

# Deleterious Associations with Baby, Toddler, and Caregiver Digital Device Use

## Global Research Highlights and GAINING Awareness Alerts Supporting Documents (2019-2025)

### **Associations with Atypical Brain Development**

#### **[Associations between digital media use and brain surface structural measures in preschool-aged children](#)**

NOVEMBER 2022 (USA) John Hutton, Jonathan Dudley, Tzipi Horowitz-Kraus, et al

Study found associations between “higher digital media use and lower cortical thickness and sulcal depth among 3- to 5-year-olds in brain areas supporting primary visual processing and higher-order functions such as top-down attention, complex memory encoding, letter recognition and social cognition.”

### **Associations with Atypical Neural Activity**

#### **[Associations Between Infant Screen Use, Electroencephalography Markers, and Cognitive Outcomes](#)**

JANUARY 2023 (SINGAPORE, USA, NEW ZEALAND, CANADA) Evelyn Law, Meredith Han, Zhuoyuan Lai, et al

“Infant screen use was associated with altered cortical EEG activity before age 2 years; the identified EEG markers mediated the association between infant screen time and executive functions.”

### **Associations with Executive Functioning and Emotional Reactivity**

#### **[Early-Childhood Tablet Use and Outbursts of Anger](#)**

OCTOBER 2024 (CANADA) Caroline Fitzpatrick, Pedro Mario Pan, Annie Lemieux, Elizabeth Harvey, Fabricio de Andrade Rocha, et al

“child tablet use at age 3.5 years was associated with more expressions of anger and frustration by the age of 4.5 years. Child proneness to anger/frustration at age 4.5 years was then associated with more use of tablets by age 5.5 years.”

#### **[Longitudinal Associations Between Use of Mobile Devices for Calming and Emotional Reactivity and Executive Functioning in Children Aged 3 -5](#)**

DECEMBER 2022 (USA) Jenny Radesky, Niko Kaciroti, Heidi M. Weeks, et al

Study suggests that “frequent use of mobile devices for calming young children may displace their opportunities for learning emotion-regulation strategies over time; therefore, pediatric health care professionals may wish to encourage alternate calming approaches.”

#### **[Screen Time and Executive Functioning in Toddlerhood: A Longitudinal Study](#)**

OCTOBER 2020 (UK, USA) Gabrielle McHarg, Andrew D Ribner, Rory T Devine, Claire Hughes

“Screen time at age 2 is negatively associated with the development of executive functions in toddlerhood from age 2 to 3, controlling for a range of covariates including verbal ability.”

### **Associations with Atypical Sensory Processing**

#### **[Early-life Digital Media Experiences and Development of Atypical Sensory Processing](#)**

JANUARY 2024 (USA) Karen Frankel Heffler, Danielle Sienko, Binod Acharya, Keshab Subedi, David Bennett, et al

“Early-life TV or video exposure was associated with atypical sensory processing in low registration, sensation seeking, sensory sensitivity, and sensation avoiding domains of the Infant-Toddler Sensory Profile, after controlling for perinatal and demographic variables.”

### **Associations with Language Delay and Suppression**

#### **[Screen Time at Age 1 Year and Communication and Problem-Solving Developmental Delay at 2 and 4 Years](#)**

DECEMBER 2023 (ITALY) Valentina Massaroni, Valentina Della Donna, Camillo Mara, Valentina Arcangeli, Daniella Pia Rosaria Chieffo  
Systematic review of 18 articles shows “prolonged screen time and exposure to screens in the first 2 years of life can negatively affect language development and communication skills, in terms of comprehension and vocabulary range. In addition, overexposure to screens in the early years can affect overall cognitive development, especially attention to environmental stimuli, social experiences, problem solving, and communication with others, e.g., the alternance of rhythms and roles in a conversation.”

#### **[Mobile Device Use is Associated with Expressive Language Delay in 18-Month-Old Children](#)**

FEBRUARY 2019 (CANADA) Meta van den Heuvel, Julia Ma, Cornelia Borkhoff, et al

Study demonstrated a “significant association between mobile media device use and parent-reported expressive speech delay in 18-month-old children.”

#### **[Screen Time and Parent-Child Talk When Children Are Aged 12 to 36 Months](#)**

MARCH 2024 (AUSTRALIA) Mary Brushe, Dandara Haag, Edward Melhuish, et al

This cohort study found a negative association between screen time and measures of parent-child talk across those early years. For every additional minute of screen time, children heard fewer adult words, spoke fewer vocalizations, and engaged in fewer back-and-forth interactions.

## **Associations with Problem-solving Developmental Delay**

### **[Screen Time at Age 1 Year and Communication and Problem-Solving Developmental Delay at 2 and 4 Years](#)**

AUGUST 2023 (JAPAN) Ippei Takahashi, Taku Obara, Mami Ishikuro, et al

Study shows “association between screen time among young children and subsequent developmental outcomes.” Results suggest “a dose-response association between longer screen time at age 1 year and developmental delays in communication and problem-solving at ages 2 and 4 years.”

## **Associations with Infant Psychophysiological Stress**

### **[Infants' physiological and behavioral reactivity to maternal mobile phone use – An experimental study](#)**

FEBRUARY 2022 (ISRAEL) Yael Rozenblatt-Perkal, Michael Davidovitch, Noa Gueron-Sela

“Findings from this study are the first to suggest that parental mobile device use while parenting (PMU) evokes a psychophysiological stress response in infants, as evident in increases in infants’ heart rate and negative affect, followed by post-PMU decreases.”

## **Associations with Lower Mother-to-Infant Attachment Quality**

### **[Associations between maternal technology use, perceptions of infant temperament, and indicators of mother-to-infant attachment quality](#)**

MARCH 2021 (USA) Shawnee Alvarez Gutierrez, Alison Ventura

“Greater technology use during mother-infant interactions was significantly associated with greater infant negative affectivity. Greater technology use was also significantly associated with lower mother-to-infant attachment quality and greater hostility toward motherhood.”

## **Associations with Decreased Sleep Quantity and Quality**

### **[Relationships between screen viewing and sleep quality for infants and toddlers in China: A cross-sectional study](#)**

OCTOBER 2022 (CHINA) Yumin Lin, Xueqin Zhang, Yinying Huang, Zhiwei Jia, Jing Chen, Wanling Hou, Lili Zhao, Guiyan Wang, Jiemin Zhu

“Screen time negatively related to total sleep time and nighttime sleep among infants and toddlers. Authors consider small portable screens used over long periods of time “real neurodevelopmental disruptors”.

## **Associations with Diminished Motor Skills**

### **[Screen Time and Developmental Performance Among Children at 1-3 Years of Age in the Japan Environment and Children's Study](#)**

SEPTEMBER 2023 (JAPAN) Midori Yamamoto, Hidetoshi Mezawa, Kenichi Sakurai, et al

“We found a bidirectional association between TV/DVD screen time and developmental scores in the communication domain from age 1 to 2 years. Additionally, we observed negative associations between TV/DVD screen time at age 2 years and the developmental scores in gross motor, fine motor, and personal-social domains at age 3 years.”

## **Associations with Development of Autistic-like Symptoms**

### **[Toddler Screen Time: Longitudinal Associations with Autism and ADHD Symptoms and Developmental Outcomes](#)**

NOVEMBER 2024 (USA) Monique Moore Hill, Devon Gangi, Meghan Miller

Greater screen time is associated with increased symptoms of autism spectrum disorder (autism), attention-deficit/hyperactivity disorder (ADHD), and lower scores on measures of development in preschool-aged community samples.

### **[Association Between Screen Time Exposure in Children at 1 Year of Age and Autism Spectrum Disorder at 3 Years of Age](#)**

JANUARY 2022 (JAPAN) Megumi Kushima, Reiji Kojima, Ryoji Shinohara, et al, Japan Environment and Children's Study Group

“Among boys, longer screen time at 1 year of age was significantly associated with autism spectrum disorder at 3 years of age. With the rapid increase in device usage, it is necessary to review the health effects of screen time on infants and to control excessive screen time.”

### **[Association of Early-Life Social and Digital Media Experiences With Development of Autism Spectrum Disorder–Like Symptoms](#)**

APRIL 2020 (USA) Karen Frankel Heffler, Danielle Sienko, Keshab Subedi, et al

“This cohort study found greater screen exposure and less caregiver-child play early in life to be associated with later ASD-like symptoms. Further research is needed to evaluate experiential factors for potential risk or protective effects in ASD.”

### **[Screen time reduction and focus on social engagement in autism spectrum disorder: A pilot study](#)**

AUGUST 2022 (USA) Karen Frankel Heffler, Lori Frome, Brigid Garvin, Lindsay Bungert, David Bennett

“In young children (18 to 40 months) with ASD and high screen time, this intervention study, though small, was associated with 1) a significant reduction in the children's screen time, 2) a significant reduction in the children's autism symptoms and 3) a significant reduction in parent stress.”

## GAINING Awareness Alerts Supporting Documents

[Prevalence and Characteristics of Manipulative Design in Mobile Applications Used by Children](#)

[Early and Excessive Exposure to Screens \(EEES\): A New Syndrome](#)

[Special Education Is Getting More Expensive, Forcing Schools to Make Cuts Elsewhere](#)

[Poll Shows Increases in Hearing, Speech, and Language Referrals, More Communication Challenges in Young Children](#)

[The lifetime social cost of autism: 1990–2029 - ScienceDirect](#)

[Infants' physiological and behavioral reactivity to maternal mobile phone use – An experimental study - ScienceDirect](#)

[Screen Time and Parent-Child Talk When Children Are Aged 12 to 36 Months | Media and Youth | JAMA Pediatrics | JAMA Network](#)

[Longitudinal Associations Between Use of Mobile Devices for Calming and Emotional Reactivity and Executive Functioning in Children Aged 3 to 5 Years | Child Development | JAMA Pediatrics | JAMA Network](#)

[The effects of background television on the toy play behavior of very young children - PubMed](#)

[Association between Screen Use and Child Language Skills](#)

[Elevated background TV exposure over time increases behavioural scores of 18-month-old toddlers - Chonchaiya - 2015 - Acta Paediatrica - Wiley Online Library](#)

[The impact of background television on parent-child interaction - PubMed](#)

[Learning From Video: A Meta-Analysis of the Video Deficit in Children Ages 0 to 6 Years - Strouse - 2021 - Child Development - Wiley Online Library](#)

[Prevalence and Characteristics of Manipulative Design in Mobile Applications Used by Children | Pediatrics | JAMA Network Open | JAMA Network](#)

[Media and Young Minds | Pediatrics | American Academy of Pediatrics](#)

[Global Prevalence of Meeting Screen Time Guidelines Among Children 5 Years and Younger: A Systematic Review and Meta-analysis | Media and Youth | JAMA Pediatrics | JAMA Network](#)

[Explaining Adherence to American Academy of Pediatrics Screen Time Recommendations With Caregiver Awareness and Parental Motivation Factors: Mixed Methods Study - PubMed](#)

[Young Children and Screens: Guidelines for Intervention during the Perinatal Period from the French National College of Midwives - Bernard - 2022 - Journal of Midwifery & Women's Health - Wiley Online Library](#)