you are in tune emotionally with someone, there's this autonomic emotional connection that you have little your brainwaves and heart rate connect. And it turns off the stress response. And so that's those magic moments when you're doing a shared reading and someone understands you and we're in sync, you truly are in sync biologically. It's really cool stuff and so the point is, how do we make it easier for families with young children to have those moments? Are they working three jobs, then it's probably not happening. Are we giving them books and the foci – the tools, it's not really about the book - it's about the relationship.

Dr. Andrew S. Garner:

Are we giving them opportunities to do that? Then we need to have opportunities to have that co-regulation that's building the child skills. And then as they get older, I alluded to this before in terms of the self-regulation, we need to make it very clear. Emotions are okay, it's okay to be angry, to be frustrated, that's part of being human. You can't have the joys without having the sadness. We don't want to numb our kids, we want to give them all the joys of the world, but then they have to handle the adversities as well. And so I think that that comes into early on tapping into their passions. What are the things that really get them that they would do for hours on end if we gave them a chance? Is it coloring? Is it music? Each kid I think really has something that resonates with them. And if I find that, I feel a lot better about that kid's potential because that's my hook for building the emotional intelligence.

Dionissi Aliprantis:

I actually wasn't expecting to ask you this, but I'm thinking about it now and it's something that's been on my mind a lot recently. And just thinking about in response to COVID, I feel like it's very clear that we

need each other. And I think everything you're talking about, all of this research, it's very clear we need each other. And so I think there's this very big need for connection with other people, but I don't think that's unqualified. I think it has to be positive connections. So I'm thinking about technology and I'm thinking about all the different ways that we can connect with each other where maybe those connections aren't so positive. And so I'm curious if you have any thoughts on making sure that connections are positive.

Dr. Andrew S. Garner:

There's no question there is data out there that with the rise of social media, there's less of a filter on social media. People will say things and do things on social media, it's very dehumanizing I guess I would say. And that becomes a vicious cycle, you know what I mean? And I think there's, again, there is an innate need to feel like people understand you. And if you feel that this person doesn't understand you, then you're going to naturally flock the people that do understand you.

Dr. Andrew S. Garner:

And so then it is very easy to become this conclave of echo chamber. Do you know what I mean? Like, yeah, I said that too. But the problem is that with the internet you can come with any crazy theory and someone is going to reinforce that, someone's going to say, "Yeah, that's right." And so I think it's really interesting that in the past knowledge was the rate limiting factor, and that's why education's so important. Now we're in the age of discernment it's not just is there data, is there information out there? Because you can find somebody who says something and some study that says something else and you can-

Dionissi Aliprantis:

It can all be data driven, right?

Dr. Andrew S. Garner:

Well, the thing is I think that we live in an era of confirmation bias. You know what I mean? This is what I believe and you can't tell me any, I have my data, you got your data. And so that makes things difficult, so that's a whole bigger issue. But I think it taps into the fact that you're right, that if we don't feel connected in desperation, we may make connections that are not necessarily healthy for us. So gangs happen for a reason. If I don't feel connected to my family, these people make me feel safe. They may actually make you less safe, but the point is they make you feel safe. But the point is that there is that need to connect and if we're not getting connections in a healthy way, it's very easy to get in an echo chamber where you're just being reinforced for what you believe. And so that gets tricky.

Dionissi Aliprantis:

I think there's this basic point that at some point you're going to realize your beliefs aren't all correct. And so to update your beliefs, you have to interact with someone who disagrees with you. And I think one thing I'm getting from this conversation is having a connection with someone might make it easier for you to hear that or to empathize with them. But I'm just curious to think about there's this perspective of how we interact with each other in a very general way that I think connects with this whole conversation about child development, how that translates into outcomes in the labor market and just thinking about how we foster these healthy connections and these positive connections.

Dr. Andrew S. Garner:

Well, a lot of things you said there just resonated with me. The one is that you started from an assumption that we're going to update our beliefs. And that reflects what psychologists would call a growth mindset. That I am not fixed, I may not have all the answers, but I can grow. And that itself is something that needs to be nurtured and cultured and it's not something that necessarily comes easily. And so we want to make sure- that that is an important predictor for how kids do, it needs to be a growth mindset. Yes, this may not come easy to you. Yes, this may be hard, but you can still do it and we're going to help you figure out how to do that. And so again, that comes from those safe, stable, nurturing relationships are going to help you build those skills, that mindset that I can update, I can become a better version of myself and I have people around who are going to help me do that.

Dr. Andrew S. Garner:

So I think that if you have that growth mindset and if you're willing to continue learning, yeah, then there's hope for us. But you're right, then you have to be able to have those safe relationships to learn from. I think what you mentioned there, an example that comes to mind is with the vaccine, which has become a very polarized political issue, people are like "I had no idea it's such a polarized issue." Talk to pediatricians, we've always had to deal with vaccine hesitancy. It's something that we do on a daily basis. And it's very clear to have any success with that, it's all about the relationship, it's not data. I can throw all kinds of data at you, you don't care what data I'm saying to you. It needs to be really who do you trust? Do you trust the book club that you're in or do you trust the relationship I've built with you over time?

Dr. Andrew S. Garner:

And that I really genuinely just want to try and help you and your family make the best decisions for your kid. It's all about that relationship. And that's why really being open to people with other perspectives and not necessarily demonizing them is hard, but it's easier to see them as a human when you're in person. And I think that's what you're getting at before, it's a lot easier to demonize them over social media. And so I think we were probably a socially isolated society before the pandemic hit and that didn't make things any better. And you're right, that's what we need to fix. And I think that's what this policy statement is trying to get at is that if we make relational health the center, there are lots of changes we need to make in terms of our practices and policies, but that's the way to really move forward.

Dr. Andrew S. Garner:

And I should point out though that safe, stable and nurturing relationship does not have to come from a parent or a caregiver. There's this great Bronfenbrenner quote that I love. So Bronfenbrenner was one of the people who started Head Start way back in the '60s. And he said and I'm paraphrasing brutally here, but something along the lines that, "To develop optimally children need more complex joint activities with adults who have an irrational emotional attachment to them." This is in the '60s he said this. He said, someone's got to be crazy about that kid first, last, and always. And so that really is it, it doesn't have to be a parent or a caregiver. It can be a coach, it can be a teacher, it can be anybody who has that relationship can, I would say do that relating, and that sets us up for the reasoning that comes later.

Dionissi Aliprantis:

How do you see the adoption of these ideas or do you think that people are receptive to them? Because it does feel to me like we could make a lot progress on some of these issues - on some of these problems - with this framework.

Dr. Andrew S. Garner:

Well, no, I agree. I think that if you think about how we argue for investments in families with children, there's three different buckets that the arguments fall into. The original one was, well, it's the right thing to do, ethically or morally. And as a pediatrician, I'm not an ethicist or a lawyer or something like that. And then there's the realm that you come from, the James Heckmans and the Arthur Rolnicks and the economists are saying, "Well, geez, look, it's the right thing to do economically." It's not only the right thing to do ethically. It's the right thing to do economically, because we get this huge return on investment down line. And I think what we're trying to argue is as a pediatrician, I'm primarily a biologist and there's a biology argument to be made here. And so the idea of reframing investments in families with children and grounding those investments in the biology of relational health, that does seem to be resonating with people.

Dr. Andrew S. Garner:

And I think that that resonates not only with psychologists, because psychologists we've been telling you that relationships are important for decades. Going all the way back to Freud and Bowlby and Ainsworth, we've always said relationship is important. But also education folks, there's a lot of interest in the educational world in part because they came to the same conclusion that, geez, we're so focused on this reason, reason, reason part. So I think there's a real interest in the educational sphere for that now. And I am encouraged by folks like you that are interested from a policy standpoint too, that maybe this is a framework that for whatever reason brings more of a visceral feel to it. And I guess that's the hope is that we'll catch people viscerally and say, well, yeah, not only do I want what's good for my kid, but I hopefully want what's good for all kids because that kid may be my surgeon someday. And so I guess that's the hope.

Dionissi Aliprantis:

Yeah. Well, it seems like an exciting time because I do think the biological angle, it seems like a very strong one and it feels like one where it's not just hard to deny, but it just feels like just here are levers that we can pull now, here are things we can do to change the world in a positive direction.

Dr. Andrew S. Garner:

I want to share your optimism, but the problem is teachers, pediatricians, economists, maybe rocket scientists, they're probably the only people that think of trajectories. Nobody else thinks of trajectories. They're thinking right here, right now, this political cycle, forget about tomorrow. I'm just focused on here and now. And I think that's part of the problem, that's why my book is *Thinking Developmentally*, that's a different framework. If we're thinking about what's... There's an American Indian tribe, and I can't remember which one it is, that makes decisions on the basis of how it's going to affect the seventh generation. That's thinking developmentally, how what I do today, is going to impact-. If we do this now, how that's going to impact. Dang, we shouldn't do it. Think about down, nobody thinks that way.

Dionissi Aliprantis:

Okay. So I do think that is probably the biggest hurdle to adopting this kind of framework or approaching problems in terms of these trajectories. How do you push things more in a direction of thinking of the long term and how things will evolve over time and how to support better trajectories?

Dr. Andrew S. Garner:

Yeah. I guess I would ask them to talk to any carpenter, any seamstress. Go back to basics here. If you don't get it right the first time you are going to pay way more down the line, it's all foundational. Anyone who's building a house, the foundation's bad, chuck it. You don't get that first line of bricks right, you're done. And so the bottom line is it's always more efficient to get things right the first time than try and retrofit. So I think that would be my argument is that you can keep trying to fix things down the line, but maybe you should just put a little more into getting things right the first time. That's simplistic, but I think that framework applies to a lot of different things.

Dionissi Aliprantis:

How do you change that focus? Because I see a lot of, and I think - we just had Dr. Faye Gary on and she spoke about this as well. This idea that you'll have an intervention, that's an intervention for one year or two years. And how do we think about interventions where it's something that's going to be, say with a kid developing for a number of years and supporting that trajectory to keep it going in the right direction, because maybe the same intervention, the same amount of resources, time, energy, everything just spread out over a couple of years could do more than all at once. And just thinking about how do you bring that perspective or at some level I think it's also just committing to those behaviors or those interventions over a long period of time. I think that's very difficult given our institutions and our institutional frameworks. And so I don't know how we do that.

Dr. Andrew S. Garner:

Yeah. I think it goes to a cultural thing. And again, I wish I were in one of those Indian tribes where we're making decisions on the basis of what happens to the seventh generation down line. That's so foreign to us. How would I know what's going to happen down then, that sort of thing. Whether it's global warming or anything, a lot of the problems we're in today are things that we didn't consider what's happening down there. I And so-

Dionissi Aliprantis:

Yeah. Inevitably.

Dr. Andrew S. Garner:

We cannot always come from a fear and a deficits and a limitations mind frame. And that's part of it is that when the approach is one of their limitations, it's fear, it's fear, it's fear, that's part of the reason there's a big movement in medicine too, about hope. Just hope, we need to have hope. If you have hope and then you are calm, then you see potentials. When you are in a fear limit-based mindset, you don't see potential. I think there's one other framework and I guess it's just because I tend to think in frames, I like this framework that comes from the self-determination theory. So self-determination theory says that there are extrinsic motivators, which is what I say, what you say, what society says blah, bla h, blah.

Dr. Andrew S. Garner:

I think of it as almost like the teacher in Snoopy. And then there are intrinsic motivators things that come from within. And there are three main things that drive intrinsic motivation, autonomy,

connection, and competence. And so that gets tricky because if as a pediatrician, I'm saying, you need to do this. As soon as I say that undermines the autonomy. Same thing as parents, as soon as they say you need to do this, undermines the autonomy, which is why I started with the passions. I said I want to start with passion. What do you want to do in the first place?

Dr. Andrew S. Garner:

The second thing then is connection. And that goes back to what we were talking about before, in terms of there has to be connection with someone, there needs to be that relate in order to build those skills and kids are driven to do that. And then the last thing is competence, what are you good at? If we're building from strengths, then we have way better success. And so if you think about it though, the video game manufacturers, they know what they're doing. They make these games for a reason. So they know the parents hate them, so that's tapping into kids' autonomy. They give you all kinds of bells and whistles and coins and things so you're good at this. And then if you can do it online with your friends, boy, you got connections, everybody-

Dionissi Aliprantis:

So it's all video games, video games are the solution.

Dr. Andrew S. Garner:

No, that's not my point. My point is that they understand the psychology and they know how to bake it into the program. And so what we need to do is use those same assets to build other skills. Tap into the autonomy, what are their passions? Tap into connection, what can they do as a team? And tap into competence, what are you good at? So if you're really good at doing chess, well, then play chess. If you're really good at coloring, do coloring. If you're really good at Rubik's cube, then do Rubik's cube. And so if we help tap into those things, that's going to help kids I think a lot. So autonomy. I was not saying that video games are the ideal and then we want to play more video games, that is not what I was saying. What I was saying though, is the video game manufacturers understand psychology, they know how to motivate kids. We can learn something from them in terms of helping kids find their own passions. And that will help them in turn, like I said, with their own affect regulation down the line.

Dionissi Aliprantis:

Great. Well, Dr. Andrew Garner, thank you so much for speaking with us today. I hope you enjoyed this episode of Conversations on Economic Inclusion. If you would like to learn more about this series or the Cleveland Fed's Program on Economic Inclusion, please visit our website at clefed.org/pei.