

## **Dr Willis recording 0**

Hello and welcome to our webcast with Dr. David Willis, director of Home Visiting and Early Childhood Systems, Maternal and Child Health Bureau, Health Resources and Services Administration, HRSA. Dr. Willis will be presenting a follow up to the session delivered by Dr. Allan Schore at the MIECHV Grantee meeting in September of 2017. At the meeting, Dr. Schore presented many facts around brain development and gender differences. The MIECHV awardees requested further information on how to apply the facts and findings to their work and home visiting. Thank you, Dr. Willis.

Good afternoon. Thanks, everybody, for joining us today. And as was stated, I'm really excited about bringing to you some of my reflections that I hope will be meaningful for you about the plenary session that Dr. Allan Schore provided for us that our all grantee meeting in September. Certainly, as you know, I specifically was very excited about him being able to present to us, him being a mentor to my work over a period of a good decade, when I spent considerable time studying with him about early brain development, especially early relationship patterns that shape brain development. And also, then, learning about the neuroscience of what we understand of how one builds a healthy right brain system that is actually the seat for social emotional competencies and well-being and capacity.

It was from his work that concepts have been growing in all of our awarenesses. And his giant influence to the field of early childhood, and infant mental health, and trauma-based work about the critical importance of the earliest relationships experiences that build a healthy right brain system that can have long term impacts. I understand that his presentation that was presented, both created a stir, created excitement, created interest, created some uneasiness for all of us to be thinking about what do we know about the challenges of earliest experiences, and how, unfortunately, our boys seem to be at greater risk than girls in the impacts that go on in the earliest experiences.

So his presentation that was entitled, All Our Son, The Neurobiology and Neuroendrinology of Boys at Risk was certainly provocative, challenging, I think insightful, I think important, and I think meaningful, that we have to be thinking about what role we play as home visitors, as a home visiting and early childhood community, to absorb what science is in front of us that calls out what can we focus on. So his major take home messages are noted here. He called out that there are significant gender differences between male and female social and emotional functions in the earliest stages of development.

He also noted that, from these, the result means that there are not only differences in sex hormones and social experiences, but that also would thereby, in the rates of male and female brain maturation, specifically in the early developing right brain. The neuroscience is clear. And that information we need to be thinking about, it's clinical and research relevant. He also noted that looking at how does stress-regulating circuits of the male brain maturing more slowly than those of the female in the prenatal, perinatal, and post natal critical periods. And that this differential structural maturation may have impacts in, then, on normal gender differences.

And he also called out that due to a maturational delay in male brain development, that it may mean that there are thereby more vulnerable over longer periods of time to stresses in the social environment, some of which may be attachment trauma, or to toxins in the physical environment, which could be endocrine disruptors. Or that simply less attention to the critical relational health space that we'll talk about, that we witnessed through early childhood systems work, all of that may negatively impact right brain development and differentially impact male [INAUDIBLE] development.

I really want to bring in the concept to help frame our reflections and my reflection, a broadening concept called relational help. You know, we focused for years on physical health, of course. And then now much work about developmental health by literacy nutrition and the focus on school readiness, and cognitive development, language development, reading capacities, and the like. But as the neuroscience comes forth, we're very keenly aware that it's the earliest experiences that build capacities.

And one might think of that as relational health, the ability to have solid, secure interactions in those first 1,000 days of life, that are known now to build the lifelong health, early learning, social and emotional capacities, self-regulation are resiliency capacities for all humans. Babies do not grow up in isolation. It's required that they have relational experiences that are intimate, safe, secure, positive, stimulating, and encouraging. And it is those foundations that, again, embodied into the brain that build health development and educational abilities.

So when Allan starts talking about the vulnerabilities of the male brain, it does call out us thinking about the relational experiences, and may call out for us to be ever more intentional about addressing this effort. When we think about relational health, again, just continuing to reiterate, that includes patterns of interactions within a relationship. So we can also see it in terms of the kind of affect that goes on within relationships, and why maternal depression has such a negative impacts.

But it also has to do with the attitudinal issues that people have about the relationships themselves that is vulnerable to thoughts and ideas, or perception, that may be false to the development of human capacities. Think about boys will be boys when it comes to issues of aggression. Think about it as boys are just slower developers than girls, rather than the vulnerabilities that create myths and opinions, likewise, shape the kind of earliest relational patterns.

The other key points I want to make about relational health and context, again, to thinking about Allan's work, is that the foundations of relational health are really established by the dyadic, the parent-child interactions of the first 1,000 days, that get embodied into a neurodevelopmental structure and function that touches the autonomic system of the brain, the limbic system development, the right brain, and the executive systems of the brain development, which are really essential. And Allan's work has been seminal all through his last two decades of contribution, to focus on the right brain system development, through attachments, through security. And that that right brain system actually develops before the left brain.

So the left brain regulatory systems are being built by the attachment and the secure interactive relational experiences layer upon which is layered the development of language-based and left brain systems, and then the integration of the two brains into what later become more complex intuition, more complex awarenesses of the integration of emotional states, non-verbal communications, and verbal and interactive communications over time.

The other key point about relational health is that it's built from that rich, interdisciplinary research that includes fields of child development, social and emotional development, infant mental health, parent-infant observations, neurodevelopment, interpersonal neurobiology and trauma. The concept of relational health subsumes and incorporates all of those broadest views into why focusing on the relational context is so important. And then I would also say that relational help is observable.

It's observable in positive parenting. It's observable in mature-- rather in maternal attunement, in caregiving nurturance and stimulation, in secure attachment, in, as Jack Shonkoff would talk about, serve-and-return patterns, the parent-child play, peer interactions, and self-regulation. So all of what we're going to be talking about under reflections call out the reason we need to be constantly attuned to the relational health experience, and thereby then thinking about boys and girls, and maybe Allan's work becomes significant if we start thinking about if there is, in fact, a vulnerability for boys from the neuroscience, why intentionally focus ever more strongly on relational patterns matters.

This does call out that awareness that Allan noted, that there really are diagnostic rate differences between genders and later disorders. For example, the autism spectrum and schizophrenia, ADHD, major depressive orders-- I mean, ADHD and even conduct disorders are far more frequently occurring in boys. And I've always wondered why. And you may have wondered the same thing in the same way, that for girls, there's much more likelihood of major disorders and depression or anorexia nervosa. But asking yourself the hard question, why are these different?

Wondering why that is, more importantly, what can we do about preventative mental health, intentionally? If one simply thinks about conduct disorders, and they're much more frequently involved in boys, has much more to do with regulation of affects, physical aggression that results in those issues of aggression, stealing, lying, destruction of property that we see in conduct disorders and oppositional defiance disorder of boys. Why do you think that's emergent? And that's so anti-social in its pattern doesn't have anything to do with the relational patterns that are very young and early, which most, if you look at the longitudinal data, would likewise [INAUDIBLE] that's true.

When we talk about gender differences in early development, it's well basically known that there are standard differences in boys and girls self-regulation of affects. Boys have much greater difficulty with emotional reactivity. And that may suggest-- and that's [INAUDIBLE]. It may suggest that boys have greater difficulties self-regulating their affective states. And in relational state, that then causes their neurophysiology to rely ever more on the maternal and regulatory input, and maybe that need, because of these brain genetically-based variations, signals the criticalness of essential relational patterns, and maybe the canary in the mind of mental health

issues in this country may likewise call out a disintegration of the relational patterns and relational opportunities in the earliest period of social and culturally [INAUDIBLE].

The other thing we know is that boys are more demanding social partners. They have much more difficulty with even the help of regulating their affective state. And they may need much more caregiver, either mother or father, or grandparent or childcare provider, more help in help regulating their affect, recognizing that it is not solely one relational experience that helps build regulatory and relational health competencies.

It may well be the complexity and the multitude of complex relational health experiences from multiple care takers that may be important, of course, of which parenting matters. But also other all the other caregivers in the concept that relational health gets built by the multiplicity of experiences with the question that's never been answered as to just how much relational experience is required. And what kind of relational experiences actually build the strongest and most capable right brain that that system seeks relational experiences [? in place. ?]

So gender differences are known and critically important in early childhood. Something Allan's called out is that right brain development occurs in all people, all humans before left brain. And more particularly in boys, the right brain develops ever more slowly than in female infants. The right brain is dominant for processing and regulating emotion, attention, affect, and helping develop the self-regulation system. And thereby is always maturation of the right brain is actually developing more slowly, that would mean that they could ultimately be more vulnerable if there's not enough relational care around them in the earliest period.

So if the observational findings in developmental neuroscience support the sense that the right brain develops at a slower pattern, then that would mean that the relational supports around them are essential, thereby with less so, or less availability, or distortions of the relational patterns, then boys would be at greater risk, simply because of that distinction between right brain development for boys and right brain development of girls.

So that, again, we're talking about attachment aren't we? We're talking about how attachment of the right brain development coexists. The effects of a secure attachment relationship on the right brain development, affect regulation, infant mental health is really well known. We know that over the first year, the major caregiver, and the studies have been with mothers, that their right brain actually rapidly receives and regulates the emotional responses to her infant's emotional communication. Somebody needs to be highly attuned and, shall we say, madly in love with an infant in order to be able to participate in the development of regulation abilities in their brain, baby's brain, by the experiences that they're having in the interactive space.

And we all know how much learning of young mothers, fathers, and babies it's about how to regulate the affect of its sensory states that so early are dysregulated, and only by the input of those around that regulatory system, come to be a greater place. We all know that in places of neglect, or in environments where there is maternal or caregiver anxiety or unavailability, that the irritability of a baby may be stronger, or their development of regulatory systems may be more challenged, hence in the first year, and the neuroscience does demonstrate that the right brain of a mom, or a caregiver, helps regulate and develop the right brain of a baby.

That kind of right brain, right brain interaction and download of one brain mature system into the next generation is really striking. We also know that the mother's right orbital prefrontal cortex, which is the system that senses, feels, and is attuned and is reflective, reads and regulates an infant's similar amygdala driven affect of state. So the regulatory system of the significant caretaker, serves as a regulatory system by thinking, by position, by voice, sound, action, behaviors to create the attunement that allows for the developmental processes to likewise get built in that experience-dependent state that a baby has of seeking relational experiences that build their natural, if [? not ?] healthy, experiences.

We also know that the limbic circuits in the early developing right brain, become imprinted, thereby, by the mother-infant experiences. And that shapes that right brain right brain emotional communication, which is the foundation for how social emotional functioning, empathy, later attunement are built. It's shocking and striking as to how important all that work is. In the early development, for many years, we talked a lot about temperament. And now we've come to understand that temperament, at birth, is really of the result of epigenetic mechanism.

So you're not really, specifically born with a temperament. But rather, it is shaped by epigenetic environment. And it's shaped both postnatally of the social emotional environment. So we've come to think that what has been termed constitutional about temperament is actually emerging as identifiable in the prenatal period, and maybe apart from the consequences of environmental influences before birth and in the earliest period of post-birth.

So temperament is really an emergent concept. And significant, but not solely genetically-based, but rather from the interactive experiences prenatally moving forward. So thus, epigenetics does change the central nervous system. But also, the central nervous system epigenetic plays a role shaped by, perhaps, steroid hormones or endocrine disrupting chemicals that have enduring effects through epigenetic mechanisms. And Allan was talking about how early life experiences or hormonal exposure, or trauma and injury, or learning and memory seem to have a direct effect through steroidal or endocrine disruptive chemical processes to thereby get embodied through epigenetic efforts that have longer term influences.

That concept of epigenetic shaping, future developmental patterns is really important. That's part of what Allan was presenting to us. So thereby, if we talk about the development of attachment in children and in boys, we know-- very clearly from other researchers, and Allan is solely reviewing the world's literature, watching and trying to make it visible within this frame. We know from Beatrice Beebe's work that male infants are more emotionally reactive than females, so that they may actually be more vulnerable to the disorganizing impact of a disorganized attachment that's not attuned and not sensitive if not frightening.

We also know that there are gender intensifications that could result from earlier vulnerabilities, such as insecure attachments, meaning insecure attachment patterns may have impacts on that genetic susceptibility by the different rate of right brain development, and thereby creates long term impact. We also know that early life attachment trauma generates failures of the limbic [INAUDIBLE] HPA. And that may be more vulnerable in young boys because their brains are apparently more sensitive, neurophysiologically without the buffering of strong, solid relationships.

So these kind of foundational principles remain from Allan's work. So the other element he was touching on that I think is really relevant to why focus on relational health in our work of home visiting and in early childhood systems as well as in child health care, we're learning that the complexity of observing and studying the earliest neurodevelopmental brain development is incredibly complex and very much dyadic. And some of you may be aware of the work of [INAUDIBLE], and in fact, he's presenting for [INAUDIBLE].

But his work is actually looking at dyadic neuroscience, the research mechanism that can demonstrate that dyadic neuroscience is incredibly complex. And there's a lot of findings that demonstrate how the dyadic experience is built into the brain's system. So we know that we can see behavioral synchrony, that's observable, in parents and infants.

We know that there's the synchronization of heart rate between a parent and an infant when they have good eye contact and they're attuned and engaged. We also know that there is the attunement and the engagement of an endocrinological system, including oxytocin, the diurnal patterns of cortisol, as well-- and that those become entrained and attuned and engaged relationships are disrupted in disorganized attachment or disconnected relational patterns.

And we also know that there's actually EEG synchrony that goes on between right brain-- between brains that are in eye contact synchrony. But as relationships move forward over time, relationships that are [INAUDIBLE] of have fallen in love or are deeply in tune and strongly connected, that there's brain to brain synchrony and awareness. That sense of relational patterns and relational health that gets embodied by the relational experiences at multiple complex, neurodevelopmental, endocrinological, neurophysiological, neuroelectrical, as well as observable synchronies in positive parent-child interactions. That awareness is true, and again, give us pause when we start thinking about the vulnerability of boys and how we begin to blend our critical focus on the relational patterns to strengthened that-- to protect that particular the vulnerability of boys in the earliest period.

So if we talk about early development certainly as the foundation of health, and we know that there is enduring impact of early maternal care, and the role of epigenetic modifications of the genome to our critical periods of early development. And it's directly related to health and disease. It may well be that this enduring impact of early maternal care, it may be one of the most important discoveries in all of science, and has significant impacts on our field. Brain development is not just genetically encoded, it needs the epigenetic social experiences that build capacity.

So it's not one or other of the gene-environmental interaction, that is the mother nature and mother nurture combined to shape human gender, health, development, and long term efforts over time. So let's translate all of this complex neuroscience into some take-homes. And like to say, let's talk about the top 10. Top 10 takeaways for home visiting of Allan Schore's contribution to our awareness about the neurobiological and neuroendocrinological risk of boys from the lens of relational health. And the first thing I would saying is, with vulnerable attachments, or relational health, young boys are particular at risk.

In other words, if there are attachments or they have poor relational patterns, young boys are going to be particularly at greater risk by first [INAUDIBLE]. Number nine, thereby we must increasingly focus ourselves on the patterns, the strengths, and the challenges of these earliest attachment relationships as a major focus area of our work in terms of both of integrating the development of neuroscience that's before us, and knowing that what's required is solid, strong, relational patterns that mitigate any risk. Not different from what we know with [INAUDIBLE]. Not different from what we know about social determinants of risk. Not different from what we know about issues of equity.

Number eight, our focus on risk factors of stress, at first childhood experiences, and depression in pregnancy, and early development is particularly critical for the future healthy neurodevelopmental and social-emotional development of boys, and I would say for all children. There is science that is so compelling that we want to be messengers of the fact that the earliest relational experiences, especially for those of greatest risk, is essential to break generational transmission of risk, to address the disparity issues, and to address equity at all-- and to focus on preventative mental health.

Number seven, we must strengthen our efforts around positive, attuned, and safe parenting that is promoting relational health. That, of course, is our core theme in home visiting. We want to celebrate that, elevate that, and be ambassadors that view. In that sense, I feel strongly that we at home visiting are carrying the relational health message into action. Number six, we need standardized measures and approaches to parent-child interactions, and thereby, of course, relational health.

I'm excited about the work that the [NFC] been doing around the DANCE. And it's good work. Likewise, I'm excited about what [INAUDIBLE] America is utilizing the CHEERS and that effort of trying to standardize our observations. I'm also thrilled that our MIECHV performance measures include reporting on child interactions. I think over the next short period we'll see increasing focus on developing relational measures and relational tools that can serve not only the purpose of documenting the strengths and vulnerabilities, but more importantly, to utilize in our intervention strategy.

What are take-home messages from the meaning of this good work. Number five, we must broaden our efforts to bring infant and early childhood mental health consultation to every home visiting program and challenge that consultation work to focus on strengthening parenting attachment, risk mitigation, and thereby relational health. The programs that do currently have infant and early childhood mental health consultations show improvements of workforce retention, show improvement in impacts for families. But I would urge, too, that they can carry further all of our emphasis on evidence-based practices around promoting relational health.

Number four, I'm excited that we've just invested in our HARC-R&D platform. That is the Home Visiting Applied Research network as a new five-year grant, housed at Hopkins, that's building on top of our previous HARC with an emphasis on bringing in precision, enhancements and adaptations, on top of our evidence-based programs upon visiting. And I'm eager that they continue to focus on strengthening relational health approaches with greater precision for what works best and for whom.

Number three, I think Allan's work calls us out to be true to the neuroscience and to neurodevelopment, where we must focus, perhaps, even greater precision on our efforts for these risks that are being talked about for boys. We've got to be carefully attentive to attachment insecurities or disorganized attachments. But we also need to be thinking simultaneously about strengthening relational patterns as protections. That's what's in front of us. And the science really supports that.

Number two. I find the most exciting phase of our work being the integration of discoveries and dyadic neuroscience into our home visiting. I continue to call for our field to embrace these emerging discoveries of development of neuroscience, or dyadic neuroscience, capturing those findings and bringing them into our field as transformational elements, as well as impactful elements. And last, thoughts with this focus on relational health promotion, home visiting actually becomes a key strategy for preventing mental health, ensuring healthy development, rebuilding our communities with equity, and a strategy for prevention of mental health with our knowledge that the careful attention to male vulnerability could be impactful in a preventative mental health sense, which is so much of what our work's about.

We can be carriers of what we know from the development of neuroscience and the criticalness of our work moving forward as to being directly impactful. That they feel very aspirational. But there are take homes that may be even thought about for today. I think it's important that we focus all of our professional development efforts on addressing improving relational health and its role within home visiting.

I also think it's important that we think about how to focus our CQI efforts on building prenatal wellness, stress management, stress regulation. I think we can be clear about the importance of raising parental awareness and engagement. And key and important positive yet true messages about male development and important relational patterns. I think it's important that we engage, as we already are, in the systems work to build increasing supports and structures and infrastructure for infant and early childhood mental health consultation.

That needs to be a central part of our work, again, embracing the criticalness of relational health and the vulnerabilities of many, and the mitigating effects of strong relational health [INAUDIBLE]. I also think we need to adapt relational health promotion strategies into all of our practices and keep our eye on the ball of the relational context in all we do. And lastly, I think it's important to identify community resources, partnerships, and others to promote prenatal, perinatal wellness and postnatal health.

So I've been excited to be able to share this all with you today. I think that where we started with Allan, the significant gender differences between male and female social and emotional functions does exist from the neuroscience and the research in the earliest developmental periods. That gives us a unique opportunity in our work, to really think about how we can be impactful. You all are the epicenter of the impact of and for the foundations of lifelong health, early learning, future well-being, because we're focusing on relational health, strengthening families, and strengthening the communities that they come from.

So in that way, I think that work that Allan elevated to all of us signals the incredible opportunity that we have as the home visiting and early childhood system field, to embrace the new neuroscience, continue to elevate our relational health. And as we grow in our ability to measure impacts over time, we may turn the tide in terms of seeing the healthier and stronger development of all of our kids, especially boys, and the capacity to mitigate risk knowing not only the social determinant risk, but ever more intently the risks that have been always or ascribed and I would argue to tolerated without understanding of boys to later difficulties.

The neuroscience helps us to know what the mitigating portions can be that will challenge us for continued intervention. Again, thank you for the opportunity to be able to share with you my thoughts about the good science that was brought to us by Allan Schore. I welcome any time any further conversations or discussion. Again, thanks for joining us today.

This concludes our webcast for today. Thanks again to Dr. Willis for helping the awardees apply this valuable information to their.