CELEBRATING 2013 - 2023 Children AND Screens INSTITUTE OF DIGITAL MEDIA AND CHILD DEVELOPMENT

2023

10 YEARS

DIGITAL MEDIA AND DEVELOPING MINDS

INTERNATIONAL SCIENTIFIC CONGRESS

SEPTEMBER 20–23, 2023

ABSTRACT BOOKLET

#MediaAndMinds23

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SCHEDULE

WEDNESDAY, SEPTEMBER 20TH

6:00 pm	**FLASH TALKS** *L'Enfant Ballrooms A-C*

THURSDAY, SEPTEMBER 21ST

11:10 am	**ABSTRACT SYMPOSIUM: YOUNG CHILDREN AND SCREENS** *L'Enfant Ballrooms D*
5:00 pm	**POSTER SESSION** *Gallery Ballroom*

FRIDAY, SEPTEMBER 22ND

11:10 am	**ABSTRACT SYMPOSIUM: MENTAL HEALTH AND BODY IMAGE** *L'Enfant Ballrooms D*
2:30 pm	**ABSTRACT SYMPOSIUM: PARENT KNOWLEDGE AND BEHAVIOR** *L'Enfant Ballrooms D*
4:00 pm	**ABSTRACT SYMPOSIUM: PREVENTION AND INTERVENTION** *L'Enfant Ballrooms D*

FLASH TALKS

PROBLEMATIC MEDIA USE ACROSS EARLY CHILDHOOD

(See Poster No. 24)

Sarah Coyne, PhD
PROFESSOR OF HUMAN DEVELOPMENT
School of Family Life, Brigham Young University

USING SCREENS TO CALM AN UPSET CHILD: AN EXAMINATION OF BI-DIRECTIONAL ASSOCIATIONS WITH SELF-REGULATORY SKILLS IN PRESCHOOLERS

(See Poster No. 53)

Marie-Andrée Binet
FACULTY OF MEDICINE AND HEALTH SCIENCES
Université de Sherbrooke

SCREEN TIME REPORTS THROUGH THE EYES OF ADOLESCENTS

(See Poster No. 11)

Emily Weinstein, PhD
CO-DIRECTOR, CENTER FOR DIGITAL THRIVING
Harvard Graduate School of Education

DIGITAL MEDIA (DM) USE AMONG ISRAELI ADOLESCENTS AFTER COVID-19

(See Poster No. 23)

Bar Shutzman
GRADUATE STUDENT, DEPARTMENT OF EDUCATION
The Hebrew University of Jerusalem

INTERACTIVE SCREEN-BASED ACTIVITIES PREDICT WORSE ADOLESCENT SLEEP HEALTH

(See Poster No. 42)

David Reichenberger, MS
GRADUATE STUDENT, DEPARTMENT OF BIOBEHAVIORAL HEALTH
Pennsylvania State University

RECIPROCAL ASSOCIATION BETWEEN SLEEP PATTERN AND TECHNOLOGY USE IN ADOLESCENTS WITH ADHD

(See Poster No. 41)

Qinxin Shi, PhD
T32 POSTDOCTORAL FELLOW
Children's National Hospital–George Washington University School of Medicine

FLASH TALKS

UNDERLYING MECHANISMS OF ASSOCIATIONS BETWEEN SCREEN TIME AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER SYMPTOMS IN ADOLESCENTS: A MULTILEVEL LONGITUDINAL MEDIATION STUDY

(See Poster No. 75)

Patricia Conrod, PhD
CANADA RESEARCH CHAIR IN PREVENTIVE MENTAL HEALTH AND ADDICTION
CHU Sainte-Justine Research Center
PROFESSOR, DEPARTMENT OF PSYCHIATRY
University of Montreal

ASSOCIATIONS BETWEEN ADOLESCENTS' ONLINE-ONLY FRIENDSHIPS, DEPRESSIVE SYMPTOMS AND SOCIAL MEDIA EXPERIENCES

(See Poster No. 33)

Zilal Kilic
GRADUATE STUDENT, DEPARTMENT OF PSYCHOLOGY
University of Pittsburgh

GIRLS INTERNET USE PREDICTS HIGHER LEVELS OF GENERALIZED AND SOCIAL ANXIETY SYMPTOMS DURING ADOLESCENCE

(See Poster No. 36)

Gabriel Tiraboschi, PhD
POSTDOCTORAL FELLOW
Université de Sherbrooke

SOCIAL MEDIA AS A 'GATEWAY' DRUG?: EXPLORING RELATIONSHIPS BETWEEN DIGITAL MEDIA USE AND YOUTH DRUG AND ALCOHOL USE

(See Poster No. 43)

Meredith Gansner, MD
ATTENDING PSYCHIATRIST, DEPARTMENT OF PSYCHIATRY AND BEHAVIORAL SCIENCES
Boston Children's Hospital
INSTRUCTOR OF PSYCHIATRY
Harvard Medical School

ABSTRACT SYMPOSIUM:

YOUNG CHILDREN AND SCREENS

UNDERSTANDING THE QUALITY OF YOUNG CHILDREN'S SCREEN TIME: E-CHILDS FRAMEWORK

Mary Brushe,
RESEARCH STUDY MANAGER
Telethon Kids Institute
PHD CANDIDATE
School of Public Health, University of Adelaide

USING TIME DIARY REPORTS TO UNDERSTAND ASSOCIATIONS BETWEEN MEDIA USE AND EARLY CHILDHOOD DEVELOPMENT

Robin Sayers, PhD
PHD, POSTDOCTORAL ASSOCIATE
University of Maryland

"I'M 10 & SINGLE": A CONTENT ANALYSIS OF YOUNG CHILDREN'S INSTAGRAM ACCOUNTS

Yoori Kim
GRADUATE STUDENT
Tufts University

Understanding the Quality of Young Children's Screen Time: E-Childs Framework

Brushe, M.[1,2], Islam, T.[1], Rahmanian, H.[1], Boulton, Z.[1], Gavin, A.[1], Belton, A.[1], Walton, J.[1]

[1]Telethon Kids Institute, Adelaide, Australia; [2]School of Public Health, University of Adelaide, Adelaide, Australia

BACKGROUND: Growing concerns around screen time in early childhood exist, given evidence suggesting that increased screen exposure negatively affects various health and developmental outcomes. Guidelines recommend no screens for children under 2 years; current estimates suggest many children exceed this. Increasingly, there has been a movement towards focusing on the quality of screen time rather than simply the amount of time children spends watching screens. Nonetheless, how 'quality' screen time is measured varies considerably within the literature. This led to the development of the E-CHILDS Framework, which captures the following elements of screen quality: (1) educational value, (2) level of engagement with screen, (3) age-appropriateness, (4) purpose for using screens, (5) type of device being used. This presentation will present the constructs in the E-CHILDS Framework and results from an Australian prospective cohort study investigating screen time during the first four years of a child's life.

METHODS: The prospective cohort study (n = 222), uses a combination of speech recognition technology called Language Environment Analysis (LENA) and human coders to quantify the amount of screen time children are exposed to and the quality of the screen content. LENA data is collected once every six months, beginning when children are six months old, whereby audio around the child is recorded over a 16hr day. Researchers then code segments of audio flagged as TV or electronic noise to determine whether a screen is present and the screen content against all five constructs of the E-CHILD Framework.

RESULTS: Preliminary findings have indicated that Australian children are exposed to an average of 1hr, 16mins (SD = 1hr, 36mins) of screens per day at 6 months old. Concerningly, less than 1 minute of screen time was categorised as 'interactive co-viewing' for the child's level of engagement, with most of the screen time considered 'passive' viewing (M = 34mins, SD = 1hr, 2mins). By 24 months old, screen time had increased to 2hrs, 28mins (SD = 2hrs, 4mins), but less than 4-minutes were interactive co-viewing. Descriptive findings of each of the five E-CHILD Framework constructs across time will be presented.

DISCUSSION: Many young Australian children are exceeding screen time guidelines and are often exposed to content that does not facilitate educational benefits. The current study using a combination of LENA technology and human coders provides a unique insight into the screen habits of young children. It can provide a comprehensive understanding of the quality of screen time in early childhood when coded against the E-CHILDS Framework. Findings will inform the development of education and support for parents to reduce potential harm from screen time.

COI DISCLOSURE: *Authors report a grant from the National Health and Medical Research Council (NHMRC) Ideas Grant, which funded the research to be presented.*

Using Time Diary Reports to Understand Associations Between Media Use and Early Childhood Development

Dore, Rebecca A.[1], Xiao, Nan[1], Sayers, Robin[2], Purtell, Kelly[1], Justice, Laura[1]

[1]The Ohio State University; [2]University of Maryland

There is substantial societal concern about the potential impacts of media use on child development. However, media use is not monolithic and different types of media experiences may differ in the extent to which they are detrimental to development. Three notable characteristics may influence the effect of media use on development: nighttime media use, educational content, and joint media engagement. Time diaries can be used to capture rich data on these characteristics of media use, as well as overall quantity. This study examined the association between media use measured using a time diary approach and preschoolers' skill gains in multiple domains, including academic (language, literacy, and math) and social/behavioral skills (task orientation, behavior control, assertiveness, and social skills).

Children (N = 179; 100 boys; Mage = 55.0 months, SD = 3.93 months; 41%, 41%, and 17% identified as White, Black, and multiracial, respectively) completed assessments of academic skills in the fall and the spring using three subtests from the Woodcock-Johnson III Test of Achievement (Woodcock, McGrew, & Mather, 2001) and Teacher-Child Rating Scale (Hightower et al., 1986) measuring children's social and behavioral skills. Parents/caregivers completed a 24-hour time diary in the spring, which was used to obtain measures of children's total media use (both as primary and secondary activity), nighttime media use (6pm to 6am), educational media use (researcher-coded as titles for which the creator has an intended learning goal), and joint media engagement (media used with others).

Results showed non-linear effects of both total media and nighttime use on teacher-rated social skills, such that high but not moderate levels of media use were associated with smaller skill gains. A similar effect was found for nighttime use on assertiveness. Overall educational media use was associated with larger gains in task orientation and assertiveness, whereas educational media specifically focusing on social-emotional content was associated with larger gains in task orientation and behavioral control. Joint media engagement with peers, but not adults, was associated with smaller gains in vocabulary skills.

The use of time diaries in this study enabled us to examine the potential effects of media use with more nuance than previous research. There were few demonstrable links between media use and academic skill gains. However, both the total quantity of children's media use and two characteristics of use (nighttime use and educational content) were predictive of children's social and behavioral skills, demonstrating that, at least in early childhood, these skills may be more susceptible to displacement effects of media use than are academic skills.

COI DISCLOSURE: *The research was part of a larger project supported by the U.S. Department of Education, Institute of Education Sciences Grant R305A180004.*

"I'm 10 & Single": A Content Analysis of Underage Instagram Accounts

Kim, Yoori[1], Starks, Allison[2], Pham, Helen[2], Ko, Yerin[2], Reich, Stephanie M.[2]

[1]Tufts University; [2]School of Education, University of California, Irvine

INTRODUCTION: Because of the U.S.'s Children's Online Privacy Protection Act (COPPA), most social media platforms require users to be at least 13 years or older. While social media companies claim to have strong age restrictions, monitoring mechanisms, and deactivation policies for underage accounts, studies consistently find children younger than 13 use social media daily (Ofcom, 2022). This leaves questions about whether underage accounts are hard to identify and what children under 13 are doing on these platforms.

METHODS: Utilizing 68 search terms of ages and/or grades under 13/7th grade (e.g., ten years old, 10 yrs, third grade, 3rd grade, grade 3, etc.), we searched Instagram for accounts whose own self-descriptors (bio) admitted they were underage. Each search term was used by two separate researchers to account for differences in user algorithms. This brief search, from adult accounts with Instagram's 60 accounts per search limit, identified 753 accounts clearly owned by children (not parents, teachers, or professional accounts). We screen-captured the profiles and coded their contents (e.g., bio description, public/private, followers/following, use of personal identifiers (name, address), types of images or videos).

RESULTS: Of the 753 accounts that self-described as underage, 82% (n=615) were public, with 36% sharing their first name, 10% posting other social media accounts, and 4% listing their city of residence. The majority of public accounts (70%) appeared to be for personal use such as sharing about daily life . Other common purposes included sharing interests/hobbies (e.g., soccer; how to do hair; 23%), self-promotion (e.g., modeling, athletics, entrepreneurship); 6%) and matchmaking (3%). Most child accounts (82%) included pictures of the child, with 62% posting selfies, 44% showing social relations (e.g., hanging with friends), and 25% glamor posing (e.g., seductive poses, risque outfits, mirror selfies). About 6% of public accounts mentioned being single.

DISCUSSION: From a basic search of bios, using algorithmically-restricted adult accounts, we easily found profiles of underaged users, negating companies' claims of difficulty locating child accounts. Each account is a direct violation of COPPA, but perhaps the legal consequences are too minor to motivate action. In looking at children's activities on Instagram, their actions correspond with typical developmental interests and capacities of 8-12-year-olds (Steinberg & Morris, 2001): to play with identity presentations, connect with peers, increase autonomy and practice adult roles and activities, and, for some, seek romantic connections. Concerning are the ways in which children openly share their profiles (i.e., public settings) and private information (i.e., name and school) that could introduce risks from unknown others and identity theft. Such patterns indicate the need for both more education for youth and stronger default privacy settings on platforms.

COI DISCLOSURE: *No author has any conflict of interest to report.*

POSTER SESSION

NOVEL METHODS, MEASURES, AND INTERVENTIONS

#1 The Role of Early Childhood Assessment in the Development of Higher Order Cognitive Skills

Hechmi Kilani
University of Houston, Houston, TX; TIMES (Texas Institute for Measurement, Evaluation, and Statistics), Houston, TX

#2 The Bilingual English Language Learner Assessment Application: A Tablet-Based Kindergarten Readiness Assessment Tool Giving Agency to Young Learners

Hechmi Kilani
University of Houston, Houston, TX; TIMES (Texas Institute for Measurement, Evaluation, and Statistics), Houston, TX

#3 Affinity to Mobile Device Use in Toddlers

Darcy A. Thompson
Department of Pediatrics, University of Colorado Anschutz Medical Campus

#4 Parent-Administered Screen Time Intervention (PASTI) in Toddlers: A Randomised Controlled Trial

Tim J. Smith
Centre for Brain and Cognitive Development, Birkbeck, University of London; Creative Computing Institute, University of Arts London

#5 Early Start Screen Smart Program: Developing and Piloting an Intervention to Support Parents of 0-2 Year Olds With Their Child's Screen Time

Mary Brushe
Telethon Kids Institute, Adelaide, Australia; School of Public Health, University of Adelaide, Adelaide, Australia

#6 Piloting a Prevention Program in Schools to Promote Healthy Social Media Use and Online Interactions

Sarah E. Domoff
University at Albany, SUNY

#7 High Schoolers Mentoring Middle Schoolers: Participatory Methods for Teaching Group Chat Etiquette

Kyra C. Dingle
University of California, Irvine, School of Medicine

POSTER SESSION

NOVEL METHODS, MEASURES, AND INTERVENTIONS

#8 Supporting Teens' Intentional Social Media Use Through an In-The-Moment Intervention

Katie Davis
University of Washington

#9 Social Media U: Testing and Implementation of a School-Based Digital Wellbeing Micro-Intervention

Rachel A. Hanebutt
Vanderbilt University

#10 Co-Design and Development of a Digital Wellbeing Mobile Application for Adolescents

Rachel A. Hanebutt
Vanderbilt University

#11 Screen Time Reports Through the Eyes of Adolescents

Emily Weinstein
Center for Digital Thriving, Harvard Graduate School of Education

#12 A New Measure of Mindful and Prosocial Digital Engagement (MAP-DE) for Adolescents

Carrie James
Center for Digital Thriving, Harvard Graduate School of Education

#13 Passive Sensing of Smartphone Usage in Teenagers in a Diverse National U.S. Sample: The Stony Brook University Measuring Electronic Devices In Adolescents (MEDIA) Study

Gina Marie Mathew
Program in Public Health, Department of Family, Population, and Preventive Medicine, Renaissance School of Medicine, Stony Brook University

#14 Designing With Kids: How Children and Adults Can Co-Create New Technologies

Medha Tare
The Joan Ganz Cooney Center at Sesame Workshop

POSTER SESSION

GENERAL USAGE PATTERNS

#15 Between Toddlers & Tweens: Digital Media Transitions in Middle Childhood (Ages 8-11)

Allison Starks
University of California-Irvine

#16 Developmental Courses of Youth Technology Engagement

Jacob T Borodovsky
Center for Technology and Behavioral Health, Dartmouth Geisel School of Medicine

#17 Predicting the Highs and Lows: Media Frequency Classifications and Their Predictors Using Latent Profile Analysis

Matthew Lapierre
Department of Communication, University of Arizona

#18 First and Non First Generation College Students and the Use of Technology

Susan Sonnenschein
University of Maryland, Baltimore County

GLOBAL PANDEMIC IMPACTS

#19 The Ongoing Impact of the Covid-19 Pandemic on Screen Time Among Canadian Youth

Travis Saunders
Department of Applied Human Sciences, University of Prince Edward Island, Charlottetown, Canada

#20 Online and Offline Friendships Throughout the Pandemic in Latin America

Alexia Carrizales
Purdue University

#21 Trajectories of Digital Stress and Well-Being Among Peruvian Adolescents During the Covid-19 Pandemic

Lucia Magis-Weinberg
Department of Psychology, University of Washington, Seattle

POSTER SESSION

GLOBAL PANDEMIC IMPACTS

#22 Positive Online Experiences Reduce Loneliness During Two Years of Remote Education in Response to Covid-19: A Longitudinal Study of Peruvian Youth

Lucia Magis-Weinberg
Department of Psychology, University of Washington, Seattle

#23 Digital Media (DM) Use Among Israeli Adolescents After Covid-19

Bar Shutzman
The Hebrew University of Jerusalem

PROBLEMATIC USE AND DIGITAL ADDICTION

#24 Problematic Media Use Across Early Childhood

Sarah Coyne
Brigham Young University

#25 Is Problematic Media Use Present Among Preschool-Aged Children?

Jennifer Emond
Department of Biomedical Data Science; Department of Pediatrics, Geisel School of Medicine at Dartmouth College, Lebanon

#26 Communication-Related Predictors of Childhood Problematic Media Use: A Systematic Review Guided by Interaction Theory of Childhood Problematic Media Use

Eunjoo Choi
Department of Communication, University of Arizona

#27 "I Am Feeling So Burnt Out": A Longitudinal Analysis of Parents' Perceptions of Child Screen and Problematic Media Use From 2019 TO 2021

Lauren Eales
Institute of Child Development, University of Minnesota

POSTER SESSION

PROBLEMATIC USE AND DIGITAL ADDICTION

#28 Evidence-Based Problematic Gambling and Gaming Youth Prevention Education in a Learning Management System (LMS): How an LMS Can Be an Educational Teaching Tool to Reduce High-Risk Behaviors and Increase Knowledge to Empower Youth to Make Smart Choices

Alison Wood-Drain
North Carolina Problem Gambling Program; TELUS

MENTAL HEALTH AND WELL-BEING

#29 Adolescent Perceptions of Social Media Use on Well-Being

Emily R. Izenman
Boston Children's Hospital

#30 Differential Effects of Social Media Use on Adolescent Depression, Anxiety, and Loneliness: A Mixture Modeling Approach in a Sample of Adolescents From the United States and South Korea

Jane Shawcroft
University of California, Davis, Department of Communication

#31 The Quality of Adolescents' Social Media Experiences – Not Just Quantity – Predicts Mental Health Impact

Anna Van Meter
New York University Grossman School of Medicine

#32 Digital Media, a Protective Buffer for Queer Teens Against Anxiety, Depression, and Suicidality

Kylie Woodman
University of California Santa Barbara

#33 Associations Between Adolescents' Online-Only Friendships, Depressive Symptoms and Social Media Experiences

Zelal Kilic
University of Pittsburgh

POSTER SESSION

MENTAL HEALTH AND WELL-BEING

#34 Social Media Use, Fear of Missing Out, and Indicators of Social Connection Among Adolescents

Samantha L. Vigil
University of California, Davis

#35 Neurobiological Sensitivity to Popularity Moderates Daily Links Between Social Media and Affect

Maria T. Maza
University of North Carolina at Chapel Hill

#36 Girls Internet Use Predicts Higher Levels of Generalized and Social Anxiety Symptoms During Adolescence

Gabriel A Tiraboschi
Université de Sherbrooke, Québec, Canada

#37 The Double-Edged Sword of Beauty Filters: Effects on Chinese Adolescents' Self-Image and Consideration of Cosmetic Surgery

Yanzhuo Niu
Department of Social and Behavioral Sciences, Colorado Mesa University

#38 A Narrative Review: Examining the Relationship Between Social Media Use and Chronically Ill Adolescents' Well-Being

Annamarie Rogers
Fordham University

RACE AND ETHNICITY

#39 Social Media Usage Patterns and Body Image Concerns Among Racially Diverse US and British Adolescent Girls

Elizabeth Daniels
Centre for Appearance Research, University of the West of England

#40 The Black Stoicism Project: Adolescent Beliefs About Racial Differences in Pain Tolerance Following Exposure to Black Stoicism Media

Kristen Harrison
University of North Carolina at Chapel Hill

POSTER SESSION

PHYSICAL HEALTH

#41 Reciprocal Association Between Sleep Pattern and Technology Use in Adolescents With ADHD

Qinxin Shi
Children's National Hospital–George Washington University School of Medicine

#42 Interactive Screen-Based Activities Predict Worse Adolescent Sleep Health

David A. Reichenberger
Department of Biobehavioral Health, Pennsylvania State University

#43 Social Media as a 'Gateway' Drug?: Exploring Relationships Between Digital Media Use and Youth Drug and Alcohol Use

Meredith Gansner
Cambridge Health Alliance; Boston Children's Hospital

#44 U.S. and International Law and Policy to Address Children and Cell Phone Radiation Health Issues

Theodora Scarato
Environmental Health Trust

DIGITAL ABUSE

#45 Pediatric Emergency Medicine Providers' Experiences With Digital Sexual Abuse

Jenny Zhu
University of California - Irvine

#46 Peer Contagion of Adolescent Digital Dating Abuse: A Network Study Across Social Contexts

Olivia Maras
Arizona State University

#47 Analyzing Digital Dating Abuse Among Late Adolescents Using Novel Coding System of Smartphone Screenshots

Selena I. Quiroz
Department of Psychology, Arizona State University, Tempe, AZ

POSTER SESSION

ADVERTISING AND MARKETING

#48 Digitizing the Toybox

Brenna Hassinger-Das
Pace University

#49 Mobile Mediation and Children's Consumer Behavior

Cecilia Sada Garibay
Department of Communication, University of Arizona

#50 Young Children's Exposure to Food and Beverage Brands While Viewing Youtube

Frances Fleming-Milici
Rudd Center for Food Policy and Health, University of Connecticut

#51 Who, What, Where, When? Childrens and Adults Source Monitoring and Memory of Online Sources

Samantha D. Barbosa
Wilfrid Laurier University, Department of Psychology

PARENTING BELIEFS AND PRACTICES

#52 Regulatory Use of Media and the Content of Children's Media

Bolim Suh
University of Wisconsin-Madison

#53 Using Screens to Calm An Upset Child: An Examination of Bi-Directional Associations With Self-Regulatory Skills in Preschoolers

Marie-Andrée Binet
Medicine and Health Sciences, Université de Sherbrooke, Sherbrooke, Canada

#54 The Digital Identity of Young Children is in the Hands of Parents

Valeska Berg
School of Nursing and Midwifery, Edith Cowan University, Joondalup, WA, Australia; Australian Research Council Centre of Excellence for the Digital Child, Brisbane, QLD, Australia

POSTER SESSION

PARENTING BELIEFS AND PRACTICES

#55 Parent Preferences, Beliefs, and Behaviors Regarding Children's Digital Play

Elizabeth Skora Horgan
University of Wisconsin- Madison, Department of Human Development and Family Studies

#56 Parent Beliefs and Child Apps

Linsah Coulanges
University of Pittsburgh

#57 Parents' Anxiety and Their Attitudes Toward Educational and Entertainment Media

Allyson L. Snyder
University of California, Davis

#58 Styles of Digital Parental Mediation: A Multi-Group Person Centered Approach

Jessica Navarro
Human Service Studies, Elon University

#59 Transformational Education for Parents to Mediate Digital Device Practices Amongst Their Children

Stephanie C. Milford
School of Education, Edith Cowan University, WA, Australia

#60 Examining How Parental Mediation Strategies Supported Youth With and Without Disabilities During the Covid-19 Pandemic

Willow S. Sauermilch
Manship School of Mass Communication, Louisiana State University

#61 Connections Between Parental Media Monitoring and Both Parent and Child Technoference Behaviors

Mccall Booth
Indiana University

POSTER SESSION

FAMILY RELATIONSHIPS

#62 Parental Mobile Phone Use, Parental Burnout, and Parent-Child Relationships

Ava Foster
Georgetown University

#63 Do Perceptions Matter More Than Actual Phone Use? Parent Phone Use, Technoference, and Perceived Responsiveness to Child

Brandon T. Mcdaniel
Parkview Mirro Center for Research and Innovation

#64 "Pay Attention to Me!": Parental Technoference as a Predictor of Preschool Social Behavior

Sarah Ashby
Brigham Young University

#65 Parent-Teen Connections on Social Media: Exploring Parent Connectivity and Interaction With Teens on Social Media and Predicting Social Media Behavior

Jana Thomas
Media and Communication, Kansas State University

#66 Examining the Role of Parent-Adolescent Relationship Quality on Adolescent Smartphone Use

Fizza Fakhar
University of North Carolina at Chapel Hill

#67 Parent-Child Behavioral, Verbal, and Emotional Engagement During Shared Book Reading

Roxanne A. Etta
University of Wisconsin-Madison

#68 Exploring Dialogic Interactions in Grandparent-Grandchild Conversations Over Video Chat

Alexus G. Ramirez
University of Delaware

POSTER SESSION

FAMILY RELATIONSHIPS

#69 They Long to be Close to You: Grandparent and Parent Perceptions of Closeness Between Video-Chatting Children and Their Grandparents

Gabrielle Strouse
University of South Dakota

COGNITION AND NEURODEVELOPMENT

#70 Screen Time and Executive Functioning in Early Children

Minxuan He
Department of Psychology, Mount St. Mary's University, Emmitsburg, Maryland

#71 Evidence for the Short-Term Impact of Fantastical Cartoon Content on Toddlers' Attention Control

Claire Essex
Centre for Brain and Cognitive Development, Birkbeck, University of London, UK

#72 A Complex Dynamical Systems Model for Understanding the Effects of Screen Time on Autism Spectrum Disorder Prevalence

Matthew A. Turner
Society for the Study of ASD and Social Communication

#73 Early-Life Digital Media Experiences and Autism Symptoms: A Review of the Literature

Karen F. Heffler
Department of Psychiatry, Drexel University College of Medicine

#74 Association of Early-Life Digital Media Experiences With Development of Atypical Sensory Processing

Karen F. Heffler
Department of Psychiatry, Drexel University College of Medicine

#75 Underlying Mechanisms of Associations Between Screen Time and Attention-Deficit/Hyperactivity Disorder Symptomsin Adolescents: A Multilevel Longitudinal Mediation Study

Patricia Conrod
CHU Sainte-Justine Research Center, University of Montreal

POSTER SESSION

COGNITION AND NEURODEVELOPMENT

#76 Virtual Reality Strategies to Assess and Improve Social Cognition in Children With ADHD and Disruptive Behavior Disorders

Tom A. Hummer
Department of Psychiatry, Indiana University School of Medicine

EDUCATION AND LEARNING

#77 Using Spatial Memory to Traverse Through Minecraft: Examining Individual Differences in Spatial Memory and Navigation

Nicole Colchete
University of California, Riverside

#78 How Variability in Infant Media Use Impacts Vocabulary

Sarah Kucker
Southern Methodist University

#79 The TV is On: Examining the Relation Between Media Exposure and Preschoolers' Language Use

Ekaterina Novikova
University of Delaware

#80 Children's Gaze Patterns Toward Digital American Sign Language Storybooks

Joseph Palagano
Educational Neuroscience, Gallaudet University, Washington, D.C.

#81 What Does Google Know?: Young Children's Beliefs About the Capacities of Google Search

Lauren N. Girouard-Hallam
University of Louisville

#82 Children's Working Memory and Learning From Virtual Reality

Camren L. Allen
University of California, Davis

#83 How Public Media Gets America's Children Learning

Shelley Pasnik
Center for Children and Technology, Education Development Center

POSTER SESSION

EDUCATION AND LEARNING

#84 Mahsi'choo for the Info! Molly Of Denali Teaches Children About Informational Text

Naomi Hupert
Education Development Center

#85 Parent Perspectives About Learning and the Role of Media After Two Years of the Pandemic

Cindy Hoisington
Center for Children and Technology, Education Development Center, New York

#86 PBS Play and Learn Science App Supports Children's Early Science Learning and Parent/Child Science Interactions

Cindy Hoisington
Center for Children and Technology, Education Development Center, New York

#87 Parent Perceptions of Remote Learning and Child Screen Time During Covid-19

Trina Harmon
University of Massachusetts Amherst

#88 A Study of Phone Use and Digital Wellness in 38 Marin County Schools

Dabney Ingram
ScreenSense

#1 - The Role of Early Childhood Assessment in the Development of Higher Order Cognitive Skills

Markov, Ilia[1,2], Kilani, Hechmi[1,2], Martinez, Candace[1,2], Tan, Mei[1,2], Grigorenko, Elena L[1,2]

[1]University of Houston; Houston, TX; [2]TIMES (Texas Institute for Measurement, Evaluation, and Statistics); Houston, TX

INTRODUCTION: To address the challenges of this century, higher order skills (HOS)—such as those involved in reasoning, problem-solving, creativity, and practical thinking—are now needed more than ever. A key question for the field of early childhood development is how and when these skills and their precursors may be detected and fostered, and can they be supported in the classroom, where they have not previously been emphasized. We argue that basic cognitive skills foundational to HOS may be fostered and assessed in early childhood education (pre-K) settings.

METHODS: We propose a technology-based solution and describe a new tablet-based formative and summative assessment designed to support the development of precursors to HOS in young children. Mean passing rates and extreme group discrimination values per item were calculated as a preliminary assessment of validity.

RESULTS: BELLA (Bilingual English Language Learner Assessment) is a new tablet-based formative and summative assessment designed to support the development of pre-cursors to HOS in young children while accounting for children's level of first and second/English language proficiency by using both a dynamic and adaptive approach. Average pass rates for cognitive skills were all above 51 on a 100-point scale, creative skills having the lowest average followed by analytical skills and practical skills (respectively, 51.51; 67.49; 68.20). Mean discrimination values were all positive and fell into the .3-.5 range. Calculated descriptive statistics indicate that BELLA's items were able to differentiate children's skill levels in our targeted cognitive domains to some extent, with creative items doing so particularly effectively.

DISCUSSION: BELLA evaluates school readiness domains such as early literacy, numeracy, science, and social-emotional development, incorporating analytical, creative, and practical cognitive skills. These are encouraged through unique tasks and presentations. A feedback system promotes children's evaluation skills, while elements such as estimation making skills – often overlooked in early education - are included. BELLA's storybook art-style fosters creativity through novel tasks, boosting flexible and imaginative thinking. BELLA leverages digital media to enhance cognitive skills fundamental to higher-order thinking, supplementing early childhood learning in response to a global demand for innovative and problem-solving skills.

COI DISCLOSURE: *This research was funded by the US Department of Education grant number R305A160402. The authors declare no conflict of interest.*

#2 - The Bilingual English Language Learner Assessment Application: A Tablet-Based Kindergarten Readiness Assessment Tool Giving Agency to Young Learners

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INTRODUCTION: The Bilingual English language learner assessment application (BELLA) is a tablet-based kindergarten readiness instrument. It is an adaptive assessment, based on state requirements, and covers areas like early literacy, numeracy, science, and social-emotional development. BELLA items incorporate analytical, creative, and practical cognitive skills across three levels of difficulty. Available in English and Spanish, it responds to fast-changing technology and global events impacting education, such as COVID-19. This study examines BELLA's validity and provides insights into future education, emphasizing the need to adapt to emerging technologies.

METHODS: BELLA was administered to 535 children (between 3 and 6 years old), each receiving one of 6 sets (pilot paths) of 32 questions in either English or Spanish. The sample was spread across 17 schools between Connecticut and Texas. Items were scored as pass or fail (100 or 0), with two-step items having a partial-passing score (100, 50, or 0). A descriptive analysis averaging these scores for each pilot path taken was conducted, followed by a factorial ANOVA, as well a profile analysis model aimed at investigating possible gender and age group differences. Complex post-hoc mean comparisons were conducted to investigate possible sources of variability in the data.

RESULTS: Students had average scores for each pilot path of 62.96, and performance was consistent across gender and age, as well as sub-domain. The factorial ANOVA revealed a significant main effect of age on pass-rates, $F(3,5876) = 60.70$, $p < .0001$, as well as a significant main effect of sub-domains, $F(11, 5876) = 34.78$, $p < .0001$. In terms of interaction effects, the interaction between age and sub-domain was significant, $F(33, 5876) = 2.59$, $p < .0001$. The profile analysis shows no significant interaction or main effect of gender, but a significant interaction and main effect of age with an upward trend in performance, with certain irregularities in the 6-year-old group scores. Both of these results were confirmed in the follow-up tests, showing no significant difference between the oldest age groups and the younger ones (3, 4 and 5-year-olds), whilst confirming the overall effect of age on performance.

DISCUSSION: A glimpse at the sample shows that BELLA has a promising future, as it has the expected properties of a valid assessment tool. The way that it is used gives agency to the child and allows teachers to assess remotely as well as in class. Concerns can be raised regarding inequalities as this is a tablet-based assessment.

COI DISCLOSURE: *This research was funded by the US Department of Education grant number R305A160402. The authors declare no conflict of interest.*

#3 - Affinity to Mobile Device Use in Toddlers

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Mobile device use starts in very early childhood, with mobile content offering a highly engaging experience for young children, who are still forming self-regulation skills. While problematic or addictive mobile device use has been identified in older children, it is possible that young children exhibit an affinity, or attraction, to mobile device use, potentially due to a variety of internal and external contributors. However, affinity to mobile devices has not been examined in early childhood. This study's objective was to create a measure of toddler affinity to mobile devices and evaluate its association with toddler mobile device ownership and use. This study focuses on low-income Mexican American toddlers, a group at risk for high screen use and related health risks.

This mixed methods study enrolled Mexican American families with toddlers (15-27 months old) recruited from a federally qualified health system. Themes regarding toddler affinity to mobile devices were identified using semi-structured interviews with mothers and fathers (n=32). Twelve survey items, e.g, my child throws a tantrum if you take away a mobile device, were developed reflecting these themes. Items were orally administered as part of a larger ongoing study. Items were only administered to mothers reporting that their child had ever used a mobile device. Participants reported whether their child had their 'own' mobile device(s) and frequency of mobile device use in certain settings. Analysis included evaluating the internal reliability for the toddler affinity scale. Responses were summed to create a scale. We examined whether affinity to mobile devices was related to child mobile device ownership and frequency of use in certain settings.

Data were analyzed from 215 mothers who reported that their child had ever used a mobile device. Participants were on average 31.3 years old (SD=6.2) and 70% reported ≤high school degree. 19% (n=41) reported that their child had their own mobile device. The internal consistency of the mobile affinity scale was high (alpha=0.88). Children who had their own mobile device had higher mobile affinity scores than those who did not ($p<0.02$). Children with higher mobile affinity scores also had more frequent mobile device use with meals ($r=0.16$, $p<0.02$), in car/public transit ($r=0.17$, $p<0.02$), and when away from home ($r=0.14$, $p<0.05$). We developed a measure of toddler affinity to mobile devices, which had good reliability. Toddlers with their own mobile devices had greater affinity to them. Additionally, toddlers with greater affinity used mobile devices more frequently at mealtimes, in transit, and away from home. These associations may be bidirectional. Whether toddler affinity to mobile devices can be used to identify children at greater risk for later problematic use warrants study. Similarly, whether socioeconomic status contributes to affinity to mobile devices or the relationships we evaluated should be investigated.

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#4 - Parent-Administered Screen Time Intervention (Pasti) in Toddlers: A Randomised Controlled Trial

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The Infant and toddler screen time is increasing and has been associated with changes in several developmental factors including sleep and attention, two critical determinants of childhood health and cognitive function. Understanding the causal impact of screen time is of the highest importance. Here, we present a pilot and feasibility randomised controlled trial (RCT) of a 7-week Parent-Administered Screen Time Intervention (PASTI) in toddlers aged 17 – 31 months old who have existing screen time in the hour before bed. PASTI materials were co-created through participatory design with parents and early years partners (including Early-Years Alliance, NCT, and The Sleep Charity). These materials include a Family Bedtime Box containing age-appropriate toys, books, craft materials and cards suggesting bedtime activities instead of screen time. PASTI will be assessed via a researcher-blind RCT with three parallel arms; 1) no-intervention arm: families are told to continue as is and do not know that screen time is the focus of the trial; 2) PASTI arm: caregivers are asked to remove all screen time from their child in the hour before bed and instead use materials from the Bedtime Box; 3) Bedtime Box arm: caregivers received the same materials as the PASTI arm, but without any guidance on removing screen time. To assess efficacy, measures of sleep (e.g., total night-time sleep, number of night awakenings) are captured using Actigraphy and parent-reported sleep diaries at baseline and outcome. Objective measures of attention are captured using experimental eye tracking tasks. Measures of screen use are captured using parent-reported questionnaires throughout the trial. By comparing the PASTI arm to the Bedtime Box arm we aim to isolate the causal impact of screen time on toddler sleep and attention whilst controlling for other aspects of bedtime routines.

A socioeconomically (SES) diverse sample of 105 families are being recruited across the three arms using randomisation minimisation of age, gender and SES (postcode-based English Index of Multiple Deprivation). Estimated study completion date is July 2023. As of mid-March 2023, 346 families have completed our pre-screen questionnaire and of those 144 (42%) are eligible due to at least 10 minutes of screen time in the hour before bed, three times a week. 42 families have completed our trial (100% retention). A further 47 families are currently randomised or scheduled. Preliminary feasibility outcomes will be presented including participation, intervention adherence and follow up rates, as well as the acceptability of PASTI using quantitative and qualitative methods. This study will provide effect size estimates for efficacy outcomes of PASTI which will be used to power a full RCT and provide the first direct evidence of a causal impact of screen time before bed on toddler sleep and attention.

COI DISCLOSURE: *The PASTI project was funded by Nuffield Foundation (FR-000022056). Claire Essex was funded by an ESRC studentship. There are no other conflicts of interest.*

#5 - Early Start Screen Smart Program: Developing and Piloting an Intervention to Support Parents of 0-2 Year Olds With Their Child's Screen Time

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BACKGROUND: Screen time is an ever-increasing challenge for families to navigate. In fact, a recent poll in Australia reported that parents' number one child health concern was screen time. Furthermore, the prevalence of children under 2 years meeting screen time guidelines is only 24.7% internationally. Despite this, very little guidance is provided to parents and carers regarding how best to manage screens with their young children. Identifying this gap, the current study aimed to develop and pilot an online program for parents with a 0-2-year-old to provide education and strategies for screen use.

METHODS: The intervention was developed using an intervention mapping approach where a combination of (1) a rapid review of screen time literature, (2) identifying relevant theories and frameworks, (3) qualitative interviews with parents, and (4) a ranking survey with parents to identify their biggest concerns, fed into the program content. A co-design process involving parents and early childhood professionals was followed to ensure that content was relevant and accessible for parents. The final program was piloted with parents and carers in Western Australia who have a child aged 0-2 years.

RESULTS: The program, named Early Start Screen Smart, consists of five modules that explore topics such as education on current evidence and guidelines, interactive co-viewing, setting screen time boundaries, managing challenging behaviours, discussing screen time with friends and family, and online safety. The program is being piloted in mid-2023 and will measure changes in the family's screen time habits and parents' self-efficacy. We will also undertake qualitative interviews to gain feedback on the feasibility and acceptability of the program to inform a larger randomised controlled trial.

DISCUSSION: The poster will describe the process of developing the program and refinement through co-design and preliminary pilot study results. It will be discussed within the context of current guidelines and how realistic they are for families. We will argue that it is important to balance potential harms linked to screen time in very young children with the reality of modern life. The program focuses on the possibility of creating 'healthy' screen time, acknowledging that while zero screen time may be ideal, it is not the reality for many Australian families.

COI DISCLOSURE: *Authors report a grant from the Channel 7 Telethon Trust in Western Australia, which funded the research to be presented.*

#6 - Piloting a Prevention Program in Schools to Promote Healthy Social Media Use and Online Interactions

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INTRODUCTION: School administrators and teachers face challenges regarding safe and healthy social media use among students. These concerns were elevated with the switch to online learning during the pandemic. With many school systems providing students with their own laptop/tablet with internet access, questions have been raised regarding how to address exposure to harmful content online and the impact that online stressors have on youth during the school day. Curricula that teach students how to be safe online, cope with online stress, and engage in online social problem solving are especially needed. This presentation describes the pilot study of a prevention curriculum and its impact on students' perceptions of skills in an under-served region of the Midwest US.

METHODS: A cohort of health teachers participated in a webinar training to learn how to implement the Developing Healthy Social Media Practices-Prevention (DHSMP-Prevention) curriculum. DHSMP-Prevention consists of six sessions that target: (1) choosing content about oneself to share online, (2) how using your phone during class time (and during other salient contexts) may impact you, (3) determining the accuracy of social media posts/websites, (4) getting help with cyberbullying and how to be an upstander, (5) determining and updating your privacy and security settings on apps, and (6) components of persuasive design and harm reduction strategies for social gaming. During the 2020-2021 academic year, students in 7th and 8th grade health classes received this curriculum (N = 224; majority White/non-Hispanic). Students could have received the class virtually or in person. After each session, students self-reported on their likelihood to use skills taught, as well as their confidence in using skills.

RESULTS: Students reported higher endorsement of: (1) likelihood to not share private information online (93% of in person students and 85% of virtual learners endorsed likely or very likely); (2) likelihood to check the accuracy of news/social media posts before sharing (84% of in person students and 80% of virtual learners endorsed likely or very likely); and likelihood to not use their phones/social media during class (79% of in person students and 66% of virtual learners endorsed likely or very likely). Fewer students reported likelihood to reduce phone/social media use around bedtime (37% in person and 41% virtual learners) and likelihood to reduce phone/social media use when doing homework (39% in person and 37% virtual learners).

DISCUSSION: Teachers successfully implemented the curriculum; some evidence suggests that a prevention curriculum could introduce skills to students on safer/healthy social media/phone use. However, more objective measures of potential impact are needed (as well as testing via RCT in more diverse samples). Empowering teachers to support youth in developing skills to navigate online interactions may promote safer social media use.

COI DISCLOSURE: *This research was supported in part by a grant from the Children's Foundation delivered to Dr. Domoff (PI) at her former institution (CMU). Dr. Domoff receives honoraria to present research on problematic media use at non-profit organizations, schools, and hospital/health systems. She has consulted with health systems about problematic media use and mental health. She is on the board of the Smart Gen Society. In 2023, Dr. Domoff consulted with Pixel Digital Health, LLC, on their school-based prevention curriculum. Dr. Domoff consults with a private practice and school district on school technology policies and prevention programming.*

#7 - High Schoolers Mentoring Middle Schoolers: Participatory Methods for Teaching Group Chat Etiquette

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BACKGROUND: Most (95%) 13 to 17-year-olds report owning a smartphone and utilizing them to connect with others, especially through text messaging. However, these digitally mediated forms of communication can lead to drama, conflict, and even cyberbullying, which has an occurrence of 14-57.9% among youth. In response to these issues, some schools offer digital citizenship education, which typically involves programs developed by adults (e.g., teachers, social workers) advising youth on how to navigate technology. The lack of youth participation in program development, despite their extensive experience, could result in advice that does not match youth experiences. Thus, we tested whether older teens (14-18 years old) could be used as a resource for teaching younger adolescents (13-14 years old) about digital citizenship.

METHODS: In partnership with a high school Social Psychology course, we used Youth Participatory Action Research to help 10th-12th graders identify what 8th graders should know about digital communication to avoid problems and promote benefits. Using interview and survey methods, the 10th-12th graders designed 5 lessons with activities that they delivered to 8th graders. Pre- and post-test surveys were administered to both age groups.

RESULTS: Notable increases were found between the 8th graders' (M=13.6 years) pre- and post-knowledge scores. The number of students that correctly identified the definition of upstander increased from 58% to 100%, and the number of students that could identify strategies for avoiding miscommunication due to tone increased from 7% to 72%. Knowledge of strategies for resolving conflicts increased from 18% to 90%. Importantly, students reported enjoying the lessons and feeling that they learned useful tips. High schoolers (M = 16.8 years) also learned more about optimal group chat behaviors and ways to avoid miscommunication. Their pre-post knowledge scores increased, including generating more reasons for conflict and ways to reduce or avoid it. Their knowledge and interest in research also increased significantly. Additionally, 53% of students reported seeing themselves as a resource for others and 67% recognized their ability to make an impact on others.

DISCUSSION: This pilot project demonstrated the effectiveness of youth-designed interventions – for both those designing the intervention and those receiving it. Ample research has demonstrated the utility of near-peer mentoring and this study suggests the same benefits may exist when applied to digital citizenship education. Further, participatory methods encouraged teens' critical thinking about media and understanding of research, while supporting younger students in their own understanding and consideration of their personal media use.

COI DISCLOSURE: *None to disclose*

#8 - Supporting Teens' Intentional Social Media Use Through an In-The-Moment Intervention

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Prior research indicates that many adolescents struggle to use social media intentionally, with negative impacts on well-being. Although people of all ages experience this struggle, adolescents may find it particularly difficult to self-regulate their social media use due to the gap between their heightened emotional responses and their lagging self-regulation skills. This presents an important but under-researched opportunity to improve youth well-being through interventions designed to support adolescents' self-regulation behaviors on social media platforms.

The purpose of the current work is to investigate the feasibility and acceptability of using an in-the-moment mobile intervention to support adolescents' intentional social media use. Through an open-trial field deployment, we sought to determine: (1)whether adolescents will adopt an in-the-moment intervention that targets their social media use; (2)the extent to which the intervention shows evidence of engaging adolescents in self-regulation behaviors; and (3)preliminary evidence of changes in teens' perceived experiences of self-control and agency in their social media use.

Using psychological theory and an iterative user-centered design process, we developed Locus, a mobile app intervention that promotes adolescents' intentional social media use by supporting their self-regulation behaviors. We conducted an open trial field deployment (N = 54; Mage=16.2 years) lasting two weeks to explore the Locus intervention's acceptability and uptake, and to qualitatively understand how it was experienced by adolescents during the course of their daily lives. Participants responded to pre- and post-deployment surveys and a sub-set of 48% (N=26) took part in follow-up interviews.

Acceptability of the Locus intervention was high, with 80% of participants reporting that they opened their social media apps through the Locus app most of the time or all of the time during the course of the two-week study. Participants further reported that they engaged in more self-regulation behaviors during the course of their two weeks using the Locus app: participants reported increased self-control ($t(52)=5.79$, $p< 0.001$), decreased absentmindedness ($t(52)=2.74$, $p<0.01$), and increased autonomy ($t(52)=5.12$, $p<0.001$) in relation to their social media use from pre- to post-deployment.

Our work suggests that use of Locus—as a mobile intervention that prompts teens in-the moment to engage in goal setting, reflection, and self-monitoring—is seen as acceptable by teens and is associated with helping them to use social media in a more intentional way. The results provide a basis for future work investigating adolescents' long-term use of and response to digital interventions, such as Locus, that provide adolescents with in-the-moment support for self-regulating their social media use.

COI DISCLOSURE: *This work was financially supported in part by the Committee for Children.*

#9 - Social Media U: Testing and Implementation of a School-Based Digital Wellbeing Micro-Intervention

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In the U.S., most teens report using social media multiple times a day (Rideout & Robb, 2018), while nearly half shared that they are online "almost constantly" (Anderson & Jiang, 2018). Further, 36% of teens say they spend too much time on social media platforms, with 54% reporting that it would be hard to give them up (Vogels et al., 2022), suggesting the need for educational tools and support targeting digital wellbeing. Micro-interventions have been shown to produce immediate change in outcomes like body image and mental health benefits (Matheson et al., 2020). One key advantage of micro-interventions includes the capacity to integrate theoretically driven and contextually significant therapeutic techniques within existing digital devices, via mobile applications and platforms already used by adolescents (Kazdin, 2017).

#HalfTheStory—a 501(c)3 nonprofit with a goal of improving the relationship adolescents have with technology—developed Social Media U, a 4-week micro-intervention with companion digital app that helps young people navigate the bridge between emotional wellbeing and digital habits. The development process included consultation from the organization's teen advisory board and leading experts in adolescent development and curriculum design. This study focuses on the initial pilot of SocialMediaU with 13-15-year-old adolescents (n=154 pre, 198 post). Descriptive and correlational analysis of pre- and post-assessments of individual and average change in adolescent digital flourishing (Digital Flourishing Scale, 21 items), digital addiction (DAST-10), loneliness (ULS-6), trait anxiety (GAD-7), trait emotional affect (PANAS-10), adolescent sleep wake (ASHSr-10) and digital media use are considered based on a variety of demographics. Outcomes include changes in digital wellbeing, and self-reported perceptions of micro-intervention feasibility by participants is paired with mixed method survey data from facilitators regarding fidelity of implementation.

Analysis suggests significant increases in digital wellbeing-related measures, specifically digital flourishing (via the 21-item Digital Flourishing Scale for Adolescents). Correlations between DFS-A scores and other key variables are examined. Feedback metrics revealed that most participants reported favorable experiences and specifically note the relevance of the micro-intervention approach. Facilitators reported an average of 5.5 (out of 7) for program adherence and the same for perceived session success. At the student level, the variation of digital wellbeing is apparent in qualitative data regarding the program and individuals' goals. At the school-community level, school leaders detailed the "shared vocabulary" provided by the program for systems level impact in cultivating a climate of digital wellbeing. This pilot confirms the need for digital wellbeing programming and additional research on school-based digital wellness interventions. Future research should consider micro-intervention approaches that personalizes digital wellbeing programming to fit adolescent needs as they change over time.

COI DISCLOSURE: *The lead author is engaged in a community-practice partnership with a 501(c)3 nonprofit, #HalfTheStory, who assisted with data collection via their school-based interventions.*

#10 - Co-Design and Development of a Digital Wellbeing Mobile Application for Adolescents

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Evolutions in technology pose new challenges for adolescent development, especially as it pertains the relationship young people have with digital devices: digital wellbeing, a subjective experience, and a dynamic system contingent upon factors which are often not included in studies about screen time alone (Abeele, 2021). Past research has extensively studied the negative experiences and behaviors of adolescents online (Rosič et al., 2022) and focused on the effects of screen time on mental health (Hunt et al., 2021; Oberle et al., 2022). Aydin and colleagues (2021) established a connection between lower emotional recognition and different metacognitive beliefs and adolescent problematic social media use, suggesting that interventions focused on these skills may be fruitful for improving digital wellbeing.

To fill gaps left by cross-sectional and other quantitative studies, more qualitative research is needed (Orben, 2020). As such, the current study adopted a mixed method longitudinal qualitative research design to garner context-specific insight missing from many quantitative approaches (n=39). The "Poncho" app—a proposed digital wellbeing prototype--was initiated by a youth-led 501(c)3 nonprofit focused on: (1) co-creating a digital intervention with adolescents focused on digital wellbeing; (2) developing a mobile application that did not rely on addictive features; and (3) understanding the feasibility of this intervention. We conducted a thematic analysis of the app ideation process—via three 90-minute semi-structured focus groups and Braun and Clarke's (2006) analysis framework, (n=27)—and iterated features of the app that emerged over app development—via twelve 1-hour longitudinal co-design sessions with teen advisors and grounded thematic analysis of co-design deliverables (n=24). We also hosted a beta testing session with the final app (n=8). Participants ranged in age from 11-19 and represented diverse geographic backgrounds, race, and gender identities.

Focus groups displayed strong interest in a daily digital tool for facilitating reflexive thinking. Participants highlighted key concerns—social comparison, body image, time management, and online safety and violence—which aligned with key adolescent development challenges. Youth also discussed the inadequacies of current screentime tracking apps, suggesting that they did not like "feeling judged" for their time on device. The ongoing co-design process resulted in the addition of the following features: digital wellbeing goal setting, digital habit-focused journaling, guided meditations, and in-app resource lists and videos from other teams (i.e., "Teen Talk"). A technology check-in feature was designed to prompt momentary technology satisfaction levels as well as to gauge current emotional states (e.g., naming emotions/intensity). Beta testing revealed some interest in using the app long-term, with proposed feature changes. Future research should test the efficacy of using the Poncho app alongside a school-based digital wellbeing programs.

COI DISCLOSURE: *The authors are engaged in a community-practice partnership with a 501(c)3 nonprofit, #HalfTheStory, who assisted with data collection via their school-based interventions.*

#11 - Screen Time Reports Through the Eyes of Adolescents

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INTRODUCTION: It is well-recognized that adolescents spend considerable time on smartphones. Assessing screen time remains a relevant focus of research on children and screens. Yet self-reported estimates of media use (e.g., via questions like, "How many minutes do you spend on your phone on a typical day?") have proven imperfect proxies, and the value and validity of such self-reports is receiving increased scrutiny (e.g., Hodes & Thomas, 2021; Parry et al., 2021). What's more, research on adolescents' technology experiences clearly points to important variation in the nature and impacts of how young people spend their screen time: they use different technologies, in different ways, and with different impacts (Ito et al., 2020; Weinstein & James, 2022).

METHODS: We piloted an approach to capturing "annotated screen time reports" from eighth graders (n=46). We first developed instructions on capturing screen time screenshots with input from a teen advisory council and then generated a Qualtrics survey to enable de-identified screenshot uploads alongside individual annotations: reflections intended to provide the research team with additional context on how adolescents' view and interpret their own reports.

RESULTS: We find that annotated screen time reports may provide a useful way to collect objective smartphone use data from adolescents, along with context that might not be apparent to researchers from log data alone. To showcase potential strengths and challenges associated with this method, we share examples of individual screen time reports and reflections; we also report on methodological considerations for future research projects aiming to link objective screen time reports to subjective estimates and/or other variables. We will share with conference participants the iPhone and Android instructions developed by our team and refined by our teen advisors, as well as the prompts we used for annotations.

DISCUSSION: Collecting anonymous smartphone screen time logs along with adolescents' personal annotations may be a promising way to assess media use while empathically incorporating youth voice into data collection. Together, screenshots and adolescents' annotations can reveal adolescents' perceptions of their own screen time. Our pilot work also suggests the activity may itself be an intervention.

COI DISCLOSURE: *This project was supported by grants from the Mind & Life Institute, Susan Crown Exchange, and Pivotal Ventures, and an Indiana University Lilly Family School of Philanthropy Faculty Research Grant. The authors also disclose that they have an ongoing collaborative relationship with Common Sense Media and collaborated on the development of resources related to this project. Dr. Weinstein reports personal fees for speaking to K-12 schools and TikTok during the conduct of the research to be presented; she is also partial owner of an LLC, Tech Without Stress, and an advisor to Idoru. Weinstein and James also receive royalties for their book, Behind Their Screens: What Teens Are Facing (And Adults Are Missing).*

#12 - A New Measure of Mindful and Prosocial Digital Engagement (Map-De) for Adolescents

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INTRODUCTION Technology use by adolescents is now routine. Prior research suggests concerns about teens' technology habits, both for their well-being and their social interactions (Anderson & Jiang, 2018; Kowalski & Giumetti, 2017; Rideout & Robb, 2019). Yet, teens are more likely to use social media prosocially compared to antisocially (Erreygers et al, 2018). Indeed, youth social media use is associated with higher empathy (Vossen & Valkenburg, 2016; Martingano et al, 2022). Social media can contribute to friendship maintenance and support (Davis & Weinstein, 2017; Nesi et al., 2018; Yau & Reich, 2018), and broader prosocial, civic actions (Kahne, Allen, & Middaugh, 2015; Weinstein & James, 2022). We aim to build on and extend research on adolescent digital media use, which often focuses on screen time, problematic use(s), and/or risk(s). Instead, this study contributes to understanding of a fuller breadth of youth media uses and experiences and how we might measure and support positive experiences. We explore mindful and prosocial digital engagement as a way to amplify tech use that supports well-being and positive relationships. Specifically, mindful and prosocial digital engagement promotes slowing down, self-reflecting, using devices in ways that promote mental and physical health, considering others' perspectives with compassion, and acting prosocially.

METHODS & RESULTS: We created and validated a new scale: The Mindful and Prosocial Digital Engagement (MAP-DE) scale for teens following a multi-step process to develop, cognitively pretest, and refine survey items. We collected data from a diverse sample of teen participants (n=692) and conducted an exploratory factor analysis on an initial list of 44 items. This list was reduced to 17 items, with four factors (confirmed via CFA): two factors were negative (Mindless Use, Unhealthy Use) and two were positive (Empathy, Prosocial Behavior).Subscales of the MAP-DE scale had reasonable internal reliability, correlated in predictable ways with other outcomes (e.g. mental health, self-control, empathy, prosocial behavior), and had high test-retest reliability.

DISCUSSION: We propose mindful and prosocial digital engagement as a potential antidote to adolescent technology use that detracts from well-being and positive relationships, and we provide a new scale to facilitate future research. We have also pilot tested a real-world intervention to increase MAP-DE in middle-school students' classrooms, and our poster will share emerging insights from that project.

COI DISCLOSURE: *This project was supported by grants from the Mind & Life Institute, Susan Crown Exchange, and Pivotal Ventures, and an Indiana University Lilly Family School of Philanthropy Faculty Research Grant. The authors also disclose that they have an ongoing collaborative relationship with Common Sense Media and collaborated on the development of resources related to this project. Dr. James reports personal fees for speaking to K-12 schools, to TikTok, and at a conference sponsored by the Abu Dhabi Department of Education during the conduct of the research to be presented. In the recent past, James was part of Children & Screens' advisory board. Weinstein and James also receive royalties for their book, Behind Their Screens: What Teens Are Facing (And Adults Are Missing).*

#13 - Passive Sensing of Smartphone Usage in Teenagers in a Diverse National U.S. Sample: The Stony Brook University Measuring Electronic Devices in Adolescents (Media) Study

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Nearly 90% of American adolescents aged 13-18 owned a smartphone in 2021, indicating that tens of millions of adolescents have regular access to unlimited, convenient electronic entertainment throughout the day. Indeed, American adolescents report spending an average of over 8.5 hours daily on screens for entertainment purposes, about ½ of their waking hours. Despite these self-reports, there are currently no national studies providing validated objective data on adolescent smartphone usage.

The current study, the Stony Brook University (SBU) Measuring Electronic Devices in Adolescents (MEDIA) Study, proposes the first national surveillance study of smartphone use patterns in adolescents aged 13-18 in the United States. We are using passive sensing technology to collect national data with intentional oversampling for non-Hispanic Black, Hispanic, and Asian teenagers. Participants are recruited online through a market research firm to participate in this two-part study. The first part consists of an online survey to query demographic characteristics, smartphone ownership, reasons for electronics use, parental restrictions on smartphone use, online behaviors, and multiple areas of physical and mental health and wellbeing. At the end of the survey in part two, participants are invited through URL to install a meter that monitors their smartphone use passively for two weeks, providing information about the timing and duration spent using specific smartphone applications. The meter is installed as an application on Android phones and as a virtual private network (VPN) on iPhones. Data collection should be complete by July 2023.

With the survey and smartphone use data obtained, we will be able to report on the feasibility and limitations of passive data collection in a large, diverse sample. We intend to procure descriptive statistics of smartphone use across the entire sample (e.g., average number of total hours spent using a smartphone per day; average number of hours spent on social media per day) and by demographic groups of interest (e.g., by gender and race/ethnicity). Additionally, the survey data will allow us to examine the association between teens' reported reasons for smartphone use and parental restrictions on smartphone use with actual smartphone use. We will also be able to examine associations between smartphone use and a range of physical and mental health outcomes, such as body mass index, anxiety, attention, and body image, in addition to moderation analyses by characteristics such as gender and race/ethnicity. The SBU MEDIA Study will therefore provide important new information about smartphone use patterns across demographic groups in America's youth.

COI DISCLOSURE: *Study funding is from the Della Pietra family. Pamela Hurst-Della Pietra is the founder and president of Children and Screens. GMM and IR have no disclosures. DAR is supported by the Prevention and Methodology Training Program (T32 DA017629) with funding from the National Institute on Drug Abuse. DAC is Editor-in-Chief of JAMA Pediatrics, Chief Science Officer of Children and Screens: Institute of Digital Media and Child Development, and a consultant to Kiwi Crate. LH is on the scientific advisory board for Children and Screens. She has received consulting fees from Idorsia Pharmaceuticals and honoraria/travel support for lectures and consulting supported by Harvard University, University of Miami, New York University, Columbia University/Princeton University, and the National Sleep Foundation. She ended her term as Editor-in-Chief of Sleep Health in 2020.*

#14 - Designing With Kids: How Children and Adults Can Co-Create New Technologies

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Media for children should be designed so they actively engage with content, connect material to what matters to them, and have a joyful and social experience (Hirsh-Pasek et al., 2015). However, many apps are not designed to support these and other research-based principles (Vaala, Ly, & Levine, 2015).

One way to develop technologies that meet children's needs is to involve them in the design process. Child-centered design ensures that children play an active role in various aspects of this process. Druin (2002) defines four levels of involvement. As users, children are consumers of the technology after it's widely available. As testers, they try the technology before it's widely available and provide feedback ("playtesting"). As informants, children provide input at various points and engage in a dialogue with adult developers. As co-design partners, children are equal shareholders with adults throughout and engage in elaborating on each other's ideas.

How do these different types of child-centered design play out in practice? We conducted a set of case studies examining the application of these techniques for three product partners, to understand how to apply age-appropriate techniques and include different populations (total N=50 children). With our first partner, who is creating an AI bot to facilitate small group learning, we engaged children ages 7-10 in playtesting and co-design in an urban makerspace. With our second partner, who is creating an AI-based storytelling tool, we engaged children ages 8-13 in co-design in a university labspace. With our third partner, who is improving the scaffolds for a coding app, we engaged children ages 4-6 in playtesting at an afterschool program.

For the first and third partner, the playtesting involved helping children share their impressions of the product and give constructive feedback. To encourage more generative thinking, children were also asked to come up with their own ideas for new games and features, make prototypes, and share their ideas with each other and the adult designers. For the second partner, the two co-design sessions aligned with principles of Cooperative Inquiry (Fails, Guha, & Druin, 2013). Each small group of children partnered with adults to engage in ideation and co-creation.

In each case, the child-centered design sessions yielded numerous ideas for the product partners. These included recommendations for improving the technology's onboarding experience so that children would better understand what was possible, understanding the scaffolds needed by children of different ages, supporting well-being through creativity and inclusion/fairness, and adding avenues for personalization.

The long-term impact of the design collaborations is an ongoing research question we intend to explore by developing measures to capture the benefits for the child and adult designers involved as well as the products and whether they better align with principles of positive child-centered design.

COI DISCLOSURE: *This work was funded by a grant from the Walton Family Foundation.*

#15 - Between Toddlers & Tweens: Digital Media Transitions in Middle Childhood (Ages 8-11)

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INTRODUCTION: Middle childhood is often overlooked in media research (Stoilova et al., 2021, Odgers & Jensen, 2020) even though it is when children spend extensive time online, often unsupervised, and typically acquire their first cell phone and/or social media account–even though most platforms require youth to be 13 years or older. Research is limited on how youth 8-11 years navigate new digital environments, how they access digital spaces (i.e. which devices, solo or co-use) and how parenting shapes technology use (Odgers & Jensen, 2020, Valkenburg & Peter, 2007) . From discussions with 3rd-5th-graders, we describe how children transition to new digital spaces during middle childhood (Stoilova et al., 2021, Charmaraman et al., 2022).

METHODS: Semi-structured focus group discussions (n = 8 groups; 40 children) explored:

1) What digital media use (devices, platforms, activities, purposes, and partners) looks like from 8-11 years

2) How children transition to digital spaces, including first devices, platforms, activities, and parental supports

Partnering with afterschool programs and summer camps in California, focus groups were organized by grade level, gender, and household income. Group discussions addressed children's online activities, ages of device ownership, positive and negative experiences associated with specific platforms/devices, and rules about technology use. Child- and parent-completed surveys were triangulated with focus group data to provide insights into family practices.

RESULTS: All youth had access to a device (40% owned phone, 65% owned tablet, 75% shared a device with a family member, 100% had access to computer/laptop). However, the experience of first using and owning devices was not universal–some started texting friends on iPads in early elementary school, some received a family member's old/limited smartphone and upgraded later to a new smartphone, while others relied on smartwatches with parent approved contacts. Other than smartwatches, patterns of use were not linked to family income. Platforms and activities varied based on age and gender. Family context was related to device access and ownership (i.e. moving between different parent houses) and parenting rules around device use were mixed. Children described wanting to connect with others and find information, which often led to some risky behavior (e.g. talking to strangers, registering as an adult user on a platform) and exposure to content meant for adults (e.g. Seeing TikTok clips on YouTube shorts). Based on this, kids created strategies for managing online risks such as confirming friends' usernames before accepting connection requests and avoiding specific search terms online.

DISCUSSION: Researchers, parents, and policymakers want to promote wellbeing and limit risk for children online, but most research is focused on older tweens and teens (Odgers & Jensen, 2020). Rich, detailed descriptions of digital experiences can help advance our understanding of the various ways younger youth engage with technology and how it relates to their positive or negative experiences. Such insights can help inform age-appropriate design and child safety legislation (e.g. California Age Appropriate Design Code) to ensure policies match needs of young users.

COI DISCLOSURE: *No author has any conflict of interest to report.*

#16 - Developmental Courses of Youth Technology Engagement

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Youth development has become intertwined with an increasingly complex digital technology environment. The impact of various technologies on youth psychosocial development remains unclear due in part to inexact measurement of technology exposure (e.g., general "screen time"). The objective of this study is to develop a comprehensive and fine-grained characterization of how youth engage with various subtypes of digital technologies over time.

We examined youth Screentime Questionnaire (STQ) data collected during the first three waves of the U.S. Adolescent Brain and Cognitive Development (ABCD) cohort study (n= 11,876; 48% biologically female). The four waves of data collection occurred at youth ages 9/10, 10/11, 11/12, and 12/13 years. STQ items assessed youth's typical number of weekday and weekend hours spent: (1) watching TV shows/movies; (2) watching YouTube/Twitch; (3) playing single/multiplayer videogames; (4) texting; (5) using social media; and (6) video chatting. We used growth mixture models to identify technology use trajectories and examine predictors of trajectory class membership.

Preliminary analyses using the first three waves of data suggest three distinct longitudinal technology trajectory subgroups: "social" (e.g., texting, social media), "low-tech", and "gaming". Multinomial logistic regression indicated that biological females were 83% less likely than biological males to be classified in the "gaming" subgroup, but 186% more likely to be classified in the "social" subgroup ("low-tech" subgroup used as reference group in the model).

These results suggest distinct technology engagement trajectories may form during youth development. Additional planned analyses will test for (1) an optimal model of technology trajectories, (2) additional biopsychosocial predictors, and (3) the relationship between trajectories and the probability of endorsing psychosocial impairment caused by specific technologies (e.g., fights with parents due to excessive social media use). The ultimate goal of this project is to build a fine-grained developmental model that accounts for the diversity of distinct technologies available to youth. Such a model would provide researchers with a more informative characterization of youth technology exposure. Better characterization will, in turn, improve the quality of future research on the relation between technology use and important outcomes (e.g., substance use and mental health).

COI DISCLOSURE: *None. This project is supported by NIDA R21DA057535.*

#17 - Predicting the Highs and Lows: Media Frequency Classifications and Their Predictors Using Latent Profile Analysis

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Understanding the patterns of media use among children and teens has obvious import to researchers in the field as theories and targeted interventions that do not match the lived reality of this population will find little success. To that end, the current study presents results from a latent profile analysis focused on the frequency of different types of media use among children and teens between the ages of 8 to 18 years old. The authors also examined demographic predictors for class membership.

The data for this study was provided by Common Sense Media from a nationally representative survey of 1,612 children and teens. For the latent profile analysis, the authors focused on the frequency of media use (1 = "never" to 5 = "every day") for thirteen types of media use (e.g., using a computer for homework, playing mobile games, watching TV, using a smart speaker). Logistic regression analyses were then used to predict class memberships using a range of demographic and socioeconomic variables: child age, child biological sex, child race/ethnicity, parent education, parent employment status, parent marital status, household income, and the language that participants used for the survey (Spanish or English).

The results from the latent profile analysis revealed that a five-class solution was the most appropriate fit for the data. The distinct classes that emerged were labeled by the authors as media abstainers (i.e., children/teens who use media less than all other classes), social media mavens (i.e., children/teens who use relatively little media except they use social media quite frequently), non-social computer users (i.e., children/teens who use computers frequently but not for social connections), basic technology users (i.e., children/teens who frequently use general technology like television but not newer devices), and high technology users (i.e., children/teens who consistently use all technologies, particularly high tech devices like VR headsets). The subsequent logistic regressions revealed that child age, child biological sex, parent age, parent marital status, and whether the survey was taken in Spanish or English were consistently significant predictors for class membership.

The findings from this study provide a new way to understand child and teen media use where media use is not simply about low versus high use, but rather the categorially different ways that this population uses media and how demographic/socioeconomic variables predict such use.

COI DISCLOSURE: *The data for this study was provided by Common Sense Media, the authors have no other conflicts of interest to disclose.*

#18 - First and Non-First-Generation College Students and the Use of Technology

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The COVID-19 pandemic has impacted the academic success and well-being of college students (Lederer et al., 2020). This study examines first-generation college students' academic success while taking courses virtually during Fall 2020 during COVID-19 because this group often experiences academic difficulties (Chen & Carroll, 2005, as cited in Martinez, 2021). We compare them with non-first-generation college students. The specific focus is similarities and differences between the two groups on the use of technology for learning and how such use relates to students' support from others, motivation for learning, and GPA.

An online survey was emailed to undergraduate students at a mid-sized public university in the mid-Atlantic region of the United States in Spring 2021. Only students who had been enrolled and registered during the Fall 2020 semester were eligible to participate in this study. They were asked about their attitudes and behaviors in the Fall 2020 semester. We received responses from 126 first-generation and 304 non-first-generation students. The survey included questions about different factors that could positively or negatively affect self-reported GPA, as well as demographic questions. The different factors are based on Byrnes and Miller's (2007) opportunity/propensity model. Relevant factors included access to technology, family support, peer support, institutional support, supportive professors, home environment, financial stress, mental health, motivation, engagement, and GPA. First generation college students had significantly lower scores on access to technology than their non-first-generation peers. This is noteworthy because the university these students attended required all students to have their own computers and specifies minimum requirements for these computers.

First generation college students had significantly lower GPAs than their non-first-generation peers. First-generation students scored significantly higher in academic motivation and engagement. They also reported lower home environments, lower access to technology scores, and greater financial stress. Of particular interest was the relation between access to technology and the various factors listed above for each of the two groups of students. Easy access to technology was positively related to GPA for first generation college students but was not significantly related for non-first-generation students. Easy access to technology was significantly related to most factors (financial stressors, school support, home environment) for both groups but the relations were stronger for non-first-generation students. Digital media has come to play an increasingly important role in the educational and recreational lives of children of all ages. This role has increased significantly during COVID-19 (Sonnenschein et al., 2021). The results from this study show the importance of such technology for college students and how this differs for first and non-first-generational students.

COI DISCLOSURE: *N/A*

#19 - The Ongoing Impact of the Covid-19 Pandemic on Screen Time Among Canadian Youth

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INTRODUCTION: The COVID-19 pandemic resulted in significant changes in the health behaviours of youth in many countries. Although several studies suggested that screen time increased for youth early in the pandemic, longer term trends have yet to be examined in a nationally representative sample. The purpose of this analysis was to examine changes between 2018 and 2021 in the screen time of Canadian youth at the national and regional level, using the Canadian Community Health Survey (CCHS).

METHODS: The CCHS is nationally representative survey that asks youth 12-17 years to report their recreational screen time on school and non-school days. Screen time was compared between a pre-pandemic period (January to December 2018, n=3,952) and during the second year of the pandemic (January 2021 to February 2022, n=3,501).

RESULTS: The percentage of youth meeting the screen time recommendation on school days dropped from 40.7% in 2018 to 29.1% in 2021 and from 21.4% in 2018 to 13.2% in 2021 on non-school days. Although all regions saw reductions in the percentage of youth meeting screen recommendations, these changes were unequally distributed across the country. Ontario (School Days: -17.5%; Non-School Days: -11.0%), Atlantic Canada (School Days: -14.1%; Non-school Days: -10.3%), and British Columbia (School Days: -12.7%; Non-School Days: -8.8%) all saw greater than average reductions in the number of youth meeting the recommendations, whereas the Prairies (School Days: -7.9%; Non-School Days: -7.2%) and Quebec (School Days: -2.4%; Non-School Days: -3.0%) saw smaller than average changes.

DISCUSSION: The COVID-19 pandemic had a detrimental impact on the screen time of Canadian youth, with all regions seeing reductions in the proportion meeting current recommendations. Compared to the pre-pandemic period, significant reductions in the proportion of youth meeting recommendations persisted well into the second year of the pandemic. Future studies should examine whether these changes were associated with changes in other behaviours or health outcomes, and whether differences in policy during the pandemic can explain regional differences.

COI DISCLOSURE: *Dr. Saunders reports no potential conflicts of interest.*

#20 - Online and Offline Friendships Throughout the Pandemic in Latin America

Alexia Carrizales[1*], Gabriela Fernandez Theoduloz[2*], Marissa Arreola Vargas[3], Lucía Magis-Weinberg[3] *(*joint authors)*

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INTRODUCTION: Adolescence is a crucial developmental stage characterized by salient importance of peers (Brown & Larson, 2009), transformational intrapersonal changes in identity, and the increased need to belong to peer groups (Baumeister & Leary, 1995). The social isolation that has resulted from the COVID-19 pandemic has led adolescents to interact more frequently through online means (Common Sense Media, 2022). However, despite the increase in social media adoption among youth growing up in low and middle-income countries (LMICs) there is a dearth of research on online friendships and their associations in adolescent mental health.

METHODS: Our sample consisted of 1927 students (55% female, ages 10.5-17.5 (M = 13.6), from LMI families in Perú. Participants reported on feelings of depression and completed an adapted Online-Only Friendship scale. Participants reported having more friends in-person than online-only. Boys had significantly more online-only and in-person friends than girls. Older grades (9th to 11th) had more friends than younger grades (6th to 8th), both online-only and in-person.

RESULTS: Overall, participants endorsed feeling more or similar levels of closeness, trust, and support with in-person friends than online-only friends. In contrast, participants endorsed higher levels of similar interests with online-only friends versus in-person friends. There were sex differences in all these indices. Boys endorsed significantly greater levels of closeness for their in-person friendships than girls ($b = 0.18$ ($SE = 0.03$), $t = 5.42$, $p < .001$). Boys also endorsed stronger feelings of trust ($b = 0.18$ ($SE = 0.03$), $t = 5.91$, $p < .001$) and support ($b = 0.22$ ($SE = 0.03$), $t = 6.98$, $p < .001$) from in-person friends, while girls felt about equal levels of trust and support from a both in-person and online-only friends. Girls endorsed having greater levels of similar interests with online-only friends ($b = -0.19$ ($SE = 0.03$), $t = 6.32$, $p < .001$), while boys reported about equal amounts of similar interests for both in-person and online-only friends. Finally, in a model controlling for sex and grade there was a main effect of the difference in the number of online-only friends and in-person friends on depression. Having more online-only than in-person friends was associated with higher levels of depression symptoms ($b = -0.04$ ($SE = 0.01$), $t = -6.46$, $p < .001$).

DISCUSSION: In conclusion, we found that older adolescents have more friends, both in person and online-only friendships. Online-only friendships might be particularly important for sharing interests with others. However, having more online-only than in-person friendships was associated with higher feelings of depression, especially for girls. Currently we are extending this project in Bolivia and Uruguay and to date have collected data from 10 schools across grade levels 5-11 (N=1279).

COI DISCLOSURE: *Dr. Carrizales reports no conflict of interest, grant from SRA Small Grants Program for COVID-19 Global Scholars/Templeton Foundation to Alexia Carrizales and Gabriela Fernández during the conduct of the research to be presented.*

#21 - Trajectories of Digital Stress and Well-Being Among Peruvian Adolescents During the Covid-19 Pandemic

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Increased sociability and connectivity are clear benefits of the online world. However, these can also become a source of digital stress with negative consequences for youth well-being. Digital stress, which is characterized by a person's own response to distressing events occurring online, consists of approval anxiety, availability stress, fear of missing out, connection overload, and online vigilance (Steele et al., 2020). With the increased dependency on digital platforms during the COVID-19 pandemic, it is important to characterize digital sources of stress for youth to minimize its negative effects.

We investigated the association of digital stress and well-being with a sample of 698 students (66% female) in school grades 6 to 11 (ages 11-17) from low- and middle-income youth in Perú across two time-points. In July and November 2021, participants self-reported on the Digital Stress Scale (DSS; Hall et al., 2020), the Patient-Reported Outcomes Measurement Information System Pediatric Item Bank v2.0 – Anxiety Short Form, and the Patient-Reported Outcomes Measurement Information System Pediatric Item Bank v2.0 – Depressive Symptoms Short Form (PROMIS-Anxiety, PROMIS-Depression; Quinn et al., 2014). Longitudinal analyses were conducted to identify the trajectories of digital stress and internalizing symptoms. PROMIS severity categories were observed.

Adolescent girls endorsed higher rates of overall digital stress and anxiety than males. Results also showed that adolescent girls endorsed higher rates of approval anxiety, FOMO, and online vigilance. Adolescents who fell in the severe anxiety category reported increased digital stress compared to adolescents in the normal, mild, and moderate categories. This was also the case with adolescents who fell in the severe depression category. Older grades reported higher rates of depression and anxiety symptoms. In addition, older grades reported higher digital stress, driven by approval anxiety and FOMO.

In summary, we find that females and older adolescents endorse more digital stress, and that this is related to symptoms of anxiety and depression. These results from a large Peruvian sample of youth during the pandemic contribute to our understanding of how increased connectivity can also be a source of stress. Future interventions should work towards reducing digital stress for adolescents and promoting the positive aspects of digital media especially as the online context becomes a prominent space for youth.

COI DISCLOSURE: *The authors report no potential conflicts of interest.*

#22 - Positive Online Experiences Reduce Loneliness During Two Years of Remote Education in Response to Covid-19: A Longitudinal Study of Peruvian Youth

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BACKGROUND: Social media use can facilitate feelings of social support, social capital, and belonging in adolescents, suggesting that these online platforms may be able to ameliorate the toll of physical isolation on wellbeing. While adolescents all around the world experienced considerable challenges, systemic disruptions varied widely by region and country. In Perú, the study where this study was conducted, adolescents were in remote education for two full academic years. In a previous a short-term longitudinal study, we described how positive and negative online experiences had different associations with loneliness at the beginning of the pandemic, when Perú experimented a particularlly strict confinement (Magis-Weinberg et al., 2021).

METHODS: Here, we present an extension of this study across a longer period of time, as adolescents continued to attend school remotely and were prevented from meeting with peers in person. In our longitudinal, three wave observational study following 350 Peruvian adolescents (11 - 17 years) from low-to-middle income urban settings, we investigate whether positive online experiences reduce loneliness that could result from being isolated from friends and classmates. Adolescents self-reported on positive and negative online experiences (Kent de Grey et al., 2019), and feelings of loneliness (UCLA Loneliness Scale, ULS-8) in April 2020, July 2021 and November 2021.

RESULTS: While adolescents experienced both positive and negative interpersonal online experiences, positive experiences were much more frequent overall. Over the course of the pandemic, the frequency of negative experiences increased, while the frequency of positive experiences remained constant. Throughout, female adolescents and older adolescents reported higher levels of both types of experiences than male adolescents. Furthermore, we show that positive online experiences relate to reduced feelings of loneliness and moderate the change in loneliness. In contrast, negative online experiences had the opposite association. Crucially, we find that positive and negative experiences have opposite associations with loneliness at the within-person level.

DISCUSSION: Our findings underscore the importance of assessing positive and negative experiences in tandem to more fully characterize the association of social media use with adolescent well-being. Our results highlight the association of online experiences and wellbeing, suggesting how positive online experiences can be an important vehicle for peer relationships in the face of lockdown.

COI DISCLOSURE: *This project was funded by the University of Washington Department of Psychology start-up funds to Dr. Magis-Weinberg.*

#23 - Digital Media (DM) Use Among Israeli Adolescents After Covid-19

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BACKGROUND: COVID-19's outbreak in March 2020 and the social distancing measures that followed changed children's lives worldwide. Studies assessing the pandemic's implications for children have reported an alarming increase in digital media (DM) and warned of its adverse impacts on children's functioning and development. In this study, we were interested in assessing the implications of increased DM use during COVID-19 on children's social-emotional and academic functioning. In particular we were interested in understanding the differential effects of DM addiction compared to DM usage time on adolescents' functioning. Furthermore, we aim to investigate whether children whose parents use negative parenting practices and children with behavioral dysregulation are at risk of developing higher rates of DM addiction and excessive DM use.

METHODS: Two-hundred one dyads (M age = 12.73, SD = 1.34) participated in two time points conducted during COVID-19 (April 2021) and after the pandemic (May 2022). Parents and children were instructed to separately complete measures assessing children's DM use (time and addiction), functioning (academic, social, emotional, and behavioral), behavioral dysregulation, and parental practices.

RESULTS: The results showed that DM addiction, but not DM use, was related to children's emotional, behavioral, and academic difficulties at both times. Moreover, the results showed that DM use and DM addiction, as well as the child's emotional and behavioral difficulties were significantly reduced compared to time 1. However, adolescents whose parents used negative parental practices and those with behavioral dysregulation showed smaller declines in DM addiction symptoms.

DISCUSSION: The study results highlighted the difference between DM use and DM addiction as two related but different constructs that may have distinct implications for adolescents' functioning. Moreover, these results highlight the need to identify children at high risk of developing problematic and addictive DM use, such as those with behavioral dysregulation, and emphasize parents' role in preventing problematic and addictive DM use.

COI DISCLOSURE: *None*

#24 - Problematic Media Use Across Early Childhood

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Though many children effectively manage media, as many as 10% of individuals develop addictive or pathological media use, where media interferes with daily functioning. Outcomes of pathological media use can be severe, including depression, anxiety, aggression, impulsivity, and problems in academic, work, and family settings (e.g., Gentile, 2009). Despite the severe outcomes associated with pathological media use later in life, researchers know very little regarding what factors increase this risk or how to prevent children from developing pathological media use. Though young children do not typically show pathological media use, several studies have begun to observe "problematic media use" during early childhood (Domoff, et al 2019). These behaviors are likely a precursor to the pathological media behaviors we see later in development, though these behaviors are less severe and likely more modifiable in younger children who are relatively inexperienced with media. This four-year study will be the first to examine the stability of problematic media use (PMU) across early childhood (ages 2-5 years old). Participants included 269 children from Project M.E.D.I.A. – a longitudinal study with the intent to examine media effects on child development. Research assistants visited participant families in their homes once a year for four years. Problematic media use was assessed through parent report and supplemented with in home observations. We examined a variety of individual (temperament, impulsivity, child media use) and parenting factors (relationship, parent PMU, media monitoring, technoference, parent stress) as possible predictors. Child internalizing and externalizing behaviors were viewed as both predictors and outcomes. A growth curve model was created and model fit was acceptable, $X2$ (69) = 92.45, p = .03, CFI = .97, TLI = .94. Problematic media use increased over a three-year period during early childhood (approximately ages 2-5) (see Figure 1). Early anxiety, β = .47, p = .02, poor self-regulation, β = .62, p = .01, and a difficult temperament, β = .47, p = .02, predicted a steeper growth in PMU over time. Additionally, the slope of PMU was associated with aggressive behavior at the final time point, β = .58, p < .001. Though problematic media tends to be studied from age 5, we find significant evidence that problems predate this age. PMU tends to increase over time and is relatively stable year to year. Focusing on early childhood is likely a way to prevent PMU problems from occurring in the future.

COI DISCLOSURE: *Dr. Coyne discloses that she has been retained as an expert witness for Meta for her existing research on social media and mental health. She also reports payments for presentations from a number of prevention conferences on social media and mental health.*

#25 - Is Problematic Media Use Present Among Preschool-Aged Children?

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INTRODUCTION: Problematic media use (PMU) is dysregulated media use that interferes with functioning and well-being. PMU has been operationalized for preadolescent children, yet the validity of that scale in preschool-age children is unknown. This study's goal was to describe PMU among preschool-age children, including correlates with media use, externalizing behaviors around limits set on media use, and measures of behavioral self-regulation.

METHODS: Children (3-to-5-years-old) and one parent each enrolled in 2019-2022. Parents completed the 9-item, validated PMU scale for 4-to-11-year-olds (Domoff et al., 2019). The final score is a mean (range from 1 to 5); higher scores indicate more severe PMU. Parents reported on children's usual media use across five device types, condensed as mobile (touchscreen tablets, smartphones) and non-mobile (TV/DVD/VCR, computers, videogame consoles) media. Parents reported on the severity of children's externalizing behaviors when limits were set on media use using a 4-point Likert scale for severity from "not at all bothersome" to "very bothersome." The frequency of the following externalizing behaviors was next reported on a 4-point scale from "never" to "a lot": child whining, crying, making physical gestures like stomping, or physically taking a device after the parent said no to media use, each reported separately. Parents reported on children's behavioral regulation (emotional self-regulation, attentional focusing, and inhibitory control) with separate validated scales.

RESULTS: Among the 85 children, 57% were male, 89% white non-Hispanic, 78% of parents were college graduates, and 68% of families had annual incomes ≥$65,000. Internal consistency of the PMU scale was good ($\alpha = 0.86$). PMU scores averaged 2.1 (SD: 0.63). Few (n=7; 8.2%) had a final PMU score ≥3; 19 (22.4%) scored ≥3 on 5 or more of the 9 individual items. In a series of linear regression models adjusted for child age, sex, and household income, a greater weekly time using mobile media (standardized beta, $b_s = 0.25$; $p=0.02$) and non-mobile devices ($b_s = 0.21$; $p=0.05$) related to greater PMU scores. PMU scores were positively related to increasing bothersome pestering to use media ($p<0.001$), as well as increasing frequency of each externalizing behavior when pestering to use media (each $p<0.001$). Worse child emotional self-regulation ($b_s = -0.24$; $p=0.038$) was also related to greater PMU scores, with worse inhibitory control ($b_s = 0.20$; $p=0.08$) trending towards statistically greater PMU scores and attentional focusing $b_s=0.07$; $p=0.49$) unrelated to PMU scores.

DISCUSSION: Variability in PMU was present in this sample of preschool-age children. PMU was associated with media use and strongly related to bothersome externalizing behaviors when children pestered to use media. PMU also correlated with child emotional self-regulation. This sample reflects a largely white, rural population of higher socioeconomic status. However, findings support the validity of this PMU measure for preschool-age children.

COI DISCLOSURE: *This research was funded by the National Institute of Health (K01DK117971, PI: JAE). The funder had no role in the design, conduct, and analysis of the study. JAE has no conflicts of interest. SED receives honoraria to present research on problematic media use at non-profit organizations, schools, and hospital/health systems. She has consulted with health systems about problematic media use and mental health. She is on the board of the Smart Gen Society.*

#26 - Communication-Related Predictors of Childhood Problematic Media Use: A Systematic Review Guided by Interaction Theory of Childhood Problematic Media Use

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Children today are growing up as active consumers of media, with a significant amount of screen time exposure. However, high screen time has been linked to negative outcomes in child development, such as poor sleep quality, lower self-regulation skills, and higher sedentary behavior. Not only that, but children also grow unhealthy habits of media use and develop problematic behaviors due to overdependence on media devices. Such problematic behaviors are theorized as problematic media use (PMU) in existing research.

The interactional theory of childhood PMU (IT-CPU) suggests that the etiology of problematic media use can be explained by three levels of factors: distal, proximal, and maintaining. Distal factors indirectly affect children's PMU by creating a climate where a higher risk of developing PMU habits exists, while proximal factors directly influence and maintain PMU habits of children over time. Maintaining factors interact with proximal factors to sustain the effect of proximal factors on childhood PMU. Understanding the risk factors that contribute to PMU in children is essential for developing prevention interventions for families.

The IT-CPU emphasizes two important aspects in researching childhood PMU. First, it suggests that both parents and children contribute to maintaining PMU by children. Yet, IT-CPU does not consider parent-child communication patterns as a contributing factor. Second, IT-CPU states that PMU is not a simple excessive use but the following behaviors that indicate children's overdependence on media devices. Yet, the original authors of the theory suggested that the current research on childhood PMU is operationalized in many ways (e.g., excessive use, overdependence, etc.). Based on these two issues noted by IT-CPU, the present study systematically summarizes current research on the risk factors of childhood PMU guided by Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA). The review aims to answer two research questions: 1) How does the current literature conceptualize and operationalize PMU? and 2) Are parent-child communicative factors examined as driving factors of childhood PMU?

The systematic search resulted in five articles in total. The study found that every study examined PMU as a behavioral problem associated with excessive media use, not as mere high screen time. Moreover, there were more non-communication factors than communication factors that are examined as the drivers of PMU in the current review.

This study provides new insights regarding how unified the use of childhood PMU is within the research context and how the parent-child communication factors are not well investigated within the area of childhood PMU research. Future studies should focus more on how parent-child communication factors contribute to childhood PMU.

COI DISCLOSURE: *The author has no conflicts of interest to disclose.*

#27 - "I Am Feeling So Burnt Out": A Longitudinal Analysis of Parents' Perceptions of Child Screen and Problematic Media Use From 2019 to 2021

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INTRODUCTION: Parents, practitioners, and researchers are concerned about children's screen media use (SMU) and problematic media use (PMU: excessive media use leading to dysfunction in at least one life domain; Domoff et al., 2019, 2020) during the COVID-19 pandemic. While there were increases in both SMU and PMU from pre-pandemic (2019) to post-pandemic onset (2020) (Eales et al., 2021), it is unclear how media use has changed since the 'return to normal' in 2021, when children were back in school. Hence, this mixed methods study examined how children's SMU and PMU changed 2019-2021.

HYPOTHESES: We hypothesized that (1) SMU and PMU would quantitatively decrease from 2020-2021, (2) qualitative themes from 2019-2020 would remain salient in 2021, and (3) child age and negative parent perceptions of media use would be related to higher SMU and PMU.

SAMPLE: 316 parents with ≥2 years of data across three years were included: 265 had data in 2021. There were 309 mothers of children (164 girls; M2020age=5.42, SD2020age = 2.38, Range2020age=1.58–13 years), most living in Minnesota, USA. Our sample was primarily White parents with White children (85.3%), with middle-/upper-tier incomes.

METHODS: Parents completed online surveys from 2019-2021 that included child's SMU (Rideout, 2017) and PMU (Domoff et al., 2019). Parents also reported on their thoughts about their child's media use during the pandemic in open-ended boxes. We used Kruskal-Wallis tests, mixed effects modeling, and thematic and content analyses (Braun & Clarke, 2006).

RESULTS: Quantitative: There was an upside-down U shape of the trajectory of both SMU and PMU across 2019-2021. 2019 SMU per day (in minutes, M = 98.3) was significantly lower than 2020 SMU per day (M =153.37), which was subsequently higher than 2021 SMU (M = 134.6). 2019 PMU (M = 1.91) was significantly lower than 2020 PMU (M = 2.09), which was subsequently higher than 2021 PMU (M = 2.0). Higher child age was associated with higher SMU and PMU across all three years, and parents perceiving media as hurtful was associated with higher PMU across all three years.

Qualitative: Most codes from 2020 were still present in 2021 (e.g., "screen use should be monitored and limited," "families are struggling with device use"). While some families were feeling better about their children's media use (new code "Back to pre-COVID screen time levels"), new codes indicated that many families were still struggling (new codes "holdovers in screen time from 2020," "parent sanity > fighting about screen time").

CONCLUSION: Overall, there was some "return to normal" for both SMU and PMU in 2021. However, qualitative findings show that while some parents feel better about their child's media use, many parents still struggle.

COI DISCLOSURE: *Ms. Eales has no disclosures to report.*

#28 - Evidence-Based Problematic Gambling and Gaming Youth Prevention Education in a Learning Management System (LMS): How an LMS Can Be an Educational Teaching Tool to Reduce High-Risk Behaviors and Increase Knowledge to Empower Youth to Make Smart Choices

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Alison Wood-Drain partnered with Dr. Robert Wood and Dr. Robert Williams, University of Lethbridge researchers and Stacked Deck authors, Dr. Stephanie Diez-Morel, researcher and clinician, and Jamie Edwards, Director of the NC Technical and Training Center, to update the only evidence-based youth problem gambling prevention education curriculum Stacked Deck. The update included digitizing the curriculum, translating it to a learning management system (LMS), and releasing this new version to 700 students throughout the state of North Carolina. The specialist recorded the curriculum by dividing each lesson into short segments (approximately 6-8 minutes each). Each segment included a question and answer portion that each student would answer independently. The original Stacked Deck curriculum was a total of five lessons, the first four included: modern commercial gambling, problem gambling, gambling fallacies, and learning to take healthy risk. The fifth lesson was a gamified quiz within the LMS. The revised curriculum included two bonus lessons in gaming disorder and emotional regulation skills. Pre-survey data was collected prior to the students completing the curriculum and post survey data was collected three months after the students completed the curriculum. The teachers were provided training in understanding youth problem gambling and gaming, the Stacked Deck curriculum, and how to implement the program in an LMS. The teachers were offered two methods of completing the curriculum: 1)on one screen in a teacher-led model where the students would login to answer questions or 2)implement the curriculum in a self paced autonomous student led-model by having students' login, watch the videos independently, and answer the questions on their own. After examining the data, the results indicate that the curriculum is effective when delivered in a LMS and can be an excellent tool for teachers to deliver youth prevention education using this modality to reduce high-risk behaviors and increase knowledge to empower youth to make smart choices. Overall, the data indicated a 5% decrease of gambling engagement and behaviors including gambling in video games after completing the curriculum. Other notable findings include a 25% increase of gambling knowledge, 27% increase in understating gambling history, a 23% increase in awareness of gambling fallacies, and a 29% increase in revealing misconceptions of smart gambling. Since the review of the program, the gaming lesson has been updated to include gaming and digital media overuse. In 2023, Alison Wood-Drain partnered with Tessa Jolls, President of the Center for Media Literacy, to add a lesson on media literacy, persuasive design, and marketing and advertising techniques in gaming, gambling, and digital media use. The curriculum will continue to be evaluated utilizing pre and post survey data collection each year.

COI DISCLOSURE: *No conflict*

#29 - Adolescent Perceptions of Social Media Use on Well-Being

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Social media plays a significant role for adolescents aged 13-18 in the U.S., with one report indicating an average daily screen time of over eight hours, and 17% of that time spent using social media (Rideout et al., 2022). Research has underscored the potential negative effects of social media usage, including heightened anxiety, depression, and body dissatisfaction, particularly for girls (Keles et al., 2020; Kelly et al., 2018). However, adolescents' perceptions of social media's impact on their well-being remain unclear; investigating these beliefs could help investigators determine areas relevant for intervention. This study aims to showcase adolescents' self-reported social media use, their behaviors on these platforms, and their perceived impacts of social media use on well-being indicators.

We surveyed a diverse sample of adolescents in the U.S. (13 to 17 years old, N=1502, 48.1% male; 48.2% female). We asked participants 1) what platforms they use daily, 2) the frequency of participating in different social media behaviors (e.g., watching videos) (1=never; 5=every time), and 3) their perceived effect of social media use on indicators of well-being including social relationships, body image, and anxiety (1=a lot worse; 5=a lot better).

YouTube (79%) and TikTok (70%) were the top platforms adolescents reported using daily over the past week. Adolescents reported that "every time" they used social media, they watched videos (35%), direct messaged (22%), and browsed others' posts/stories (22%). Overall, they reported positive impacts of social media on their social relationships (M = 3.49) and mood (M = 3.47) but perceived negative impacts on their body image (M = 2.9) and anxiety (M = 2.93). Girls were more likely than boys to report negative effects of social media overall (girls = 2.99; boys = 3.28), particularly regarding mood (girls = 3.32; boys = 3.64), body image (girls = 2.69; boys = 3.13) and anxiety (girls = 2.81; boys = 3.05).

Findings provide important benchmarks for measures of adolescent social media use, showcasing that adolescents are generally optimistic about the effects of social media on aspects of their well-being. However, exceptions lie in anxiety and body image, which may indicate important avenues for further education and intervention. Consistent with previous research, girls perceive more negative impacts of social media than boys. The high prevalence of adolescents watching videos and browsing content points to potential intervention strategies for social media companies, such as stronger algorithms or other methods to detect and remove content that targets girls' body image (e.g., posts or videos promoting disordered dieting or exercise). Results further indicate the need to provide young girls with education and support to reduce anxiety and ensure they are thriving in online spaces.

COI DISCLOSURE: *There are no conflicts of interest to report.*

#30 - Differential Effects of Social Media Use on Adolescent Depression, Anxiety, and Loneliness: A Mixture Modeling Approach in a Sample of Adolescents From the United States and South Korea

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Although much of the discussion surrounding adolescent mental health has pointed to the rise of social media, empirical research on the link between adolescent mental health and social media use still does not paint a clear picture and remains heavily nuanced (Valkenburg et al., 2022). Empirical research sensitive to the person-centered nuances and specific effects of social media use on adolescent mental health has largely examined samples in the United States and Western Europe. As countries all around the world have different regulatory policies and cultural practices around social media use, the lack of cross-cultural research greatly diminishes researchers' ability to make meaningful policy recommendations and support the well-being of adolescents all around the world.

We wanted to understand if there were subgroups of adolescents who experienced differential relationships between social media use (time, pathological use, and social media use for connection) and mental health (anxiety symptoms, depressive symptoms, and loneliness) – in a sample of adolescents from the United States and South Korea (total N = 2,212). We were also interested in understanding how different developmental (age, self-regulation), social (parent education, peer belonging, and country of residence), and dispositional (gender identity, sleep) susceptibilities related to adolescents' relationship with social media use and mental health.

Using a mixture modeling approach, we identified two subgroups of adolescents. Adolescents in group 1 (N = 193, 8.73%) experienced higher mean levels of mental health challenges overall and showed a positive relationship between time spent using social media and anxiety and loneliness, but a negative relationship between time spent using social media and depression. There was no significant relationship between social media use for connection and mental health or pathological SM use and mental health for this group.

Adolescents in group 2 (N = 2,019, 91.28%) experienced lower mean levels of mental health challenges overall and did not demonstrate a significant relationship between time spent using social media use and mental health. This group, however, demonstrated a consistent positive association between pathological SM use and mental health, and SM use for connection and loneliness.

Adolescents in the first group reported lower levels of self-regulation and were more likely to be from the United States compared to adolescents in group 2, who were more likely to be from South Korea.

Policymakers in the United States may consider the unique policies South Korea has implemented for adolescent SM use, as it is possible that these policies provide a protective context for South Korean adolescents. Our analyses indicate that not only does the effect of social media use differ on an individual-by-individual basis but is differentially related to different facets of mental health even within the same individual at the same point in time.

COI DISCLOSURE: *None*

#31 - The Quality of Adolescents' Social Media Experiences - Not Just Quantity - Predicts Mental Health Impact

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BACKGROUND: Observed associations between screentime and symptoms of anxiety and depression in adolescents have led to concern about the detrimental effects of online activity. Social media has been a high profile target due to bullying behavior, images of unrealistic lifestyles, and idealistic physical attributes. However, social media also creates opportunities for adolescents to find people with whom they share valued identities and to communicate with friends. This type of social connectedness is important to mental health, particularly during adolescence. One hypothesis about why social media is detrimental is that replaces other beneficial forms of interaction. The goal of this study was to examine whether online belongingness – the degree to which adolescents feel supported – moderates the associations between time spent on social media, depression, and anxiety. Further, we explored whether social media time (SMT) and online belongingness were associated with time spent on the phone or Facetiming with friends. Finally, we explored whether outcomes varied by gender.

METHODS: Adolescents were recruited through social media in spring 2020 and assessed 10 times over 18 months. Consenting participants completed online questionnaires (PHQ-9, GAD-7, Online Belongingness Scale) and reported on daily average SMT, phone time, and Facetime. Multilevel models (MLM), assessed associations between PHQ-9, GAD-7, gender, social media time, and online belongingness over 18-months.

RESULTS: Participants' (N=332; 88% female; age 16.5[1.28]) PHQ-9 (M=10.76[7.3]) and GAD-7 (M=8.44[6.14]) scores were correlated with SMT (M=255.34[172.68] minutes; PHQ r=0.12, p<.0001, GAD r=0.14, p<.0001) and online belongingness (M=9.48[3.93]; PHQ r=-0.34, p<.0001, GAD r=-0.26, p<.0001). Phone time (M=48.06[125.85] minutes) was associated with PHQ(r=0.07, p=019) and GAD-7(r=0.06, p=0.032). Facetime (M=54.11[132.82] minutes) was not correlated with PHQ-9 or GAD-7. SMT and online belongingness were correlated (r=0.13, p<.0001). SMT was correlated with phone time (r=0.18, p<.0001) and facetime (r=0.21, p<.0001). In MLM, Facetime and phone time were not associated with PHQ or GAD. SMT was positively associated with PHQ (B=0.003, p=0.019) and GAD (B=0.003, p=0.011), online belongingness was negatively associated with PHQ (B=-0.47, p<.0001) and GAD (B=-0.25, p<.0001). The SMT/online belongingness interaction was not significant in either model. Relative to boys and nonbinary youth, girls with higher SMT had higher PHQ-9 (B=1.18, p=0.009) and GAD-7 (B=0.84, p=0.032) scores. The interaction of gender and online belongingness was not significant.

DISCUSSION: Adolescents who are active online may also spend more time communicating by phone or Facetime. For those who experience high levels of online belongingness, social media may improve mental health outcomes. Relative to other youth, the negative effects of SMT may be more pronounced for girls. To understand the mental health impact of social media, both the quality and quantity of adolescents' online experiences must be considered.

COI DISCLOSURE: *Dr. Van Meter receives salary support from a K23 Career Development grant from the National Institute of Mental Health*

#32 - Digital Media, a Protective Buffer for Queer Teens Against Anxiety, Depression, and Suicidality

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Unsettling findings regarding LGBTQ+ teens continue to emerge regarding their increased risk for mental health concerns, including anxiety, depression, and suicide. Stigma management theory postulates that stigma can lead to poor health outcomes, such as increased mental health symptoms. Individuals can minimize negative health outcomes through stigma management strategies, such as bonding, disclosure/displaying, making favorable social comparisons, or normalizing the stigma. Due to the technological advancements and ubiquitous nature of social media, socially oriented screen time (SOST) provides an avenue for stigmatized LGBTQ teens to develop a community, explore and accept their identities, and avoid potentially stigmatizing realities. A review of LGBTQ teens' media use by Berger and colleagues (2022) revealed that queer teens use more social media than their straight-cis-gendered peers and their social media use was related to increased well-being and lower mental health concerns. However, there is limited research on the longitudinal buffering effect of SOST for queer teens. Herein, we propose the SOST Buffering Hypothesis, predicting that LGBTQ+ identifying teens experiencing stigma, SOST moderates the levels of depression, anxiety, and suicidality.

The analyses use data from the Adolescent Brain Cognitive Development Study (ABCD), a national longitudinal study of over 11,000 teen participants. Two annual time points are used T1 (when the teens are 11-1), and T2, the following year. This age group was chosen based on the increase reports of youth identifying as LGBTQ+ identities compared to earlier ages. Gender and sexuality are measured through teens reporting on their identification with different labels (e.g., gay, lesbian, bisexual, transgender, or other). SOST is the teens' average time spent on devices with socializing affordances such as: playing multi-player video games, texting, or sending messages, using social media apps, video chatting, and talking on the phone. Lastly

Hypothesis testing utilized Andrew Hayes' "PROCESS" macro, model 3, v4 for R 4.2.2 (2022). LGBTQ+ status was used as the independent variable, predicting each mental health outcome at T2, moderated by SOST, and controlling for previous mental health symptoms at T1.

The results indicate that for LGBTQ+ individuals, SOST is a moderating protective factor for anxiety and depression but not for suicidality. Based on Stigma Management Theory, socially oriented screen time can be classified as an effective method of active stigma management. While the ABCD study provides a diverse group of LGBTQ+ teens throughout the country, our results do not examine the depth of media affordances nor content during LGBTQ+ teens' screen time engagement. Future research should examine the longitudinal effects of media content impact of LGBTQ+ mental health outcomes.

COI DISCLOSURE: *The authors of this paper have no conflict of interests*

#33 - Associations Between Adolescents' Online-Only Friendships, Depressive Symptoms and Social Media Experiences

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Feelings of social connectedness buffer against depression. Given the increasing rates of depression and social media (SM) use in adolescence, during which peer relationships gain utmost importance, it is important to understand how SM could offer opportunities for social support. Online-only friendships (OOFs; i.e., exclusive to SM platforms) could offer an extra layer of social support and increase well-being. Alternatively, OOFs may reduce in-person interactions, potentially limiting teens' opportunities to build long-term friendships. However, little work has examined the links between OOFs, well-being and SM experiences (Massing Schaffer et al., 2020.

We investigate associations between having an OOF and both depressive symptoms and emotional reactions to SM. Furthermore, we explore how these outcomes are associated with the perceived relationship quality of OOFs. 780 U.S. teens aged 13–19 (M=15.59, SD=1.18) completed online surveys during school hours as part of a longitudinal study investigating adolescent development and SM use. Teens reported whether they had any OOFs, and, if so, the relationship quality (i.e., levels of intimate disclosure) of the OOFs. Additionally, teens completed the Short Mood and Feelings Questionnaire (Angold & Costello, 1987) as a measure of depression, and Positive and Negative Experiences on Social Media (Nesi et al., 2021) as an assessment of their emotional responses to SM experiences.

Three ANCOVAs compared three groups: teens with no OOFs (n=370), teens with high-quality OOFs (n=195), and teens with low-quality OOFs (n=215). Analyses controlled for age and gender. There was a significant association between OOF status and depressive symptoms $F(2,779) = 15.40$, $p<0.001$. Further post-hoc comparisons revealed that having high-quality OOFs was associated with higher rates of depressive symptoms compared to no OOFs ($b=1.74$, $p<0.001$), and low-quality OOFs ($b=1.36$, $p<0.001$). There were also significant associations between OOF status and positive ($F(2,764) = 9.17$, $p<0.001$) and negative SM experiences ($F(2,765) = 16.79$, $p<0.001$). Further post-hoc comparisons revealed that those with high-quality OOFs reported having more negative experiences on SM than those with no OOFs ($b=0.62$, $p<0.001$) and with low-quality OOFs ($b=0.57$, $p<0.001$). Those with high quality OOFs reported having more positive experiences on SM than those with low-quality OOFs ($b=0.23$, $p<0.05$), and both these groups reported having more positive experiences than those with no OOFs ($b=0.41$, $p<0.001$ and $b=0.41$, $p<0.05$, respectively). These findings suggest that teens with high-quality OOFs exhibit increased levels of depressive symptoms, as well as heightened levels of positive and negative experiences SM. These results provide initial insight into the possible protective or risk features of OOFs for adolescent well-being and imply that the ways in which OOFs' characteristics impact well-being and perceptions of SM may be complex. Further work should investigate these links longitudinally, to understand whether depressed youth are turning to SM for friendship-building in the digital age.

COI DISCLOSURE: *There are no COIs related to this work.*

#34 - Social Media Use, Fear of Missing Out, and Indicators of Social Connection Among Adolescents

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As adolescents' use of social media continues to rise, there has been an increased push to better understand the potential impacts social media has on developing minds. Throughout adolescence, having a sense of social connection is vitally important. As a result, researchers have continuously sought to gain insight into how social media use may affect this aspect of adolescent life. However, research regarding the mechanisms which influence social media's effects on indicators of social connection is mixed. Further, the prevalence of cross-sectional data within this area of study has prevented researchers from demonstrating directionality between such variables.

In order to address this, we collected data from adolescents (aged 14-18 years) from South Korea (N = 953) across three waves beginning in Spring 2022 and concluding in Spring 2023. Measures included social media use (time), social media use (for social connection), fear of missing out (FoMo), loneliness, peer belonging, and satisfaction with social connection. We are currently analyzing data in order to assess the mediating effect of FoMo on the relationship between social media use and indicators of social connection. Based on past research examining social media use and FoMO, often rooted in Social Comparison Theory (Festinger, 1954), and our understanding of the Differential Susceptibility to Media Effects Model (Valkenburg & Peter, 2013) we expect that our data will show three things. First, we believe that social media use at time 1 will be positively related to adolescents' reports of fear of missing out (FoMo) at time 2. Second, we believe that social media use for connection at time 1 will be positively related to adolescents' reports of FoMo at time 2. And thirdly, we believe that FoMo at time 1 will be negatively related to adolescents' reports of indicators of social connection including (a) loneliness, (b) peer belonging, and (c) satisfaction with social connection at time 3.

Social media use has been shown to have a variety of negative effects on adolescents' sense of social connection and overall well-being. Garnering a deeper insight into the mechanisms that may influence the relationship between social media use and potential negative outcomes will help us to better understand this highly nuanced topic. As social connection is such an integral component of adolescent life, we feel this is an exceedingly important outcome to focus on which will have broader implications for research regarding adolescent social media use.

COI DISCLOSURE: *This project was funded by Ewha Womans University. There are no conflicts of interest.*

#35 - Neurobiological Sensitivity to Popularity Moderates Daily Links Between Social Media and Affect

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Social media behaviors increase during adolescence, and features allowing quantifiable feedback metrics (e.g., likes, followers) may amplify the value of social status for teens.Social media's impact on adolescents' daily affect may be exacerbated given the neurodevelopmental changes that increase youths' sensitivity to socio-emotional information. This study examined whether neurobiological sensitivity to popularity moderates daily links between social media use and affect. Adolescents (N=91, Mage=13.6 years, SDage=0.6 years) completed an fMRI task in which they viewed faces of their high (>1 SD above the mean) and low (<1 SD below the mean) popular classmates based on peer-nominated sociometric ratings from their school social networks. Two years later, adolescents reported their affect and time spent on social media daily for two weeks. Neural tracking of popularity in the ventromedial and dorsomedial prefrontal cortex moderated the association between time on social media and affect. Specifically, adolescents who tracked high popular peers in the vmPFC reported more positive affect on days when they used more social media. Contrastingly, adolescents who tracked low popular peers in the vmPFC and dmPFC reported more negative affect on days when they used more social media. Results suggest that individual differences in sensitivity to popularity may be a protective or risk factor for well-being when using social media.

COI DISCLOSURE: *Dr. Telzer and Dr. Prinstein reported receiving private research funds from the Winston Family Foundation during the conduct of the study. The Winston Family Foundation had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review or approval of the manuscript; and decision to submit the manuscript for publication.*

#36 - Girls Internet Use Predicts Higher Levels of Generalized and Social Anxiety Symptoms During Adolescence

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BACKGROUND: There is increasing concern over the impact of youth media habits on their wellbeing and mental health. However, most studies in this area have been cross-sectional, or unable to account for reverse causation. Furthermore, studies have mostly examined associations between adolescent media use and well-being or depression symptoms. Considerably less research has examined links between adolescent internet use and symptoms of generalized and social anxiety. Our study aims to address these gaps by examining associations between internet use at age 15 and later development of anxiety symptoms at age 17. To control for reverse causation, we simultaneously examine how adolescents' generalized and social anxiety symptoms at age 15 forecast internet use at age 17.

METHODS: Our study draws data from the Quebec longitudinal Study of Child Development (n = 1324, 49.1% were girls) a population-based study on youth's psychosocial and academic adjustment. At the ages of 15 and 17, youth self-reported internet use and anxiety symptoms. Internet use was measured as number of hours per week adolescents spent online on social media, browser games, or searches. Anxiety symptoms was measured by social or generalized anxiety symptoms in the past year. We estimate two cross-lagged panel models to examine associations between internet use and: (1) Generalized and (2) Social anxiety symptoms. In each model, internet use and anxiety symptoms at age 15 were used as predictors of those same variables at age 17, while controlling for socioeconomic status. Because of sex differences in the prevalence of anxiety and online experiences, we estimated sex invariance and then used sex as a grouping variable.

RESULTS: The two models indicated a good statistical fit to our data (RMSEA < 0.05, CFI > 0.95, and χ^2 > .05). Girls' internet use at age 15 predicted more generalized (β = .07, p = .024) and social (β = .07, p = .048) anxiety symptoms at age 17. There were no significant associations between boys' internet use and their development of anxiety symptoms. Girls and boys anxiety symptoms at age 15 did not predict more internet use at 17. Our analyses also revealed moderate stability for boys and girls internet use and generalized and social anxiety symptoms between ages 15 and 17.

DISCUSSION: Our results indicate that girls who spent more time online at age 15 experienced higher levels of social and generalized anxiety symptoms at age 17. This was not observed in boys. Furthermore, we did not find that girls and boys anxiety symptoms lead to greater internet use. Girls may be more vulnerable to the negative effects of internet use because of increased sensitivity to social comparisons, but future research is needed to clarify which biopsychosocial factors explain sex differences in vulnerability.

COI DISCLOSURE: *This research was funded by Canadian public research funds agencies. It received funds from the Canada Research Chairs and from the Fonds de Recherche du Québec (FRQ).*

#37 - The Double-Edged Sword of Beauty Filters: Effects on Chinese Adolescents' Self-Image and Consideration of Cosmetic Surgery

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The growing popularity of auto-photographic filters that enhance selfies raises concerns about their effects on adolescents' self-image, especially among Chinese females, who focus more on facial features. This study hypothesizes that digitally enhanced self-images serve as a comparison target, leading to self-enhancement feedback and motivation for cosmetic surgery. Adolescents, with still-forming self-concepts, may be particularly susceptible.

A total of 150 Chinese female undergraduate students (Mean age = 19.27) completed a baseline survey and were randomly assigned to a regular camera condition (N=75) or a beauty filtered camera condition (N=75). Participants observed themselves on an iPad screen (with/without a filter) for 30 seconds and completed a post-exposure survey. Self-concept clarity was examined as a moderator.

Participants in the beauty camera condition reported higher state physical appearance self-esteem (Mb=3.33, Mr= 2.98 ; $t(147) = -3.439$, $p < .001$) but also stronger willingness to consider cosmetic surgery (Mb=2.33, M0= 1.87 ; $t(148) = -3.081$, $p = .002$). Self-concept clarity was generally positively correlated with state physical appearance self-esteem (b= -.265. SE = .090, $p = .004$) and negatively correlated with willingness to consider cosmetic surgery across both conditions (b = -.365. SE = .143, $p = .012$). A significant interaction effect between group assignment and self-concept clarity on willingness to consider cosmetic surgery was found (b = .844, SE = .285, $p = .004$), indicating that the relationship between self-concept clarity and willingness to consider cosmetic surgery differed between the regular and beauty camera groups. Specifically, the negative relationship between self-concept clarity and willingness to consider cosmetic surgery was present in the regular camera group, while this relationship was not significant in the beauty camera group.

These findings suggest beauty filters have a paradoxical effect on self-esteem and desire for cosmetic surgery. The moderation effect of self-concept clarity implies that a clearer self-concept may buffer individuals against negative consequences of beauty filter exposure. Results support the hypothesis that beauty filters evoke a salient possible self, leading to self-enhancement feedback and motivation for cosmetic surgery.

The results highlight the need for understanding the psychological impact of digital media on self-concept development and body image perceptions. Future research should explore strategies to mitigate potential negative effects of beauty filters on adolescents' self-image and decision-making regarding cosmetic procedures.

COI DISCLOSURE: *No known conflict of interest to disclose.*

#38 - A Narrative Review: Examining the Relationship Between Social Media Use and Chronically Ill Adolescents' Well-Being

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This narrative review examines the relationship between social media use and the well-being of chronically ill adolescents. Social media use has become increasingly prevalent among adolescents nationwide. This use extends beyond neurotypical adolescents to include those who are chronically ill. However, despite the burgeoning body of literature examining linkages between social media use and well-being among adolescents, the latter population remains understudied. This situation is surprising as social media has been shown to help chronically ill children maintain relationships with peers and feel a sense of belonging, especially during times of medical separation from peers and family. A narrative synthesis of studies published between 2012 and 2022 among several large-scale databases (e.g. PsycArticles (APA), PubMed/Medline) highlighted the paucity of research done whereby only two empirical studies were yielded as relevant to the goal of the review. These studies addressed chronically ill adolescents' use of mobile technologies and their well-being and adolescents with chronic diseases and their attitudes toward social media exposure in regard to their well-being. However, the paucity of research examining linkages between chronically ill adolescents and the ramifications of their social media use for their well-being is a finding unto itself. This finding showcases the need to adopt a more inclusive approach to studying the ramifications of social media use among chronically ill adolescents.

COI DISCLOSURE: *Annamarie Rogers reports no grants or personal fees from any organization during the conduct of the research to be presented. Annamarie Rogers reports no relevant financial activities outside the submitted work and no planned, pending, or issued patents broadly relevant to the submitted work. In addition, Annamarie Rogers reports having no additional relationships described in Section 4.*

#39 - Social Media Usage Patterns and Body Image Concerns Among Racially Diverse US and British Adolescent Girls

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BACKGROUND: Meta-analyses have found that higher rates of social media (SM) use are associated with body image disturbance (e.g., Saiphoo & Vahedi, 2019). Much of this research, however, has studied primarily White college women. Thus, less is known about these associations among other groups. SM use is especially high during adolescence, a time when identity and self-concept are consolidating. Therefore, it is especially important to examine correlates of SM use among adolescents, especially youth of color who use media at high rates. In the present study, we examined use of 5 SM platforms and body image concerns with a large sample of racially diverse US and British adolescent girls. We are interested in whether race moderates associations between SM use and body image. These two locations were selected due to a shared cultural emphasis on White standards of beauty (e.g., thinness) despite multi-cultural populations.

METHODS: We surveyed 797 Black, Asian, Latina, White, and biracial US girls and 784 Black, Asian, White, and biracial British adolescent girls, aged 12-17 (M=14.4), about their frequency of using 5 SM platforms (Facebook, Instagram, TikTok, Snapchat, Twitter) and 4 body attitudes including body surveillance and body shame (measured by OBCS-Y) as well as weight satisfaction and shape satisfaction (measured by items from Satisfaction with Racially Salient Appearance Features Scale).

RESULTS: Hierarchical regression analyses were conducted to examine whether race moderates relations between SM use and body image variables. Only moderator analyses are reported here for brevity. Among US girls, race did not moderate associations between SM use and shape satisfaction or body shame. It did for body surveillance and weight satisfaction. Latina and biracial girls who use SM more often reported higher body surveillance than White girls. Latina girls who use SM more often also reported less weight satisfaction than White girls. Among British girls, race did not moderate associations between SM use and weight satisfaction, shape satisfaction, or body surveillance. It did for body shame such that Black and Southeast Asian girls who use SM more often reported higher body shame than White girls.

DISCUSSION: SM use is associated with body image concerns among racially diverse US and British adolescent girls. Associations vary by nationality and race. Attention to such variations may be useful for intervention efforts such that interventions can be tailored to address specific body image issues related to social media use among different groups of girls.

COI DISCLOSURE: *None*

#40 - The Black Stoicism Project: Adolescent Beliefs About Racial Differences in Pain Tolerance Following Exposure to Black-Stoicism Media

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In the U.S., people racialized as Black are stereotyped as formidable (Wilson et al., 2017). Many medical professionals believe that Black patients experience less pain than White patients (Hoffman et al., 2016) although there is no evidence that this is true. This bias even disadvantages Black children, who receive less effective pain medication in the emergency room (Goyal et al., 2020). The belief that Black bodies are specially equipped to tolerate physical hardship has been documented in White children as young as 10 (Dore et al., 2014). The origin of this belief is uncertain, but media depictions of Black stoicism may contribute.Media depictions of Black vitality, like the Black Panther films (Sanders & Banjo, 2021), are a welcome change from White-savior narratives (Hughey, 2010). However, against a real-world backdrop of medical failure to recognize Black suffering, media depictions of Blackness as superhuman may compromise the development of racially relevant empathy among adolescents developing schemas about race.

This project examined the effects of exposure to Black-stoicism media on 13-19-year-olds' beliefs about Black and White men's and women's pain tolerance following exposure to one of four genres of media that depict Blackness as unusually resilient: Black superhero narratives (Sanders & Banjo, 2021), the strong-Black-woman trope (Black & Peacock, 2011), Black athletes in sports (Ferrucci & Tandoc, 2017), and news content depicting Black hardship (Hoffman & Trawalter, 2016). Based on priming theory in the context of stereotyping (Johnson et al., 2009), we predicted that (H1) compared to adolescents who saw no video, adolescents who saw a Black-stoicism video would estimate that Black targets feel less pain following injury, and that (H2) adolescents exposed to a Black-stoicism video would estimate that Black targets feel less pain than White targets following injury. We also advanced three research questions asking whether pain estimates would differ by video genre, gender of the target, and race or gender of participants. The sample comprised N = 1029 adolescents ages 13-19, with 200 in each condition, half self-identified as Black and half non-Black (mostly White), balanced by gender.

There was a robust difference by gender, with female targets judged to feel more pain, both physical and emotional, than male targets regardless of condition. However, H1 and H2 were unsupported. Where video effects were observed, they tended to oppose our predictions, with Black women judged to experience more emotional pain among participants exposed to Black-hardship and Strong Black Woman genres. There were some significant interactions between participant race, participant gender, and target gender in predicting target pain, a summary of which will be provided in the poster. Discussion emphasizes the potential role of narrative for encouraging empathy even in genres that depict superhuman resilience through injury.

COI DISCLOSURE: *No conflicts of interest; project funded by the University of Michigan College of Literature, Science, and the Arts.*

#41 - Reciprocal Association Between Sleep Pattern and Technology Use in Adolescents With ADHD

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Sleep quality is critical for adolescents with ADHD and can significantly impact their overall functioning and quality of life (Martin et al., 2020). Adolescents with ADHD are at a higher risk of experiencing sleep problems compared to their peers without ADHD (Becker, 2020). As technology use has become a pervasive part of adolescents' daily life, excessive use of technology can lead to poor sleep quality (e.g., daytime sleepiness) in adolescents with ADHD (Bourchtein et al., 2019). Also, poor sleep quality can impair cognitive function and exacerbate adolescents' technology use to compensate for mood disturbances such as irritability and depression (Becker et al., 2019). Sleep quality and technology use can be bi-directionally associated. However, the potential causal (spillover) association between these two constructs remains unclear, especially for adolescents with ADHD.

Further, many studies examining bi-directional associations use traditional cross-lagged panel models (CLPM; Rogosa, 1980). Although this approach has been widely applied, it has been criticized recently for producing biased results (Berry et al., 2017) since it fails to disaggregate the between (e.g., compared to adolescents with healthier technology use pattern, whether adolescents with poor technology use also experience poor sleep quality) and *within-person* associations (e.g., whether an adolescent with more technology use than usual has poor sleep quality). An alternative model termed the Random-Intercept Cross-lagged Panel Model (RI CLPM; Hamaker et al., 2015) addresses CLPM's limitations so that between and within person dynamics between sleep quality and technology use can be separated. Thus, the current study aims to test such reciprocal dynamic associations between sleep quality and technology use in adolescents with ADHD.

Using a five-wave longitudinal design spanning middle school into high school, analyses were conducted on 162 adolescents with ADHD (64.8% male; 79.6% White, 7.4% African American, 2.5% Asian; Mage=13.17 years). Sleep quality was measured with adolescents' self-reported Pediatric Daytime Sleepiness Scale (Drake et al., 2003). Technology use was also self-reported and an averaged score was computed across three domains (Pea et al., 2012), including *total day media use* (e.g., watching video content such as TV, YouTube, movies, playing video games); *technology in the bedroom hour before sleep* (e.g., cellphone, computer), and *social media platforms use* (e.g., Facebook, Twitter). Results indicate that (a) the RI-CPLM fit the data well for adolescents' self-reported data (i.e., $\chi\chi 2$= 54.503; CFI = .973;TLI = .971; RMSEA = .043;

SRMR = .076; AIC = 3839.695; BIC = 3910.709); (c) both sleep quality (β_{sleep}= .164, p < .05) and technology use demonstrated (($\beta_{technology}$ = .146, p = .12) positive within-person consistency over time, but only significant with sleep quality, and (c) contradictory to our expectations, there is only one negative and significant unidirectional spillover effect from poor sleep quality (i.e., high level of daytime sleepiness) to less frequent technology use ($\gamma_{sleep\text{-}technology\ use}$ = −.244, p < .05). Our results showed that adolescents with ADHD who are poor sleepers tend to be less involved with technology. This may suggest that adolescents with ADHD may have different dynamic patterns regarding sleep quality and technology use compared to their typical peers. Future research can further explore potential factors that cause poor sleep and excessive technology use for adolescents with ADHD.

COI DISCLOSURE: *There is no conflict of interest.*

#42 - Interactive Screen-Based Activities Predict Worse Adolescent Sleep Health

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BACKGROUND: Daytime and evening screen use are associated with poor sleep health among adolescents, especially later sleep timing and shorter sleep duration. However, most studies only investigate associations among adolescents rather than within the same person across multiple nights, which precludes examination of temporal precedence. The current study used a multilevel modeling approach to assess associations between screen use and subsequent sleep.

METHODS: We analyzed approximately five days of data (mean±SD 4.8±1.3 days) from the age 15 wave of the Future of Families and Child Wellbeing Study, a longitudinal birth cohort (n=475 adolescents, 15.4±0.5 years old). Adolescents wore wrist actigraphy devices and completed daily surveys reporting how many hours across the day they engaged in screen-based activities (e.g., communicating with friends, playing video games) and whether they engaged in screen-based activities in the hour before bed. Screen use was separated into within- and between-person variables predicting sleep onset, midpoint, offset, and duration that same night. Multilevel models with random intercepts for each sleep outcome adjusted for school day, bedtime routine, adolescent demographics, and family socioeconomic status.

RESULTS: Within-person results showed that on days when adolescents played video games more than their own daytime average±SE (1.3±1.2 hours of gaming), sleep onset (6±2 min, $p<0.01$) and midpoint (4±2 min, $p<0.02$) were delayed for each additional hour of gaming. Between person results showed that adolescents who played video games had later sleep onset (9±4 min, $p<0.02$) and shorter sleep duration (-5±3 min, $p<0.05$) for each hour spent gaming. For each hour adolescents used screens to communicate with friends across the day, sleep onset was later (11±3 min, $p<0.01$), midpoint was later (8±3 min, $p<0.01$), and sleep duration was shorter (-5±2 min, $p<0.03$). Adolescents who used screens to communicate or play video games in the hour before bed had later sleep onset (30±14 min, $p<0.03$) and midpoint (25±13 min, $p<0.05$).

CONCLUSION: Not all screen-based activities may delay or shorten sleep. Passive activities, such as browsing the Internet or watching videos, were not shown to affect sleep health in the current study, but limiting interactive activities such as texting and video games could protect adolescent sleep health and well-being. Future research should investigate the attributes (e.g., affect, fear of missing out [FOMO], device notifications, in-game rewards and reinforcement) of screen-based socializing and video gaming that are potentially detrimental for sleep.

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#43 - Social Media as a 'Gateway' Drug?: Exploring Relationships Between Digital Media Use and Youth Drug and Alcohol Use

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BACKGROUND: The 2023 congressional hearing regarding Snapchat's liability in fentanyl related adolescent deaths has drawn national attention to the relationship between digital media and substance use. However, research in this area has been lagging, with studies often focusing on one type of digital media use or relying solely upon cross-sectional survey methodology. We explored the relationship between digital media and substance use through two related studies. The first used a national survey study to clarify associations between specific type of digital media use, online exposures, and substance use. A second study then piloted a smartphone-based ecological momentary assessment (EMA) protocol in a smaller subset of youth to "capture" instances of substance use and online drug-related exposures, focusing on those significantly related digital media types found in the survey study.

METHODS: Via Facebook advertising, U.S. youth aged 13-23 were recruited to complete an online survey about digital media and drug use. Linear regression models compared severity of substance use (via DAST-A score) and types of digital media use, controlling for age, race and gender. Youth aged 13-23 were then recruited from within a community-based outpatient mental health clinic to complete a 6-week EMA protocol via smartphone application. Participants documented daily information about substance use and screen time using their personal smartphone's screen time reports. Relationships between instances of substance use and type of digital media use were assessed using mixed effects logistic regression models.

RESULTS: The online survey was completed by 396 youth. Both intentional and unintentional online exposures to drug-related content were linked to riskier substance use, particularly exposure to peer-posted drug-related content on social media platforms. 26 youth participated in our pilot EMA study and on average, reported substance-related online exposures 35% of the time. Both frequent TikTok and Snapchat use were associated with exposure to peer-posted substance-related content. On days when Snapchat was one of a participant's most frequently used apps, the participant had 13 times the odds of using substances compared to days when Snapchat was not as frequently used.

DISCUSSION: Our results underscore growing scientific recognition that "digital media use" is not a monolith, and that digital media-associated risks may be dependent on online experience. By virtue of their ability to both disseminate rapidly nearly unlimited content and facilitate two way communication, social media platforms may create an ideal environment for youth drug acquisition, influenced by online experiences and exposures. Given the increasing number of adolescent overdose deaths, it is imperative that future studies clarify further the significant relationships found here so that digital risk factors can be incorporated into existing methods to treat and prevent adolescent substance use.

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#44 - U.S. and International Law and Policy to Address Children and Cell Phone Radiation Health Issues

Scarato, Theodora MSW

Environmental Health Trust

There are hundreds of cell phone apps designed for babies and toddlers. Children watch videos on cell phones for several hours a day. Yet growing evidence associates exposure to the radiofrequency (RF) non-ionizing radiation emissions from cell phones to a range of adverse health effects. In response to research indicating children are more vulnerable due to their developing nervous system, numerous countries have implemented various policies to mitigate risk, with measures specifically aimed at protecting children.

This presentation will overview and compare U.S. and international laws and policies related to children including updates from the World Health Organization EMF Project database.

More than 20 countries provide straightforward public health advice that parents should minimize their children's exposure to cell phone radiation. Belgium and France inform have bans on the advertising and sale of cell phones designed for young children. Several countries have banned Wi-Fi in kindergartens. Korea, Cyprus, France, and French Polynesia have funded multimedia public education campaigns to educate parents on ways to use technology with reduced RF radiation.

United States regulations for cell phone radiation have remained unchanged since 1996. Cell phones are premarket safety tested using liquid filled models sized to represent a 220-pound large adult male rather than a child. Phones are not tested in body contact positions, even though children use cell phones clutched against their bodies. A 2012 proposed federal bill H.R. 6358, the "Cell Phone Right to Know Act," would have initiated government research, consumer labeling and federally developed safety limits. Although it received strong support from the American Academy of Pediatrics, the bill never made it out of committee.

Several U.S. states and localities have proposed and passed various laws, enacted policies and developed educational initiatives. New Hampshire legislation created a study commission and issued a 2021 Final Report with 15 recommendations, several aimed at protecting children with measures such as replacing Wi-Fi with ethernet in schools. This year, Michigan, Maine, New York, and Massachusetts legislators are considering bills focused on RF impacts to children's health.

Numerous countries, including Switzerland, Israel, China, India, and Russia, have set public exposure limits for environmental RF at levels 10 to 100 times more stringent than the U.S. French government tests found hundreds of phone models violate RF limits when phones are tested touching the body. The U.S. does not have programs to independently test phones/towers, monitor environmental levels, gather and analyze health surveillance data, nor to provide oversight and enforcement. The Environmental Protection Agency, Centers for Disease Control and Prevention, Food and Drug Administration and National Cancer Institute have not evaluated the totality of evidence. Stronger federal oversight activities are needed to protect children and address documented regulatory gaps.

COI DISCLOSURE: *None*

#45 - Pediatric Emergency Medicine Providers' Experiences with Digital Sexual Abuse

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BACKGROUND: While there is established protocol for supporting children and adolescents who experience physical sexual abuse, less attention has focused on digital sexual abuse. This includes, but is not limited to unwanted sexting, cyberflashing, cyberbullying, sextortion, and pornography use/addiction. Research suggests that between 20-32% adolescents receive sexts1 and that cyberflashing (e.g., receiving unwanted sexual images and/or videos) is commonplace among adolescents2. These experiences can be associated with negative youth outcomes such as emotional distress, depression, and suicidal ideation2,3. Pediatric providers may serve as crucial resources for children and families dealing with these issues4,5. However, if and how digital sexual abuse presents in pediatric emergency settings is unknown, as well as providers' sense of competency to address these new issues. Thus, we surveyed pediatric emergency healthcare providers to better understand their experience in the realm of digital sexual abuse.

METHODS: An anonymous online survey completed by pediatric emergency providers (n=188), asking about:

1. How often patients and/or their parents share concerns about digital sexual abuse
2. If some presentations of suicidal ideation/attempts are related to digital sexual abuse.
3. Providers' familiarity with different common types of digital sexual abuse and what resources they used to support patients
4. What additional information or supports are needed in clinical practice to address pediatric digital sexual abuse experience.

RESULTS: Providers frequently encounter patient/family concerns related to nonconsensual image sharing, cyberbullying related to shared sexual images/videos, and sexting, presenting in their practice on a monthly basis with some reporting cases occurring several times a week. Importantly, providers reported cases in which cyberbullying related to sexual images and sexting concerns were associated with suicide ideation or attempts. Providers were familiar with terms like cyberbullying and sexting, but only moderately familiar with cyberflashing and sextortion, with 38.8% and 24.9% indicating not at all familiar respectively and most selecting between "a little" to "not at all" familiarity. When needs arose, the most common resources utilized by providers were in-house social workers (77.8%) and psychological services (57.8%). In general, providers felt underprepared to address porn use/addiction, sextortion, and cyberflashing. Most providers wanted additional education/training (79%), resources for families (92%), and reporting tools (70%).

DISCUSSION: Overall, providers were more familiar with some forms of digital sexual abuse (e.g., cyberbulling) than others (e.g., cyberflashing). For youth, especially females with a phone, cyberflashing is quite commonplace2. Yet, providers' lack of comfort with addressing these topics is concerning given that these forms of sexual abuse were associated with suicidal ideations or attempts in their clinical practice. We would never accept emergency providers not knowing how to intubate, a need that most ER providers encounter monthly. Thus, we should similarly provide education/training and resources related to digital sexual abuse to these frontline workers who can help identify and support our children and teens.

COI DISCLOSURE: *None.*

#46 - Peer Contagion of Adolescent Digital Dating Abuse: A Network Study Across Social Contexts

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Nationally representative data show that 76% of adolescents experience digital dating abuse (DDA; Ellyson et al., 2021). DDA is the use of technology to threaten, harass, monitor, control, pressure, or coerce a romantic partner (Reed et al., 2017). DDA is concerning as it is associated with in-person abuse, anxiety, and depression (Zweig et al., 2013). Given that this is a relatively new area of research, it is essential to use a developmental perspective to better understand the precursors of adolescents' DDA (Nesi et al., 2018). Adolescents are particularly vulnerable to experiencing DDA, as adolescence is a sensitive period during which DDA first emerges and peaks in mid-to-late adolescence (Thulin et al., 2022). Additionally, they are avid technology users, with digital communication surpassing in-person contact (Anderson & Jiang, 2018). Deviant peer relationships are among the most robust risk factors for adolescents' in-person dating abuse (e.g., Garthe et al., 2017). Through social learning, adolescent friends socialize coercive and objectifying relationship norms, which predict future dating abuse (Ha et al., 2021). Despite the importance of peer relationships for in-person dating abuse, research about peer socialization of DDA is lacking (except Van Ouytsel et al., 2020). Therefore, we investigated whether friends' levels of DDA are associated with adolescents' DDA while controlling for important in-person dating abuse risk factors, i.e., antisocial behaviors and substance use.

Participants are 9th graders from two public high schools in the Southwestern U.S. (N = 437, Mage = 14.9, 49.2% female, 31.8% Hispanic/Latino, 31.7% multiracial). Adolescents nominated up to ten friends and reported DDA perpetration (Reed et al., 2016, α = .86). Results from linear network auto-regressive models showed that in both grade-level networks, friends' level of DDA was positively associated with adolescents' levels of DDA (b = .25, $p < .05$, adjusted $R2 = 0.09$; b = .25, $p < .001$, adjusted $R2 = 0.17$), while accounting for gender, ethnicity/race, subjective socio-economic status, antisocial behaviors, and substance use.

In line with recent calls to include the digital context in the study of adolescent development, we found support for peer contagion of DDA. Like in person-dating abuse studies, peer levels of DDA are essential to consider as potential risk factors for adolescents' DDA. Primary prevention programs for adolescent in-person dating abuse focus on changing peer norms around dating in school-based programs (Foshee et al., 2014). Our results imply that including the digital context may be necessary. Future studies would benefit from applying longitudinal methods to better understand peer selection and socialization as they relate to DDA. Further, we will discuss the relevance of gaining insights into how the digital context may impact in-person peer dynamics, and vice-versa.

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#47 - Analyzing Digital Dating Abuse Among Late Adolescents Using Novel Coding System of Smartphone Screenshots

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Digital dating abuse (DDA) is a recent phenomenon observed among late adolescents, wherein they use technology to perpetrate dating violence against their romantic partners (Reed et al., 2016). While most current research utilizes self-reports of DDA behaviors, we have developed a new coding system for DDA involving participant-uploaded smartphone screenshots depicting various romantic relationship events. Objective coding of DDA within these actual screenshots from participants allows for a more ecologically valid assessment of engagement, as we can observe actual behaviors between romantic partners. Additionally, late adolescents do not always accurately recognize instances of DDA in their relationships as these behaviors can be viewed as passion or joking behavior (Reed et al., 2021), making objective coding of DDA that much more vital.

The current study analyzed 232 smartphone screenshot events from 288 late adolescents (M_{age} = 20.77, SD = 1.99; 51.7% Female, 48.3% Male; 55.2% White, 21.2% Hispanic/Latinx) currently in romantic relationships ($M_{relationship\ duration}$ = 20.25 months, SD = 19.13). Participants were asked to upload up to 10 screenshots per relationship event category asked about on an online survey: a stressful event and a jealousy event.

Findings demonstrated that 37.1% (86/232) of all screenshot events displayed DDA behaviors. Out of these 86 screenshots displaying DDA, a variety of different types of behaviors were present including guilt tripping partner (48.8%), cursing at partner or insulting them (32.6%), hostile humor (25.6%), completely ignoring partner (24.4%), bombarding partner with calls or texts (15.1%), gaslighting partner (10.5%), and threatening partner (7.0%). Comparing objective codes to self-reports, participants whose screenshot events contained DDA reported higher self and partner cyber relationship aggression (Self: p = .04, d = .29; Partner: p = .01, d = .36), self and partner in-person intimate partner violence (Self: p = .01, d = .36; Partner: p = .01, d = .38), and higher interactional reactivity (p < .001, d = .49).

Findings demonstrate that late adolescents engage in DDA in a variety of ways, and objective codes of DDA are related to participants' self-reports of DDA or similar behaviors. This novel methodology is a promising new way to objectively analyze the presence of DDA among late adolescents, and it may help to reduce social desirability biases that occur in self-reports.

COI DISCLOSURE: *The authors have no conflicts of interest to declare.*

#48 - Digitizing the Toybox

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While ever-increasing attention has focused on the impact of screens on development, technological (tech) toys are associated with similar changes to children's experiences. Research suggests that caregiver-child interactions with tech toys (battery-operated) are significantly different from interactions with traditional toys, in terms of play behaviors and language use (Wooldridge & Shapka, 2012; Zosh et al., 2015), similar to findings regarding screen use (Madigan et al., 2020). The current study examines the U.S. toy marketplace for tech and traditional infant toys to better understand the choices facing today's caregivers when deciding upon screen time alternatives, with the goal of avoiding another activity with the same potential pitfalls.

In Fall 2020, toys advertised for infants (birth-24 months) from two national retailers (average annual shopper income: Retailer 1=$76,000; Retailer 2=$89,000) were selected (N=352; 176 traditional, 176 tech). The toys were coded based on the following variables: price, gender-based marketing, educational marketing, and developmental domain.

The main effect of retailer was not significant, with the average price of toys being higher at Retailer 2 ($24.45) versus Retailer 1 ($20.30), p=.230. There was a significant interaction between gender and retailer, with the average price of toys marketed for males being significantly more expensive at Retailer 1 ($44.24 versus $18.84) and toys marketed for females significantly more expensive at Retailer 2 ($47.74 versus $18.05), $F(1, 320)=9.061$, $p<.001$, $\eta_p^2=.054$. A significant interaction also occurred between educational claims and retailer, with the average price of non-educational toys being significantly higher at Retailer 2 ($40.40 versus $25.57) while educational toys were similarly priced across retailers (Retailer 1=$19.75; Retailer 2=$17.99), $F(1, 320)=12.283$, $p<.001$, $\eta_p^2=.037$.

Each retailer separately exhibited a similar pattern of differences between tech and traditional toys in terms of developmental domains, with more traditional toys targeting physical development (Retailer 1=84.8% traditional vs 58.4% tech; Retailer 2=83.7% traditional vs 57.7% tech) and more tech toys aimed at cognitive development (Retailer 1=12.1% traditional vs 37.7% tech; Retailer 2=7.1% traditional vs 37.2% tech), with the percentage of socioemotional toys remaining more similar for both tech and traditional toys (Retailer 1=3.0% traditional vs 3.9% tech; Retailer 2=9.2% traditional vs 5.1% tech).

These findings shed light on how tech toys are marketed by two retailers with different consumer bases. Given that the toy market is so vast, and research suggests that there are potential costs of playing with tech toys, it is important for researchers and the public to know exactly how toys are marketed. This knowledge can be used to prevent exploitation based on the pursuit of a "brainy baby" and help caregivers avoid replacing screentime with experiences that might have similar negative impacts.

COI DISCLOSURE: *Dr. Hassinger-Das reports no conflicts of interest.*

#49 - Mobile Mediation and Children's Consumer Behavior

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Children's increased media use of portable digital devices and the new types of commercial messages consumed through their screens represent a challenge for parents in their effort to socialize their children in general and, specifically, as responsible consumers. Digital media offer children an ecosystem frequently saturated with advertising, where the distinction between entertainment and commercial content is often blurry (e.g., unboxing videos of popular toys, kids influencers videos).

The current study explores how two different measures of parents' understanding of digital advertising (i.e., parents' knowledge and familiarity with mobile/digital advertising techniques) are related to parental mediation of their children's media use and the effect of the mediation on children's purchase request and purchase conflict. In addition, we investigated how the mediation strategies varied based on the device's portability by focusing on three mobile/digital devices (i.e., laptop computer, tablet, and smartphone).

To that end, the authors collected data from 500 parents with at least one child between the ages of 5 to 14 via Qualtrics. For a diverse sample, we set a quota for the education level and gender of parents. Participants reported on their media use along with their child's with a specific focus on computers/laptops, tablet computers, and smartphones. Furthermore, parents reported on their media monitoring behaviors, mediation practices related to the target child, parental knowledge and attitudes about mobile/digital advertising techniques, and consumer behaviors of children (i.e., purchase conflicts, purchase requests). We conducted path analyses to investigate the associations between parents' understanding of mobile/digital advertising, their media parenting practices, and children's consumer behaviors across the three types of mobile/digital devices.

Preliminary results reveal three key findings. First, parents tend to employ different monitoring and mediational approaches by device. In other words, parents reported engaging in different monitoring approaches regarding their children's tablet use when compared to their smartphone use. Second, parents who report being more familiar with mobile/digital advertising tend to engage in more mediation with their child- whether that be active, co-use, or restrictive mediation. Third, and most surprisingly, both active and restrictive mediation by parents is associated with more aggressive consumer behaviors from children (i.e., more purchase requests, more purchase-related conflict).

This study provides new insights regarding how parents are dealing with their children's mobile/digital media use and how their management of their children's media experiences is linked to their children's consumer behavior may lead to undesirable outcomes.

COI DISCLOSURE: *M.A. Sada Garibay reports having no conflict of interest to declare nor having any additional relevant financial activities outside the submitted work or patent or copyrights related to it.*

#50 - Young Children's Exposure to Mobile Food Marketing: A Youtube Case Study

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INTRODUCTION: Extensive exposure to food marketing increases children's preferences, purchase requests, attitudes, and consumption of the mostly high-calorie, nutrient-poor products promoted. Food and beverage companies have extended their reach by marketing on mobile media where young children (3-8y) spend 2.5 hours/day, with YouTube being their most popular video-viewing platform. Limited research suggests that policies banning food advertising around child-directed YouTube channels do not protect children from unhealthy branded food promotion that may be more influential than ads. Further, children may view channels that are not child-directed. Unlike advertising in other media, non-proprietary data are not available to measure children's exposure to mobile marketing. Therefore, there is little understanding of the amount and type of exposure young children experience. We created and pilot-tested a data collection technique to measure a diverse sample of young children's (3-8y) exposure to branded food-related content when viewing YouTube on mobile devices.

METHODS: Eligible parents had a child ages 3-8y who viewed videos on YouTube/YouTube Kids app via mobile device ≥1 day in the past week. Data was collected from parent-child dyads via Zoom. The child watched the videos he/she normally watches on YouTube / YouTube Kids on the mobile device he/she uses most often for 15-30 minutes with device screen record activated. The parent completed an online survey with questions about the child's and parent's own media use. Upon completion the parent sent the recording to researchers via a secure app. A content analysis will identify and code all branded food-related content (i.e., food, beverages, restaurants), including ads, promotions, and appearances.

RESULTS: Participants (N=101) with children (N=53, 3-5y; N=48, 6-8y) were diverse, with over 50% identifying as Hispanic, non-Hispanic Black or other (non-White). Over one-third of children 3-5y and 42% of children 6-8y watched online videos for >1 hour on weekdays and weekends. Most of their video-viewing time was spent on YouTube (38%, 3-5y; 42%, 6-8y), less on YouTube Kids (28%, 3-5y; 19%, 6-8y). Over 2,400 minutes of data was collected. Thirty-six percent of children 3-5y and 75% of children 6-8y were exposed to branded food-related content via YouTube/YouTube Kids. Analyses will answer the following research questions: What is the frequency and type (i.e., ads, appearances/promotions in videos/thumbnails) of branded food-related content children are exposed to viewing videos/searching on YouTube? Are there differences in exposure by platform (YouTube vs YouTube Kids) and type of videos viewed (e.g., animated, influencer, gaming)? Branded content will be coded by food/beverage category, nature of appearance (visual only, implied consumption, consumed, verbal mention), and sponsorship disclosure.

CONCLUSIONS: Researchers have utilized a successful data collection methodology that addresses the gap in knowledge on children's food marketing exposure via YouTube. Findings will inform policies to reduce children's exposure to food marketing via YouTube.

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#51 - Who, What, Where, When? Childrens and Adults Source Monitoring and Memory of Online Sources

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Exposure to online advertisements has increased substantially with the rise in digital media and online interactions. This raises concerns about source credibility and the individual ability to accurately identify relevant and non-relevant information. Often, the more credible someone perceives an online source, the more likely they will be persuaded and influenced by its contents. Source monitoring allows both children and adults to weigh the credibility and make decisions about whether information is accurate and relevant. Even with an abundance of web or online experience, individuals can struggle with consuming this information and accurately judging its origins. Across two studies, we aimed to measure source monitoring and memory accuracy of two online sources with embedded advertisements, amongst children and adults. In addition, we investigated whether children and adults differ in their ability to accurately source-monitor and recall pertinent information. Prior studies have focused heavily on preschool children and contained outdated internet-based materials and surveys that are less relevant given the current online atmosphere. Our studies incorporated two separate media sources with novel advertisements and updated measures of internet safety and advertisement knowledge. Children between the ages of 7-12 (N =30) and adults aged 18 or older (N = 32) were recruited to participate in two online sessions. During the first session, participants viewed two separate media sources (i.e., website, video) containing embedded advertisements. After 2-3 days, participants completed a battery of source-monitoring and memory questions regarding the online content. Internet usage and leisure, internet safety knowledge, and advertisement knowledge were measured through survey response prior to the first session. We anticipated that children and adults' source-monitoring and memory scores would be significantly different, specifically, adults would be more accurate in their source monitoring and memory recall. When expressly looking at the source monitoring of the embedded advertisements, adults would also outperform the child sample. Results suggested that the adult sample was more accurate at source-monitoring for both the video and website source. Likewise, the adult sample also had a higher memory accuracy for the website media source. Lastly, the adult sample had higher accuracy of source monitoring of advertisements embedded on the website. The results provide further evidence of the assumed developmental differences in memory and source monitoring, while incorporating novel sources and explicit distractions. We gain a deeper understanding of how various age groups interact with, remember, and recall online information.

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#52 - Regulatory Use of Media and the Content of Children's Media

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Some studies suggest using media to regulate children's emotions and behaviors predicts worse child self-regulatory skills (Coyne et al., 2021). In addition, regulatory use of media may lead parents to choose different types of media content. In this study, we examine associations between regulatory use of media and the amount, type, and content of media used by children.

Fifty-eight parents of a child 3-5 years old reported on household media practices at two timescales: 1) general media patterns and preferences over the last two weeks using the Media Assessment Questionnaire (MAQ; Barr et al., 2020) and 2) daily media patterns for up to seven days using an end-of-day (EOD) survey and the Time Use Diary (TUD; Barr et al., 2020). The MAQ was administered once and included demographic questions, the Regulatory Use of Media for Children (RUM-C) scale, and questions related to child media use (media quantity in the last two weeks, titles of the child's three most commonly used TV/videos and games/apps). The RUM-C consists of two factors that capture parental motivations for using child media: 1) to regulate the child's emotions/behavior (Cronbach's $\alpha = .70$) and 2) to occupy the child so the parent could take a break or get things done (Cronbach's $\alpha = .71$). Additional measures that are still undergoing analyses include daily EOD surveys, including questions about the frequency of regulatory use of media throughout a given day, and TUDs which capture the frequency, quantity, and content (i.e., titles) of media used by children each day.

Both factors in the RUM-C were positively correlated with the amount of TV/video viewing reported in the MAQ (to regulate: $r = .49$, $p < .001$; to occupy: $r = .46$, $p < .001$). However, neither factor was significantly correlated with the amount of digital game/app play (to regulate: $r = -.17$, $p = .37$; to occupy: $r = .04$, $p = .84$). We are currently coding media content (e.g., educational messages, persuasive design features) of children's most commonly used media to examine associations between regulatory use and content of media use.

While there is some evidence that regulatory use of media negatively predicts children's self regulation (Radesky et al., 2014), much is still unknown around regulatory use of media. Given the impact of media depends largely on the quality of media experience, particularly media content (Kirkorian & Horgan, 2023), it is important to understand how regulatory use of media might lead parents to select certain types of media. Our preliminary results illustrate more parent-reported TV/video viewing among children whose parents use media to regulate their child's emotions and behavior. Further analysis is planned to examine whether regulatory use of media also predicts specific content features and to examine within-person day-to-day variation.

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#53 - Using Screens to Calm an Upset Child: An Examination of Bi-Directional Associations with Self-Regulatory Skills in Preschoolers

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Parents report using digital devices to regulate their children's negative emotions, e.g. to stop tantrums. However, this could hinder children's development of self-regulatory skills. The objective of this study was to observe bi-directional longitudinal relationships between parental use of digital devices to regulate their child's negative emotions and child self-regulatory skills (anger/frustration management, effortful control, and impulsivity).

This study draws on participants (N=265) enrolled in a study of preschooler media habits during the pandemic in Nova Scotia, Canada. Parents reported child self-regulation and parent digital emotion regulation repeatedly when children were 3.5 and 4.5. The initial assessment took place in 2020 (mean child age = 3.5 years old), and follow-up occurred a year later in 2021 (mean child age = 4.5 years old). Child temperamentally-based self-regulation was measured using three subscales of the Child Behavior Questionnaire (CBQ) and include anger/frustration, effortful control and impulsivity. Parents reported *parental digital emotion regulation*, reflecting how often they use media with their child to calm them down when they are upset. This variable was then dichotomised as (1 = Never/rarely, 2 = Regularly/frequently). We estimated three separate cross-lagged panel models to measure bi-directional associations between parental digital emotion regulation and child self-regulation, while adjusting for child sex, child age, child screen time, parent education, and parenting stress.

Higher occurrence of parental digital emotion regulation at 3.5 predicted poorer anger/frustration management and effortful control skills at 4.5, but did not predict impulsivity. Poorer anger/frustration management skills at 3.5 predicted higher occurrence of parental digital emotion regulation at 4.5. Neither impulsivity nor effortful control at 3.5 predicted parent digital emotion regulation.

Our results indicate that using screens to regulate children's emotions may undermine their self-regulation abilities. Moreover, parents of children with greater temperament-based anger tend to use digital devices to regulate their child's difficult emotions (e.g. anger) more frequently. While digital emotion regulation can be effective in the short term, this strategy may be detrimental to children's development of internalized self-regulatory skills, leading to poorer effortful control and anger management. This process leads to a vicious circle, resulting in stronger dependence on the digital device which can lead to problematic media use and *screen time tantrums.* Based on these results, efforts should be made to call parents' attention on the harmful consequences of digital emotion regulation.

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#54 - The Digital Identity of Young Children is in the Hands of Parents

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Children's digital identities are often given birth to before the child is born (Steinberg, 2016; Schoenebeck, 2015). The creation of a child's digital identity often starts with parents sharing information about their soon to be born or newly born child on social networking sites (Brosch, 2016). Once the child is born the digital identity of the child often gets further developed by parents by sharing about their child's progress, involvement in activities, important events etc. This scoping review explores the literature on children's digital identities on social networking sites from conception to 8 years of age.

The scoping review was conducted in accordance with the JBI methodology for scoping reviews (Peters, 2020). The databases included EBSCO, Web of Science, ProQuest ERIC, Scopus, ProQuest Dissertations, Thesis Global, and grey literature. Reference lists of included studies were cross-checked.

A total of 2374 abstracts were identified, 79 full-text articles were evaluated, and 27 articles were included. The most used digital identity concept in the 27 articles of this scoping review was 'sharenting'. Parents, especially mothers, are often the creator of children's digital identities on social networking sites as children are restricted to use these services until they turn 13. The first postings of the child are often sonograms.

Most studies investigated the digital identity of children on Instagram, Facebook or social media in general via shared text or photos. We identified the two most common types of digital identities parents create for their children. Most of the articles reported on the 'social digital identity', which means that parents post social images and text about everyday activities, special events, interactions between family members, the child playing, or social gatherings. The second most reported identity type was 'impression management digital identity'. This means that parents post information and photos of their children to convey a picture of the child that can deviate from the actual identity of the child. For example, #fashionkids bloggers put a lot of effort into their posts to present their child in a neat and fashionable way.

The results of this scoping review provide a starting point for the investigation of children's digital identities on social networking sites. The results of this scoping review suggest that children have very little agency over their digital identity during the first 8 years of their life.

The current literature is lacking research that investigates children's unauthorised creation of their own digital identities on social networking sites under the age of 13 and how it affects their identity development. More work in this field is needed to investigate the effects of digital identity creation on social networking sites on children's development.

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#55 - Parent Preferences, Beliefs, and Behaviors Regarding Children's Digital Play

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Children's play is rapidly changing in the digital age. While research has begun to examine ways that digital media use may constitute a form of play, previous work has primarily treated digital activities as monolithic. Given the variety of activities available through newer touchscreen technology, the current work examined parent conceptualizations of digital play when distributed across traditional play categories.

Study 1 investigated implicit perceptions of similarities between digital and non-digital play. Participating parents (n = 503, Mage = 35.20 years) of young children (Mage = 4.75 years) completed a triadic judgment task assessing similarities between digital and non-digital activity analogs across three play categories (constructive, socio-dramatic, and game). Results indicated that parents recognized differences between the three play categories and perceived greater variability within the game category than within the constructive and socio-dramatic categories. Conversely, modality (digital vs. non-digital) was not a strong driver of similarity judgments, as there was as much variability among digital activities as non-digital activities.

To extend these findings, Study 2 examined the influence of parent beliefs and behaviors on children's digital play activities. A subsample of participants from Study 1 (42%, n = 213) completed an online survey. Results indicated that parents had an overall preference for non digital (versus digital) play. The more parents preferred non-digital play the less time their child spent using media and the less likely they were to consider their child's interactive media use as a form of play. Parents' reasons for choosing and using media for their children were significant predictors of children's interactive media use, parents' digital play perceptions, and the frequency of parent-child joint media engagement.

Taken together, the results of this work highlight discrepancies between parent perceptions about the similarity, value, and purpose of children's digital play (as compared to non-digital play) and actual behaviors around digital play for their young children. Whereas prior research has demonstrated that children's non-digital play is predicted by parents' beliefs and values, this work suggests that children's digital play may be more strongly influenced by parents' in-the moment instrumental uses of media.

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#56 - Parent Beliefs and Child Apps

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As parents increasingly use screen-based media as part of their home learning environment (HLE) practices (Blum-Ross & Livingstone, 2016), it is important to understand beliefs associated with use of these tools. The screen-based HLE may be dependent on general beliefs about the importance of different skills, and specific beliefs about media as a learning tool. In the current study, we assessed whether parents' beliefs about the importance of literacy and math skills were associated with downloading apps for their child. Additionally, we assessed if parent beliefs about the potential of apps to promote learning was associated with downloading apps.

The current work draws on data from a longitudinal study of 2-year-olds and their parents (N = 200). It draws on the Skill Responsibility Survey (Evans et al., 2004) to measure parental views on the importance of different skills. More specifically, parents were asked to rank the relative importance of nine domains, including math and literacy skills. Parents also reported how much they believed their child learned from touchscreen devices and reported whether they downloaded apps advertised as promoting math and literacy skills for their child (Strouse & Ganea, 2017). Parents who thought that their child did not learn from apps (3.5%) and those who had children who did not use apps (27.2%) were not included in the current work. Covariates included child age and socioeconomic status (SES) because prior studies show child age is positively associated with use of screens, and lower SES parents tend to hold more positive beliefs about the benefits of screen-based media for learning (Rideout & Robb, 2020).

Results indicated a significant difference in the odds of downloading a math app (OR =4.9, $p < .001$) or literacy app (OR = 3.5, $p < .01$) for parents who believed that children learned a lot from apps (36.4%) compared to those who thought they only learned a little from apps (32.8%). Beliefs about the importance of math skills were not associated with downloading math apps. There was also no association between parent beliefs about the importance of literacy skills and downloading literacy apps.

Parent beliefs about whether their child learned from apps was associated with downloading apps, but the importance of math and literacy skills were not associated with downloading apps that target those skills. Whereas activities in the HLE through traditional means (e.g., shared book reading), may be predicted by the value parents place on literacy skills (Weigel et al., 2006), this does not seem to be the case for learning apps. Future work should further distinguish between these two types of beliefs and qualitatively assess parents' views about whether screen-based learning tools aid in developing math and literacy skills

COI DISCLOSURE: *None*

#57 - Parents' Anxiety and Their Attitudes Toward Educational and Entertainment Media

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Though research demonstrates mixed findings as to whether young children (ages 3-7) can learn from media (Griffith et al., 2020), parents generally hold positive attitudes toward media, primarily using it with young children for the purpose of learning (Rideout & Robb, 2020). Preschoolers use media for upwards of two-and-a-half hours each day, and most of this time is spent watching videos or television (Rideout & Robb, 2020). While there are television shows, such as Sesame Street, that can and do foster children's learning, there are also many shows that are simply for entertainment purposes, but if parents have positive attitudes toward media generally, it is important to understand if parents differentiate between educational and entertainment content. Past research also demonstrates that parent anxiety about their children's future is associated with increased participation in extracurricular activities (Anderson et al., 2003), but with increasing access to technology, parent anxiety might also fuel greater media use.

Two-hundred-ninety-one parents (55% fathers) completed a survey including measures about their general attitudes toward media, their attitudes toward educational and entertainment context, as well as their anxiety about their children's futures. Results demonstrated that parent anxiety was associated with positive attitudes toward both entertainment and educational media. Further, attitudes toward media generally (or the potential for media to have educational value) moderated these relations, making them stronger for parents who had strong positive attitudes toward media generally. These findings demonstrate that parent anxiety can increase not only educational media use for children but also entertainment media use, as parents do not differentiate between these types of programming.

Past literature demonstrates that parent anxiety about their children's futures has associations with parenting behaviors like enrolling children in extracurricular activities. Our results demonstrate that this anxiety can also predict media use, especially for parents who already hold positive attitudes toward media generally and believe that is has potential educational benefits. Our results also demonstrate, however, that parents are not differentiating between educational and entertainment content, thus children's increased media use may be with programming that does not support their educational development. Our findings suggest that parents should more closely examine the type of content that they use with their children. Further, practitioners and researchers might more closely examine the role of parent anxiety in children's media use, potentially intervening on parents to suggest other ways to support their children's development.

COI DISCLOSURE: *This project was funded by the communication department at the University of California, Davis. There are no conflicts of interest.*

#58 - Styles of Digital Parental Mediation: A Multi-Group Person-Centered Approach

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BACKGROUND: In the space of a generation, the developmental contexts in which children learn, communicate, and play have expanded to include the internet, a context without spatial or temporal restrictions and with affordances distinct from those in face-to-face settings. Today's parents find themselves in an unprecedented situation as they attempt to guide children and youth through quickly evolving virtual contexts that they themselves are also learning to manage. Parents utilize a specific set of skills and practices, termed parental mediation, when trying to control, monitor, and support their children's use of media. Research on digital-specific parenting has increased rapidly in the last decade, but most of these studies assume homogeneity across parents, treating parents as having similar patterns of knowledge or skills about how to mediate the influence of digital technology. The aim of this study is to test whether distinct profiles of digital mediation styles can be identified, whether these profiles differ between mothers and fathers, and whether parent characteristics, household composition, and parent technology use and attitudes are differentially related to membership in these profiles.

METHODS: The sample for the current study was comprised of US parents (N = 460) recruited through an online participant pool in January 2020. Parents in the sample were aged between 22 and 69 years of age, and were diverse in terms of race, ethnicity, education, and income. Latent profile analyses (LPA) were used to identify subgroups of digital parental mediation using factor scores from the four digital-specific subscales of the Digital Parental Mediation Scale (DPMAS; Navarro et al., 2022). Following LPA modelling, multiple-group multinomial logistic regressions were estimated to examine whether demographics, technology ownership and use, and technology-related attitudes and interactions were significantly related to profile membership.

RESULTS: We identified four latent profiles of digital parental mediation styles: one "high" and one "average" digital meditation style, and two "low" involvement styles, demarcated by parents' emphasis on mediation by modeling. These profiles were generalizable across mothers and fathers, and differentially associated with relevant covariates (including parent income and race, child age, parent and child screen time, and parents' technology-related confidence and worry.

DISCUSSION: The results of the current study underscore the heterogeneity in how parents approach parenting related to digital and social media, and how a diverse array of person characteristics and contextual factors relate to parents' digital mediation styles. Future longitudinal research should examine how digital parenting relates to child, youth, and family level outcomes in the short and long term. Evidence about the efficacy of digital parenting strategies will be crucial in helping practitioners, educators, and clinicians in supporting parents to develop and utilize the most effective strategies to support their child(ren) and adolescent(s) in the digital age.

COI DISCLOSURE: *We have no known conflict of interest to disclose.*

#59 - Transformational Education for Parents to Mediate Digital Device Practices Amongst Their Children

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The digital environment is constantly evolving and expanding and alongside this children's digital access has increased. Children often prefer digital devices, such as tablets and smartphones due to their ease of use, interactivity, and engagement. The United Nations Convention on the Rights of the Child General comment No. 25 (2021) states the importance of providing information, informed by research, for parents and caregivers on children's rights in relation to the benefits and opportunities alongside the risks of engaging with digital devices. Parents, as the primary caregivers, play a highly influential role in mediating device access for their child, and dependent upon the required outcome, parents often adopt a range of strategies to help their children access devices safely and responsibly. Despite limited formal direction, most parents report limiting their children's access to and use of technology in the home. The aim of the study was to identify the different factors that influence the choices parents make regarding their child's digital device use. The study is based on a bio-ecological framework suggestive that children are nested within families and influenced by the practices of important others, specifically parents. Over 400 parents of children aged 4-17 years were recruited via social media and community advertisements and completed an online Qualtrics survey. Questions investigated how parents access information about digital devices and what mediation strategies they currently employ. Additionally, questions were asked about parents' personal device use, parent self-efficacy, parent self-stigma and their opinions regarding digital device usage generally. Path analysis was used to establish associations between factors affecting digital device use. Results suggest an association between shame and parent self-efficacy, mediated by parent self-stigma. The study outcomes emphasise the role of research in better understanding parental factors and attitudes in selecting strategies to mediate digital device use. Our findings highlight the importance of research driven guidelines to educate parents and contribute to the emerging evidence base to help inform future parenting practices. Further research is needed to properly understand how parents can appropriately mediate digital device practices among children and adolescents.

COI DISCLOSURE: *The authors declare that there is no conflict of interest regarding the publication of this article. The research was supported by the Australian Research Training Program (RTP) scholarship and an Edith Cowan University Higher Degree by Research (HDR) scholarship.*

#60 - Examining How Parental Mediation Strategies Supported Youth With and Without Disabilities During the Covid-19 Pandemic

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Technology use among youth with disabilities is unique in that while screen-based devices provide access to communicative and social supports, increased recreational screen time can leave youth more susceptible to negative media effects. Thus, for parents of youth with disabilities, technology use is a major concern (Blum-Ross & Livingstone, 2016). Little is known about how parents of special education students used parental media strategies (i.e., parental mediation) to help youth navigate the increased technology demands during the earliest months of the pandemic; aims the current study addresses. Using an online survey of 987 U.S. parents of youth (18 years old and younger, n = 1326), two subsamples were created: (1) 237 children and adolescents (60% boys, 40% girls, mean age of 11 years) who received school-based special education support services (nested under 201 parents), and (2) 237 age- and gender-matched peers who received general education services (nested under 220 parents). Analysis indicate that parents used active mediation (m = 3.32, sd = .69) significantly more than coviewing (m = 3.32, sd = .69), which was used significantly more than restrictive mediation (m = 2.91, sd = .82); however, the use of parental mediation strategies did not significantly differ between parents of youth with and without disabilities. The use of parental mediation strategies was differentiated by the needs of youth receiving different types of special education support services. Parents of youth receiving counseling services and/or academic tutoring used active mediation strategies significantly more than other strategies, while active mediation and coviewing strategies were used significantly more than restrictive mediation for youth receiving speech therapy, adaptive PE, behavioral support/ABA, music therapy, and/or special education classroom support. Although parental attitudes towards the utility of media guidelines issued by the American Academy of Pediatrics (AAP) were positively correlated with the frequency with which parents provided mediation strategies, this was amplified for parents of youth with disabilities. The current study addresses a dearth of information within the literature addressing not only the technology needs of youth with disabilities, but how parents supported youth during unprecedented technology challenges during the COVID-19 pandemic. Findings are unique in that variations in the frequency with which parents provide mediation strategies are associated with needs corresponding to different types of disabilities (e.g., youth with communication needs receive speech therapy, etc.). The predominant use of active mediation/coviewing is in contrast with pre-pandemic findings among parents of youth without disabilities, who favored restrictive mediation (Nichols & Selim, 2022). Although AAP guidelines do not specifically address the individualized needs of youth with disabilities, findings indicate that they are a source of support for parents striving to reduce negative media effects and amplify positive media effects among youth with disabilities.

COI DISCLOSURE: *Authors have no relevant financial or nonfinancial relationships to disclose.*

#61 - Connections Between Parental Media Monitoring and Both Parent and Child Technoference Behaviors

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Given the associations between general parenting practices and child behavior, we would expect that specific media parenting styles may similarly predict child media behaviors. These parenting styles may also be a reflection of parental attitudes towards media, and thus parental media monitoring (PMM) style may also be associated with the parent's own media behaviors. Currently, no study has directly mapped technoference, or disruptions to social activity due to technology use, with PMM styles. The purpose of the present study was to examine how different PMM styles—co-viewing, restrictive-controlling, active-controlling, restrictive-autonomy-supporting, and active-autonomy-supporting—might be related to adolescent and parental technoference.

Participants for this study (N = 884) were selected from Project M.E.D.I.A. and were surveyed on their media experiences, habits, and beliefs, in addition to other relevant outcomes. Results from a series of regression analyses indicate that all five PMM styles predicted parent technoference, however only restrictive-controlling, active-controlling, and active-autonomy-supporting PMM styles were significant predictors for adolescent technoference. As for direction of effects, coviewing and autonomy-related PMM styles predicted less technoference (-), whereas controlling PMM styles predicted greater technoference (+) for parent and child. This suggests that parents who wish to minimize the likelihood of their adolescent engaging in technoference ought to refrain from controlling parenting behaviors, and increase their amount of autonomy-supportive discussions regarding media.

COI DISCLOSURE: *No conflicts of interest.*

#62 - Parental Mobile Phone Use, Parental Burnout, and Parent-Child Relationships

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INTRODUCTION: Parental burnout is more prevalent in the U.S. than in most countries (Roskam et al., 2021). Parents experience burnout when the demands of parenting make them feel exhausted, overwhelmed, and emotionally distant from their child. Technology is the leading reason U.S. parents believe parenting is different today than 20 years ago (Pew Research Center, 2020) but most research on the impact of media and technology use on children ignores parental media use.

The present study examined parent media use, parental burnout, and parent-child relationships. We hypothesized that higher regulatory media use and parental burnout would be associated with lower reported quality of parent-child relationships. We also hypothesized that day-to-day fluctuations in media use might differ from average ratings.

METHODS: Fifty-eight well-educated and predominantly white parents of a child 3-5 years old reported on household media practices including parental perceptions about mobile device use (McDaniel, 2021) and patterns of daily media use for up to seven days using a daily diary methodology. Items included the frequency of parental regulatory use of media (e.g., to mentally "check out" or escape, to take a break from their child), daily symptoms of parental burnout, and negative parent-child interactions. The daily percentage of screen time spent on social or productivity apps was measured via passive sensing using iPhone Screen Time.

RESULTS: A multilevel structural equation model (SEM) tested within- and between-person associations between daily parental burnout and frequency of parent regulatory media use on frequency of negative parent-child interactions. Between-person effects for parent regulatory media use showed that parents who used media to self-regulate more frequently report having more frequent negative parent-child interactions ($\beta = .374$, $p = .020$) compared to parents who used media to self-regulate less often. Within-person effects demonstrated that parents reported more negative parent-child interactions ($\beta = .198$, $p < .001$) on days when they also reported more self-regulatory media use than usual (their own average), as well as on days when they reported more symptoms of parental burnout than usual ($\beta = .310$, $p < .001$). There were no significant associations between the Screen Time Categories of Social and Productivity and negative parent-child interactions when added to the SEM models.

Overall, these data show that day-to-day fluctuations in parental regulatory media use and symptoms of parental burnout are related to negative parent-child interactions on the same day. Ultimately, it will be important to develop interventions that are tailored to the specific needs of parents to support parents' healthy coping and children's socio-emotional development in the digital age.

COI DISCLOSURE: *This study was made possible by intramural seed grants from the School of Human Ecology, UW-Madison (PI Kirkorian) and Georgetown University (PI Barr).*

#63 - Do Perceptions Matter More Than Actual Phone Use? Parent Phone Use, Technoference, and Perceived Responsiveness to Child

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INTRODUCTION: Almost every adult age 18-49 owns a smartphone1. Interviews reveal parent smartphone use (SPU) when bored or stressed and for support. Although SPU could assist parents, it may cause distractions (technoference), which can impact child well-being/behavior. Additionally, parents express guilt concerning SPU. Thus, SPU is also linked with parents' feelings concerning parenting. In this study, we examined daily objective and perceived SPU around their infant, differences between objective and perceived SPU, and associations between SPU (objective and perceived) and perceptions of responsiveness to infant. Parents are often not accurate reporters of SPU, thus we hypothesized that objective use and self-reports would differ. However, it was unclear whether objective or perceived SPU would more strongly link with daily responsiveness.

METHODS: Data are from 264 parents (76% mothers, 79% Non-Hispanic Caucasian, Median income=$70,000) of infants (Mage=6.65 months). We utilized data from 8 days of surveys and objectively-measured smartphone use. Daily surveys included depressive symptoms (CESD-7), delayed responsiveness ("Today, I feel I sometimes responded slowly to my baby"), stressful child behavior ("Today, how much did you experience your infant's behaviors as stressful"), perceived SPU around child ("Thinking about the time you were physically near your infant—not counting when infant was sleeping—about what proportion of that time were you also on your phone?"; Slider from 0%-100%), perceived technoference ("How many times today did your phone use interrupt and interaction or activity you were engaged in with your infant?"), and a time diary (indicating when with child in 15-minute intervals). We matched the phone tracking and time diary data to create objective SPU around child (use during child times divided by total child time).

RESULTS: On average, parents showed objective SPU during 27% of their child time, and the average for perceptions was similar. However, the average masks differences between objective and perceived SPU. On average, 50% were fairly accurate in reporting SPU (within 10 percentage points), while 26% perceived greater SPU than their actual (more than 10 percentage points off) and 24% perceived less SPU than their actual (more than 10 percentage points off). Utilizing multilevel modeling (accounting for nested data), we examined daily associations between objective SPU, perceived SPU, technoference, and delayed responsiveness—controlling for parent gender, ethnicity, depression, child hours, and child behavior. Greater perceived technoference (NOT objective or perceived SPU) predicted perceptions of slower responsiveness to infant.

DISCUSSION: Perceptions and actual SPU differed for many parents. Yet, neither perceived nor actual SPU were associated with perceptions of parenting. Instead, perceived technoference was more predictive of daily changes in perceptions of parenting. This aligns with studies that suggest technoference matters more than amount of use for effects on parenting12—although prior work had not examined objective use.

COI DISCLOSURE: *Dr. McDaniel reports that this research was supported by the National Institute of Nursing Research of the National Institutes of Health under Award Number R21NR019402.*

#64 - "Pay Attention to Me!": Parental Technoference as a Predictor of Preschool Social Behavior

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Although families can bond over shared experiences with technology, devices can also interrupt parent-child interactions. These interruptions to the parent-child relationship due to technology are known as technoference and occur frequently. Young children are in a time sensitive period for development and parents play a significant role in these outcomes. Little research has been conducted examining the influence of parental technoference on children's social behaviors towards their peers. Participants for this study included 362 parent-child dyads (Mchildage at Wave 5= 4.00 years, SD = .23 years) which parents reported on (1) the amount of technoference in their parent-child relationship on a typical day, (2) their beliefs surrounding technoference in their home, and (3) their children's social behaviors towards their peers, specifically physical and relational aggression, depression, and prosocial behaviors. Four Ordinary Least Square models were used to examine how parental technoference related to the specified social behaviors. Findings indicated that parental technoference was predictive of increased physical and relational aggression, and depression. Additionally, parental technoference was not predictive of increased prosocial behavior, but rather showed a decrease of prosocial behavior in their children towards peers. Children may become frustrated by the sudden withdrawal of parental attention when responding to notifications which may lead to more maladaptive behaviors that translate to other relationships. Overall, parents may miss opportunities to teach proper social skills in addition to unintentionally modeling problematic behavior when excessively using technology around their children.

COI DISCLOSURE: *No conflicts of interest.*

#65 - Parent-Teen Connections on Social Media: Exploring Parent Connectivity and Interaction With Teens on Social Media and Predicting Social Media Behavior

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Social media has become a prominent fixture in the everyday lives of teens; it has changed the way they express themselves and find information and offers a critical outlet for youth identity development. However, with increased teen social media use, comes the potential for increased tensions within families, at school, and in communities and society at large. Grounded in frameworks from scholarly literature on digital citizenship, parent mediation, socialization theory, and teen social media uses and gratifications, this study focuses on the tensions between parents and teens from social media use and explores potential associations between their connectivity and interaction on social media and teen social media behaviors.

Prior research has shown it to be increasingly difficult for parents to effectively mediate and engage in their teen's social media activities due to a technology knowledge gap, where the rate of technology change outpaces parents' ability to understand it. Digital technology has become extremely personal and mobile, and today's teens are more tech-savvy than ever. Parents aren't necessarily up to date on the latest teen apps and social media features, leaving families involved in on-going, multifaceted conversations and debates about proficiency and expertise in relation to technology and social media usage. Exploring and understanding parent impact on teen social media use could lead to the development of mediation and support interventions that maximize positive teen social media behaviors.

Through a 41-item questionnaire, 650 middle school and high school students self-reported their social media use behaviors, their connectivity to parents on social media, and the frequency of their interactions such as likes, comments, viewing of content, and direct messages. Results provided significant evidence that teens who frequently connect with and interact with their parents on social media exhibit stronger problem-solving abilities, civic and global awareness, content creation and sharing talent, collaboration with others, identity management, and information seeking and evaluation skills on social media. Overall, parent-teen connectivity and interaction on social media were found to positively predict teen civic, critical, and creative social media behaviors.

The findings from this study reveal the importance of filling the technology knowledge gap between parents and teens around social media and have the potential to inform future parent mediation strategies and techniques that minimize family tensions and drive positive teen social media behaviors. For example, opportunities exist for parents to deploy more participatory mediation strategies with their teens that encourage parents to demonstrate new ways of using social media, promote conversations, and encourage skilled content creation and sharing.

COI DISCLOSURE: *None.*

#66 - Examining the Role of Parent-Adolescent Relationship Quality on Adolescent Smartphone Use

Fakhar, Fizza[1], Morris, Terrique J.[2], Maza, Maria T.[1], Garrett, Shedrick[1], Nick, Elizabeth[1], Prinstein, Mitch J.[1], Telzer, Eva H.[1]

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Adolescents' ubiquitous digital media use is deeply embedded within family contexts. This has spurred fear that unprecedented use of smartphones may affect and be affected by in-person interactions, particularly with parents. The quality and quantity of interactions between parents and adolescents are significant determinants of parent-adolescent relationship dynamics and may be a critical predictor of adolescents' digital media use. The current study investigated whether the quality of parent-adolescent interactions predicted adolescents' smartphone use in the subsequent hour. Adolescent participants (N = 70 , Mage = 16.96 years, SDage = 0.58 years) completed an Ecological Momentary Assessment three times per day for 14 days in which they reported the quality of interactions between themselves and their parents and a daily diary for 14 days in which they submitted screenshots showing their objective time spent using smartphones at the hourly level. We hypothesized that parent-adolescent relationship quality would negatively predict adolescents' smartphone use. Using a multilevel model, we found significant associations between the quality of positive parent-adolescent interactions and smartphone use such that adolescents spent more time using their smartphone when they reported having more positive interactions with their parents during the previous hour. Interestingly, no association was found between the quality of negative parent-adolescent interactions and smartphone use. Findings suggest that the quality of interactions between parents and adolescents may be a critical factor to better understand adolescents' digital media use.

COI DISCLOSURE: *Dr. Mitch Prinstein and Dr. Eva Telzer reported receiving private research funds from the Winston Family Foundation to help fund this study. The Winston Family Foundation had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review or approval of the manuscript; and decision to submit the manuscript for publication.*

#67 - Parent-Child Behavioral, Verbal, and Emotional Engagement During Shared Book Reading

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Print and electronic reading materials have been pitted against one another for decades. Whether one format is better for preschoolers' engagement and learning is still up to debate (Reich, Yau, & Warschaur, 2016). Survey studies show that parents prefer print books for their preschoolers, claiming that their children seem more engaged with and learn more from print books compared to eBooks (Etta, 2019; Strouse & Ganea, 2017). Contrary to parent belief, preschoolers frequently engage more with and learn better from eBooks in a laboratory setting, depending on how the eBook is designed and used. Most research testing effects of book format on young children is conducted in a controlled context (e.g., an experimenter reading from a script in a laboratory) and focusing on book reading outcomes (e.g., subsequent tests of learning) rather than processes (e.g., real-time observations of behavior and engagement). This study was designed to fill these gaps and provide greater ecological validity with a naturalistic context while maintaining experimental control over book format and content.

The purpose of this study was specifically to examine how children's book format influences parent-child book reading engagement. The extant literature suggests that there are at least two potential mechanisms that might moderate children's engagement with books: (1) the format and features of the book itself and (2) how parents and children engage with the book. This study aimed to tease apart the separate effects of book platform and interactivity on real-time behavioral and verbal engagement during parent-child reading. This study also aimed to advance the nascent literature on children's physiological emotional responses (via electrodermal activity) to reading with various book formats.

Ninety-six preschool-aged children (3-5 years) and their parent read one of four books that varied based on interactivity (interactive, noninteractive) and platform (eBook, print book). Sessions took place at a children's museum and families were recruited on-site. Children were outfitted with a physiological device during book reading and sessions were video recorded for subsequent behavioral and verbal coding.

Results revealed that print books were favorable for positive reading engagement, as they increased encouraging gestures and story-related discussion. eBooks added excessive, non-story related engagement such as more restrictive gestures and device-related talk. Platform and interactivity had no effect on children's physiological responses. These results suggest that traditional, noninteractive print books might be best suited for parent-child joint reading.

COI DISCLOSURE: *This research was supported by the Spencer Foundation. The views expressed are those of the author and do not necessarily reflect the views of the Spencer Foundation.*

#68 - Exploring Dialogic Interactions in Grandparent-Grandchild Conversations Over Video Chat

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Many families use video chat to sustain relationships between children with distanced family members (Horgan & Poehlmann-Tynan, 2020). Exploring how we can utilize video chat to stimulate emotional connections with loved ones and foster child language development is critical. Limited research has examined how adults support children's language development over video chat. Therefore, we drew upon literature from adult-child in-person interactions. The delivery and content of the input plays a role on children's language learning (Masek et al., 2021). For example, asking children questions and statements may be more beneficial for language development than commands (Justice et al., 2002). The content of communication, such as the presence of dialogic practices (e.g., distancing prompts), during adult-child interactions is related to literacy, language, and academic success (Hargrave & Sénéchal, 2000; Luo et al., 2014). Therefore, it is crucial to investigate whether question-asking, statements, and distancing prompts appear over video chat with grandparents and grandchildren as they watch and discuss media (i.e., a video and sets of pictures).

This study builds upon prior research by examining grandparent-grandchild interactions through video chat in real-time. The current study asks: 1) Do grandparents and grandchildren produce high-quality language talk (e.g., questions and statements) with each other as they engage with the media through video chat? 2) Do grandparents engage in dialogic interactions with their grandchildren?

Children between the ages of 48- to 72-months (Mage = 60.19, SD = 6.49, 18 males) and their grandparents (10 males) participated in a one-time video chat session (N = 43). Participants interacted during two activities: watch and discuss a video about an uncommon animal and discuss pictures showing birthday parties, playgrounds, and household pets. The proportion of questions, statements, and commands were calculated to assess input quality. We also calculated the proportion of distancing prompts, which appear when adults draw parallels from the media to children's lives outside of the media source (Purdy, 2008). For example, grandparents may say things like, "Remember when you saw a horse at the farm?" or "Do you have a slide like that at your park?" Lastly, parents and grandparents were asked to complete a Relationship Survey separately to assess the relationship between children and their grandparents.

Results revealed that grandparents drove conversations and primarily used statements and questions when interacting with their grandchildren as they engaged with media over video chat. We also found that grandparents facilitated dialogic interactions using distancing prompts 26% of the time. Grandparents tend to open these bouts of distancing prompts through question asking. Findings have implications for building children's language development through interacting with grandparents. Additionally, results suggest that video chat may be an alternative environment for children to experience meaningful, language-rich interactions contributing to language growth.

COI DISCLOSURE: *No conflicts.*

#69 - They Long to Be Close to You: Grandparent and Parent Perceptions of Closeness Between Video-Chatting Children and Their Grandparents

Gabrielle Strouse[1], Jennifer Zosh[2], Georgene Troseth[3], Lauren Myers[4], Elizabeth McClure[5], Rachel Barr[6]

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Many grandparents use video chat as a way of connecting with their grandchildren. In a prior study, we found that more frequent video chats were associated with grandparents' feelings of closeness to their grandchildren (ages 0 to 5 years; Strouse et al. 2021), suggesting that video chats may be a valuable tool for grandparents wishing to connect with remote grandchildren. However, little is known about how video chat usage predicts closeness over time, especially when children are very young.

In the current study, we sent the grandparent and parent of 100 young children (4-20 months) each three surveys spaced two months apart. Grandparents rated their overall feeling of closeness to their grandchild as well as how close they felt during video chats and how much they enjoyed video chats. Parents rated how close they thought their child felt to the grandparent.

Using hierarchical linear growth models, we found that grandparents' ratings of overall closeness increased across the three surveys, as their grandchildren got older ($b = 0.07$, $p < .001$). They rated overall closeness higher when they met with their grandchild in person more frequently ($b = 0.22$, $p < .001$) and when they video chatted more often ($b = 0.21$, $p = .003$). Grandparents' ratings of closeness and enjoyment experienced during the video chats showed a ceiling effect rather than growth -- with high closeness (Median = 4.22 out of 5) and enjoyment (Median = 98 out of 100) across all surveys, illustrating how valuable video chat interactions can be for grandparents. Similar to grandparents, parents estimated that their child felt closer to their grandparent over time (age, $b = 0.05$, $p = 0.014$) and when they met in person more frequently ($b= 0.20$, $p < .001$), but parents did not rate their child's closeness to their grandparent higher when they video chatted more often ($b = 0.10$, $p = .211$).

Frequent video chats support grandparents' feelings of closeness to their grandchild and they find them an enjoyable way to connect with their grandchild. According to parents, however, video chat frequency did not predict estimates of how close their child felt to the grandparent. This difference in perspectives may be due to the expertise of grandparents in interpreting screen images, relative to infants, who may still be learning to remember people and events they experience on screens, or connect those memories over time. Alternatively, the parents' perspective may be informed by what parents must do to support children in drawing these connections, or parents may underestimate infants' closeness to others. Future studies are needed to disentangle these alternatives by asking more about both grandparents and parent interpretations of the video chat experience.

COI DISCLOSURE: *The research team reports funds from AARP during the conduct of the resarch to be presented.*

#70 - Screen Time and Executive Functioning in Early Children

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The COVID-19 pandemic has created stressful experiences for families with young children (Pachter et al., 2020; de Figueiredo et al., 2021). As childcare services and routines got disrupted and working at home became part of the new normal for many, parents were more reliant on digital devices to engage, entertain or educate their children. Research on the effects of the COVID-19 pandemic on family functioning suggests both short- and long- term consequences for child development, with early childhood being a particular vulnerable period (Magson et al., 2021). Therefore, we focus on screen use in families with young children under ages 5 and explore the associations between three types of screen use (e.g., for entertainment, education, vs social connections) and young children's emerging executive skills as our society gradually transitions to the post-pandemic era.

We surveyed 81 families, primarily White/Caucasian and well-educated, with young children (42 boys, mean age = 3.31 years, SD = 1.26) in the greater D.C. area in the months of October and November in 2022. Parents reported the amount of screen time their child spent using TV, computers/tablets or smartphones as well as filled in the Executive Skills Questionnaire for Children (Preschool/Kindergarten Version). On weekdays, almost two-fifths of our families eliminated screen time for their child. Among those who allowed for screen use, children spent on average 54 minutes screen time for entertainment (e.g., watching cartoon videos on YouTube, or using gaming apps), 29 minutes for educational purpose (e.g., watching Discovery channels, or reading eBooks), and 16 minutes for social purpose (e.g., using video chat with a family member) on a typical weekday. Over the weekend, more than two-thirds of the families engaged in some type of screen use. Children spent on average 86 minutes for fun, 30 minutes for education and 20 minutes for socializing purposes.

Parents also reported a moderate level of executive skills scores (Mean = 91.6, SD = 18.3), totaling scores from 11 executive skill items such as response inhibition, emotional control, task initiations and goal-directed persistence. No gender difference was found for any executive skill item. Age was the single strongest predictor of executive skills development in our sample. After controlling for age, the total amount of screen time for educational purpose was positively associated with more task initiations, the total amount of screen time for fun was positively associated with more goal-directed persistence, while total screen time, no matter for fun, educational or socializing purposes, was positively associated with meta-cognition (e.g., "could find novel, but simple, use of a tool to solve a problem."). Taking a strength perspective, these findings show the potential benefits of screen use to young children in developing various types of executive functions.

COI DISCLOSURE: *Dr. He reports no financial relationships/conditions/circumstances that present a potential conflict of interest for any aspect of the presented work during the conduct of the research to be presented.*

#71 - Evidence for the Short-Term Impact of Fantastical Cartoon Content on Toddlers' Attention Control

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INTRODUCTION: Despite international recommendations to restrict/limit screen time in early childhood (e.g., American Academy of Paediatrics, 2016), young children are increasingly engaging with screen media (Ofcom, 2021). To understand whether "screen-time" at this age is developmentally appropriate we believe a nuanced approach must be taken to individual pieces of media and their potential demands on viewer cognition. For example, multiple studies have shown that children's Executive Functions (EF) are depleted immediately after viewing some TV shows but not others (e.g., Lillard et al., 2011; 2015). These effects have been attributed to general content features such as the presence of fantastical events (e.g., violations of physical laws such as impossible transformations) or formal features such as cut rate. However, neither adequately predicts whether a show will deplete EF. We suggest fantastical events may be particularly problematic as violations of expectation require re-assessment of knowledge, which may capture attention to the detriment of other aspects of a scene. Aligning these events with existing knowledge is cognitively taxing and may limit endogenous processing on subsequent tasks, encouraging more stimulus-driven processing (exogenous attention control).

METHODS: To isolate and test the short-term impact of these events 36 infants (18 months) were shown matched cartoons (fantastical & non-fantastical) created from commercially available TV shows (Looney Tunes). The short-term impact was tested with behavioural and objective measures of attention control (a pre-cursor of EF skills; Hendry, Jones & Charman, 2016), including Lab-Tab block task (focused attention), static scene viewing (endogenous attention control), and an anti-saccade task (e.g., exogenous saccades to a salient distractor [pro-saccade] & endogenous inhibition of the distractor with anticipatory saccades to a target [anti-saccades]). Generalised Estimating Equation models tested condition differences (baselined for pre-viewing performance).

RESULTS: There was no condition difference on focused attention (longest look, p=.19). We also found no condition difference in mean fixation duration during scene viewing (p=.29). In the anti-saccade task, we found no condition difference on exogenous attention control (pro-saccade SRTs, p=.35). However, there was an impact of fantastical content on endogenous attention control. Only after viewing the non-fantastical condition were children able to significantly increase the proportion of anti-saccades made (p=.007; fantastical p=.35).

CONCLUSIONS: Thus, endogenous processing was limited after viewing fantastical cartoons, but only when children needed to suppress stimulus-driven processing. Suggesting the short-term impact of fantastical content manifest in the trade-off between endogenous and exogenous processing. These findings support existing evidence of short-term effects of viewing fantastical content. Importantly, our design shows it is specifically fantastical events, independent from other confounding differences e.g., cut rate, that leads to poorer attention control. Further work is needed to understand the mechanisms which underly these short-term effects and whether effects are sustained in the mid-to-long term.

COI DISCLOSURE: *Claire Essex reports a PhD Studentship grant from the Economic and Social Research Council (ESRC), Tim Smith reports a Nuffield Foundation Grant (Grant Number: FR-00002205) during the conduct of the research to be presented.*

#72 - A Complex Dynamical Systems Model for Understanding the Effects of Screen Time on Autism Spectrum Disorder Prevalence

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INTRODUCTION: Autism spectrum disorder (ASD) is characterized by impaired reciprocal social communication. ASD may be caused by several potentially interacting factors operating across time scales: in seconds or less, interaction with caregivers and the environment molds highly plastic brain networks of infants, potentially encoding ASD-like behavior; over about a dozen years, a cohort of siblings may be born into a family–if any siblings develop ASD, that increases the chance future siblings will, too; finally, over eons, social communication genetically evolved. To understand the rise and onset of ASD it is also necessary to consider different population scales: ASD may arise from individual-level genetic disorders or maternal illness in-utero; family opinions and social dynamics are also predictive of ASD; at the cultural level, the increased use of screen devices may be causing increased ASD prevalence world wide.

METHODS: In order to better understand how these different nested layers of time and population scales may interact to cause increased ASD prevalence, we present in our poster an integrative literature review of various factors leading to ASD using the framework of complex dynamical systems theory. This approach enables the analysis of complex dynamics including bifurcations and emergent behavior in conversational prosody, turn-taking, joint attention, and pragmatics in cognitive science, all of which are impaired in those with ASD.

RESULTS AND DISCUSSION: Our review analyzes observation-based and other empirical approaches to studying ASD by classifying the studies based on temporal and spatial scales considered, from which we can begin to develop a dynamical systems account of ASD. Our work especially supports the ongoing study of ASD that examines the causal relationship between screen time in the first year of life with ASD prevalence by providing a framework for multi-scale analysis of phenomena and causal factors related to ASD onset. These time and population scales range from relatively fast individual-level neurobiological dynamics to the cultural evolution of screen availability and use among infants and their families and caregivers. We close by developing a mechanistic, integrative model of increasing ASD prevalence, which suggests new behavioral experiments to study the interaction of different nested processes leading to ASD emergence.

COI DISCLOSURE: *Matthew A. Turner is funded by co-author Leonard Oestreicher's non-profit Society for the Study of Autism Spectrum Disorder and Social-Communication (SSAS-C) and a Pandemic Preparedness Postdoctoral Fellowship from the Pandemic Preparedness Hub at Stanford Medicine.*

#73 - Early-Life Digital Media Experiences and Autism Symptoms: A Review of the Literature

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INTRODUCTION: Higher screen time is associated with developmental delays. Recent studies have shown a relationship between early-life screen time and autism spectrum disorder (ASD). We review research on screen time and autism, covering association and intervention studies.

METHODS: Review of the literature was undertaken crossing the terms "screen time" and "digital media" with "autism". Studies were categorized as associational or interventional; cross-sectional or longitudinal (prospective or retrospective). Data gathered: country, N, participant age, measures, and outcomes. Studies included had at least some participants 4 years or younger. Interventional study details also included parent education, therapies, period of intervention, and outcomes.

RESULTS: Twenty association studies were identified from 12 countries (2 prospective, 8 retrospective, 10 cross-sectional); combined N=147,138 children. Greater daily viewing was associated with an autism diagnosis (9 studies), autism-like symptoms (7 studies) and severity of autism symptoms in children with an autism diagnosis (4 studies). Earlier age of first screen viewing was associated with autism diagnosis (5 studies) and autism-like symptoms (1 study). Six intervention studies were identified from 5 countries (N=215 children). Children had an autism diagnosis (4 studies) and autism symptoms without a diagnosis (2 studies). Length of intervention was 6 to 8 months for children with autism, and 2 months for those with sub-clinical autistic-like symptoms. Five studies included parent training on social engagement in addition to screen time reduction. Children with an autism diagnosis continued their usual therapies. Screen time was successfully decreased to an hour or less/day (4 studies), with each of these studies finding significant improvement in autism symptoms post-intervention compared to baseline. Two studies had varied success with screen time reduction, including one finding continued screen time >1 hr/day had significant negative effects on therapeutic improvement. The other found a significant association of symptom improvement with the extent of screen time reduction. Parent stress was significantly reduced post-intervention (2 studies), while one study documented improvement in EEG patterns post-intervention.

CONCLUSIONS: There is a growing body of literature associating early-life digital media exposure to autism symptoms and diagnoses, as well as improvements in symptoms among children with screen exposure when screen reduction is combined with a focus on social engagement. These findings suggest that early-life digital media exposure may be a modifiable risk factor in the development of autism symptoms. While further research is needed including randomized controlled trials of screen/social parent training combined with usual therapies vs usual therapies alone, we urge greater awareness of current findings on screen time and autism, and adherence to recommended limits on screen viewing in young children. Interventionists and parents may wish to consider a trial of screen reduction along with socially oriented early intervention therapies in young children with autism symptoms and high digital media exposure.

COI DISCLOSURE: *The authors have no conflicts of interest to disclose.*

#74 - Association of Early-Life Digital Media Experiences With Development of Atypical Sensory Processing

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INTRODUCTION: Early-life exposure to digital media is a relatively new phenomenon in human history, with little understanding of its impact on sensory processing. Screen time reduces meaningful play and social interactions that may have significant implications in the development of typical sensory processing. Audiovisual stimulation of digital media could potentially directly impact early sensory brain connectivity. Symptom severity in autism has been associated with both early-life digital media exposure and sensory hypersensitivity. This study was undertaken to determine the relationship between early digital media experiences and subsequent caregiver reported sensory profiles.

METHODS: Data was obtained from the US National Children's Study, a cohort study of environmental effects on children. Parents of 1471 children reported their children's exposures to digital media viewing at ages 12 months (yes/no viewing), 18 months (hours/day), and 24 months (hours/day). Sensory processing was reported at 33 months (32.7 ± 1.94 months) on the Infant/Toddler Sensory Profile (ITSP), a 48-item validated tool for measuring sensory processing. Quadrant subscales including low registration (fails to notice/respond to sensory stimuli), sensation seeking (actively seeks sensory stimuli), sensory sensitivity (overly distracted by sensory stimuli), and sensory avoiding (actively tries to limit sensory exposure) were coded for frequency of sensory-related behaviors as typical, high, and low, based on age-dependent ITSP cut-off scores. Covariates included in the multivariable models were child age, sex, prematurity, family income, parent education, race/ethnicity, caregiver play with toys with child (12-months), and caregiver takes walks with child (12-months). Multinomial logistic regressions were conducted on 100 imputated data sets.

RESULTS: At 12 months, screen exposure was associated with both greater than typical low registration behavior (OR 2.05; CI 1.31-3.20), and less likelihood of lower than typical low registration behavior (OR 0.64; CI 0.44-0.92), as well as less likelihood of low sensation seeking (OR 0.55; CI 0.35-0.87) and low sensation avoiding (OR 0.69; CI 0.50-0.94) behaviors. At 18 months, greater daily screen exposure was associated with a high frequency of low registration (OR 1.23; CI 1.04-1.44) and sensation avoiding (OR 1.23; CI 1.03-1.46) behaviors. At 24 months, greater daily screen exposure was associated with a high frequency of sensation seeking (OR 1.20; CI 1.02-1.42), sensory sensitivity (OR 1.25; CI 1.05-1.49), and sensation avoiding (OR 1.21; CI 1.03-1.42) behaviors. Additionally, greater 12-month caregiver-child play was associated with less risk of high frequency behaviors related to low registration (OR 0.49-0.51).

DISCUSSION: Early-life digital media exposures at 12-, 18-, and 24-months were associated with atypical sensory processing outcomes. Further research is needed to understand the relationship between screen time and specific sensory-related behaviors, such as those related to autism, and whether minimizing early-life exposure can improve subsequent sensory-related outcomes.

COI DISCLOSURE: *The authors have no conflicts of interest to disclose.*

#75 - Underlying Mechanisms of Associations Between Screen Time and Attention-Deficit/Hyperactivity Disorder Symptoms in Adolescents: A Multilevel Longitudinal Mediation Study

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Several studies investigated the association between screen time and the growth of attention deficit/hyperactivity disorder (ADHD) symptoms among children and adolescents, and findings suggested an important relationship between digital media use and ADHD symptoms severity. However, further studies investigating the underlying mechanism of screen time effects on neuropsychological development in adolescents are needed. With this aim, the current study used data from a population-based longitudinal cohort of adolescents to assess the associations of screen time and ADHD symptoms through impulsivity and neuropsychological functions using a mediation multilevel model (MLM).

Our sample included 3,779 adolescents (49% girls; mean [SD] age: 12.8 [0.5] years) who were recruited from 31 high schools in the greater Montreal area, and participated in annual surveys for five consecutive years, from 7th to 11th grade. We assessed screen time by asking participants how much time per day they spend on social media, playing video games, watching shows or movies on television and practicing other activities on computer. We assessed impulsivity with five items of the Substance Use Risk Profile Scale. Inhibitory control was measured using an adaptation of the Go/No-Go Passive Avoidance Learning Paradigm, while working memory was assessed with the spatial working memory task "Find the phone" based on the Self-Order Pointing Task and the spatial working memory task of the Cambridge Neuropsychological Test Automated Battery. Bayesian MLMs assessed direct and indirect associations of screen time and ADHD symptoms through impulsivity, response inhibition and working memory at between-person, concurrent within-person, and lagged within-person levels. To further characterize potential mediated associations, we applied four variable chained mediation MLMs where the multiple sequential mediators were either inhibitory control and impulsivity, working memory and impulsivity.

Results showed that further increases in social media use, television viewing, and video gaming in a given year were associated with an exacerbation of ADHD symptoms within that same year (direct within-person association), over and above potential common vulnerability (direct between-person association). Impulsivity resulted to be the most robust mediator associating screen time and ADHD symptoms at both between and within-person levels, while inhibitory control and working memory only at between-person level. Social media use revealed a significant lagged-within-person association with ADHD symptoms mediated by impulsivity, showing a lasting effect from one year to the next, and was shown to be longitudinally linked to increased risk for ADHD symptoms through a mediation path that involved disrupted inhibitory control and impulsive temperament.

These findings proved robust even after accounting for the potential common vulnerability between these behaviors and neurocognitive difficulties, in a manner that is consistent with a causal hypothesis, and have important clinical implications for preventing and managing with clinical interventions ADHD symptoms among adolescents.

COI DISCLOSURE: *Authors report no financial interests or potential conflicts of interest.*

#76 - Virtual Reality Strategies to Assess and Improve Social Cognition in Children With ADHD and Disruptive Behavior Disorders

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Social cognitive deficits are a prominent component of functional difficulties in children with ADHD and/or disruptive behavior disorders, such as oppositional defiant disorder (ODD) and conduct disorder. While behavioral therapies have been developed to address these difficulties, interventions can be difficult to implement and maintain due to low engagement or personnel requirements, and executive functioning impairments may be an obstacle to success. Virtual reality (VR) has exciting potential to address social cognitive impairments, as it provides the capability to present realistic social environments in which children are fully immersed as a character. Our NeuroXR lab has developed novel VR programs that provide interactive scenes in which the environment and characters can be adapted in a controlled manner. We have employed these programs in two separate studies of children aged 9-12 with social-cognitive difficulties.

In Study 1, we developed a VR intervention (PerspectiVR) to address perspective-taking deficits in youth with a disruptive behavior disorder. Participants underwent three distinct scenes in a virtual school cafeteria, each involving an interpersonal conflict. In the intervention condition, these children then experienced the conflict from their virtual counterpart's perspective, while in the control group the conflict was re-experienced from the same initial perspective. After each scene and replay, participants completed surveys regarding perspective taking and judgements of the counterpart's intentions. In Study 2, we are using VR to assess the role of visual and auditory distracters on attribution biases and emotion recognition in three groups: children with ADHD, children with ADHD and comorbid ODD, and a healthy control group. Participants view social interactions with and without background visual and audio distraction and answer questions about virtual character intentions. In addition, we are assessing the speed and accuracy of facial emotion recognition amidst high, medium, and low levels of background distraction.

For Study 1, participants scored higher on perspective taking after the PerspectiVR intervention, relative to the control group ($p = .002$). In addition, after the intervention, virtual counterparts were rated to be less mean, and participants were happier after scenes. Finally, participants rated the VR headset to be comfortable and easy to use, and they highly enjoyed using VR. Study 2 is ongoing and preliminary results will be presented regarding the degree to which previously reported hostile attribution biases and poor emotion recognition in ADHD and ODD are driven by visual distractions and a failure to attend to social cues.

These studies reflect the promise that VR can provide for both assessing social cognition and delivering novel intervention strategies in children with social-cognitive difficulties. Our NeuroXR lab aims to build on this promise to build adaptive VR programs for at-home use and integration into clinical therapies to improve social cognition in children.

COI DISCLOSURE: *This project is supported by funds from the National Institute of Mental Health, grants R61MH119291 and R21MH126165. The authors may apply for a patent for VR software but have not yet initiated the application process.*

#77 - Using Spatial Memory to Traverse Through Minecraft: Examining Individual Differences in Spatial Memory and Navigation

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Understanding what supports hippocampus-based memory is integral to identifying teaching strategies that will support students' memory processing and learning. The hippocampus enables the retrieval of spatial memory, which is an essential cognitive mechanism for learning STEM. This study explores the relationship between egocentric and allocentric frameworks within hippocampal spatial memory and individual differences in the relationship between these two spatial memory frameworks.

Memory for objects and object-location associations were examined in 45 participants ages 18-22 years old (*Females* = 17, *Males* = 4) using the open-field Minecraft Memory and Navigation task. Participants were administered four measures of individual differences which included the Corsi Block Task, Guay's Visualization of Views, the Spatial Anxiety Scale, and the Video Game Experience Questionnaire. Participants then watched a video of an avatar following a route to 12 objects. Immediately following the video, participants were administered a 24-item object recognition task and then recreated the path route they learned in the Minecraft environment. Subsequently, participants were placed at a random location in the Minecraft environment and asked to navigate to the locations of the 12 original objects. Correlation analyses were conducted to examine the association between individual differences and path route accuracy. The association between egocentric and allocentric memory was assessed using the accuracy of object-location associations, which was calculated using mean Euclidean distances between the actual and replaced object locations; smaller differences equaling higher accuracy.

Preliminary results show that video game players show significantly higher rates of path route accuracy when compared to non-video game players ($r = 0.72, p < 0.05$). Contrastingly, video game players show significantly lower rates of sequential recognition than non-video game players ($r = 0.46, p < 0.05$). A significant negative correlation between object replacement accuracy and participants' accuracy in recalling objects in the correct sequence ($r = -0.545, p < .001$) was found, suggesting that better memory for object-location association is related to better memory for the objects themselves.

These findings imply that there is interaction between allocentric and egocentric memory, indicating that a cognitive map can be created using egocentric information. This provides insight into the factors contributing to hippocampal-based memory formation which may have broad implications for formal instruction of spatial environments, such as in geosciences and other field-based STEM domains. Findings also provide insight into how individual differences affect spatial memory, which could lead to discovering teaching strategies that could make STEM courses more accessible to students with individual differences in spatial memory. This examination of cognitive processes that support spatial memory will be expanded on in Study 2, where we will use the Minecraft Memory and Navigation task to investigate how contextualizing spatial information in a narrative story can support spatial memory.

COI DISCLOSURE: *The authors have nothing to disclose.*

#78 - How Variability in Infant Media Use Impacts Vocabulary

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Young children's digital media use is widespread (Rideout & Robb, 2020) and continuing to increase (Madigan et al., 2022). However, there is also massive variability in how much and for what purpose individual children use digital media, and these differences are associated with developmental outcomes (Stockdale et al., 2022). This is particularly true for language development (Sundqvist et al., 2021). The current study examines this variability in media use and its impact on language outcomes in 17-30-month-old children.

302 parents of children between 17- and 30-months completed questionnaires on their child's vocabulary (MCDI; Fenson et al., 1994), technology use (MAQ; Barr et al., 2020), temperament (ECBQ-short form; Putnam et al., 2010), and their own personality (BFI; John, 1991). This included questions aimed at what technology-based activities children engage in and parent reasons for using media with their children.

First, a linear mixed model predicted average media time (minutes/day) with fixed effects of activity type (contrast coded), child age (in days, centered) and child total vocabulary (centered), which both interacted with activity type, and a random participant intercept. There was a main effect of activity, $\chi2=346.46$, $p<.001$. Follow-up pair-wise analyses revealed children spent the most amount of time watching videos, more than reading books, $p<.001$. Activity and vocabulary also interacted, $\chi2=10.47$, $p=.03$, with follow-up models revealing higher video time correlated with lower vocabulary, $\beta=-32.68$, $t=-2.56$, $p=.011$.

Second, we explored if reasons why parents use digital media with their children might moderate the impact on vocabulary. Logistic models predicted whether or not a parent indicated a given reason for that activity from the child's vocabulary and age. There was variability across children, but also patterns – in general, parents used videos to occupy the child more than for calming, or connecting, $\chi2(16)=339$, $p<.001$. They also co-view videos and co-engage in chat at least some of the time. Despite these differences in why or how parents engage in media with their children, neither reason nor co-viewing were significant moderators.

Finally, a final set of path analyses explored possible origins for variability in media use. Here, child temperament and parent personality predicted media use and reasons, which in turn predicted child vocabulary. While child surgency (standardized $\beta=.18$, $p=.008$), and effortful control (standardized $\beta=.24$ $p<.001$), directly predict vocabulary, there was a significant indirect relationship between negative affect and vocabulary, which was mediated by media use ($\beta=-.04$, $p=.006$). Parent personality was not significant.

Overall, infants 17-30-months-old often use digital media to watch videos and frequently for educational purposes, but there is also a lot of variability, which may be partially explained by children's temperament. Critically, these results suggest individual differences in who and why media is used, which may have cascading impacts on vocabulary.

COI DISCLOSURE: *An NIH NICHD grant (R15HD101841) to Dr. Kucker funded the project.*

#79 - The TV is On: Examining the Relation Between Media Exposure and Preschoolers' Language Use

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There is considerable research examining the effects of audiovisual media on children's developmental outcomes. When it comes to language development specifically, previous work has shown that higher media time negatively affects children's language use. In contrast, the types of programs children watch appear to mediate the adverse influence of media exposure, with educational programs fostering language outcomes. Since prior work has primarily relied on parent reports to measure the amount of media exposure and the type of media content children receive, it is unclear how closely these reports reflect the actual properties of child media exposure. The present study uses wearable recording devices to capture children's naturalistic auditory and language environment to examine (i) the relation between the *amount* of audiovisual media exposure and children's language use, and (ii) whether the *type* of media content (child-oriented educational, child-oriented entertainment, adult-oriented) relates to children's language use and environment.

Eleven typically developing children aged 21-30 months (M=28.17) have been coded to date. The Language ENvironment Analysis (LENA) system was used to record a total of 149 hours 23 minutes in the home (one- to two-day recordings per child). The LENA is a portable device worn by the child that captures language and environmental sounds, including media. The recordings were used to code total child media exposure and the audiovisual media types. We also transcribed 5-minute language samples of child-adult conversations (M=54 complete child utterances) to examine (i) the relation between the amount and type of audiovisual media exposure, and (ii) children's language use measured by total number of words, number of turns, and mean length of turn. Additionally, we analyzed the relationship between (i) child media exposure and (ii) mean length of child-directed adult turn and number of child-directed adult turns.

On average, children were exposed to audiovisual media 40.25% of their waking time. Correlation analyses showed that children produced more turns (r=.769, p=.006) but spoke less frequently (r=-.795, p=.003) if exposed to more adult-oriented media. Children also produced more words (r=.769, p=.006) if exposed to more child-oriented entertainment media. Adults spoke to children less frequently (r=-.863, p=.001) and used fewer child-directed words (r=-.652, p=.03) in households with more adult-oriented media.

The results indicate that, while no connection between total media time and language use was identified, the amount of adult-oriented media in the home demonstrated a negative association with both child turns and the amount of child-directed adult language. Interestingly, a positive connection between number of child words and child-oriented entertainment media but not educational media was identified. Implications and study methodology are discussed.

COI DISCLOSURE: *This work uses data obtained with the ASHFoundation New Investigator Grant, "Word Learning from Infant-Directed Speech in Bilingual Children", awarded to Dr. Pumpki Lei Su.*

#80 - Children's Gaze Patterns Toward Digital American Sign Language Storybooks

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The impact of digital interactions on children's cognitive development has been shrouded in confusion; on one hand, digital exposure has been contextualized as harmful, but for deaf children, digital media can provide much-needed language exposure. Most deaf children are born to hearing, non-signing parents (Mitchell & Karchmer, 2004), and speech input is often insufficient for optimal cognitive development during early years (White et al., 2022). Parents and teachers need evidence-based language enrichment resources available for deaf children. Bilingual storybook apps, accessible on iPad tablets, provide multiple channels of information (dynamic American Sign Language (ASL) video, English text, and visual-pictorial figures) and accessible language input. However, it is unknown how deaf children divide attention amongst multi-channel, simultaneous, dynamic elements within a digital storybook. The present study investigates gaze patterns and attention to digital ASL/English storybooks, seeking answers to the following questions: How does sensory and language experience impact young children's attention to the information provided in a digital storybook? What are the characteristics of gaze patterns that correspond to better storybook comprehension in signing children?

Using Tobii eye-tracking hardware and storybook recall tests, we will collect gaze and comprehension data from four participant groups: deaf and hearing children with parents who use ASL or Spoken English as their primary language in the home (>80% of the time). We aim to collect data from 32 participants between 3-5 years old. Participants view a 4-minute bilingual ASL-English storybook on a large monitor. Then, participants' comprehension of the story and recall of story elements is assessed with a picture-matching task. We will employ an Area of Interest (AOI) approach to calculate the proportion of time spent gazing at different AOIs. The main AOIs are the signer's face, signing space (in which the hands predominantly appear), storybook text, and the illustrated background (Stone & Bosworth, 2019). We use a linear mixed-model analysis on each AOI: sensory experience, home language, and age as fixed effects. The primary continuous dependent variable analyzed is percentage looking time. We also analyze participants' behavioral responses on storybook knowledge recall tests using a similar linear mixed model.

Sensory experience and parental language input are predicted to be significant predictors of the percentage looking time for different AOIs. We expect story comprehension/recall quality to be associated with gaze patterns for the face and signing space. Sustained and efficient perceptual gaze control and attention to the digital storybook are essential for the quality of reading and language learning; however, little is known about what this looks like in deaf-signing children. Our findings will elucidate which factors attract the attention of children with various language backgrounds. We seek to inform the development of digital resources that engage young children's attention, providing critical language exposure.

COI DISCLOSURE: *The authors declare no conflicts of interest. The work is supported by NSF grant 2118742 (PI: Quandt).*

#81 - What Does Google Know?: Young Children's Beliefs About the Capacities of Google Search

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Google is the world's most visited website, processing billions of searches per day (Moshin, 2022). Google is so ubiquitous that "to Google" now means "to search online." Although preschool-age children may not use Google themselves, they are likely to have heard about Google from adults and older children. Yet, when judging potential informants, children under age 7 are skeptical of internet-based sources and prefer human informants (Girouard-Hallam & Danovitch, 2022; Wang et al., 2019). However, because children prefer familiar informants over unfamiliar ones (Corriveau & Harris, 2009), and Google is *familiar* to young children, they may trust it over other sources. This study examines whether children prefer to ask a knowledgeable human informant (a teacher) or consult Google search to answer questions about general knowledge and current events.

Participants were 120 children ages 4-6 (M=5.51, 59 girls, 61 boys). Children were told about a fictional person who had a question from one of two categories: general knowledge facts (e.g., what language people in Zombot speak) and current events (e.g., what the weather is like in Koba today). In 10 trials, children were asked whether the teacher could answer the question correctly (yes/no), whether Google could answer the question correctly (yes/no), and which informant would have the better answer (teacher/Google).

To explore children's attributions to Google and a teacher, a multilevel model was conducted in R. There was a significant main effect of informant that was subsumed by a significant two-way interaction of age and informant (β=-0.94, p<.001, d=.30). As participant age increased, endorsement of Google increased, and endorsement of the teacher decreased. There was also a significant two-way interaction between informant and question type (β=-0.57, p=0.008, d=.10). Children's endorsement rate was similar across question type for the teacher (M=.74 and M=.75), but children more frequently endorsed Google for stable facts (M=.91) than for current events (M=.84) In the forced choice task, children chose Google more frequently (64% of trials) than the person (χ^2=7.84, p=.005). Children also chose Google significantly more often to answer stable fact questions (M=.70) than questions about current events (M=.60, p=.003).

These findings suggest that children as young as four believe that Google can answer questions about both stable facts and current events. Children view Google as an increasingly competent source as they age, and at times children prefer Google to a human source. Although children believe that Google can answer factual questions, they may need help assessing whether Google can answer questions about current events. Given the ubiquity of Google and its role as a learning tool at home and in the classroom (Osborne, 2012; Singer, 2017), these findings imply that children should be taught about the capacities *and* limitations of Google search for providing information.

COI DISCLOSURE: *N/A*

#82 - Children's Working Memory and Learning from Virtual Reality

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In the past five years, educational technology products, such as BrainPop or Khan Academy, have become increasingly prominent in schools and in the home (Klein, 2019), but research demonstrates mixed results as to whether children can learn from these products. Younger children (under 5) struggle to learn from interactive media, while older children (ages 5 and up) are better able to transfer the knowledge learned from media to new contexts (Griffith et al., 2020). Some media effects scholars (Aladé et al., 2016; Schroeder & Kirkorian, 2016) have speculated about the role of working memory in children's learning from interactive media, but research has not yet directly examined these relations. Moreover, middle childhood and early adolescence are largely ignored in educational technology literature. Working memory still undergoes development during this period, making it of particular interest.

The current study addresses these gaps by addressing how pre-adolescent (ages 8-11) children are able to learn from virtual reality. Participants will participate in one of three conditions: interactive (playing the game Cubism in a virtual reality headset), video (using the virtual reality headset to watch a video of someone else playing Cubism), or control (drawing in virtual reality). Before condition assignment, we will assess children's working memory skills as well as their spatial skill ability (i.e., their ability to understand, remember, and reason about spatial relations among objects). After using the virtual reality headset, children will participate in a series of transfer tasks to see if they can use the knowledge they learned in the game in a physical setting.

We anticipate that the interactivity of virtual reality environments may overwhelm children's working memory and lead to less storage and retrieval of educational information. Thus, we hypothesize that children will not learn more in the virtual reality interactive condition as compared to watching someone else play in virtual reality. Further, younger children who have less advanced working memory than their older peers will struggle more to transfer the knowledge learned during gameplay to physical settings. Understanding if this emergent technology (virtual reality) can support children's learning has important implications for both parents and policy makers. Like tablets, virtual reality has potential to become popular in educational settings, but if children struggle to learn in this context, educational efforts may be better spent elsewhere.

COI DISCLOSURE: *This project was funded by the communication department at the University of California, Davis. There are no conflicts of interest.*

#83 - How Public Media Gets America's Children Learning

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INTRODUCTION: High-quality early learning experiences help prepare young children for success in school and in life. Yet many families across the U.S. are not able to find, afford, or reach these programs. Pandemic-related upending of the early learning landscape has exacerbated lack of access to early learning opportunities. Results from three random-control trials (RCTs) over the past few years suggest that educational public media can play a significant role in supporting learning at a large scale through high-quality and research-based educational content.

Since 2006, researchers at Education Development Center (EDC) and SRI have worked with the Ready To Learn initiative, a partnership between the U.S. Department of Education, the Corporation for Public Broadcasting (CPB) and Public Broadcasting Service (PBS), to examine whether digital media improves children's learning. Ready To Learn targets low-income communities, where many children arrive unprepared for school. Through this partnership, researchers have designed and implemented multiple studies demonstrating the impact of access to media on mathematics, science and literacy learning.

The presentation will provide an overview of results from a series of three randomized trial studies examining the impact of access to media on learning related to literacy, mathematics, and early science and engineering. Presenters will also discuss approaches to furthering the reach and impact of high-quality digital media for young children, as well as the challenges of designing high-quality digital resources that effectively address learning goals for all children.

METHODS: Each of these studies employed a randomized controlled trial design to assess the impacts of Ready To Learn videos, digital games and apps with young children. Between 263 and 454 young children from low-income families participated in each study.

FINDINGS: Findings from the three RCTs suggest positive impacts on child learning related to literacy, science and engineering, and mathematics; significant effect sizes ranged from 0.25-0.51- SD.

DISCUSSION: Results from these three studies suggest that an emphasis on integrating learning sciences and developmentally aligned frameworks with the creation of engaging characters and storylines is an effective approach to capturing the interest of young children while also introducing them to new information and skills.

COI DISCLOSURE: *Researchers at EDC and SRI conducted research for CPB and PBS as part of the U.S. Department of Education's Ready To Learn Initiative, which is funded and managed by the U.S. Department of Education's Office of Elementary and Secondary Education.*

#84 - Mahsi'choo for the Info! *Molly Of Denali* Teaches Children About Informational Text

Joy L. Kennedy[1], Claire Christensen[2], Naomi Hupert[1]

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INTRODUCTION: All of us depend upon informational text (IT)—books, websites, maps, road signs, menus, podcasts, and more—to function and solve problems. The ability to interpret, create, and use text that provides and communicates information is also a fundamental aspect of early literacy education. However, young children's opportunities to encounter IT lag behind narrative texts. In this presentation, researchers describe a study of the PBS children's series, Molly of Denali, including videos and digital games, designed to help children 4-8 develop knowledge and skills for interacting with IT while also learning about the day-to-day life of a 10-year-old Native Alaska girl. Molly uses and creates a variety of IT including books, online resources, field guides, historical archives, indigenous knowledge, maps, charts, posters, photos, and a vlog in which she shares her adventures.

METHODS: The research team conducted two nine-week randomized controlled trials (RCTs) with a total of 263 first-grade children from low-income families across the U.S. The first RCT began with in-person data collection and then, due to COVID-19, shifted to remote data collection via video conferencing. The team then conducted a fully remote replication study with a second sample. In both studies, all participants received data-enabled tablets and were randomly assigned to one of two groups: treatment or control. The treatment group received tablets pre-loaded with Molly resources that were grouped into content bundles focused on specific IT skills and features. Tablets for the control group blocked access to PBS KIDS and other IT apps. Researchers measured impact by developing a standardized assessment that assessed children's ability to use IT to solve practical questions, such as navigating a book. Researchers measured expressive language ability at baseline, using the Expressive Vocabulary Test, third edition, to control for the potential confounding effect of this characteristic on performance.

RESULTS: Multiple regression analyses for the two individual RCTs, as well as the combined sample, showed that the treatment group outperformed the control group on ability to use IT, controlling for baseline EVT score, demographics, site, and study. For every hour spent on Molly content, children scored .20 points higher at posttest (out of 27 possible points). These findings are particularly meaningful given our successful replication.

DISCUSSION: These findings demonstrate the positive impact that the Molly resources had on children's IT skills. Although the effect sizes were modest, they were notable for a nine-week intervention in which children used the resources for an hour a week on average. Our findings provide further evidence that digital media can support children's learning at home and suggest that public media can offer an inexpensive method capable of bridging the current gap in children's access to IT resources and learning (Kennedy et al, 2022).

COI DISCLOSURE: *Researchers at EDC and SRI conducted research for CPB and PBS as part of the U.S. Department of Education's Ready To Learn Initiative, which is funded and managed by the U.S. Department of Education's Office of Elementary and Secondary Education.*

#85 - PBS Play and Learn Science App Supports Early Science and Vocabulary Learning

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We evaluated the effectiveness of the PBS Play and Learn Science app as part of the Ready to learn initiative, a cooperative agreement funded and managed by U.S.D.O.E's office of Innovation and Early Learning. The app introduces foundational science concepts and practices through five distinct sets of activities: Water Games, Ramp and Roll, Shadow Play, Weather Control, and Gear Up. Each activity set includes three digital games and a designated parent page that incorporates suggestions for supporting their children's game play (Tips) and their related real-world explorations (Activities).

For this study the research team developed a four-week structured experience for families of preschool-aged children. Families were encouraged to focus on one set of in-app and hands-on activities each week. Two family science nights allowed families to preview the activities and receive take-home supplies.

Participants were recruited from two child-care centers: a private center in the South that accepts child-care fee waivers and a Head Start program in the Northeast. Sample sizes ranged from 31-33 participants by outcome measure and children' ages ranged from 37 to 67 months.

This study had a single-group design with pre-and post-experience parent surveys and child assessments. The research team developed non-standardized vocabulary and performance-based child assessments tailored to the Play & Learn Science content. The multiple choice vocabulary assessment measured children's receptive English language vocabulary for key words from the five sets of activities in the app. The performance-based assessment, consisting of five hands-on tasks, assessed knowledge of focal concepts and use of skills related to one or more of the activity sets in the app.

When used in a supported context, the PBS KIDS Play and Learn Science app benefitted both children and their parents. Child outcomes included:

- Gains in understanding of science content and use of science and engineering practices.
- Increased use and understanding of science vocabulary.
- Increased excitement about science, technology, engineering, and mathematics.

Parent outcomes included increased parent-child engagement in science and engineering-related activities and increased confidence in supporting their child's science learning.

These findings suggest that a high-quality app can be a catalyst for real-world science exploration, especially when it incorporates tips for parents about how to mediate children's use of science-focused digital games, explicit guidance for real-world science activities they can do at home with their children, and specific suggestions for interacting in was that stimulate child exploration, thinking, and conversation.

COI DISCLOSURE: *Researchers at EDC and SRI conducted research for CPB and PBS as part of the U.S. Department of Education's Ready To Learn Initiative, which is funded and managed by the U.S. Department of Education's Office of Elementary and Secondary Education.*

#86 - Parent Perspectives About Learning and the Role of Media After Two Years of the Pandemic

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INTRODUCTION: Even before the pandemic, children under the age of eight spent a considerable amount of time—an average of two and a half hours each day—using or watching media (Rideout & Robb, 2020). Digital media use increased during the pandemic. In a recent survey by Katz and Rideout (2021), most parents rated educational TV shows, videos, or games as "very helpful" in supporting learning during the beginning of the pandemic. Moreover, children in households with poverty-level incomes were most likely to be frequent users of educational media, compared to families in higher-income households. Educational media interventions can help children learn and are highly scalable and extremely low-cost, especially relative to other educational interventions (Hurwitz, 2019; Kearney & Levine, 2019; Kennedy, 2022). However, the effectiveness of educational media rests on families' selection of high-quality media and how families scaffold their children's media use so that children are able to notice and interpret the media and connect these concepts and skills off-screen.

In this study, we describe findings from a qualitative study that examines how parents and caregivers think about and support learning with media. The study also explores how parents' practices and needs related to helping their children learn have changed because of the COVID-19 pandemic.

METHODS: Researchers conducted remote focus groups with 42 parents/caregivers living in low-income households and collected in-depth data through diary-based interviews with 12 parents.

RESULTS: Most parents described learning experiences with their children as spontaneous, informal experiences embedded in daily routines and within children's play with blocks, puzzles, and games, including digital games, apps, and videos. Parents used media for learning mainly by seeking resources they perceive to have some educational value; many parents used a walled-garden approach in which they did not co-use or monitor their children's media use in the moment but rather identified shows or apps that they felt were appropriate for their children in advance. Children most often use media alone, but frequently talk to their parents about the media.

DISCUSSION: The information gathered from parents in this study can shed light on how families perceive and support learning, including what families need to support their children's learning, where they are finding the resources they need, what their goals are for their children's learning, and how media fits into these experiences.

COI DISCLOSURE: *Researchers at EDC and SRI conducted research for CPB and PBS as part of the U.S. Department of Education's Ready To Learn Initiative, which is funded and managed by the U.S. Department of Education's Office of Elementary and Secondary Education.*

#87 - Parent Perceptions of Remote Learning and Child Screen Time During Covid-19

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Due to COVID-19, many school districts pivoted to remote learning in spring 2020 and continued through the next school year. This dramatic shift to children spending unprecedented time on screens greatly impacted children and their families, and offers a unique opportunity to evaluate this use of screens in children's education. However, some areas of remote schooling have been poorly evaluated. In particular, few studies have actually examined parent perceptions of remote learning for elementary-aged children, or differential experiences as a function of SES.

Utilizing Amazon's MTurk, we surveyed 194 caregivers from across the United States in fall 2020 to evaluate their views regarding the successful and less successful aspects of the implementation of school via screens.

Unsurprisingly, children used considerable screen time during remote learning. Parents reported that children were on screens for an average of 4 hours and 20 minutes a day for school, and an additional 2 hours and 42 minutes a day outside of school, for a total of over 7 hours. Children's non-school screen time actually increased relative to before the pandemic. Older children spent more time than younger children on screens. Most children used tablets (85.3%) and laptops (70.4%) and had at least somewhat reliable internet (97.9%). Almost half (48.7%) had the television on while completing schoolwork, at least on occasion.

Despite the challenges, parents did describe positive aspects, including the assignments that teachers assigned. Parents expressed concerns, as expected, in the areas of technical problems, social interactions, and child engagement. Most of these concerns cut across SES, but some SES differences were found. For example, while technical glitches were widely reported, lower-SES parents reported more technical problems that caused them to lose class time and instruction. A central challenge was that most parents (82.5%) reported fewer social activities, and 64.8% either somewhat or strongly agreed that their children's emotional and social development suffered due to going online.

One of our most striking findings was the number of parents who reported problems with child engagement. Across SES, children were described as substantially less motivated and less interested than when school was in person. This finding is in one sense surprising, given that technology has the potential to foster engagement through its flexibility and interactive capabilities, as seen in the number of hours that children voluntarily spend on screens outside of school. At the same time, this finding is consistent with other reports, suggesting that technology's potential was not realized and negatively impacted children's engagement with the classwork.

In conclusion, results suggest areas for improvement in supporting teachers' and families' efforts to utilize the positive potential and mitigate the problematic aspects of screen learning.

COI DISCLOSURE: *The researchers have no conflicts of interest to disclose.*

#88 - A Study of Phone Use and Digital Wellness in 38 Marin County (CA) Schools

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Schools – where students spend a large portion of their day – are an important developmental environment for modeling and teaching digital wellness to young people. While existing research clearly associates tech overuse and misuse with mental health and other challenges, there is scant research on what schools are doing to navigate the digital age.

In spring of 2022, ScreenSense conducted a survey of 38 school administrators in Marin County, a collection of suburban districts just north of San Francisco, CA. Sixty percent of schools responded to the survey, including 10 elementary, 12 (K-8), 7 middle, and 9 high schools.

Survey measures included: (1) the perceived impact of technology use on students cognitively, emotionally, and socially; (2) the landscape of personal device/phone policies; and (3) the scope of digital citizenship/wellness instruction.

Four findings emerged from survey results: (1) More than two-thirds of Marin educators believe students' social and emotional wellbeing are 'quite' or 'tremendously' negatively affected by their tech use, with concerns heightening in middle school; (2) Personal phone use during school hours increases dramatically in high school compared to K through 8th grades, and schools with more phone access are the least satisfied with how they are handling phones on campus; (3) Two-thirds of schools feel their phone policy needs improvement; (4) Digital wellness/citizenship training is highly variable; overall not much is happening or it is not clear what is happening or by whom.

Key takeaways from this survey include: (a) Schools need help identifying best practices for phone/digital device management on campus so students are less distracted and more ready to learn; and (b) Digital citizenship/wellness education in schools is a compelling area for improvement. If we want to improve the social and emotional well-being of our young people, we must boost their digital wellness, and schools should be supported as key stakeholders in this effort.

COI DISCLOSURE: *None except that as co-directors of ScreenSense we'd like to see more digital wellness education in schools.*

ABSTRACT SYMPOSIUM:

MENTAL HEALTH AND BODY IMAGE

EFFECTS OF PERSUASIVE ONLINE CONTENT ON ADOLESCENTS' BODY IMAGE CONCERNS

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LONGITUDINAL CHANGE IN ADOLESCENTS' APPEARANCE-RELATED SOCIAL MEDIA CONSCIOUSNESS AND DEPRESSIVE SYMPTOMS: A WITHIN-PERSON ANALYSIS

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SOCIAL MEDIA USE, EUROCENTRIC APPEARANCE NORMS, AND MENTAL HEALTH CONSEQUENCES FOR BLACK GIRLS

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Effects of Persuasive Online Content on Adolescents' Body Image Concerns

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Youngsters are concerned about their bodies and marketing professionals know it. Thus, more and more research (Coates et al., 2019; De-Jans et al., 2021; Lowe-Calverley & Grieve, 2021; Tiggeman & Anderberg, 2020) shows that content on social media platforms and particularly the one created by influencers have an impact on users', both in the perception of their body image and dietary patterns. In this context, this paper analyzes the relationship between the frequency of exposure of teenagers to persuasive content on social media and their concerns about their body image when they consume content from influencers in collaboration with food or body care brands. For this purpose, an online survey was conducted with a total of 1055 minors between 11- and 17-years old living in Spain with a 95% confidence rate and a +/-3% margin of error. The final selection of the individuals to be surveyed was made according to cross quotas of sex and age and the fieldwork took place between April and June 2022. Taking Perloff's (2014) model of social media and body image concerns as a reference, the main results indicate that between 12% and 28% of minors have frequently or very frequently felt negative feelings regarding their body or self-image. The ones that seem to affect minors the most are those referring to their physical appearance and their projected image: around 26 and 27% value themselves for their physical appearance, while feeling that a healthy body is specifically one that is slim and toned. However, what could be considered consequences, such as frustration, anxiety, goal setting or belittling one's own physical appearance, have a notably lesser influence and only 12-14% say they feel this way frequently or very frequently. As exposure to persuasive online content increases, so does the frequency with which minors experience these feelings. This occurs on all platforms except for Facebook. Despite this generalization, some social networks have a higher degree of positive correlation: for example, the feeling of not measuring up or not meeting physical standards is more intense among the population that receives more advertising from TikTok. However, the feeling of frustration or anxiety is more common among people with more exposure in games, Discord or Twitter. Goal setting, on the other hand, appears more correlated with platforms such as TikTok, again, and with Twitter or websites and search engines.

In conclusion, the impact of digital media advertising on elements such as self-esteem, self-perception, confidence, stereotyping, etc. is clear and of moderate magnitude. This impact is common to the entire population surveyed, but women express a higher incidence of negative feelings. While age is not a relevant factor in explaining differences in this regard, socioeconomic status is.

COI DISCLOSURE: *This study is conducted within the Digital_Fit research project "Body and diet as sales arguments on social net-works: Impact of brand content published by influencers on the beliefs of minors on physical appearance and healthy eating habits", funded by the Mapfre Foundation.*

Longitudinal Change in Adolescents' Appearance-Related Social Media Consciousness and Depressive Symptoms: A Within-Person Analysis

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Adolescents are experiencing a mental health crisis, showing pervasive, elevated rates of depressive symptoms in recent years. Social media has been identified as a likely culprit, yet research has overwhelmingly used cross sectional designs to test associations with "screen time," with mixed results and small effect sizes. Instead, research ought to examine which subjective experiences may increase youth's vulnerability to adverse effects. During adolescence, when youth's perception of their attractiveness is the biggest predictor of self-esteem, appearance-related social media consciousness (ASMC) likely impacts mental health. For example, adolescents with higher ASMC, or those who show more preoccupation with their physical attractiveness on social media, tend to report more depressive symptoms one year later than peers with lower ASMC. Critically, while these findings are informative, only within-person analyses can identify how an adolescent's unique pattern of appearance-focused social media use is related to the co-development of depressive symptoms over time.

The current study examines within-person associations between ASMC and depressive symptoms over one academic year among U.S. adolescents (N = 3,200; Mage = 14.50, range 11-18; 46.88% girls, 36.53% Hispanic/Latinx, 31.25% White non-Hispanic, 15.93% Black, 6.27% Asian, and 6.55% multiracial or another race/ethnicity; 39.31% low SES) and explores gender and age differences in this association. At three time points, participants reported their ASMC and depressive symptoms on an online survey.

Random intercept cross-lagged panel models revealed that within-person change in ASMC was positively associated with subsequent within-person change in depressive symptoms (β = .54, b = 0.74, p<.001), while the opposite direction (change in depressive symptoms preceding change in ASMC) was nonsignificant (p>.05). The association did not differ between boys and girls (p>.05), nor between middle and high school students (p>.05).

Adolescents are embedded in an "appearance culture," with biological, social, and cognitive transitions increasing the salience of perceived attractiveness for mental health and well-being. Social media may exploit this vulnerability, with most platforms proliferating primarily appearance-focused content. Findings revealed that adolescents may be at risk for subsequent increases in depressive symptoms when their ASMC exceeds its typical level. Notably, this pattern emerged for girls and boys, in middle and high school. Therefore, although girls generally report higher ASMC than boys, individual increases in ASMC elevate the risk for subsequent depressive symptoms in both genders, during different stages of adolescence. Identifying this temporality is critical for understanding, and potentially intervening on, change processes happening within an adolescent. As researchers continue to evaluate social media as a contributor to adolescents' mental health, the role of appearance concerns must be recognized. Further, as the field attempts to identify which adolescents are particularly negatively affected by social media, we ought to take note of youth exhibiting greater appearance concerns than they used to.

COI DISCLOSURE: *None*

Social Media Use, Eurocentric Appearance Norms, and Mental Health Consequences for Black Girls

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INTRODUCTION: Analyses of social media use and girls' appearance concerns have frequently centered on expectations of objectification theory. Here, it is assumed that greater exposure to sexualized beauty norms on social media will predict greater self-objectification among girls, which, in turn, will lead to diminished well-being. Although some evidence supports these patterns, findings have been mixed, suggesting that more nuanced approaches may be needed. First, global measures of social media use may be less effective in capturing effects than measures centered on appearance-related activities. Second, little attention has been paid to impacts among girls of color, even though African American youth use media, including social media, at high levels. Third, the femininity ideal of mainstream media is not only a sexualized ideal, but is also a Eurocentric one, in which Eurocentric features such as long straight hair, light skin, and light eyes are prioritized. Therefore, we sought to bring a more nuanced approach by addressing these dynamics among Black girls, by focusing on appearance-oriented measures of social media use, by examining pressures to conform to Eurocentric beauty norms, and by testing consequences of these appearance beliefs for girls' mental health.

METHODS: We surveyed 242 Black adolescent girls aged 12-17 (M=14.4) concerning their engagement in 3 types of appearance-oriented social media use via the Social Media Appearance Preoccupation Scale. Participants also completed the Satisfaction with Racially Salient Appearance Features Scale and a modified version of the Internalization and Awareness Scale of SATAQ, modified to measure Whiteness internalization (e.g., "I believe that fairer skinned models look better than darker skinned models"). Mental health measures assessed symptoms of anxiety, depressive affect, and loneliness.

RESULTS: In partial correlation analyses, with several demographic controls, each of the three forms of appearance-oriented social media use was associated with significantly higher levels of whiteness internalization and lower satisfaction with Eurocentric facial features. In regression analyses, we tested whether the Eurocentric appearance norms predict mental health, beyond contributions of demographics and self-objectification (measured via the Body Surveillance subscale of the OBCS-Y). As expected, Whiteness internalization was indeed a predictor of greater anxiety, depressive affect, and loneliness. Lower satisfaction with Eurocentric facial features was associated only with greater loneliness.

DISCUSSION: Appearance-oriented social media use is a consistent correlate of both self-objectification and internalization of Eurocentric norms among Black adolescent girls. In turn, these appearance beliefs are associated with diminished well-being. Here, concerns with skin tone seem more predictive than dissatisfaction with Eurocentric facial features.

COI DISCLOSURE: *None*

ABSTRACT SYMPOSIUM:

PARENT KNOWLEDGE AND BEHAVIOR

EXPLORING PARENTS' KNOWLEDGE OF DARK DESIGN AND ITS IMPACT ON CHILDREN'S DIGITAL WELL-BEING

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THE ROLE OF MARKETING IN PARENTS' SHARENTING OF CHILDREN'S INFORMATION: IMPLICATIONS FOR ONLINE PRIVACY

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PROMOTING HEALTHY SCREEN MEDIA USE IN CHILDREN WITH EXTERNALIZING BEHAVIOR: RESULTS OF AN OPEN TRIAL

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Exploring Parents' Knowledge of Dark Design and Its Impact on Children's Digital Well-Being

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Digital technology is increasingly important to children: for their education, entertainment, and social lives. Many children struggle to imagine life without the internet (Revealing Reality, 2022). However, the digital sphere was designed by adults, for adults. Whilst it offers new possibilities for realizing children's rights, it also poses risks (United Nations Committee on the Rights of the Child, 2021). Of specific interest here is a context where the user experience (UX) for children is intentionally deceptive: dark design.

Dark design (also known as deceptive design; Colin et al., 2018 and dark patterns; Mathur et al., 2019) is described as "a user interface carefully crafted to trick users into doing things they might not otherwise do" (Brignull, 2022; page 1). We have categorized dark design into ten groups: sneaking, urgency, misdirection, social proof, scarcity, obstruction, forced action, identity captures, psychological/ physical triggers, and friction-less/ seamless- consistent with new and emerging research (Mathur et al., 2019's seven categories, together with three new, child-specific categories we have identified). We have further uncovered 41 dark design sub-types across these categories.

Currently, research on dark design primarily focuses on adult users in the context of human-computer interaction and not as a consumption problem that affects children. It is only in recent years that regulators have become interested in the effects of dark design for vulnerable consumer groups, including children and teens (Federal Trade Commission (FTC), 2021). Research that tests interventions for dark design is urgently requested by the FTC and other regulators worldwide (e.g., CNIL).

This interdisciplinary (marketing, law) research project uses cross-sectional surveys to explore parents' awareness of dark design and the risks it poses to their children. Using the CloudResearch and Prolific platforms (see Litman et al., 2017), data were collected online from parents in the US and UK (N = 506). Our research aims to develop understanding of the effects and risks of dark design for children; a global, 'Children and Screens'-compatible problem. It aims to use these insights to further develop effective interventions to help parents, children, marketers and legislators be mindful of and resistant to dark design practices online. Specifically, across multiple studies we address the following questions:

(a) What is the influence of dark design (1) across media (e.g., apps, video games, social media platforms, websites) and (2) across differently-aged children?

(b) To what extent are parents aware of their children's exposure to dark design and the risks that such exposure poses?

(c) What is the efficacy of marketplace [e.g., Google Play's 'Monetization and Ads' policy (Google Play, 2022)] and regulatory [e.g., UK's Age-Appropriate Design Code (ICO 2022)] controls?

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The Role of Marketing in Parents' Sharenting of Children's Information: Implications for Online Privacy

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Dubbed "sharenting," parents sharing about their child in the form of social media posts including photos, videos, and other personal information has "almost become a social norm" (Brosch, 2016, p. 226). Government regulation prevents companies from collecting data directly from children ages 12 years and under without parental permission (Children's Online Privacy Protection Act [COPPA]; Federal Trade Commission, 2013). However, COPPA does not apply to information that adults share online about children. Despite its prevalence, sharenting puts children's online privacy and, potentially, safety at risk. Our research focuses on understanding parents' sharenting behavior in light of their vulnerabilities and motivations to share, particularly in response to companies' engagement tactics.

Our multimethod approach used in-depth interviews with mothers and fathers of young children, observation of mothers of very young children engaging in a Twitter chat with a popular children's brand, and a survey of hundreds of mothers and fathers. In the Twitter chat observation, we used natural language processing techniques to parse through each tweet and assess the information contained therein, including types of personally identifiable information (PII). The survey assessed parents' perceptions of sensitivity for a variety of types of information, as well as their willingness to share that information with social media marketers.

First, our research finds that parents are vulnerable and post PII about their children in response to company marketing efforts (Fox & Hoy, 2019; Fox et al., 2022). Second, we demonstrate that mothers willingly provide their young child's PII—mainly photos—in response to a children's brand's social media engagement efforts when incentivized by sweepstakes participation (Fox & Hoy, 2019). Third, our work establishes a baseline of parents' attitudes regarding their children's data. Despite the commonality of parents sharing PII online, fathers especially evaluate their child's screen name, video, audio files, photos, and birthdate as sensitive (Hoy et al., 2022).

First-time parents, especially mothers, are vulnerable to sharenting their child's PII. Moreover, they share this information when companies request it via social media. Our research highlights a need to increase mothers' perceived sensitivity regarding their child's information. Also, marketers should appeal to fathers' role as "Involved Protector" when it comes to their child's digital footprint. Overall, while parents want to play a greater role in their children's online privacy (Center for Democracy & Technology, 2021), our work demonstrates the paradoxical nature of parents' attitudes versus their behavioral tendencies toward their children's online privacy. Educating parents regarding the potential risks of disclosing their child's information to marketers, calling for sharenting to be addressed in privacy regulation, and encouraging companies to change their marketing tactics so as not to prompt sharenting, are important in shaping the future of the children's online privacy landscape.

COI DISCLOSURE: *None*

Promoting Healthy Screen Media Use in Children With Externalizing Behavior: Results of an Open Trial

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The sharp rise in young children's access to mobile devices (e.g., smartphones, tablets) has posed new and significant challenges to parents in managing their children's screen media use (Solomon- More et al., 2018). For parents of young children with externalizing behavior problems, managing screen media use is especially important and especially challenging. Studies have identified early externalizing behavior problems as a risk factor for unhealthy screen media use patterns in young children (Radesky et al., 2014; Ansari et al, 2016), and increased screen time has been linked with negative behavioral outcomes (e.g., sleep problems, obesity; for reviews see Eirich et al, 2022). Additionally, caregivers of children with externalizing behavior problems experience increased parenting stress and low parenting self-efficacy, which make adhering to screen media use recommendations particularly challenging (Sanders et al., 2016; Evans et al., 2011). Meanwhile, behavioral parenting interventions are the gold-standard treatment for externalizing behavior problems in young children (Kaminski et al., 2017) but do not systematically address current issues around parenting and screen media use.

In this presentation, we describe an NIH funded project (R21HD104367) to adapt an existing behavioral parenting intervention, the School Readiness Parenting Program, to include content around screen media use, and present results of an open trial examining feasibility, acceptability, and initial outcomes of the adapted intervention. Participants were low-income parents (n = 7) of children participating in a 8-week therapeutic summer camp for young children with externalizing behavior problems. Parents attended a once weekly (1.5 hour) parent group where they received the intervention, completed questionnaires at pretest, posttest, and one month following the intervention, and completed interviews about their experiences.

Parent treatment satisfaction ratings were high (M = 44.60, SD = 5.37, where 50 indicates the highest possible satisfaction), indicating that parents found the program useful and acceptable. The average fidelity in implementing session objectives was 93.29% (SD = 10.31%), and the mean attendance was 88.75%. Limit setting around children's use of screen media and parents perceived self-efficacy for managing children's media use increased significantly after the intervention, and children's overall screentime decreased by 22%. Parents expressed they found content regarding using timers and parental controls on mobile devices, bedtime routines and screen media use, and ideas for replacing some screentime with other developmentally appropriate activities most useful. They expressed wanting more information about level-appropriate educational media content for kindergarteners, and child safety within apps.

Results suggest that leveraging existing parent interventions to promote healthy media use habits may be a promising avenue to maximize reach to vulnerable populations. Results are discussed with regard to implications for designing screen time interventions for low-income parents, and for parents of children with externalizing behavior or other special needs.

COI DISCLOSURE: *This work was supported by an NICHD R21 grant (5R21HD104367) to the first author.*

ABSTRACT SYMPOSIUM:

PREVENTION AND INTERVENTION

IMPROVING DIGITAL WELL-BEING: FINDINGS FROM TWO INTERVENTION STUDIES TARGETING SMARTPHONE BEHAVIOR

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PROMISING CLASSROOM APPROACHES TO SUPPORT MINDFUL AND PROSOCIAL TECHNOLOGY USE AMONG ADOLESCENTS

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EMPOWERING ADOLESCENTS TO SELF-REGULATE THEIR USE OF DIGITAL DEVICES: A PILOT STUDY IN DANISH HIGH SCHOOLS

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FIVE TREATMENT NEEDS OF MALE ADOLESCENTS AND YOUNG ADULTS WITH GAMING DISORDER

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Improving Digital Well-Being: Findings From Two Intervention Studies Targeting Smartphone Behavior

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In response to the growing public concern about youth spending too much time on their smartphones, a variety of strategies have been suggested that may reduce the smartphone's salience and thereby increase users' control over their smartphone use. Conveniently, smartphones offer some options within their settings to reduce engaging design features. For instance, a commonly heard advice is to turn off notifications. In addition, popular news media suggest using the smartphone's grayscale mode (i.e., switching the smartphone screen to black-and-white) to make the smartphone less enjoyable. However, research is still scarce and inconclusive as to whether these strategies indeed help the user to control their smartphone use. Therefore, two preregistered intervention studies were conducted to test the effectiveness of the two smartphone interventions.

In both studies, a research app was used that objectively logged participants' smartphone behavior (i.e., daily screen time and number of phone unlocks) and sent daily surveys to participants to assess subjective experiences.

In Study 1, the grayscale mode was tested with a student sample (N = 84; Mage = 21.95, SDage = 3.55). The study consisted of a baseline week, followed by an intervention week in which participants had their phone on grayscale. The results showed that grayscaling significantly reduced daily screen time with approximately 20 minutes per day. Moreover, the intervention improved digital well-being; participants felt more in control over their smartphone use, and they experienced less smartphone overuse, smartphone vigilance, and stress. However, no effect was found on perceived productivity and daily number of phone unlocks.

In Study 2, a notification-disabling intervention was tested (N = 205; Mage = 24.45; SDage = 3.92) with a randomized controlled trial design (i.e., baseline week vs. intervention week; treatment vs. control group). The results showed that the intervention did not affect daily screen time or daily number of phone unlocks. We also found no effects on productivity and smartphone-related distraction. However, participants did report checking their phones less habitually.

Together, these findings suggest that both grayscaling and disabling notifications result in an increased perceived intentionality of smartphone behavior, yet only grayscaling seems to be effective in reducing screen time and improving other subjective smartphone experiences. Thus, contradicting widespread beliefs, our findings indicate that turning off notifications does not boost productivity or reduce distraction. Furthermore, the lack of effects on number of phone unlocks underlines the notion that checking habits are deep-rooted.

COI DISCLOSURE: *Nothing to declare.*

Promising Classroom Approaches to Support Mindful and Prosocial Technology Use Among Adolescents

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INTRODUCTION: Schools are increasingly subject to state policies that suggest or even mandate teaching of digital topics (Media Literacy Now, 2020; Phillips & Lee, 2019). In 2019, Texas passed legislation requiring school districts to incorporate digital citizenship (defined as "appropriate, responsible, and healthy online behavior") into instruction (Media Literacy Now, 2020, p. 12). Even where such teaching is not mandated, schools face real pressures to address digital media use– including from parents, struggles teachers observe in their students, and problems online that spillover into school contexts (Weinstein & James, 2022a). In response, there have been numerous resources and programs created to address such topics. Yet these resources do not consistently tap existing evidence-based practices aligned with related issues. A recent review points to meaningful benefits of integrating digital media topics with "well-established and evidenced based programs…addressing related *off-line harms*" (Finkelhor et al., 2020). Within this general frame, the current translational research project focused on developing new resources informed by existing evidence-based practices to increase mindful and prosocial uses of digital technology among teens.

METHODS: We used a multi-step process to create and then pilot test a suite of classroom lessons to support mindful and prosocial digital engagement, drawing directly on established evidence-based practices for related offline issues. The development process included: literature review, participatory design research with educators and youth, expert interviews, feedback from clinical psychologists, and ongoing iteration based on youth advisory and formal classroom pilots. We specifically focused on resources designed to target relevant pain-points related to digital media use identified by adolescents in our prior survey, interview, and focus group research (Weinstein & James, 2022b).

RESULTS: In this presentation, we will share and overview of (1) the resource development process we used to facilitate integration of digital media topics with established practices and (2) new classroom lessons we created through the process (e.g., "Social Media Thinking Traps," grounded in practices from cognitive behavioral therapy (CBT); a Tech & Values activity that incorporates Values Sorting, and a "Digital Habits Challenge," created with insights from habit science). We then describe (3) preliminary data from a pilot study of these lessons in 8th-grade classrooms at a public charter school in a northeastern city.

DISCUSSION: There is a legitimate demand for school-based lessons on digital well-being topics. This presents an opportunity to leverage evidence-based practices to seed development of high-quality interventions. Ongoing assessment of such resources is also essential - including assessment of implementation by different teachers and across diverse educational contexts. We describe emerging insights from a single-site pilot study as well as upcoming plans for a larger RCT. Insights suggest the potential of resources are mediated by teacher facilitation and rapport with students, making high quality professional development a high priority.

COI DISCLOSURE: *This project was supported by grants from the Mind & Life Institute, Susan Crown Exchange, and Pivotal Ventures, and an Indiana University Lilly Family School of Philanthropy Faculty Research Grant. The authors also disclose that they have an ongoing collaborative relationship with Common Sense Media and collaborated on the development of resources related to this project. Dr. James reports personal fees for speaking to K-12 schools, to TikTok, and at a conference sponsored by the Abu Dhabi Department of Education during the conduct of the research to be presented. In the recent past, James was part of Children & Screens' advisory board. Weinstein and James also receive royalties for their book, Behind Their Screens: What Teens Are Facing (And Adults Are Missing).*

Empowering Adolescents to Self-Regulate Their Use of Digital Devices: A Pilot Study in Danish High Schools

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Digital devices like smartphones and laptops are ubiquitous in the classroom. How do we ensure that they support learning instead of merely distracting students? Researchers have investigated how students self-regulate digital device use, that is, use them in accordance with personal, longer-term goals. This research suggests that the most important factor students can control is restructuring digital environments to suit their task at hand and reduce irrelevant temptations (Lyngs et al. 2020). Studies of 'digital self-control tools' for this purpose shows that a range of interventions, from distraction blocking to goal reminders, can change behaviour and make students feel more in control (Lyngs et al. 2022).

Most research on digital self-control tools, however, focuses on a single intervention on a single device, and uses 'screentime' as measure of success (Roffarello & De Russis 2022). To provide actionable advice to adolescents, we need to help them articulate their actual goals around digital device use, learn how to tailor digital environments to their needs, and then apply the most useful tools.

We investigated Danish high school students' goals for their personal digital device use, and how a workshop introducing digital self-control tools might support self-regulated use. In six workshops with 41 students, participants wrote down their challenges, the triggers in their digital environment (e.g., notifications) and mental state (e.g., negative emotions) that drove those challenges, and articulated their ideal use of digital devices. Afterwards, they sorted 'strategy cards' representing ways that digital self-control tools might help. Students committed to try one or more options, and we followed up one month later.

We found that the students commonly struggled with digital distraction. About nine out of ten said that digital devices often made them less productive, and three quarters that it was 'quite' to 'extremely' important to get better at handling their challenges. Notions of success related to *control*: staying focused on intended activities, and feeling that they themselves, rather than their devices, controlled their use. Success also related to *managing time spent*, specifically keeping clear boundaries around time of use, and limiting overall time spent.

Four out five students found digital self-control tools in the workshop they thought were good solutions to their challenges. Students who moderately or highly applied them experienced a large increase in digital self-control (measured by an adaption of the Brief Self-Control Scale for digital device use), with an effect size three times larger (d = 1.2) than a control group who did not participate in the workshop. However, better support around applying the tools was needed, as one third of participants did not try the strategies they committed to. We discuss how to support healthy digital media use by empowering adolescents to control their digital environment.

COI DISCLOSURE: *Dr. Ulrik Lyngs holds copyright for the specific design, wordings, and software code used in the Reduce Digital Distraction workshop. Dr. Lyngs has developed open-source extensions for the Safari browser to help users hide distracting UI elements on specific websites. These are paid apps (£0.89-£1.99) available on the Apple App Store ('MindShield', '"No Distractions" for YouTube').*

Five Treatment Needs of Male Adolescents and Young Adults With Gaming Disorder

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Video gaming has become part of everyday life, especially for adolescents. In the same way most people who drink alcohol do not develop substance use disorder (SUD), most gamers do not develop a gaming disorder (GD), but a portion of them do. Similar to individuals with SUD, youth with GD showed defects in several areas of their brains, interfering with their cognitive control and brain reward processing. In 2013, the DSM-5 included GD in its Chapter Three, labeling GD a potential psychiatric disorder that needs further research to verify. In 2018, the WHO ICD-11 approved GD as a formal diagnosis. Currently, most GD treatment follows SUD treatment approaches since they both involve addiction. Despite this overlap, it is important to investigate whether individuals with GD have their own unique treatment needs. Based on findings from a qualitative study, this presentation highlights five areas that characterize the specific treatment needs of adolescents/young adults with GD, providing clinicians with a framework for treating these individuals.

Our qualitative study, which was approved by the host university's Institutional Review Board, included 15 young adult males who were attending a GD treatment program in the US. Individual in-depth interviews, lasting 2.5 hours each, were conducted with each participant. All interviews were audio-recorded and transcribed verbatim. A grounded theory approach, with an inductive and thematic analysis strategy, was used. This presentation highlights five distinct treatment needs of youth clients with GD, which not only provides a clinical framework but also serves as a starting point for researchers to compare and contrast treatment needs among SUD and GD patients. First, our findings suggest that clinicians should enhance clients' social skills and social support. Although not all GD individuals experience social vulnerability, "struggling socially" appears to be one fundamental driving factor to GD for many clients. Second, clinicians should cultivate emotion regulation and problem-solving skills. GD is the result of repeated use of gaming, often driven by self-medication of negative emotions, crises, traumas, and other life challenges. Third, they should address a client's identity distress and help them find their niche. Finding a life purpose and affirming self-esteem are critical for adolescents/emerging adults, who are transitioning from childhood to adulthood. Fourth, clinicians should screen for and treat co-occurring disorders (CODs), including depression, anxiety, ADHD, autism spectrum disorder, and SUD. These CODs may be related to or worsen a client's social competency, emotion regulation, and problem-solving abilities, as well as GD. Finally, they should treat GD as a bona fide disorder, not just a symptom of other psychiatric disorders, as the two disorders may have a bi-directional relationship.

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