Attachment—Additional Questions for the Record

Subcommittee on Health
Hearing on
"Enhancing Public Health: Legislation to Protect Children and Families"
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The Honorable Frank Pallone, Jr. (D-NJ)

Dr. Radesky, in your career, you have seen the shifting landscape of media and how children and parents consume it. The research of today is not limited to video games and text messaging; it involves social media, educational content, lifetimes of video streaming and so much more.

Moreover, where parents may have sought to limit screen-time before, the pandemic made it nearly impossible to limit technology in daily life for themselves and for their children.

1. In your testimony, you mention that before 2007, no one walked around with tiny computers in their pockets. What is different about the way we study the effect of media on children and families today?

In the era of "traditional media" such as television (TV) and DVDs, children's media exposure was measured through parent recall of "screen time" – the duration a child spent with screens in the foreground or background of their activities. Now that digital media are engineered to interact with human psychology, respond to children's inputs and preferences, collect data about user behavior, employ persuasive nudges to influence decision-making, and contain a nearly endless amount of content, media exposure must be measured in much more nuanced ways. Please see my recent article[1] for an exhaustive description of a child media research agenda. Example methods could include:

- Examining how interactive design nudges influence child behavior, thought, or physiology in real-time, either through laboratory-based experiments (e.g., bringing children into a university lab, applying heart rate, skin conductance or eye-tracking monitors, and having children play different apps or immersive digital experiences) or by tracking children's media usage and physiologic responses in the home environment (e.g., through wearable sensors like FitBit or Empatica).
- My research lab uses passive sensing – a method that harnesses data already collected by smartphones and tablets – to see precisely what children are doing on their devices at

[1] Radesky J, Hiniker A. From moral panic to systemic change: Making child-centered design the default. International Journal of Child-Computer Interaction. 2021 Jul 10:100351.

different times of day.[2] This technology (despite being used by tech companies to track user behavior) is very rarely used by research teams.

- Finally, we know that tech companies experiment on users with "A/B testing" in which they release different versions of the same digital product to assess which version gets more engagement. We need experiments run by academic researchers (collaborating with industry, if needed) to test different designs by metrics of child well-being, such as improvements in child mood or eating disorders, sleep problems, emotion regulation, obesity, or other important outcomes.

The above examples of study designs would yield incredible insight into relationships between modern media use and youth physical and mental health, yet these methods are only in their infancy. More research funding through CAMRA would allow this type of nuanced research to be the norm and directly inform federal policy (i.e., about technology design) and parenting guidance.

2. How do our children's media habits differ than adults, and how can parents ensure that their children are engaging with content that will enhance, not inhibit, socio-emotional and cognitive development?

Children's media habits are directly influenced by parents' media habits – for example, preferences for types of shows or movies; whether TV is left on in the background when no one is watching it; whether devices are used at the dinner table or in the car; and whether media is used together socially versus in an isolated manner.[3] Therefore, studying and intervening upon parent media use may be an important opportunity to improve media use as a whole family.

However, children differ from adults in that 1) in early childhood, their media use is controlled by, and mediated through, parents as gatekeepers; 2) children have extremely limited understanding of marketing, data collection, and other important digital privacy concepts;[4] 3) tweens and teens are in a developmental stage characterized by heightened interest in peers and identity formation, so often use social media or social gaming for these purposes. At each of these points, however, parents' actions to ensure that their child is accessing positive content can be undermined by digital design that prioritizes business objectives. For example, my research has found that 3-4 year old children are easily accessing age-inappropriate apps and videos on the Google Play app store and YouTube.[2] We have also found that children's apps regularly collect and share digital identifiers without notifying parents or children,[5] and bombard children

[2] Radesky JS, Weeks HM, Ball R, Schaller A, Yeo S, Durnez J, Tamayo-Rios M, Epstein M, Kirkorian H, Coyne S, Barr R. Young children's use of smartphones and tablets. Pediatrics. 2020 Jul 1;146(1).
[3] Wartella E, Rideout V, Lauricella AR, Connell S. Parenting in the age of digital technology. Report for the center on media and Human development school of communication Northwestern University. 2013 Jun.
[4] Radesky J, Chassiakos YL, Ameenuddin N, Navsaria D. Digital advertising to children. Pediatrics. 2020 Jul 1;146(1).
[5] Zhao F, Egelman S, Weeks HM, Kaciroti N, Miller AL, Radesky JS. Data collection practices of mobile applications played by preschool-aged children. JAMA pediatrics. 2020 Dec 1;174(12):e203345-.

with ads throughout gameplay.[6],[7] It is clear that monetization objectives are being pursued as the main design influence in many of children's digital spaces.

To ensure that children have equitable access to positive content that enhances socio-emotional development, several steps can be taken:

1) Like the UK and other countries, the United States can adopt federal policies that enact a "child-centered design code". Bills such as the PRIVCY Act and KIDS Act would regulate the types of back-end (e.g., data collection and targeted advertising) and front-end (e.g., interactive design nudges and algorithmic amplification of toxic content) design problems that children frequently encounter when trying to enjoy online spaces.
2) As outlined above, more research needs to be funded to understand what types of algorithms or user-experience designs are elevating the most toxic content versus promoting the most wellbeing online, and at which developmental stages these matter the most.
3) Currently, positive content creators can't always compete with the types of influencers and content that "trend" because they are outrageous or inappropriate. Therefore, increased funding for the Public Broadcasting Service would help create more positive, prosocial content for young children through teens, and make it more readily accessible.

3. The CAMRA Act seeks to establish a research program at the National Institutes of Health (NIH) that focuses on the health and developmental impacts of technology on children. What do you see as the biggest barriers to producing cutting-edge research in this space? And how can the CAMRA Act help address these barriers?

As a media researcher, I often feel "behind the 8 ball;" technology companies are always introducing and A/B testing products faster than we can find ways to measure them and study their effects. We also know that technology companies like Facebook are conducting internal research on youth without appropriate ethical oversight follow up when concerns are identified. Therefore, academic researchers with adequate training in child development/health/wellbeing and ethical protections for child participants need funding to conduct media research, and at a more rapid pace than the usual NIH review cycles (which can take years from initial proposals to study results). I therefore recommend 1) more rapid review and funding cycles for media research; 2) collaboration with industry partners or the Federal Trade Commission to access tech company data; and 3) increased funding for high-risk, novel methodologies such as passive sensing and physiologic monitoring of youth participants.

The Honorable Michael C. Burgess, M.D. (R-TX)

Children have gone through particularly trying times during this pandemic. With kids returning to in-person-learning, many habits created during the pandemic, such as an increased use of social media, are sure to carry over. While social media may be beneficial for peers to

[6] Yeo SL, Schaller A, Robb MB, Radesky JS. Frequency and Duration of Advertising on Popular Child-Directed Channels on a Video-Sharing Platform. JAMA Network Open. 2021 May 3;4(5):e219890-.
[7] Meyer M, Adkins V, Yuan N, Weeks HM, Chang YJ, Radesky J. Advertising in young children's apps: A content analysis. Journal of developmental & behavioral pediatrics. 2019 Jan 1;40(1):32-9.

connect with one another, I have read disturbing reports of the impact social media may have on the mental health of children.

1. How did the pandemic affect mental health for youth?

   Concerns about youth mental health, and the role of social media in accelerating mental health concerns in vulnerable teens,[8] predated the COVID-19 pandemic. Unfortunately, systematic reviews suggest that the prevalence of depression and anxiety have approximately doubled in children and teens during the pandemic, now impacting about one-quarter of youth.[9] Emergency room visits for mental health problems increased proportionally during COVID-19,[10] and eating disorder prevalence has increased,[11] while wait times for mental health services have increased across most communities. The American Academy of Pediatrics (AAP), American Academy of Child and Adolescent Psychiatry (AACAP) and Children's Hospital Association have declared a national emergency in children's mental health,[12] driven by mechanisms such as social isolation, family stress, parent mental health problems, and loss of loved ones. In my clinical practice, children with autism, anxiety, or ADHD experienced significant worsening of sleep, explosive/aggressive behavior, compulsive behaviors, and regression in skills.

2. Is there anything Congress can do in the immediate future to help the mental health of children?

   I fully support the recommendations of the AAP for legislative priorities to improve youth mental health.[13] I outline these below, but provide specific examples from my clinical expertise to illustrate what these policies would mean for everyday families:

- Increase federal funding to ensure all families can access mental health services. Currently, many families are on long wait lists for therapists, psychologists, behavioral pediatricians, or social workers/case managers, as the supply of trained mental health professionals is vastly outstripped by the demand of distressed families in our communities. Increased federal funding would help 1) increase the size of training programs for these mental health professions, 2) increase loan repayment for these professionals, 3) increase access to evidence-based parenting programs that provide a lighter-touch intervention for families with young children (such as the Triple P

[8] Lenhart A, Owens K. The Unseen Teen. Data & Society. Data & Society — The Unseen Teen (datasociety.net)
[9] Racine N, McArthur BA, Cooke JE, Eirich R, Zhu J, Madigan S. Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19: a meta-analysis. JAMA pediatrics. 2021 Nov 1;175(11):1142-50.
[10] Leeb RT, Bitsko RH, Radhakrishnan L, Martinez P, Njai R, Holland KM. Mental health–related emergency department visits among children aged< 18 years during the COVID-19 pandemic—United States, January 1–October 17, 2020. Morbidity and Mortality Weekly Report. 2020 Nov 13;69(45):1675.
[11] Lin JA, Hartman-Munick SM, Kells MR, Milliren CE, Slater WA, Woods ER, Forman SF, Richmond TK. The impact of the COVID-19 pandemic on the number of adolescents/young adults seeking eating disorder-related care. Journal of adolescent health. 2021 Oct 1;69(4):660-3.
[12] AAP, AACAP, CHA declare national emergency in children's mental health | AAP News | American Academy of Pediatrics
[13] AAP, AACAP, CHA declare national emergency in children's mental health | AAP News | American Academy of Pediatrics

Program or Incredible Years Program) – including reimbursement to providers who run these training sessions); 4) increase the availability of mental health professionals in schools, primary care offices, and other sites families can easily access – rather than driving to a children's hospital

- Improve access to telemedicine. Many families do not have sufficient internet connectivity to engage in tele-mental health.
- Support effective models of school-based mental health care. Teachers are bearing the brunt of child mental health problems, and do not have enough social workers or psychologists to help them manage challenging child behavior in the classroom (where it is likely to occur, when kids feel stressed by academic challenges or peers).
- Accelerate integration of mental health care in primary care pediatrics. Many parents prefer to see a therapist in the medical home, for convenience or trust. Integrated mental health care is effective, but not widely enough available.
- Strengthen efforts to reduce the risk of suicide in children and adolescents. This includes strictly reducing access to self-harm content on social media feeds and video sharing sites, which currently let too much toxic content through automated filters.
- Address ongoing challenges of the acute care needs of children and adolescents. In Michigan, there is a severe shortage of hospital beds for child psychiatry, so children either struggle at home or wait in the emergency room for days before a bed might eventually be found. Expansion of child psychiatry hospital services – including day services and wraparound services – is needed.
- Fully fund community-based systems of care that connect families to evidence-based interventions. The best outcomes I have seen for my most complicated patients happen when a wraparound team is involved – helping the family with all aspects of therapy, school, family stress, and finances.
- Promote and pay for trauma-informed care services. Trauma-informed care means that difficult child behavior will be responded to in a way that recognizes the stress and adversity a child may be under, rather than punishing children for showing negative emotions. Although some school districts have adopted this type of model, it is the exception rather than the rule.
- Address workforce challenges and shortages so that children can access mental health services no matter where they live. This might entail loan repayment, improving salaries for mental health professionals in underserved areas, or expanding training programs at local universities or community colleges.
- Advance policies that ensure compliance with mental health parity laws. Too often, patients have restrictions on their mental health reimbursements that make it even harder to address a challenging mental health condition.