

**Coaching Families Raising Young Children With Signs of Autism:  
Naturalistic Approaches**

**Wednesday May 25<sup>th</sup> 12:00-1:30pm PT**  
*With Dr. Aubyn Stahmer and Sarah Dufek PhD.*

**Family-Centered Approach for Cultural and Linguistic Diversity:  
Considerations for Early Intervention**

**Tuesday June 21<sup>st</sup> 12:00-1:30pm PT**  
*With Cindy Esquivias, MS CCC-SLP*

**Summer Book Club**

**Saturday June 26, July 23, August 22, 9:00-10:00am PT**

**Implementing Neurodiversity-Affirming Care for the 0-3 Population**

**Part 1: The Foundations Tuesday July 12<sup>th</sup> 1:00-3:00pm**

**Part 2: Clinical Foundations Thursday July 14<sup>th</sup> 1:00-3:00pm**

*With Hillary Crow, MA, CCC-SLP*

**Chaos and Instability in the Lives of Children**

**Tuesday July 26<sup>th</sup> 11:00am-12:30pm**

*With Stacey Doan, PhD*



**Emergent Feeding Strategies: Equity for Feeding  
Approaches for Early Intervention**

**Friday August 26<sup>th</sup> 12:00-1:30p**

*With Cindy Esquivias, MS, CCC-SLP*

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# Bunker Babies: Review of preliminary research on the effects of Covid 19 on young children's development

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# Preliminary research on developmental delays

- Brown University study of 39 children enrolled in longitudinal study prior to the pandemic (January 2019) to 188 children born after July 2020 using Mullen Scales. (Deoni et al. 2021)
  - Cognitive scores were significantly reduced during the pandemic by 27 to 37 points (almost 2 standard deviations)
    - Significantly reduced verbal, motor, and overall cognitive performance
    - Follow up research recorded parent-child interactions at home and found the number of words spoken by parents to their children, and vice versa in the past 2 years has been lower than in previous years
- Columbia University Irving Medical Center study of 255 infants born between March and December 2020, parents completed a 6-month ASQ-3 assessment (Shuffrey et al. 2022)
  - Exposure to maternal SARS-CoV-2 infection was not associated with differences on any ASQ subdomain at 6 months
  - Both exposed and unexposed infants born during this period had significantly lower scores on gross motor, fine motor, and person-social subdomains compared with infants born before the pandemic.



## Preliminary research on developmental delays

- Southern Illinois University, assessed (6, 12, 18, 24, and 36-month intervals) pre-pandemic and post-pandemic ASQ3 scores for 1,024 children distributed among 2 pediatric practices
  - There were no significant differences in aggregate scores for the overall sample
  - There were statistically significant differences in domain scores by age
    - Postpandemic problem-solving scores decreased among 6-month olds while increasing among 24-month-olds
    - Slight decrease in post-pandemic scores in the communication domain among 6- and 12-month olds
- University of Oklahoma - National survey among 705 participants across 47 states for children aged 0 to 8 on play activities during early social distancing (Casey et al. 2022, Beers Dewhirst 2021)
  - Almost 2/3 of parents felt indifference or that it was difficult to play with their children during social distancing
  - Parents' perspective was that keeping their children at home away from other children was affecting play behaviors



## International data on delays

- University of Calgary in Canada compared developmental screening using ASQ3 of 1,623 1-year-old infants born between April 2020 to November 2020 to infants born pre-pandemic (Giesbrecht et al. 2022)
  - Infants born during the pandemic had lower mean scores relative to pre-pandemic infants in all domains except problem-solving.
  - Infants had a significantly higher risk for developmental delay in the communication and person-social domains for scoring 2 standard deviations below the mean.
- UK Government education inspectorate Ofsted based on a small sample of 70 early year providers reported
  - Delays in speech and language with limited vocabulary and adverse social skills
  - Regressions in independence and self-care skills
  - Delays in crawling and walking
  - Toddlers and preschool children needed extra support with sharing and taking turns
- Lund University, Sweden online survey among 382 preschool staff between January to March 2021 (Andersson et al. 2022)
  - Social distancing between staff and parents resulted in distance from the children as children perceived the distance between parents and staff as a sign of distrust and consequently this negatively impacted the child-staff relationship



# Language Development across the globe during lockdown

- Vocabularies of 1,742 children between 8 to 36 months (68% of the sample were below 24 months of age) across 13 countries and 12 languages was evaluated at the beginning and end of the first lockdown period (in each country) from March to September 2020 using the MacArthur Bates CDI (Kartushina et al. 2022)
  - Children who had less passive screen exposure and whose caregivers read more to them showed larger gains in vocabulary development during lockdown, after controlling for SES and other caregiver-child activities.
    - Children with no exposure to screens were reported to have the largest vocabulary gains relative to norms
    - Children with less passive screen exposure showed greater gains in expressive, but not receptive vocabulary
    - The **time spent on shared book reading significantly correlated with gains in receptive vocabulary**, but not expressive vocabulary
  - Children gained more words than expected (norms) during lockdown, authors attribute to “faucet” moments when shared aspects of the child’s environment are removed and the home environment is particularly important for development.

*33.9% of parents in California read to their baby every day, which is lower than the national average of 36.8% (State of Babies 2022, Zero to Three)*



## Research on masks and infants

- 23 mother-infant dyads (5 to 19-month-olds) filmed themselves playing without a mask, putting a mask on, and then again without the mask. (Tronick and Snidman 2021)
  - In all but 2 of the interactions children showed no change in affect or quality of social engagement
- 24 infant-mother dyads (average age of 22 months) in Singapore were shown a video of a woman speaking words with no mask, a cloth mask, and a face shield (Singh et al. 2020)
  - Infants were able to recognize familiar words when hearing words through opaque masks but struggled when hearing words with a face shield
- Limitations of studies:
  - Very small sample sizes
  - In Tronick study, as they stated “infants and mothers know each other and have routines that underlay their interactions.”
  - In Singh study, children were shown an unfamiliar speaker through a video, clear mask was a large face shield covering the entire face including the eyes.
    - They attributed distortion due to refraction and reflection of the plastic surface, however, a face mask covering the mouth only is not a fair comparison to a mask covering the entire face and reflection and refraction would be worse over a video screen



## Additional considerations on effects of opaque masks on language development

- Bilingual infants rely more on audiovisual speech cues (look longer at the speaker's mouth) than monolingual infants who shift their attention from the mouth at 8 months to both the eyes and mouth at 12 months
- Autistic children studied at 2 years old tended to look more at a speaker's mouth than the eyes unlike typically developing toddlers

Source: Lekowicz & Hensen-Tift 2012)





# Impact of face mask on word recognition in young children with hearing loss during Covid

- Thirteen children (3 to 7 years old) watched a recording of words spoken with no mask, a surgical mask, a face shield and a clear mask (Lipps et al. 2021)
  - Word recognition was significantly poorer for surgical masks and transparent face shields (apron masks)
  - The ClearMask condition was not significantly worse than no mask condition for words in quiet environment
  - This study replicated an earlier study (Lalande et al. 2021) with older children (7 to 18 years olds) who found that children who are DHH (Deaf/Hard of Hearing) benefitted more from visual cues with clear masks, and audiovisual speech perception was the least affected by transparent masks.



# Additional impacts of Covid to DHH children and families

- University of Kentucky study of parents of DHH preschool-aged children (Anschultz 2021)
  - Parents of DHH children interviewed reported trouble accessing services during the pandemic and the difficulty was often correlated with socio-economic status and educational attainment
    - Parents had difficulty maintaining hearing devices with some children not wearing their hearing aids for up to a year
  - Children lost access to ASL for programming and as young DHH children cannot read closed captioning does not meet their needs. Virtual schooling platforms such as Zoom are normed to spoken language spotlighting speakers who make noise. (Whitney & Whitney 2021)
  - The change of attenuation from 4dB increases from a basic medical mask increase to 12 dB for N95 masks, this small change can be significant for speech understanding for a DHH child. The attenuation combined with the loss of audiovisual cues (lip reading) can significantly affect speech perception. These visual cues are particularly important during critical periods of speech and language development. (Charney et al. 2020)



## Ripple effect of parental stress on children's stress and behavior

- Increases in children's internalizing symptoms of stress increased from pre-pandemic to pandemic (May to August 2020) and that higher levels of Covid stress were associated with increased maternal depression. *Maternal depression and children's behavior symptoms were correlated.* (Doan et al 2022)
- Pandemic related stress during April 2020 through May 2020 was significantly associated with *higher maternal psychological distress which was significantly associated with higher negative parenting* which was significantly associated with higher child behavior problems (Shelleby et al. 2022)
- Penn State 204 families with children average age of 4 years old identified psychological impact of Covid 19 (Fosco et al. 2021)
  - Disruptions to family functioning during the pandemic predicted increases in children's maladjustment including stress and behavior problems
  - *Increased harsh and lax discipline* predicted changes in children's maladjustment



## Inequities compound negative effects

- University of Washington examined maternal mental health as a predictor of child adjustment during the pandemic among 147 first time mothers of young toddlers living in low-income context (Thompson et al. 2021)
  - The greater the increase in maternal mental health symptoms predicted greater child adjustment problems
  - Maternal mental health predicted children's early level of adjustment problems and changes across 6 months of the pandemic.
  - *Covid 19 contextual hardships (employment/childcare loss) predicted changes in maternal mental health and Covid 19 health risks compounded symptoms*



# Maternal stress has long term impacts on development

- Developing Brain Institute at Children's National Hospital, Washington DC (5/22)- Babies born to women who are stressed out during pregnancy may be more likely to experience social, emotional and learning problems
  - Infants showed brain changes in key areas of the developing brain, including the hippocampus which is tied to learning and memory and helps regulate emotions
- Washington State University (3/19/21) – 160 pregnant and postpartum women who delivered babies from April 28 to June 30, 2020
  - 52% worried about babies contracting Covid 19, 27% couldn't obtain healthy food, and 25% missed prenatal appointments
  - *Pregnant women were more stressed than postpartum women*



# Maternal Stress, Depression and Development

- Canada (pre-print Adams 2022) reported an increased risk of developmental delays among 1-year-olds born between April and November 2020 and a link between higher levels of stress by pregnant women during the pandemic and changes to babies' brain development
- University of Calgary (Manning et al.) surveyed 8,000 women who were pregnant during the pandemic
  - Approximately half reported anxiety and one-third reported depression which was much higher than in pre-pandemic years
  - MRI imaging scan of 75 babies 3 months after birth to people who reported prenatal distress (anxiety/depression)
    - Different structural connections between their amygdala, brain region involved in emotional processing and their prefrontal cortex, brain region responsible for executive functioning
    - Previous small study (Lebel 2015) found link between prenatal depression and brain connectivity in same areas and found that in boys those brain changes correlated with aggressive and hyperactive behavior at preschool age



## Inequities affect outcomes

- National survey among 1,836 mothers of preschoolers conducted in May 2020 (Kracht et al 2021)
  - Most mothers reported that preschoolers were less physically active and increased their screen time
  - Preschoolers in high chaos households (**crowding**, noise, and disorder in the home) had less physical activity and more screen time when compared to low chaos households
  - Mothers who viewed routines as “less/not important” reported more preschooler screen time compared to mothers who viewed routines as “very important”

*28% of California babies are living in crowded housing versus national average of 15.4% (State of Babies 2022, Zero to Three)*



## Inequities affect outcomes

- RAPID-EC online survey among 10,707 families across all 50 states (Fisher et al. 2021) found:
  - Pandemic caused a “chain reaction of hardship” for many families with young children including material hardship for basic needs, no less than 1 in 4 households which equates to 3.6 million families
    - *As the severity of material hardship increased, so did emotional distress in both parents and children*
    - The proportion of Black and Latinx families unable to pay for basic needs was twice that of White families
  - Families with a child with special needs have disproportionately greater challenges including higher rates of material hardship, higher rates of emotional distress for both parents and children and higher healthcare disparities
    - *50% of special needs children missed a well-baby or well-child visit, significantly more than the 39% of other households*

*Only 27.7% of babies in California receive developmental screening which is lower than the national average of 33.8% (State of Babies 2022, Zero to Three)*





## Inequities affect outcomes

- University of Connecticut national survey of 407 caregivers of children with and without a developmental disability (Chafouleas and Lovino, 2020)
  - Caregivers of children with developmental disabilities experienced significantly higher caregiver burden, depression, anxiety and stress than caregivers of typically developing children during the pandemic.
- UCLA and UC Riverside Primary Care and LEND clinics survey of Covid 19 impacts
  - 70.6% child behavior difficulties
  - 64.7% mental issues
  - 58.8% physical issues
  - 52.9% childcare issues
  - 41.2% financial issues



# US Dept of Health and Human Services Jones 2021

- In July 2020, approximately 20% of households with children under five (2 million households) reported having a very hard time paying for basic needs since March 2020
- Low income Black and Latino households with children reported being more likely to experience emotional and behavioral problems
- Children living with a disability reported higher levels of emotional difficulty
- Families with a child with a disability were more likely to experience an interruption in child care during the pandemic
  - Children under five from lower-income households, single-parent families, Black households as well as young children with disabilities experienced the largest increases in emotional or behavioral problems
  - Closure of ECE services plus material hardships negatively affected caregiver well being which had an adverse effect on the emotional and behavioral health of young children



# Neonatal care during the Pandemic

- Covid 19 in pregnancy associated with preterm birth in California (Karasek et al. 2021)
  - Covid 19 diagnosis was associated with **a 40% increase in preterm birth and a 60% increase in very preterm birth**
  - In Ca. Covid 19 diagnosis rates in pregnant women increased across all ethnic groups but were disproportionately higher among Latinx, American Indian, and Native Hawaiian/Pacific Islander women and among people with public insurance.
    - Latinx mothers represented 47% of the sample and 72% of Covid 19 positive cases
- Parents of 169 NICU babies in a national survey among 38 states reported extremely stressful experiences during the pandemic
  - Parents reported extreme isolation and disconnection, disruption to their family with almost half of families reporting only one parent was allowed into the NICU at a time, and concerns about child development due to lack of shared experiences and lack of visible facial expressions due to masks
- Global experience of 2,103 participants from 56 countries (Kostenzer et al. 2021) reported similar responses to the US study including:
  - 63% of families were not allowed to be accompanied by another person in NICU and 52% did not have a support person present during the birth
  - Only 10% reported that skin to skin (Kangaroo care) was initiated immediately after birth
  - Restrictions of time allowed with their babies included 15% with none at all, 30% were permitted up to one hour
  - 78% worried about Covid during pregnancy and 92% worried about Covid after birth

*Research shows that the separation of parents and their newborn can impair developmental outcomes (Gale et al. 2021)*



# Covid 19 and Autism

- University of Michigan – online survey of 873 families revealed higher levels of stress in caregivers of younger children with ASD and those with greater severity of ASD symptoms.
  - Families reported greatest areas of stress were isolation, illness, and finances
- Loma Linda, Cal State Fullerton, and Univ. of Oregon study among 77 ethnically, linguistically, and socioeconomically diverse families with young children with intellectual and developmental disabilities in CA and OR (Neece et al 2020)
  - Sample was predominately Latinx, male and 62.34% had comorbid ASD
  - The most frequently reported parent challenge, at 55.8%, reported that being stuck at home and unable to leave the house was their most difficult challenge
  - 10.4% reported child behavior problems
  - 28.6% reported economic challenge was a potential long-term impact on their families
  - 15.9% reported lack of educational and developmental progress as a long term concern
- Concerns that infection with SARS could result in neurodevelopment disorder
  - No evidence thus far, just concern because research has found that some pregnant women infected with the virus had increased levels of cytokine IL-8 (protein) which has previously been linked to atypical brain development, and infants with prenatal exposure to SARS-CoV2 showed dysregulation of a signaling pathway involved in brain development.

