

Rethinking Misinformation: A Holistic Community Model for Youth Resilience through Socioemotional Learning and Sociocultural Design

Jason Yip
Information School
University of Washington
Seattle, Washington, USA
jcyip@uw.edu

Darae Kim
Department of Psychology
University of Washington
Seattle, Washington, USA
kimdarae@uw.edu

Swati Sachdeva
Human Centered Design &
Engineering
University of Washington
Seattle, Washington, USA
swatinaama@gmail.com

Michele Newman
Information School
University of Washington
Seattle, Washington, USA
mmn13@uw.edu

Jan R. Lim
Information School
University of Washington
Seattle, Washington, USA
limjanr@gmail.com

Xiaoyu Zheng
Interaction Design
University of Washington
Seattle, Washington, USA
unazxy@hotmail.com

Runhua Zhao
Information School
University of Washington
Seattle, Washington, USA
runhz@uw.edu

Matthew Kyle Pedraja
Human Centered Design &
Engineering
University of Washington
Seattle, Washington, USA
mpedraj@uw.edu

Yifang Zhou
College of Education
University of Washington
Seattle, Washington, USA
yvonnezhou1999@gmail.com

Chris Coward
Information School
University of Washington
Seattle, Washington, USA
ccoward@uw.edu

Jin Ha Lee
Information School
University of Washington
Seattle, Washington, USA
jinhalee@uw.edu



Figure 1: Children and adults co-designing mis/disinformation concepts - (A) KidsTeam UW children co-designing parental support for mis/information; (B) KidsTeam Libraries children (Acorn Summit) arguing about an online video of a ghost; (C) KidsTeam Libraries (Rolling Way) co-designing zero waste fruit hacks viral disinformation videos using skits and posters.

Abstract

With the growing prevalence of online mis/disinformation encountered by children, digital media literacy has become an urgent



This work is licensed under a Creative Commons Attribution 4.0 International License.
CHI '26, Barcelona, Spain
© 2026 Copyright held by the owner/author(s).
ACM ISBN 979-8-4007-2278-3/26/04
<https://doi.org/10.1145/3772318.3790876>

concern. Existing research emphasizes cognitive models, focusing on individual reasoning and specific quantitative criteria to classify people's information literacy. However, critics argue that focusing solely on cognitive approach neglects the social, emotional, and cultural contexts that shape how mis/disinformation is created and spread. In this study, we expand beyond the cognitive model by examining socioemotional learning (SEL) and sociocultural (SC) perspectives. To explore how children conceptualize mis/disinformation through these lenses, we conducted 26

co-design workshops with children ages 6–11 over a 2.5-year period. Our findings highlight children’s awareness of emotional responses, peer pressure, financial incentives, and the importance of community support. These insights contribute to HCI by foregrounding the need for design approaches that integrate cognitive, SEL, and SC dimensions. We present an integrated framework to inform how community groups can support children and design recommendations that address the growing sophistication of mis/disinformation.

CCS Concepts

• **Human-centered computing** → **Empirical studies in HCI**.

Keywords

Misinformation, participatory design, children

ACM Reference Format:

Jason Yip, Michele Newman, Runhua Zhao, Darae Kim, Jan R. Lim, Matthew Kyle Pedraja, Swati Sachdeva, Xiaoyu Zheng, Yifang Zhou, Chris Coward, and Jin Ha Lee. 2026. Rethinking Misinformation: A Holistic Community Model for Youth Resilience through Socioemotional Learning and Sociocultural Design. In *Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26)*, April 13–17, 2026, Barcelona, Spain. ACM, New York, NY, USA, 21 pages. <https://doi.org/10.1145/3772318.3790876>

1 Introduction

Researchers, designers, and policy developers warn about the dangers mis/disinformation¹ poses to children [46, 83]. The rapid spread of online mis/disinformation is emerging as a pressing world issue that affects any child with access to online networks (e.g., social media, videos, games, news) and even impacts offline communities [46]. Because of the extensive and organized spread of online mis/disinformation in youth digital spaces, educators and designers are considering early digital media literacy exposure for youth [19]. However, we have limited understanding of how to prepare children for a digital world surrounded by mis/disinformation. Strategies to deal with yesterday’s mis/disinformation on older platforms may not work with tomorrow’s new mediums and advancing technologies [99]. Finally, mis/disinformation does not emerge solely through people’s intentional search behaviors; mis/disinformation targets people using sophisticated algorithms [4, 31, 82]. Overall, all people, especially children, will encounter and be susceptible to mis/disinformation [46].

To deal with the rapid rise of mis/disinformation, digital media literacy often focuses on autonomous cognitive approaches to mis-information research with children and youth [5]. Autonomous (cognitive) perspectives focus on individual cognitive skills independent of social contexts [39]. This framing leans heavily towards behaviorist ideas of learning, such as objectivity and measurement [39]. While important, the cognitive perspective alone does not tell the full story about children and mis/disinformation. Critics of the autonomous model cite its lack of attention to social contexts and heavy focus on specific criteria to classify digital information literacy [116].

¹We use mis/disinformation to convey Wardle’s [115] *information disorder* definition. That is, “both disinformation and misinformation describe false or misleading claims, but disinformation is distributed with the intent to cause harm, whereas misinformation is the mistaken sharing of the same content.”

In this study, we examine two alternative social perspectives on mis/disinformation beyond the autonomous cognitive models: the socioemotional learning (SEL) perspective and the sociocultural (SC) perspective. The SEL perspective asks how emotions, social relationships, group dynamics, and cultural values influence the way children make sense of digital mis/disinformation [87, 126]. Similarly, proponents of the SC perspective note the importance of how aspects of mis/disinformation embed themselves into everyday life and cultural practices [39, 116].

Despite the possible benefits of the two social models, there is little research on mis/disinformation within the child-computer interaction field on emotional reactions, peer-pressure, and cultural and social norms [24]. To better understand the application of SEL and SC perspectives to children and mis/disinformation requires HCI methods that examine specific aspects of mis/disinformation over the course of a period of time with open interactions. We argue that co-design methods, such as design partnerships with children, can help make sense of the complex SEL and SC perspectives [25, 124]. Cooperative Inquiry allows for deeper relationship building and longitudinal examination of children’s designs [25, 124], enabling a more extensive look at children’s emotional, relational, and societal understanding regarding mis/disinformation.

For this study, we ask two research questions.

RQ1: What kinds of socioemotional and sociocultural responses and perceptions do children have about mis/disinformation when utilizing co-design techniques with them?

RQ2: What needs do children express around socioemotional and sociocultural perspectives on mis/disinformation when engaging in co-design?

To understand how children conceptualize mis/disinformation through SEL and SC, we examined 26 co-design workshops on mis/disinformation conducted over 2.5 years. Topics in co-design workshops included designing play-based mis/disinformation learning and pilot work on perceptions of misinformation and different technologies. Two different co-design groups, KidsTeam UW (one university campus location) and KidsTeam Libraries (two public library sites), participated in the study. A total of $n = 46$ children participated in these co-design sessions. Through Cooperative Inquiry [25, 124], we utilized adult-child design partnerships to dive deep into how children utilize SEL and SC perspectives to make sense of mis/disinformation.

We contribute to the discussion on children, SEL, design, and mis/disinformation in following ways. Empirically, we report on abductive themes of SEL and SC mis/disinformation in youth [107]. Conceptually, we pursue the argument that HCI researchers need to engage SEL and SC perspectives to make sense of children’s engagements in mis/disinformation. Specifically, we advocate for a more integrated community-based model [59, 115] of design that ties together the autonomous cognitive, SEL, and SC frameworks to help children develop epistemic vigilance [105] towards mis/disinformation.

2 Literature Review

2.1 Children and Mis/disinformation

UNICEF [46] notes the rapid rise of online mis/disinformation for children can be found in digital games [77], social media [97], online

videos (short form and long form) [42], fake news [99, 100, 112], scams [9], and anywhere else children are present online. Digital mis/disinformation proliferates through people, bots, and troll factories that are often highly coordinated efforts [46]. Deceptive patterns in apps, videos, websites, social media, digital games, and other digital mediums are designed specifically to ensnare children [46]. Reasons for spreading mis/disinformation among children include financial scams [90], political polarization [112], family influence [97], and other motivations. In short, mis/disinformation towards families, caregivers, educators, and other community groups can harm children [97], even if the mis/disinformation is not directed towards children [46].

Children are often the objects of mis/disinformation for a variety of reasons. First, children can be skeptical of impossible events that break physical laws, but accept improbable claims and unreliable informants [37, 99, 100]. This makes it likely for children to change their minds based on perceptions of authority or context [100]. Second, children struggle to identify reliable sources [7]. Many elementary-age children think that online information is mostly accurate [34] and that verifiability can be determined by superficial appearances [57, 73]. Children can be overconfident in how well they protect themselves online and their ability to recognize mis/disinformation [3, 125, 127]. Finally, online information is paradoxical, in which opposing information seems to come from credible sources [39]. Spotting a single instance of mis/disinformation does not mean one can do so in other contexts. For instance, Renaud et al. [89] found that while children (ages 11 - 12) understand that deceptive designs are all around them, they tend to suspect everything and overcompensate with skepticism. Scholars recommend that instead of showing specific types of deception, new interventions need to help children understand the motivations behind deceptive design, develop resilience, and set realistic expectations for the consequences of mis/disinformation [5, 59, 116].

2.2 Cognitive Approaches to Misinformation and Youth

Cognitive approaches to mis/disinformation often emphasize literacy skills and measurement of those skills to assess whether online information is accurate and reliable. Children's memory [7, 71], metacognition [93], and suggestibility [91] are prevalent areas in understanding how children cognitively process online information. Cognitive approaches often assume that small controlled exposure can facilitate the development of learning strategies for children to recognize mis/disinformation in other contexts [92]. For example, inoculation theory explains that resistance to persuasive information (e.g., mis/disinformation) can be strengthened through pre-exposure to weakened and safe forms of that persuasion [52, 69, 109]. Examples include inoculation theory training for AI chatbots [98], online fake news literacy training for adolescents [88], and digital game-based solutions to present child players weakened forms of fake news [52]. However, Compton et al.'s [18] literature review showed that while inoculation theory can be helpful to support people's resistance to mis/disinformation, limitations exist. Real-world encounters are far more varied [113], difficult to scale [49, 76], emotionally charged [18], and integrated

into youth culture [46] than the controlled scenarios on which cognitive inoculation approaches are based.

Because cognitive skills only cover a portion of necessary support, researchers are calling for a more social perspective on the problems of mis/disinformation for children. For instance, Herrero-Diz et al. [44] asks how emotional responses influence information processing and behavior of youth. Outrage language is specifically used to elicit strong emotions in youth in mis/disinformation [74]. While youth need cognitive skills to review mis/disinformation, they also need to process their own emotions when exposed to outrage language. Selnes [96] found that teen engagement in fake news on social media (e.g., sharing, liking) was not just about literacy skills; teen perspectives on media culture and sociocultural background shaped their online behaviors. Therefore, our co-design research takes an SEL and SC approach, which can balance out the prevalent cognitive skills approach to mis/disinformation.

2.3 Socioemotional Learning as a Lens

Socioemotional learning (SEL) theory refers to programs and activities that attempt to enhance emotional intelligence and literacy and / or the development of basic social and emotional competencies [45]. SEL is not separate from cognitive processing. Proponents argue socioemotional life skills can and must be explicitly taught in schools, families, and communities [15, 36]. There are three parts to SEL: (1) emotional intelligence, (2) interpersonal skills, and (3) social functioning. SEL literature looks at how people externalize their own internal emotions, while also learning how to regulate themselves. Recognizing one's own and others' emotional states when encountering mis/disinformation may prevent people from engaging or spreading mis/disinformation further [15, 35, 38, 45]. Improved self-control can help children recognize emotional cues, triggers, and impulses to help better share meaningful information.

From the information searching processes literature, we know that there are cognitive, behavioral, and affective dimensions to encountering information online [50, 94]. A systematic review of social media literacy found the need for SEL competencies to defend against mis/disinformation [85]. With social media, empathy can be seen as both an individual experience of another person's emotional state (affective) and understanding another person's emotions through digital technologies [32]. The SEL approach is needed to understand children and mis/disinformation because children's abilities (and adults') to evaluate information are deeply shaped by emotions, relationships, and social dynamics, not just cognitive reasoning. Despite this need for SEL, less is known about children's interpretations of socioemotional competencies when it comes to online mis/disinformation. For instance, Dumitru [26] noted that teens would sign a petition to save a fake animal, not because of the accuracy of the information, but out of fear of being ridiculed by bullying peers. Herrero-Diz et al. [44] found that teens are likely to spread more mis/disinformation through WhatsApp when they are influenced by emotional language. While these studies show youth emotional engagement around mis/disinformation, we do not know how these emotional responses are connected with cultural contexts. Based on this SEL need, our current research used co-design workshops to examine how children's emotional responses to mis/disinformation are informed by sociocultural contexts.

2.4 Sociocultural Perspective as a Lens

A second social perspective of mis/disinformation is the sociocultural perspective (SC). This encompasses the ways that people approach information literacy through the various cultural norms and relationships in everyday life that help people meaning-make [39, 40, 116]. In the SC perspective, literacy is situated in social and cultural practices, so different communities have different norms around approaching digital information [48]. While cognitive and technical skills matter, it's also crucial to understand information practices within broader sociocultural contexts [48]. An SC perspective is needed to understand children and mis/disinformation because children's (and adults') judgments of online information are shaped by the societal contexts and shared practices of their surrounding communities.

More recently, Wedlake et al. [116] argued that games as a design can be used to support mis/disinformation education through an SC perspective. For games to have impact, targeted cultural narratives need to be integrated into games so that on-going conversations and engagement can take shape. Games with an SC perspective can integrate different contexts (e.g., K-pop fandom, cryptocurrency scams) so that different cultural contextual strategies and tactics can be revealed [59]. Instead of games being targeted for autonomous individual skills development, context-based games can help people share their own personal stories and strategies, and reflect on their own cultural practices around digital media. However, Wedlake et al. [116] and other misinformation researchers [59] have not directly made the connection between SEL and SC. Sociocultural contexts are often tied together with the emotions, relationships, and norms in online settings [23]. Overall, we complement the SEL with the SC perspective as an integrative way to connect emotional, cultural, and societal assumptions in children and mis/disinformation.

3 Methodology

3.1 Research Design

This co-design study seeks to dive deeper into making sense of children's reactions to digital misinformation through an SEL and SC perspective. We chose not to directly examine the cognitive lens, as there is an overabundance of this perspective in empirical research on children [5]. For this study, we adhered to the standards of participatory design (PD) method [51] and of Cooperative Inquiry [25, 124]. PD is an approach distinct from user-centered design that emphasizes close collaboration and shared decision-making between all stakeholders [51]. Cooperative Inquiry is a specific method of PD rooted in the ideals of equity and equal co-design partnerships between children and adults [25, 124].

We chose Cooperative Inquiry as our method to understand children for two reasons. First, prior research with mis/disinformation and children often focuses on showing samples of misinformation [62], interviewing children's perspectives [97], and running pre-post tests on information literacy abilities [1]. While these methods are useful, there is a need for trusted design partnerships over time to help children articulate the abstract and difficult nature of mis/disinformation [124]. Second, Cooperative Inquiry has shown to work well for children exploring complex topics like sex and gender [63], privacy and security [56, 101], finances [122], creepy technologies [123], GenAI technologies [20, 21, 79], and complex

intelligent user interfaces [118, 119]. In all these co-design studies, researchers have shown that PD techniques allow children to talk about complex emotional topics in comfortable settings with adults and other children [123, 124]. We believe that because SEL and SC perspectives on mis/disinformation are complex, abstract, and tension-filled for children, Cooperative Inquiry is an opportunity to leverage the strengths of design partnerships and center youth perspectives [25, 124].

3.2 Participants and Settings

The PD sessions in this study focused on designing digital play-based misinformation activities for a larger digital information literacy project in a single USA geographic location. This study of 26 co-design workshops with children is part of a larger multiyear study on the development of play-based misinformation curriculum for youth. Each of the sessions are standalone sessions on a topic in mis/disinformation for children based on initial ideas for this curriculum. However, taken as a whole, we used the analysis of these sessions to help us build out new play-based learning activities around mis/disinformation for children.

We conducted this study with intergenerational co-design teams of children (ages 6 - 11) and adult design researchers (undergraduates, masters students, librarians, and doctoral students). We chose children ages 6 - 11 because that is typically the developmental stage in which children begin to independently engage with technology online [22]. At the time of this study, we only collected demographic data on age and gender of the children (see Limitations and Future Work). For more information on age and gender breakdown per research site, please see Appendix. All names and titles are pseudonyms. The first team is called KidsTeam UW. Child members in KidsTeam UW have participated for the past 1 - 5 years. We worked with KidsTeam UW together from 2022 to 2023 for a total of 8 sessions (Table 1). A total of $n = 21$ children participated from 2022 - 2023 in KidsTeam UW.

The second design team we worked with was KidsTeam Libraries, located in two separate public library locations. KidsTeam Libraries is a spin-off group from KidsTeam UW focusing on conducting co-design groups away from university campuses at easier-to-access neighborhood libraries. The two partnering libraries (Acorn Summit and Rolling Way) are situated in communities with many immigrants and lower-socioeconomic families. However, what makes KidsTeam Libraries distinct is not just the public library context. KidsTeam Libraries is part of a graduate course in library and information science (LIS). The learning goal of the course was to train LIS students to engage in design thinking [17, 60] through PD methods at a real library site. Therefore, KidsTeam Libraries is an intergenerational co-design team of children (ages 6 - 11), but also composed of teen volunteers (ages 14 - 17) who help facilitate sessions with LIS graduate students learning how to co-design. The children in KidsTeam Libraries met between October and December of a calendar year to work on specific information science projects. In this case, the co-design of mis/disinformation learning activities lasted for two years. We worked with the KidsTeam Libraries group in 2022 and 2023 (Table 2) at Acorn Summit (AS) and Rolling Way (RW). We conducted 18 sessions at KidsTeam Libraries (10 sessions

at AS; 8 sessions at RW). A total of $n = 25$ different children ages 6–11 participated at the two library sites (see Appendix):

- In 2022, we had 7 children at Rolling Way and 7 children at Acorn Summit for a total of $n = 14$ children.
- In 2023, we had 11 new children at Acorn Summit with 2 returning children from Rolling Way (2022), for a total of $n = 13$ children.

3.3 Research Ethics

We recruited children for KidsTeam UW and KidsTeam Libraries through word of mouth, mailing lists, and posters. Parents and guardians provided informed consent after we briefed them on the study's goals, potential risks, privacy protections, and confidentiality. We reminded them that their children could withdraw at any time. Through university-approved child assent (written and verbal agreement from the children), we explained the research in clear, age-appropriate language (ages 6–11), emphasized that participation was ongoing, and reminded children of their autonomy to withdraw at any time without consequence. Undergraduate, graduate, and faculty researchers trained in child ethics and safety facilitated co-design sessions, ensuring children felt no pressure to participate. Children received a gift card for their participation. The university's Institutional Review Board approved the study, and we anonymized all child data, storing it securely on institutional servers.

3.4 Data Collection

In the 26 co-design sessions (approximately 90 minutes per session) we collected video data of group interactions as the primary data source. For KidsTeam UW, our university lab space was the primary location for the eight sessions, so we used three to four of our own iMac computers with Zoom online video to capture the co-design session. We placed an iMac computer with Zoom recording capabilities with each design group (approximately one to three adults and two to three children per group). For KidsTeam Libraries, because we were in a public space, we used a single video camera with external microphone and tripod to record the 18 sessions. A researcher placed the single video camera for each design group (approximately two to three adults, one to two teen facilitators, and two to three children) and rotated the placement of the camera every 5–10 minutes.

3.5 Data Analysis

We approached this study through abductive methods [107], focusing on initial ideas we had around digital misinformation and children. In July 2024, we started writing analytic memos [6] and transcribing salient quotes from the video data [6, 75]. For each of the co-design sessions, the primary reviewer watched the videos, created analytic memos, and transcribed the portions of the co-design sessions that were relevant to children's perspectives of digital misinformation. Analytic memos allowed us to review the videos and make our own reflective observations [6, 75]. Next, a secondary reviewer watched the same videos and added their own reflections, observations, and transcripts to the primary reviewer's initial memos. Our team held eight weekly discussions on this

process and completed the analytic memos at the end of September 2024. Once we completed the analytic memos, we began an abductive coding process [107].

Abductive analysis combines deductive and inductive coding approaches [107]. We started with the theoretical framing that children may have emotional responses to mis/disinformation [107] and perceptions of the society around them [116]. Therefore, we began coding the video data using an inductive open approach to try to understand what kinds of emotional and relational responses children might have around digital mis/disinformation and their thoughts about society as a whole [102]. The process of inductive coding began in October 2024 with the same primary reviewers of the analytic memos. The primary reviewer initially coded for children's perceptions of online trolling, emotional responses (e.g., sarcasm, arrogance, anger, fear, etc.), peer pressure and bullying, tone and feeling of messaging, post-truth and skepticism responses, authority, emotional manipulation, information verification, pseudoscience, use of technology and misinformation, and perceptions of reality. In October 2024, we held four discussion meetings on the initial coding process. The primary reviewers finished the first round of coding at the end of October 2024. In November 2024, the same secondary reviewers checked the coding and determined points in which they disagreed. We conducted consensus coding through qualitative negotiations and discussions about the disagreements [72]. We went through the disagreements about coding processes and made sure our group came to a consensus [41, 43]. This process of coding review took three meetings and wrapped up the final review at the end of December 2024.

In January 2025, our team started axial coding [117] and generated themes around the codes [11]. Through five meetings from January to July 2025, we developed six overarching inductive themes around children's emotional responses and societal views on misinformation. For each of these themes, we chose specific representative vignettes based on our inductive coding and team consensus of the best examples [104]. Finally, in July 2025, from these six themes, we ran a deductive analysis on SEL and SC understanding [2]. We re-examined the initial inductive codes found in each of the vignettes and matched them with an analysis of SEL (e.g., emotional intelligence, interpersonal skills, social functioning) [15, 45] and SC perspectives (e.g., cultural practices, relationships around digital media, societal norms and values) [39, 40, 116]. Table 3 demonstrates a sample of how we mapped the inductive codes to the deductive SEL and SC analysis.

4 Findings

We present our findings of six major themes (Table 4). For each of these themes we present representative vignette descriptions from the co-design sessions and direct quotes from the children as qualitative evidence for these themes. In each vignette, we provide a mini-analysis tying our original inductive coding to SEL and SC deductive perspectives. Finally, we conclude each section with a summary analysis of the importance of each theme as the overall vignettes together relate to SEL and SC interactions for children and digital mis/disinformation.

Table 1: Date and description of KidsTeam UW sessions (2022 to 2023)

Date	Session Description
2022-04-26	Children designed a game to help think about online misinformation.
2022-07-27	Children designed libraries that could help other children tackle misinformation (morning / afternoon session.)
2022-10-18	Children played the game “two truths and a lie” and created a game around misinformation.
2022-10-20	Children designed a misinformation game inspired by a game around guessing AI fake faces.
2022-11-01	Children engaged in the “would you rather” game [101] and tried to understand children’s reactions to misinformation.
2022-11-03	Children acted as disinformation agents and create their own viral videos.
2023-04-25	Children came up with examples of misinformation according to the types of bias.
2023-07-27	Children worked on AI learning to figure out misinformation.

Table 2: Date and description of KidsTeam Libraries sessions - Acorn Summit and Rolling Way (2022 to 2023)

Date	Session Description
2022-10-12	Children designed a game to help think about online misinformation (AS / RW).
2022-10-19	Children tested a prototype for a misinformation game built in a Minecraft maze (AS / RW).
2022-10-26	Children engaged in the “would you rather” game [101] and tried to understand children’s interactions and reactions to misinformation (AS / RW).
2022-11-02	Children acted as disinformation agents and create their own videos to spread disinformation (AS / RW).
2022-11-09	Children created a game around rumors and sharing misinformation (AS / RW).
2022-11-16	Children pretended to be an influencer spreading misinformation (AS / RW).
2022-11-30	Children co-designed ways in which people will have different perspectives of Bigfoot (AS / RW).
2022-12-07	Children co-designed ways to teach about the consequences of sharing online mis/disinformation (AS / RW).
2023-10-11	Children worked on AI training, biases, and scenarios (AS).
2023-10-18	Children created disinformation short form videos (AS).

4.1 Theme 1. The Difficulty of Children’s Empathy and Mis/disinformation

Children in our co-design sessions had trouble understanding that other people did not have the same views about information as they did. Researchers note that children have difficulties with “theory of mind,” that is, the cognitive ability to understand that other people have different thoughts, experiences, feelings, emotions, and beliefs [35]. Children struggle with cognitive empathy [53, 64] and often display egocentric behavior focusing only on their perspectives around mis/disinformation. Children can also struggle with affective (emotional) empathy, that is, the capacity to experience emotions to the observed experiences of others [95]. Research demonstrates links between affective empathy and cognitive empathy for children [84]. In the following example vignettes, we present examples of children having a hard time believing people fall for mis/disinformation, overestimating their own capacity to identify mis/disinformation, and thinking that the majority of society should not fall for mis/disinformation.

4.1.1 How can anyone believe in a flat Earth? In this session, the children (Mandy, Tamara) started discussing the concept of making a ‘fake video,’ intending for it to go viral (KidsTeam UW - 2022-11-03). An adult suggested to spread the idea that the Earth is flat. Mandy drew a picture of a person reporting that the Earth is flat.

Tamara replied back, “*The Earth is flat? Of course, no one is going to believe that because everybody knows it’s round.*” The adult asked, “*Then how can we make this report more reliable? This report says they see the Earth is flat.*” Tamara responded, “*Yeah, but you need to have evidence.*” The adult participant continued, “*What evidence should we get to make people believe it?*” Mandy suggested, “*A photo.*” Tamara added, “*A realistic photo that shows the world is flat.*”

From an SEL standpoint, Tamara had difficulty being empathetic in understanding how other people could fall for mis/disinformation because clear evidence (*photo*) is needed for a flat Earth. She even invoked an SC claim - that is, the majority of society (*everybody*) knows the Earth is round.

4.1.2 Aren’t people smart enough? We had children (Trent, Callie) look at claims of misinformation from online fake news articles (KidsTeam UW - 2022-07-27). One online mis/disinformation claim we asked children to look at suggested eating a large amount of chocolate could be healthy. Trent noted with confidence, “*I’m pretty sure that if Hershey’s made that article, then I would know that it isn’t true.*” Callie said that a child would be “*dumb*” if they could not find out that this claim about chocolate was a lie. Peter (facilitator) asked Trent how children would figure out the

Table 3: Sample Codebook Mapping Inductive Codes to Deductive Analysis

Sample first round inductive coding	Description of inductive code	Sample data	Second round deductive analysis of sample data using SEL / SC
Peer pressure and bullying	Children mention how peer pressure and bullying tactics gets people to fall for mis/disinformation.	An adult asked the group for a show of hands on who supports this news network. A child in the group urges everyone: <i>"Everybody should be raising their hands."</i> The child looks around making sure everybody was supporting the news network and when he spots someone not raising their hands. The child yelled out and pointed, <i>"There you are, you traitor!"</i> .	SEL: The child jokingly understands that negative reinforcement (<i>you traitor!</i>) can be used to coerce another person to choose information sources from a dominant group.
Skepticism and distrusting authority	Children talk about distrusting authority, organizations, families, etc.	Child: <i>"Yeah, like in Hollywood, they take a picture of a gorgeous view, then add other people in and make it all one picture, so it looks like the person was really there."</i> Adult: <i>"So, what I'm hearing is that you're saying you can't always trust what's in the videos?"</i> Child: <i>"Not always. I mean, sometimes."</i>	SC: The child recognizes a large mainstream cultural organization (<i>Hollywood</i>) and the use of advanced technologies (photo editing) can create information that is hard to trust.

Table 4: Summary of Themes and SEL and SC Supports

Thematic description	Socioemotional learning needs	Sociocultural perspective needs
Theme 1 - Children had difficulty understanding how others could be affected by mis/disinformation.	Children may need more empathetic reasoning towards others (cognitive, affective).	Cultural pressures can exist that make children want to look confident around others.
Theme 2 - Children acknowledged local and online emotional manipulation for mis/disinformation.	Children may need ways to acknowledge how peer pressure and media messaging as emotional manipulation in mis/disinformation.	Children may need to recognize different community groups within manipulation (friends, influencers).
Theme 3 - Children expressed information trust could be determined through engagement analytics.	Children need to recognize their own parasocial emotional connections with influencers to determine trust	Children need to understand how larger-scale advanced technologies (e.g., bots) can distort analytics and manipulate trust.
Theme 4 - Children recognized mis/disinformation connections to hypercapitalism.	Children need to know how their emotions can be manipulated towards mis/disinformation to spend more money.	Children need to recognize how the spreading of mis/disinformation can occur from larger financial organizational ties.
Theme 5 - Children recognized that people's cultural beliefs can influence decisions on mis/disinformation.	Children need to understand how they might be investing their emotions into trending online information.	Children may need to understand how cultural beliefs shape trust in online information.
Theme 6 - Children expressed tensions with adult authority and mis/disinformation.	Children need emotional support towards negative feelings (e.g., sadness, anger) around mis/disinformation.	Children expressed a need for parents and authority support around mis/information, but are also distrustful of authority.

claims as lies. Trent argued, **"Most people are smart enough (to know) that it (too much chocolate being healthy) isn't true."**

In this example, both children cited other people's lower intelligence for believing that chocolate could be healthy. From the SEL level, calling people "dumb" for mis/disinformation seemed to invoke them as overestimating their own ability to identify misinformation. Similar to the flat Earth example, Trent's invocation of "most people are smart enough" indicates an SC belief that the majority of people can spot misinformation in society.

4.1.3 Sarcasm and jokes are obvious. Children (Callie, Robin) in this session (KidsTeam UW - 2022-04-26) started to converse about falling for online scams in card trading games (Magic the Gathering, Pokémon cards). Callie and Robin talked about YouTube as a place of mis/disinformation on card trading. The adult facilitator asked what the children thought about YouTube videos that provided tips to help children in card games. Robin pointed out a lie, "Maybe, and one of the tips could be 'Send me all your Magic cards.'" The group laughed. Callie noted, "When people do that, they usually make it clear that it's a joke." Callie pointed out, **"I mean they say it in a very sarcastic tone. You know, they make it obvious that they are lying."**

In this case, children noted the ridiculous possibility that others could fall for online scams because they did not consider that sarcasm, jokes, and satire could be misinterpreted by others. On an SEL perspective, the children cannot empathize with why people cannot understand online jokes and sarcasm, despite how subtle they are to interpret.

4.1.4 Fake AI is easy to spot. As some children displayed egocentrism, their hubris around mis/disinformation started to hurl insults that AI-generated information could not fool them. During this co-design session (KidsTeam UW - 2022-10-20), the children tried a website in which people have to figure out which human face is AI generated or a genuinely a real portrait. The children have two images to determine which face is real or AI generated (without any hints). Mandy claimed the image on the left was fake. Tamara replied, **"Of course that one is fake, it looks creepy."** However, the group got their answer wrong. Mandy exclaimed, "That (answer) is not right!" The adult noted, "Look, this earring is all wack" (on the AI generated picture). Mandy did not believe it and said the eyes on the real image did not look right. The adult commented, "Your eyes can be glazed like that; this is how just some people are." Mandy and Tamara interrupted him, saying **"Oh yeah, this one's (AI generated) eyebrow is weird,"** and mentioned how they can trick people with this.

In this example, the children seemed quick to justify what they think is real or computer generated, such as justifying that the photos are creepy or weird looking. Using SEL, the children justify their misinformation claims through insults ("creepy", "weird"), indicating some bias towards good looking faces as trustworthy. However, they did not come to recognize their own vulnerability for not being able to distinguish the faces [78]. One aspect to consider from the SC perspective is that the children do not yet recognize how pervasive or advanced AI generated faces will be in their online future.

4.1.5 Theme 1 analysis. Cognitive empathy is an important aspect of child development [35, 53, 64]. The vignettes here demonstrate that children in our co-design sessions had a more difficult time with cognitive empathy, demonstrating hubris about themselves and citing how they would not fall for mis/disinformation like others would. Much is known about Dunning-Krueger effect [27] and other aspects in which people do not understand their own perceptual limitations.

Overall, from an SEL perspective, children seemed to not be able to take others' perspectives (cognitive empathy [103]), and called those who fell for online misinformation "dumb" or "stupid." Here, the third-person effect can be seen, as individuals underestimate their own susceptibility and overestimate the extent to which others are affected by misinformation [54]. From an SC lens, we observed many of the children wanted to look confident in being able to identify and not fall for online misinformation [66]. In our vignettes, we observed children wanting to socially demonstrate for others their confidence and skills in not falling for misinformation [14], rather than displaying vulnerability among their peers (e.g., blaming technology, thinking mis/disinformation jokes should be obvious).

4.2 Theme 2. Children's Experiences of Social Pressures and Mis/disinformation

Children in this theme acknowledged spreading of mis/disinformation often came from pressure from their own peers and external forces of emotional manipulation from influencers. In the following examples, we demonstrate children understand that engagement in mis/disinformation can be a result of online social pressures and emotional manipulation.

4.2.1 Social pressures and misinformation. Children acknowledged that their peers engaged in falsehoods in person and online to make themselves seem grandiose. Adults worked with Trent and Eli to develop an online game about mis/disinformation (KidsTeam UW - 2022-04-26). While working on the online mis/disinformation game, Trent noted about social pressure, **"Usually (there's) someone telling you a lie. Then a bunch of other people always follow my friend around. They would agree (with my friend), (but) they don't even know if it's (the statement) correct. If it is true or not."** Eli shared his experience about lying and social pressure. He reflected that usually at school, there will be certain people who will lie, "be known for lying to look cool." Eli noted, **"In my school, in my class, they'll try to act like they are kind of rebels. They do cool stuff, but actually in reality, they are kind of, just the same."**

Trent and Eli understood that identifying mis/disinformation is not solely about assessing accuracy. Children expressed they felt social pressure (SEL) from other children to support lies, even without evidence for truth. The children talked about a pervasive culture (SC) of children trying to "look cool" and choosing to spread mis/disinformation. The intention is not always malicious, but the children do indicate a widespread recognized youth culture of pretending to have clout.

4.2.2 Online influencers manipulating emotions. We observed that children understood social media influencers (both children and adults) often speak in an exaggerated way. For instance, children in one group (Elena, Jordan) watched example online videos of

influencers playing video games (KidsTeam Libraries at Rolling Way - 2022-11-16). One of the adults noted, "If you jump into the middle of the video, would you know it's an ad?" Elena sarcastically started to act like the influencer she saw, "(sarcastically) **This is soooooo fun! This is the best game I've ever played.**" Jordan also mimicked Elena, with exaggerated movements, "Oh! This is so cool! Look at this!" The adult asked, "Would you guys advertise like this if you were paid?" Jordan acted out, "She's like (eyes wide open, mouth wide open... a very surprised look). It seems like her parents are nodding the whole time, and he was like 'get this NOW!' (mouth wide open for 'NOW') and his eyes were like (acts out with eyes wide open, not blinking)." The adult asked, "Is that like parent behavior? Do you see your own parents do that?" Jordan (shaking his head): "No. I mean, they would be encouraging, but they are not like 'ya ya ya...'"

Another group of children (Alex, Sam) noted that people use different voices for varying situations and age groups; some are more active for children's online channels, and some are more mature for adults. Alex noted that what the influencers were saying seemed like an advertisement, "Yeah! His voice sounds too enthusiastic, in a way that makes it sound like that." The group conversed and realized that younger children might look up to these influencers because they are older. They also realized if you are older than the influencer, changing your voice seemed a strange way to persuade people.

Children expressed that online influencers try to manipulate their emotions through exaggerated voice, tone, gestures, repetitive phrasing, intonation, and pacing (SEL). The children stated the delivery from the messenger matters. They also recognized how pervasive these tactics are in our digital culture (SC). Children made satirical jokes about these tactics, and all the children in the room recognized these patterns.

4.2.3 Theme 2 analysis. In both examples, children noted that mis/disinformation was not just about the accuracy or verifiability of the information. From an SEL lens, children in both cases could see that social peer pressure [28] and marketing emotional tone [81] were tactics that could promote mis/disinformation spreads. From an SC perspective, both examples demonstrate that children need to develop behavioral and emotional resilience towards social and group oriented interactions around misinformation [16], from both local peer groups and larger external online media.

4.3 Theme 3: Trust Online Through Fame and Analytics

Children robustly expressed parasocial trust could be determined through analytics that measure fame (e.g., likes / dislikes, view count, subscribers). In the following examples, we demonstrate that children consider the social analytic numbers and fame reputation more than the message.

4.3.1 Social media analytics. Two adult facilitators were working with three children (Emily, Robin, Mandy) to develop "would you rather" [101] statements around online misinformation (KidsTeam UW - 2022-11-01). Robin read the example would you rather: Would you trust a random YouTuber and their cheat code hack or play it safe and ignore the hack? Robin chose to "play it safe and don't

use the code." Emily also chose to "play it safe." She added, "I would trust my friend." Robin noted, "depending on the YouTuber." The other adult asked the group, "What kind of YouTubers do you trust?" She gave possible requirements, such as many subscribers or being famous. Emily noted, "If they're a rookie YouTuber, I wouldn't trust them." Mandy also responded that "a rookie YouTuber" was not trustworthy. One of the adult facilitators asked: "Would you trust a YouTuber with fewer likes and more subscribers, over someone with more likes and fewer subscribers?" Emily responded with "More subscribers because likes can't tell anything. Subscribers can." She added, "Anyone can like anything."

Children's trust is built on views of power, authority, and parasocial relationships (SEL). *Rookie YouTubers* with lower social analytics indicated less authority or expertise. In daily life (SC), children are mostly deferring to authority figures (e.g., parents, teachers, coaches, etc.). Those they perceive as having lower social analytic numbers means their messages must have less impact. Children are verifying YouTubers' trustworthiness from cultural (SC) aspects of design (likes, view counts, subscribers). However, none of the children mentioned the possibility that the analytics could be falsified (e.g., bots).

4.3.2 Being famous matters. Another group (Idris) was also developing a would you rather scenario (KidsTeam UW - 2022-11-01) [101]. The adult returned back to an earlier would you rather statement posed by Idris: "Would you rather believe that your dad tells you that it's bad to stand in front of a functioning microwave or a famous person on YouTube tells you that it's not bad to stand in front of a functioning microwave?" Kelly (adult) asked Idris if he would like to tweak the scenario to have the famous person specifically be a famous YouTuber or just someone in a random video. Idris instead answered his stance, "I would probably believe the (famous YouTuber) because they're famous." Kelly (adult) asked him to explain further and he tautologically responded, "Because a famous person is a famous person. A famous person like I'd believe because they're famous."

Idris based his trust on the perceived fame of the YouTuber (SEL). While tied closely to the social media analytics example, *being famous* is also tied to whether Idris had heard of the YouTuber. Being famous may be more closely tied to the development of parasocial relationships and validation of culturally what is valued (SC).

4.3.3 Theme 3 analysis. From these vignettes, the children in our study consistently noted that trust in information is not about accuracy of information, but trust in social media analytics. From an SEL perspective, parasocial relationships seemed to be quite important for our children. Interactive media like social media allows children some degree of emotional connection with influencers [68]. Children often use simple measures like gender, attractiveness, humor, and success as determinants of parasocial trust [8]. From an SC standpoint, children's use of social media analytics gives them partial understanding of how to determine trust online. But the children in our co-design examples did not understand bot accounts and deceptive patterns that can undermine these analytics [47, 110]. We advocate for ways to develop children's epistemic vigilance [13, 29] when it comes to how they perceive influencer fame.

4.4 Theme 4. Manipulation in a Hyper-capitalistic Society for Children

One topic that was quite pervasive in our co-design sessions was children recognizing the financial motivations behind online influencers and monetary ties to information sources.

4.4.1 Everyone online is selling something. Earlier, the children noted the phenomenon of "YouTube voice" as being an emotionally manipulative tactic. The children talked about YouTube voice as being disingenuous and trying to convince children to spend money. Children in our design sessions (KidsTeam Libraries at Rolling Way - 2022-11-16) highlighted the need to look closely at the financial and organizational ties between an influencer and a sponsor. A group of children and teens co-designed a satirical influencer skit to note these connections as problematic for mis/disinformation.

Sarah: *"Hey guys, so this totally (sarcastically) isn't sponsored ... well, it is sponsored, but I totally bought the products beforehand. Like, their outfits are so weird, but anyways. You see that octopus? It's small, it's tiny, and it's not trendy anymore. So, if you have it, you're not trendy. The new trend is the Chip Beetle—it's right here, and it's only \$30. Listen, \$30! It's so cheap for its size. You know what I mean? It's \$30, it's huge, and there are only 170 of them available each day! Yeah, only 170 today—it's so cheap. But with my discount code, you can save 1% ... Yeah, listen, I'm here for all the hunties, girl bosses, and slayers of the house, okay? I am here for you. Which is why I have my discount code: N O T A S C A M. It's only available for two days, so go to my description or my pinned comment. And it's only available for two days, so hurry up!"*

In this skit, children made the connection between the emotionally manipulative tactics (SEL) of influencers with the SC understanding that financial sponsorships are connected. Interestingly children could even specifically call out tactics like artificial scarcity, discount codes, social slang terms (e.g., girl bosses, hunties, slayers), and high-to-low pricing margins. These financial tactics are so pervasive in society (SC) that every child in this session completely understood the premise of this satire (as indicated by everyone laughing).

4.4.2 False advertising. The adults in the co-design session showed a presentation on misinformation traps and discussed with the children (KidsTeam Libraries at Acorn Summit - 2022-10-19). An adult asked the children to share an example of an online misinformation trap. A child mentioned that online there are ads that are misleading. For instance, companies would show you something that looked pleasing, but when you get the product, it would not look the same as the advertisement.

Scott: *"They (the companies) have good advertisements. They would put glue instead of cheese for a good cheese stretch. The content does not match the actual food. It just looks fake."* In this example, children could recognize this widespread information issue in their online interaction (SC). Companies online would show a good looking product online, swaying emotions to buy (SEL). However, the product in reality is disappointing and even misleading.

4.4.3 Search engine optimization. We asked children to co-design viral misinformation videos through storyboards (KidsTeam Libraries at Rolling Way - 2022-11-02). What we found out was that

children started to co-design the algorithm that would manipulate people's emotions. A group of children started to present their creation; *Zero Waste Fruit Hacks*. They explained *"Our video is zero waste fruit hacks that actually work not for fake. These are real. These are 12 different fruits hacks."* Sarah added a comment to their explanation: *"I have something to say. I saw it online—if you put mixed berries in, it can dye your hair."* In their video, they developed examples such as banana peels used as clothes, coconut shells as bicycle helmets, and other hacks using compostable foods.

Children in this vignette understood that search engine optimization could be emotionally manipulated (SEL). For instance, Peter (adult) asked why "zero waste" in their video. Annie answered, *"We used the term 'zero waste' to make it more searchable and also to play on people's guilt. The video would feature many tricks to use fruit products to do things that felt like they could work, even though they didn't."* Children understood how extensive search engine optimization is in our society (SC). We saw this from their conversation in understanding how they knew searching for intentional key words (e.g., compost, environmental) could tie to a recommendation algorithm that surfaces videos on food waste reduction and eventually their mis/disinformation message on zero waste fruit hacks.

4.4.4 Theme 4 analysis. In these examples, the children and teens came to the conclusion that spreading misinformation can be connected to financial ties (e.g., influencer sponsorships, manipulative ads, complex algorithms). Socioemotional manipulation could occur to spread misinformation (e.g., consumer environmental guilt, artificial scarcity, slang terms). The SC context connected to larger organizations and the cultural factors that allow finances to be connected with online information. The children expressed that spreading of mis/disinformation online does not always occur by individuals, but also through larger SC connections with organizational ties and resources (e.g., sponsorships).

4.5 Theme 5. Cultural Beliefs and Mis/disinformation Engagement

Children recognized that people's cultural beliefs and community can play a role in how they interpreted online information. Specifically, the children noted that pseudoscience, subjectivity, and disagreement can play an influential role how information is interpreted.

4.5.1 Ghosts are real. Children noted that people's cultural beliefs around ghosts could determine whether an online misinformation video clip goes viral. Two teen volunteers in our co-design group (KidsTeam Libraries at Acorn Summit - 2022-11-02) introduced the children to a viral video called *Ghost Trashing Kitchen*. In the clip, loud noises are heard, cabinets mysteriously open on their own, and objects are being thrown around the kitchen by an invisible force. One of the teens asked, *"Why do you guys think this is misinformation and why do guys think people would believe this?"*

Looking at this vignette, it was clear the video itself generated emotional debate (SEL). After watching the video, some children immediately retorted, *"They (ghosts) are real!"* However, Peter disagreed, *"Ghosts are not real."* Bryson noted, *"But the video has ghosts!"* Dustin claimed, *"Well people could believe in ghosts or*

stuff like that. They might really like it(the video)." Children also recognized that if people had SC beliefs in ghosts, they would naturally promote or share mysterious online videos. For instance, a teen noted that mysterious videos like this are interesting and, when shared, could make people more popular and influence what friends think of you.

4.5.2 Bigfoot is real. Bigfoot is a mysterious ape-like figure that roams in forested areas of North America. While Bigfoot takes on a mythic status, groups of people around the world believe in the factual existence of the creature. Often online information (e.g., social media, forums, online videos) are used to debate Bigfoot's existence. A group of children watched a YouTube clip on Bigfoot presented by the executive producer of the *Finding Bigfoot* show (KidsTeam Libraries at Rolling Way - 2022-11-30). After watching the clip, the adult facilitator asked, "What do you think about what they are saying? Would you believe them?" Some children remained skeptical if the clip was real. However, two children (Annie, Lisa) admitted "somewhat" to the believability of Bigfoot in the online video. Annie observed, "It (video) was so blurry, like literally can't make anything." Lisa explained, "**It (Bigfoot image) looked like a gorilla in a very glowy image.**" Another adult added, "It is also reminding me of about last week about the tone. He (video host) was very wishy-washy like (moves hands doing a balancing gesture to show support for both sides) Ah! I don't know if I can believe it."

Children immediately recognized emotional tactics (SEL) that made it hard to judge this video. The children agreed that the host's swaying of opinion made Bigfoot hard to judge. Taylor responded, "**Because if he (host) was right, people would agree. They wouldn't have to say, Oh! You are right! Or oh, you are wrong and I am right. People would just know that you are right if you are right.**" From the SC perspective, the children noted that Bigfoot videos are made mysteriously to attract more viewers. There is also the community aspect of pseudoscience videos. Children described them as weird, entertaining, and a part of something bigger. These kinds of emotional community ties can foster engagement within mis/disinformation [106].

4.5.3 Theme 5 analysis. Because of this mysterious nature, the notion of subjectivity makes it hard to judge information as right or wrong. However, ghost and Bigfoot videos are not new, as pseudoscience trends were around before the Internet. What is notable is the socioemotional ways people get attached to the mysterious videos of Bigfoot and ghosts. For instance, children explained that sharing trendy online ghost videos could make you look more popular. Overall, from these examples, children understood what people culturally believe and how those beliefs shape their acceptance of trust in the online videos and information and how they may emotionally connect with such information. Children appeared unaware of how their own beliefs shaped their evaluation of the videos, including what they personally vouched for (e.g., whether ghosts or Bigfoot are real) and how their online participation in support of those beliefs could contribute to the spread of mis/disinformation. The development of epistemic vigilance is important to consider for children[13, 29].

4.6 Theme 6. Children's Tensions with Adult Authority and Mis/disinformation

In this set of vignettes we found a tension among children. The first two vignettes focus on the difficulties children have with their parents and authority over truth. The next two vignettes then show that children still need their parents and adults to help them process how to deal with mis/disinformation, both in spotting it and dealing with associated negative feelings.

4.6.1 Parents are not always truthful. During our co-design sessions, children noted a somewhat complicated relationship between truth and lies with their parents. For instance, we asked children to co-design a scenario with a false connection (KidsTeam UW - 2023-04-25). The topic of parents and lying came up. The researcher asked, "Kids, is there anything your parents tell you, like if you do something, something else will happen, that might be a false connection?" One child answered, "My parents told me if you eat watermelon seeds, they will grow in your stomach." Another child said, "My parents told me if I don't eat carrots, my hair color will turn gray."

A similar topic of parental lies came up at Rolling Way (KidsTeam Libraries at Rolling Way - 2022-11-30). The session focused on mis/disinformation children hear. A group of children presented a poster: *Is Santa Claus real?* The children created a poster in which the first portion showed a child who believes in Santa Claus because his parents said the figure was real. The second portion indicated a scientist who does not believe in Santa. The scientist questioned how people can travel around the world in one night and noted that reindeer cannot fly. Finally, the poster showed a person making a testimony that Santa is real because they saw him through a telescope at night. The children talked about how their parents did push this concept of Santa Claus to them. One of the children noted, "**The kid said that Santa is real because my parents said it so. But the parents were lying because they did not want the kid to think that Santa is not real. So nope, Santa is not real.**"

Overall, children described an SC phenomenon in which parents presented falsehoods (e.g., superstitions, folklore, Santa Claus) as truth to the children. While these were not malicious, children noted that parents as authority figures may not always be trusted. Some children had conflicting emotions about trusted authority figures presenting these falsehoods as reality to them (SEL).

4.6.2 Parents are too authoritative. We asked children to consider what they would do if they encountered misinformation online (KidsTeam UW - 2022-07-27). A facilitator asked whether the design should give child users some options like sending a message to their parents for permission. Abel thought it was a good idea. Abel then asked how to spell "information." "Send it to your parents...for...information," he told the facilitators what he wants to put down. While Abel agreed with the facilitator for child users to send messages to parents, he believed what is needed from parents is not permission, but more information and clarity. Eventually, this group designed a fact check button for children to send links or information to their parents to review. The facilitator then pointed to what Idris had drawn explaining that they also had a parent restriction design.

Children had emotional tensions (SEL) with their parents about ceding them authority to judge mis/disinformation online. For instance, Peter (adult) asked Idris whether children think it is a good thing or bad thing. Idris, without thinking, immediately claimed, "**A bad thing... Cuz I don't want to be restricted.**" Abel added, "**Bad thing for children, but good thing for parents.**" Peter (adult) asked why Abel thinks parents restrict children from misinformation. A facilitator helped Abel explain, "*Maybe it's (the online content) inappropriate.*" Idris added that sometimes parents completely restrict their access to browsers and other technologies. Here, children recognized the SC power that parents have in being able to control the flow of online information in their homes.

4.6.3 Parents could help us. While some children expressed that parents could be too restricting, they were not against asking families and friends for help. For instance, Mandy's group (KidsTeam UW - 2022-07-27) presented their ideas on what to do if they encounter misinformation online (e.g., eating 100 pounds of chocolate quickly is healthy). Trent explained what he thinks children should do to see if the information is accurate, noting, "*You can go to a library, you can... media literacy... ask parents in person... Google.*" Emily also wanted to present her idea on another misinformation scenario: a child receiving a message on COVID being completely cured. Emily noted, "**Text your friend to see if COVID cure is true. Tell your friends to check with their parents to see if the information is correct.**"

Children recognized their parents could be helping them process mis/disinformation as support figures. From an SEL standpoint, children in this group trusted their parents to help them. They even recognized the SC possibility of integrating community groups (e.g., libraries) and technology (e.g., Google, texting) with their parents' input.

4.6.4 Adults and children processing emotions. After the co-design session of the AI faces game (KidsTeam Libraries at Rolling Way - 2022-10-12), a number of children expressed their feelings about AI manipulation and mis/disinformation in society. One adult asked in the session, "*One question I have for the kids is, how do you feel when you see faces that aren't real?*"

- Elena: "**I just feel... SAD.** Seeing fake stuff makes me feel sad because it's not real, so it's sad." (She says "sad" quietly, like disappointment.)
- Mabel (teen): "**So for me, I agree with feeling sad.** Now that you know a face could be fake, you don't know if a photo your friend sends you is real. Like, maybe you have an online friend you've never met in person, and she sends you a photo. Now you don't know if it's real or not; she might have just grabbed it online and made it up."
- Alex: "**Anger.** Because if you're playing a guessing game, you might be so focused on one thing that you think is definitely it, and then you realize it's not the one."

We argue a need for emotional and community support for children living in era of online mis/disinformation. Children have some negative feelings about how ubiquitous and sophisticated the flow of mis/disinformation is (SEL). This vignette is an example of adults helping children process these feelings about mis/disinformation. Children can sense the problematic issues in society and overall

need community support (SC). Children in this session started to recognize the difficulty of this task to identify mis/disinformation from an AI source. Some of the children noted the futility of trying now with current technologies.

4.6.5 Theme 6 analysis. Children have a complicated relationship with misinformation and parents (adults). Parents are not always truthful with their children. Children recognized the cultural falsehoods of Santa Claus and parents telling small lies. Children also recognized SC power: Allowing parents to verify mis/disinformation also cedes power to them in the form of technology restrictions. As adults, we need to also help children process their emotions around misinformation and support their understanding, as a community, of how misinformation operates in their world. Children need designs that support community bonding as a way to help them navigate online.

5 Discussion

5.1 The Importance of SEL and SC for Children and Mis/disinformation

Overall, our findings (Table 4) demonstrate that children think about mis/disinformation in emotional, relational, societal, and cultural ways beyond fact checking and information accuracy. Current instructional and technological intervention designs (e.g., digital games, simulations) focus on media literacy have limitations for children. These designs often focus on teaching accuracy of information (e.g., spotting fake news [112]), finding reputable sources [86], slowing down and thinking critically [86], and triangulating information [5]. While these are important critical skills, they are not enough to help youth navigate increasingly challenging information environments. Barzilai and Chinn's review of educational responses to post-truth conditions notes that cognitive lens has received the most empirical attention so far [5]. They note the risk of leaning too heavily on just a single perspective (cognitive alone) [5]. The complexity of mis/disinformation, the diversity of people and contexts, and the constantly changing digital information environment require a multiplicity of connected strategies that deal with technology, ideology, settings, and epistemologies.

The issue at hand is that children often encounter broad and evolving scenarios in their own lives that are beyond just identifying the accuracy of information. First, some designs make cognitive awareness of mis/disinformation the priority [52, 100, 111], but this puts the onus of detecting and dealing with mis/disinformation on the user (child). While important, the cognitive autonomy lens alone does not always take account of the emotional and social complexity children are facing today with mis/disinformation (as shown in our themes). The sheer amount of information (facts, opinions, diverse interpretations), the level of sophistication with AI technology, paradoxical contradictions, and hyper-capitalism make it difficult for any individual to address this issue without community support [59].

Therefore, it is important to understand how people (especially children) interact with information in an emotional, cultural, and ecological fashion to understand the issues in-depth. While the cognitive lens is important for digital media literacy, we ask: What makes children resilient towards mis/disinformation from both

an SEL and SC lens? Our findings demonstrate that children are able to recognize some SEL issues (cognitive empathy, peer pressure, hubris, emotional manipulation) and SC factors (cultural beliefs, participation in misinformation society, hyper-capitalism) that are pervasive around them. Children are developing their own cognition, SEL, and SC awareness. They are also engaging with the most advanced technologies in our history designed to influence these perspectives. The rapid growth of technologies and mis/disinformation (e.g., AI fakes, social media flooding, algorithms, marketing influencers, online videos, etc.) amplifies not only the cognitive problems (e.g., accuracy, bias, sourcing, triangulation), but also the socioemotional aspects (e.g., overconfidence, empathy, peer pressure, parasocial relationships) and societal issues (e.g., hyper-capitalism, technology manipulation, existential views) [108].

5.2 The Community-Based Approach Towards Misinformation

We argue that children need supports in cognitive, SEL, and SC lenses through a **community-based approach** [59]. Starbird et al. note that conspiracy theorizing is a form of collective sense-making [106]. Conspiracies are often driven by plausibility rather than accuracy and the pursuit of conformative post-truths that transmit effectively. While conspiracy theories seem irrational, conspiracy theorists gather information, express doubt, construct links, and do logical information literacy reasoning [106]. They value plausible information that supports their story and social identity construction. We note the same issues can happen with children when information literacy only focuses on a cognitive lens. Communal sense-making tells us that emotion, social identity, and storytelling take priority over accuracy [30, 106]. Community-based strategies [59, 115] focus on grassroots efforts to sustainably combat misinformation and build collective resilience towards mis/disinformation in a community of practice [58]. Instead of only emphasizing cognitive strategies, the community-based approach begins developing shared community values and tactics to develop and facilitate epistemic resilience among group members [59, 115].

The findings of this study demonstrate that our own co-design method of Cooperative Inquiry [25, 124] and the co-design techniques allowed children the opportunities to engage in a community-based approach around mis/disinformation not always available in typical schooling. For instance, as children co-designed around viral ghost videos or Bigfoot's authenticity (Theme 5), they took on debates, coordination, and worked out epistemic claims together. As children created their own viral disinformation videos (Theme 4), children expressed how digital media manipulation incorporated culture and emotions (e.g., fruit hacks and SEO). Children also needed communities to figure out strategies to protect themselves (Theme 6). In all of these findings, we noted the importance of children connecting SEL and SC views in a communal setting, while also acknowledging aspects of cognitive skill sets.

Barzilai and Chinn [5] note the criticality of designing instruction and innovations in ways that address social and political issues and encourage civic participation [30]. This requires an interdisciplinary approach of designers, scientists, civics instructors, HCI, and social scientists to consider how to bridge and link different approaches and epistemologies together. Overall, HCI researchers

are already at innovative forefronts of studying people in an ecological way (cognition, emotion, and cultural). Design in HCI can focus on the relational to address multidisciplinary high-level problems. Some examples include supporting adolescent security and privacy risks together as a family team [33], designing communal health supports for care teams [10, 80], and developing inclusive experiences for senior citizens in community social programs [120]. These emotional and relational designs demonstrate the need for ecological support strategies towards mis/disinformation [12].

5.3 Design Recommendations for Community-Based Approach

We argue that there is a need to reframe mis/disinformation supports for children (and even adults) from acquisition of individual skills towards an ecological, community-based approach that recognizes the people problem of mis/disinformation. Therefore, we consider three design recommendations to connect the cognitive, SEL, and SC lenses.

5.3.1 Basic digital media literacy is needed to combat misinformation (cognitive), but misinformation is not always true or false: Designs and strategies still need to engage children with digital media literacy and the need for accuracy, sourcing, recognition, triangulation, fact checking, and bias. Children still need the cognitive perspective as a baseline for understanding facts and that authority in knowledge still exists to develop epistemic resilience and vigilance. However, relying on the cognitive model only is limited because of the overwhelming amount of online information, the large systematic manipulation of information, and the rise of new technologies that manipulate information quickly at scale.

Information is not just about facts, but also opinions and perspectives that cannot be fact checked. Online designs for digital literacy often focus on fact checking fake news [52], misleading digital content [111], and biased reporting [67]. However, children in our findings noted unverifiable online information such as, "chocolate is healthy," "Bigfoot and ghosts are real," and "my friend says he has a lot of money on social media." Even a conspiracy group can wield excellent cognitive information literacy skills to support their views and utilize accurate information with misleading interpretations [106].

Design Recommendation 1: People need to see their own cognitive limitations together in a safe community. For instance, our findings show that children often recognize mis/disinformation in others more readily than in themselves, reflecting a third-person effect consistent with prior work [54]. We also observed children in our study needed opportunities to negotiate multiple perspectives, rather than treating online information as an absolute (e.g., Bigfoot and ghosts, healthiness of chocolate debate). Based on these findings, we recommend designs that shift focus from binary detection to process-oriented learning. Instead of just teaching children how to spot mis/disinformation only cognitively, designs can help children understand that misleading content is a common part of online engagement and not a reflection of intelligence. For instance, digital games and simulations can allow children to experience how easily anyone could be misled, normalizing cognitive limitations in a safe environment [116]. Designs can also highlight how people

with different perspectives interpret and evaluate information together. This approach encourages reflection on diverse viewpoints and collective sense-making, rather than solely judging content as “true” or “false” [59, 116].

5.3.2 The online information environment is harsh and we need to take care of each other (socioemotional learning): The world of online misinformation is fraught with emotional aspects for children. Cognitive and affective empathy, emotional regulation, peer-pressure, and bullying are examples of how emotion influences the spread of mis/disinformation. Our findings demonstrate that children must deal with their friends’ participation in mis/disinformation, feeling overwhelmed by false information, and seeing online influencers constantly try to manipulate their feelings. There is a need for recognizing how children’s own emotions and social groups play a part in spreading mis/disinformation (i.e., participatory misinformation). The SEL lens takes into account cognitive bias and limitations [5] to address how children and people’s emotional development plays a role in making sense of online information. SEL factors can help children care for something beyond themselves and participate in a community-based approach for addressing mis/disinformation together. The interventions can focus on helping children better understand their own emotional vulnerability, developing cognitive and affective empathy for others, and finding the right way to talk to someone who might have a disagreement with (epistemic resilience and vigilance). Community-based designs need to also consider ways in which children are feeling sad, angry, and overwhelmed by the current state of mis/disinformation.

Design Recommendation 2: We advocate for new designs that consider the importance of integrating social supports for children to deal with mis/disinformation that consider their feelings of being overwhelmed. Based on this, we recommend designs that integrate social and emotional support, alongside informational guidance. For example, digital support networks can be developed with peers and trusted adults to help children navigate complex feelings around mis/disinformation. HCI-inspired approaches, such as a *Circle of Trust* could balance monitoring with emotional support, helping adults scaffold children’s reasoning without inducing fear or shame [33]. Grounded in the fact that teachers and caregivers already support children with online risks like cyberbullying and privacy challenges [70], these communal systems can extend that support to navigating mis/disinformation, promoting resilience, reflection, and emotional regulation in online contexts.

5.3.3 We need to collectively navigate the confusing information space (sociocultural): The SC view posits that we need to understand mis/disinformation in social settings, or “communities of practice” [58]. Given this, on the learning side we need digital and instructional interventions that engage children in communities of practice, in activities that encourage collective sense-making and meaning making [5]. Researchers argue that little attention has been paid to building systems that help facilitate collective sense-making and rumoring behavior itself [55]. For children, there are little to no systems that help them engage with and understand the participatory and collective sense-making of mis/disinformation. Our findings demonstrate that children had difficulty understanding why others fall for mis/disinformation (e.g., naive for believing in a flat Earth), how social analytics could be manipulated, and

dealing with other cultural beliefs in information (e.g., ghosts are real / not real).

Design Recommendation 3: Our findings indicated that children benefit from articulating their own perspectives and negotiating meaning collaboratively when encountering online information, reflecting both cognitive and affective engagement in digital media literacy. Based on this, we recommend designs that support socio-technical systems enabling collaborative sense-making. For example, digital games and interactive platforms can make explicit the norms, values, and affordances embedded in social media tools, allowing children to explore how these tools exploit cognitive and emotional tendencies around mis/disinformation [65, 116]. Activities where children articulate viewpoints and listen to peers foster reflection on diverse perspectives and subjective reasoning [114]. Similarly, structured messaging groups with peers and trusted adults can scaffold collaborative interpretation and resilience to manipulative online strategies [61]. Grounded in the SC approach and our observations, these designs help children understand the socio-technical ecosystem, recognize manipulative strategies, and coordinate multiple epistemologies, supporting critical engagement with both scientific and social knowledge [5].

6 Limitations and Future Work

We developed our understanding of SEL and SC with $n = 46$ different children, with 26 co-design sessions, residing in a single USA geographic location, many of whom have prior experience in design and technologies. We acknowledge this is a unique situation and not all researchers have the infrastructure to conduct multiple co-design sessions as our team did. Therefore, we can only contribute to theoretical generalizations, not statistical generalization [121]. Future work is needed to examine SEL and SC perspectives of children and mis/disinformation in other contexts. For instance, we did not collect demographic information on ethnicity / nationality of the children. Future studies could look at ethnicity / nationality as a part of SEL and SC perspectives of mis/disinformation.

Additionally, we conducted the co-design sessions under a larger study looking at creating digital literacy curriculum. Therefore, the themes of this study may not have captured an extensive set of issues in SEL and SC in children. For instance, while we were able to directly observe cognitive empathy issues [95], we did not follow up and ask for more about affective empathy [35, 53]. We also did not directly ask children for their thoughts on the relationship between cognitive, SEL, and SC lenses. Therefore, we acknowledge this study is the start of considering SEL and SC perspectives with children. More work is needed to examine specifically how a community-based approach could come together for children and trusted adults. In future work, we hope to be able to directly co-design a specific community-based approach based on the ideals of this study. For instance, conducting co-design work with parents, teachers, and other community stakeholders with children could expand on a more holistic perspective of the community-based model.

7 Conclusions

In this study, we examined 26 co-design sessions of children’s (ages 6 - 11) engagement around online mis/disinformation. We found

through design partnerships that children have sophisticated understandings of mis/disinformation beyond the cognitive skills perspective. Through an analysis using SEL and SC perspectives, we observed children's interactions around mis/disinformation as having difficulty with empathy, feeling peer-pressure, making sense of parasocial relationships, living in a world of hyper-capitalism, engaging in cultural beliefs, and dealing with complex views of adult authority. Overall, we show a need for an integrated framework combining SEL, SC, and cognitive perspectives to inform how trusted community groups can support children and guide HCI designs that address the growing sophistication of mis/disinformation.

To conclude, mis/disinformation is not just about accuracy of information alone. When we take solely the cognitive perspective, we might narrowly see mis/disinformation as fixing a data and information problem (e.g., accuracy of information, facts, fake or real news, sourcing, and cognitive bias). However, youth encounter online mis/disinformation in the forms of paradoxical information, opinions, and information that is accurate but misinterpreted and/or maladaptive. For children, some information just cannot be fact checked, like Bigfoot or how a friend really feels about another friend. At the heart of it, mis/disinformation is a people problem fraught with beliefs, emotions, relationships, and cultural issues, especially when we consider children's socioemotional development and engagement in digital youth culture.

Acknowledgments

We thank all KidsTeam UW and KidsTeam Libraries volunteers, researchers, students, children, teens, families, librarians, and libraries that supported this work. We also thank the Center for an Informed Public for guidance on this work. This research is supported by funding from the Institute of Museum and Library Services (Grant Nos. LG-252291-OLS-22; LG-255047-OLS-23; LG-256571-OLS-24) and the National Science Foundation (Grant Nos. 1941679; 2314195). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Institute of Museum and Library Services and the National Science Foundation.

References

- [1] Benedikt Artmann, Christian Scheibenzuber, and Nicolae Nistor. 2023. Elementary school students' information literacy: Instructional design and evaluation of a pilot training focused on misinformation. *Journal of Media Literacy Education* 15, 2 (2023), 31–43. <https://doi.org/10.23860/JMLE-2023-15-2-3>
- [2] Theophilus Azungah. 2018. Qualitative research: Deductive and inductive approaches to data analysis. *Qualitative Research Journal* 18, 4 (2018), 383–400. <https://doi.org/10.1108/QRJ-D-18-00035>
- [3] Carolyn Baer, Puja Malik, and Darko Odic. 2021. Are children's judgments of another's accuracy linked to their metacognitive confidence judgments? *Metacognition and Learning* 16, 2 (2021), 485–516. <https://doi.org/10.1007/s11409-021-09263-x>
- [4] Ava Bartolome and Shuo Niu. 2023. A literature review of video-sharing platform research in HCI. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–20. <https://doi.org/10.1145/3544548.3581107>
- [5] Sarit Barzilai and Clark A Chinn. 2020. A review of educational responses to the "post-truth" condition: Four lenses on "post-truth" problems. *Educational Psychologist* 55, 3 (2020), 107–119. <https://doi.org/10.1080/00461520.2020.1786388>
- [6] Melanie Birks, Ysanne Chapman, and Karen Francis. 2008. Memoing in qualitative research: Probing data and processes. *Journal of Research in Nursing* 13, 1 (2008), 68–75. <https://doi.org/10.1177/1744987107081254>
- [7] David F Bjorklund, Barbara R Bjorklund, Rhonda Douglas Brown, and William S Cassel. 1998. Children's susceptibility to repeated questions: How misinformation changes children's answers and their minds. *Applied Developmental Science* 2, 2 (1998), 99–111. https://doi.org/10.1207/s1532480xads0202_4
- [8] Bradley J Bond, Karen E Dill-Shackleford, Jayson L Dibble, Tracy R Gleason, Nancy Jennings, Sarah Rosaen, and Rebecca Tukachinsky Forster. 2024. Parasocial relationships in children and teens. In *Handbook of Children and Screens: Digital Media, Development, and Well-Being from Birth Through Adolescence*. Springer Nature Switzerland Cham, 239–244. https://doi.org/10.1007/978-3-031-69362-5_33
- [9] Elijah Robert Bouma-Sims, Lily Klucinec, Mandy Lanyon, Julie Downs, and Lorrie Faith Cranor. 2025. The kids are all right: Investigating the susceptibility of teens and adults to YouTube giveaway scams. In *Network and Distributed System Security (NDSS) Symposium*. <https://dx.doi.org/10.14722/ndss.2025.240342>
- [10] Diogo Branco, Margarida Moteiro, Raquel Bouca-Machado, Rita Miranda, Tiago Reis, Elia Decoroso, Rita Cardoso, Joana Ramalho, Filipa Rato, Joana Malheiro, et al. 2024. Co-designing customizable clinical dashboards with multidisciplinary teams: Bridging the gap in chronic disease care. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*. 1–18. <https://doi.org/10.1145/3613904.3642618>
- [11] Virginia Braun and Victoria Clarke. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology* 3, 2 (2006), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- [12] Urie Bronfenbrenner. 1977. Toward an experimental ecology of human development. *American Psychologist* 32, 7 (1977), 513. <https://doi.org/10.1037/0003-066X.32.7.513>
- [13] Pip Brown and Michaela Gummerum. 2025. Trust issues: Adolescents' epistemic vigilance towards online sources. *British Journal of Developmental Psychology* (2025). <https://doi.org/10.1111/bjdp.12559>
- [14] Stephen V Burks, Jeffrey P Carpenter, Lorenz Goette, and Aldo Rustichini. 2013. Overconfidence and social signalling. *Review of Economic Studies* 80, 3 (2013), 949–983. <https://doi.org/10.1093/restud/rds046>
- [15] Carmel Cefai, P Bartolo, Valeria Cavioni, and Paul Downes. 2018. Strengthening social and emotional education as a core curricular area across the EU: A review of the international evidence. <https://doi.org/10.2766/664439>
- [16] Xinyin Chen. 2012. Culture, peer interaction, and socioemotional development. *Child Development Perspectives* 6, 1 (2012), 27–34. <https://doi.org/10.1111/j.1750-8606.2011.00187.x>
- [17] Rachel Ivy Clarke, Satyen Amonkar, and Ann Rosenblad. 2020. Design thinking and methods in library practice and graduate library education. *Journal of Librarianship and Information Science* 52, 3 (2020), 749–763. <https://doi.org/10.1177/0961000619871989>
- [18] Josh Compton, Sander Van Der Linden, John Cook, and Melisa Basol. 2021. Inoculation theory in the post-truth era: Extant findings and new frontiers for contested science, misinformation, and conspiracy theories. *Social and Personality Psychology Compass* 15, 6 (2021), e12602. <https://doi.org/10.1111/spc3.12602>
- [19] Theodora Dame Adjin-Tetty. 2022. Combating fake news, disinformation, and misinformation: Experimental evidence for media literacy education. *Cogent Arts & Humanities* 9, 1 (2022), 2037229. <https://doi.org/10.1080/23311983.2022.2037229>
- [20] Aayushi Dangol, Michele Newman, Robert Wolfe, Jin Ha Lee, Julie A Kientz, Jason Yip, and Caroline Pitt. 2024. Mediating culture: Cultivating socio-cultural understanding of AI in children through participatory design. In *Proceedings of the 2024 ACM Designing Interactive Systems Conference*. 1805–1822. <https://doi.org/10.1145/3643834.3661515>
- [21] Aayushi Dangol, Runhua Zhao, Robert Wolfe, Trushaa Ramanan, Julie A Kientz, and Jason Yip. 2025. "AI just keeps guessing": Using ARC puzzles to help children identify reasoning errors in generative AI. In *Proceedings of the 24th Interaction Design and Children*. ACM, 444–464. <https://doi.org/10.1145/3713043.3728836>
- [22] Katie Davis. 2023. *Technology's Child: Digital Media's Role in the Ages and Stages of Growing Up*. MIT Press. <https://doi.org/10.7551/mitpress/13406.001.0001>
- [23] Janine Delahunty, Irina Verenikina, and Pauline Jones. 2014. Socio-emotional connections: Identity, belonging and learning in online interactions. A literature review. *Technology, Pedagogy and Education* 23, 2 (2014), 243–265. <https://doi.org/10.1080/1475939X.2013.813405>
- [24] Tilman Dingler, Benjamin Tag, Philipp Lorenz-Spreen, Andrew W Vargo, Simon Knight, and Stephan Lewandowsky. 2021. Workshop on technologies to support critical thinking in an age of misinformation. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–5. <https://doi.org/10.1145/3411763.3441350>
- [25] Allison Druin. 2002. The role of children in the design of new technology. *Behaviour & Information Technology* 21, 1 (2002), 1–25. <https://doi.org/10.1080/01449290110108659>
- [26] Elena-Alexandra Dumitru. 2020. Testing children and adolescents' ability to identify fake news: A combined design of quasi-experiment and group discussions. *Societies* 10, 3 (2020), 71. <https://doi.org/10.3390/soc10030071>
- [27] David Dunning. 2011. The Dunning-Kruger effect: On being ignorant of one's own ignorance. In *Advances in Experimental Social Psychology*. Vol. 44. Elsevier, 247–296. <https://doi.org/10.1016/B978-0-12-385522-0.00005-6>

- [28] Ryan Ebarido, Josephine De La Cuesta, Jypzie Catedrilla, and Santoso Wibowo. 2020. Peer influence, risk propensity and fear of missing out in sharing misinformation on social media during the COVID-19 pandemic. In *International Conference on Computers in Education*. 351–359.
- [29] Shiri Einav, Alexandria Levey, Priya Patel, and Abigail Westwood. 2020. Epistemic vigilance online: Textual inaccuracy and children's selective trust in webpages. *British Journal of Developmental Psychology* 38, 4 (2020), 566–579. <https://doi.org/10.1111/bjdp.12335>
- [30] Noah Weeth Feinstein and David Isaac Waddington. 2020. Individual truth judgments or purposeful, collective sensemaking? Rethinking science education's response to the post-truth era. *Educational Psychologist* 55, 3 (2020), 155–166. <https://doi.org/10.1080/00461520.2020.1780130>
- [31] Miriam Fernandez, Alejandro Bellogin, and Iván Cantador. 2024. Analysing the effect of recommendation algorithms on the spread of misinformation. In *Proceedings of the 16th ACM Web Science Conference*. 159–169. <https://doi.org/10.1145/3614419.3644003>
- [32] Ruth Festl. 2021. Social media literacy & adolescent social online behavior in Germany. *Journal of Children and Media* 15, 2 (2021), 249–271. <https://doi.org/10.1080/17482798.2020.1770110>
- [33] Arup Kumar Ghosh, Charles E Hughes, and Pamela J Wisniewski. 2020. Circle of Trust: A new approach to mobile online safety for families. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–14. <https://doi.org/10.1145/3313831.3376747>
- [34] Lauren N Girouard-Hallam, Yu Tong, Fuxing Wang, and Judith H Danovitch. 2023. What can the internet do?: Chinese and American children's attitudes and beliefs about the internet. *Cognitive Development* 66 (2023), 101338. <https://doi.org/10.1016/j.cogdev.2023.101338>
- [35] Thalia R Goldstein and Ellen Winner. 2012. Enhancing empathy and theory of mind. *Journal of Cognition and Development* 13, 1 (2012), 19–37. <https://doi.org/10.1080/15248372.2011.573514>
- [36] Daniel Goleman. 2005. *Emotional Intelligence: Why It Can Matter More Than IQ*. Bantam.
- [37] Brandon W Goulding and Ori Friedman. 2021. A similarity heuristic in children's possibility judgments. *Child Development* 92, 2 (2021), 662–671. <https://doi.org/10.1111/cdev.13534>
- [38] Mark T Greenberg, Celene E Domitrovich, Roger P Weissberg, and Joseph A Durlak. 2017. Social and emotional learning as a public health approach to education. *The Future of Children* (2017), 13–32. <https://doi.org/10.1353/foc.2017.0001>
- [39] Jutta Haider and Olof Sundin. 2022. Information literacy challenges in digital culture: Conflicting engagements of trust and doubt. *Information, Communication & Society* 25, 8 (2022), 1176–1191. <https://doi.org/10.1080/1369118X.2020.1851389>
- [40] Jutta Haider and Olof Sundin. 2022. *Paradoxes of Media and Information Literacy: The Crisis of Information*. Taylor & Francis. <https://doi.org/10.4324/9781003163237>
- [41] David Hammer and Leema K Berland. 2014. Confusing claims for data: A critique of common practices for presenting qualitative research on learning. *Journal of the Learning Sciences* 23, 1 (2014), 37–46. <https://doi.org/10.1080/10508406.2013.802652>
- [42] Katrin Hartwig, Tom Biselli, Franziska Schneider, and Christian Reuter. 2024. From adolescents' eyes: Assessing an indicator-based intervention to combat misinformation on TikTok. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*. 1–20. <https://doi.org/10.1145/3613904.3642264>
- [43] Vonna L Hemmler, Allison W Kenney, Susan Dulong Langley, Carolyn M Callahan, E Jean Gubbins, and Shannon Holder. 2022. Beyond a coefficient: An interactive process for achieving inter-rater consistency in qualitative coding. *Qualitative Research* 22, 2 (2022), 194–219. <https://doi.org/10.1177/1468794120976072>
- [44] Paula Herrero-Diz, Jesús Conde-Jiménez, and Salvador Reyes de Cózar. 2020. Teens' motivations to spread fake news on WhatsApp. *Social Media+ Society* 6, 3 (2020), 1–14. <https://doi.org/10.1177/2056305120942879>
- [45] Diane M Hoffman. 2009. Reflecting on social emotional learning: A critical perspective on trends in the United States. *Review of Educational Research* 79, 2 (2009), 533–556. <https://doi.org/10.3102/0034654308325184>
- [46] Philip N Howard, Lisa-Maria Neudert, Nayana Prakash, and Steven Vosloo. 2021. *Digital Misinformation/Disinformation and Children*. Technical Report. UNICEF. <https://www.unicef.org/innocenti/media/856/file/UNICEF-Global-Insight-Digital-Mis-Disinformation-and-Children-2021.pdf>
- [47] Muhammad Nihal Hussain, Serpil Tokdemir, Nitin Agarwal, and Samer Al-Khateeb. 2018. Analyzing disinformation and crowd manipulation tactics on YouTube. In *2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*. IEEE, 1092–1095. <https://doi.org/10.1109/ASONAM.2018.8508766>
- [48] Henry Jenkins. 2006. *Fans, Bloggers, and Gamers: Exploring Participatory Culture*. NYU Press. <https://doi.org/10.18574/nyu/9780814743690.001.0001>
- [49] Alexandra Johnson and Jens Koed Madsen. 2024. Inoculation hesitancy: An exploration of challenges in scaling inoculation theory. *Royal Society Open Science* 11, 6 (2024), 231711. <https://doi.org/10.1098/rsos.231711>
- [50] James Kalbach. 2006. "I'm feeling lucky": The role of emotions in seeking information on the Web. *Journal of the American Society for Information Science and Technology* 57, 6 (2006), 813–818. <https://doi.org/10.1002/asi.20299>
- [51] Finn Kensing and Jeanette Blomberg. 1998. Participatory design: Issues and concerns. *Computer Supported Cooperative Work (CSCW)* 7, 3 (1998), 167–185. <https://doi.org/10.1023/A:1008689307411>
- [52] Kristian Kiili, Juho Siuko, and Manuel Ninaus. 2024. Tackling misinformation with games: A systematic literature review. *Interactive Learning Environments* 32, 10 (2024), 7086–7101. <https://doi.org/10.1080/10494820.2023.2299999>
- [53] Juyoung Kim and Nana Shin. 2025. Relations of empathy and theory of mind with difficulties in peer relationships in school-aged children. *Journal of Child and Family Studies* 34, 7 (2025), 1941–1951. <https://doi.org/10.1007/s10826-025-03034-x>
- [54] Alex Zhi-Xiong Koo, Min-Hsin Su, Sangwon Lee, So-Yun Ahn, and Hernando Rojas. 2021. What motivates people to correct misinformation? Examining the effects of third-person perceptions and perceived norms. *Journal of Broadcasting & Electronic Media* 65, 1 (2021), 111–134. <https://doi.org/10.1080/08838151.2021.1903896>
- [55] Peter Krafft, Kaitlyn Zhou, Isabelle Edwards, Kate Starbird, and Emma S Spiro. 2017. Centralized, parallel, and distributed information processing during collective sensemaking. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. 2976–2987. <https://doi.org/10.1145/3025453.3026012>
- [56] Priya Kumar, Jessica Vitak, Marshini Chetty, Tamara L Clegg, Jonathan Yang, Brenna McNally, and Elizabeth Bonsignore. 2018. Co-designing online privacy-related games and stories with children. In *Proceedings of the 17th ACM Conference on Interaction Design and Children*. 67–79. <https://doi.org/10.1145/3202185.3202735>
- [57] Alexander Lascaux. 2020. Of kids and unicorns: How rational is children's trust in testimonial knowledge? *Cognitive Science* 44, 3 (2020), e12819. <https://doi.org/10.1111/cogs.12819>
- [58] Jean Lave and Etienne Wenger. 2001. Legitimate peripheral participation in communities of practice. In *Supporting Lifelong Learning*. Routledge, 121–136.
- [59] Jin Ha Lee, Nicole Santero, Arpita Bhattacharya, Emma May, and Emma S Spiro. 2022. Community-based strategies for combating misinformation: Learning from a popular culture fandom. *Harvard Kennedy School Misinformation Review* (2022). <https://doi.org/10.37016/mr-2020-105>
- [60] Kung Jin Lee, Yoojung Kim, Wendy Roldan, Jin Ha Lee, and Jason C Yip. 2023. Caring for the community: An academically based community service course in LIS. *Journal of Librarianship and Information Science* 55, 1 (2023), 232–245. <https://doi.org/10.1177/0961006221132276>
- [61] Tuan-He Lee and Susan R Fussell. 2025. Countering misinformation in private messaging groups: Insights from a fact-checking chatbot. *Proceedings of the ACM on Human-Computer Interaction* 9, 1 (2025), 1–30. <https://doi.org/10.1145/3701189>
- [62] Stephan Lewandowsky and Sander Van Der Linden. 2021. Countering misinformation and fake news through inoculation and prebunking. *European Review of Social Psychology* 32, 2 (2021), 348–384. <https://doi.org/10.1080/10463283.2021.1876983>
- [63] Calvin A Liang, Katie Albertson, Florence Williams, David Inwards-Breland, Sean A Munson, Julie A Kientz, and Kym Ahrens. 2020. Designing an online sex education resource for gender-diverse youth. In *Proceedings of the Interaction Design and Children Conference*. 108–120. <https://doi.org/10.1145/3392063.3394404>
- [64] Jiayuan Lim, Candida C Peterson, Marc De Rosnay, and Virginia Slaughter. 2020. Children's moral evaluations of prosocial and self-interested lying in relation to age, ToM, cognitive empathy and culture. *European Journal of Developmental Psychology* 17, 4 (2020), 504–526. <https://doi.org/10.1080/17405629.2019.1667766>
- [65] Louise Limberg, Olof Sundin, and Sanna Talja. 2012. Three theoretical perspectives on information literacy. *Human IT: Journal for Information Technology Studies as a Human Science* 11, 2 (2012). <https://humanit.hb.se/article/view/69>
- [66] Amanda R Lipko, John Dunlosky, and William E Merriman. 2009. Persistent overconfidence despite practice: The role of task experience in preschoolers' recall predictions. *Journal of Experimental Child Psychology* 103, 2 (2009), 152–166. <https://doi.org/10.1016/j.jecp.2008.10.002>
- [67] Ioana Literat, Yoo Kyung Chang, and Shu-Yi Hsu. 2020. Gamifying fake news: Engaging youth in the participatory design of news literacy games. *Convergence* 26, 3 (2020), 503–516. <https://doi.org/10.1177/1354856520925732>
- [68] Chen Lou and Hye Kyung Kim. 2019. Fancying the new rich and famous? Explicating the roles of influencer content, credibility, and parental mediation in adolescents' parasocial relationship, materialism, and purchase intentions. *Frontiers in Psychology* 10 (2019), 2567. <https://doi.org/10.3389/fpsyg.2019.02567>
- [69] Jinjin Ma, Yidi Chen, Huanya Zhu, and Yiqun Gan. 2023. Fighting COVID-19 misinformation through an online game based on the inoculation theory: Analyzing the mediating effects of perceived threat and persuasion knowledge. *International Journal of Environmental Research and Public Health* 20, 2 (2023), 980. <https://doi.org/10.3390/ijerph20020980>

- [70] Sana Maqsood and Sonia Chiasson. 2021. "They think it's totally fine to talk to somebody on the internet they don't know": Teachers' perceptions and mitigation strategies of tweens' online risks. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–17. <https://doi.org/10.1145/3411764.3445224>
- [71] Tammy A Marche. 1999. Memory strength affects reporting of misinformation. *Journal of Experimental Child Psychology* 73, 1 (1999), 45–71.
- [72] Nora McDonald, Sarita Schoenebeck, and Andrea Forte. 2019. Reliability and inter-rater reliability in qualitative research: Norms and guidelines for CSCW and HCI practice. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–23. <https://doi.org/10.1145/3359174>
- [73] Miriam J Metzger, Andrew J Flanagin, Alex Markov, Rebekah Grossman, and Monica Bulger. 2015. Believing the unbelievable: Understanding young people's information literacy beliefs and practices in the United States. *Journal of Children and Media* 9, 3 (2015), 325–348. <https://doi.org/10.1080/17482798.2015.1056817>
- [74] Ellen Middaugh. 2019. More than just facts: Promoting civic media literacy in the era of outrage. *Peabody Journal of Education* 94, 1 (2019), 17–31. <https://doi.org/10.1080/0161956X.2019.1553582>
- [75] Paul Mihas. 2021. Memo writing strategies: Analyzing the parts and the whole. In *Analyzing and Interpreting Qualitative Research: After the Interview*. Sage, 243–256.
- [76] Ariana Modirrousta-Galian and Philip A Higham. 2023. Gamified inoculation interventions do not improve discrimination between true and fake news: Reanalyzing existing research with receiver operating characteristic analysis. *Journal of Experimental Psychology: General* 152, 9 (2023), 2411. <https://doi.org/10.1037/xge0001395>
- [77] Sam Moradzadeh and Yubo Kou. 2024. "Wow another fake game from YouTube ad": Unpacking fake games through a mixed-methods investigation. In *CHIPLAY. Proceedings of the ACM on Human-Computer Interaction* 8, 1–36. <https://doi.org/10.1145/3677115>
- [78] Matthew Motta, Timothy Callaghan, and Steven Sylvester. 2018. Knowing less but presuming more: Dunning-Kruger effects and the endorsement of anti-vaccine policy attitudes. *Social Science & Medicine* 211 (2018), 274–281. <https://doi.org/10.1016/j.socscimed.2018.06.032>
- [79] Michele Newman, Kaiwen Sun, Ilena B Dalla Gasperina, Grace Y Shin, Matthew Kyle Pedraja, Ritesh Kanchi, Maia B Song, Rannie Li, Jin Ha Lee, and Jason Yip. 2024. "I want it to talk like Darth Vader": Helping Children Construct Creative Self-Efficacy with Generative AI. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*. 1–18. <https://doi.org/10.1145/3613904.3642492>
- [80] Sarah Nikkiah, Swaroop John, Krishna Supradeep Yalamarti, Emily L Mueller, and Andrew D Miller. 2022. Family care coordination in the children's hospital: Phases and cycles in the pediatric cancer caregiving journey. *Proceedings of the ACM on Human-Computer Interaction* 6, CSCW2 (2022), 1–30. <https://doi.org/10.1145/3555187>
- [81] John O'Shaughnessy and Nicholas Jackson O'Shaughnessy. 2002. *The Marketing Power of Emotion*. Oxford University Press.
- [82] Royal Pathak, Francesca Spezzano, and Maria Soledad Pera. 2023. Understanding the contribution of recommendation algorithms on misinformation recommendation and misinformation dissemination on social networks. *ACM Transactions on the Web* 17, 4 (2023), 1–26. <https://doi.org/10.1145/3616088>
- [83] Ana Pérez-Escoda, Luis Miguel Pedrero-Esteban, Juana Rubio-Romero, and Carlos Jiménez-Narros. 2021. Fake news reaching young people on social networks: Distrust challenging media literacy. *Publications* 9, 2 (2021), 24. <https://doi.org/10.3390/publications9020024>
- [84] Anat Perry and Simone Shamay-Tsoory. 2013. Understanding emotional and cognitive empathy: A neuropsychological perspective. In *Understanding Other Minds: Perspectives From Developmental Social Neuroscience*. Oxford University Press Oxford, 179–194. <https://doi.org/10.1093/acprof:oso/9780199692972.003.0011>
- [85] Karina Polanco-Levicán and Sonia Salvo-Garrido. 2022. Understanding social media literacy: A systematic review of the concept and its competences. *International Journal of Environmental Research and Public Health* 19, 14 (2022), 8807. <https://doi.org/10.3390/ijerph19148807>
- [86] Gianfranco Polizzi and Ros Taylor. 2019. *Misinformation, Digital Literacy and the School Curriculum*. Technical Report. London School of Economics and Political Science. <https://eprints.lse.ac.uk/101083/>
- [87] Stephanie Preston, Anthony Anderson, David J Robertson, Mark P Shephard, and Narisong Huhe. 2021. Detecting fake news on Facebook: The role of emotional intelligence. *PLOS One* 16, 3 (2021), e0246757. <https://doi.org/10.1371/journal.pone.0246757>
- [88] Anne Reinhardt, Claudia Wilhelm, and Sophie Mayen. 2025. Experimental testing of active vs. passive inoculation interventions on adolescents' news discernment and learning enjoyment. *Journal of Media Psychology: Theories, Methods, and Applications* (2025). <https://doi.org/10.1027/1864-1105/a000471>
- [89] Karen Renaud, Cigdem Sengul, Kovila Coopamootoo, Bryan Cliff, Jacqui Taylor, Mark Springett, and Ben Morrison. 2024. "We're not that gullible!" Revealing dark pattern mental models of 11–12-year-old Scottish children. *ACM Transactions on Computer-Human Interaction* 31, 3 (2024), 1–41. <https://doi.org/10.1145/3660342>
- [90] Arjan Reurink. 2019. Financial fraud: A literature review. *J. Econ. Surveys* 32, 5 (2019), 79–115. <https://doi.org/10.1111/joes.12294>
- [91] Kim P Roberts, Katherine R Wood, and Breanne E Wylie. 2021. Children's ability to edit their memories when learning about the environment from credible and noncredible websites. *Cognitive Research: Principles and Implications* 6, 1 (2021), 42. <https://doi.org/10.1186/s41235-021-00305-1>
- [92] Jon Roozenbeek, Sander Van Der Linden, and Thomas Nygren. 2020. Prebunking interventions based on "inoculation" theory can reduce susceptibility to misinformation across cultures. *The Harvard Kennedy School Misinformation Review* 1, 2 (2020). <https://doi.org/10.37016/mr-2020-008>
- [93] Nikita A Salovich and David N Rapp. 2021. Misinformed and unaware? Metacognition and the influence of inaccurate information. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 47, 4 (2021), 608. <https://doi.org/10.1037/xlm0000977>
- [94] Reijo Savolainen. 2014. Emotions as motivators for information seeking: A conceptual analysis. *Library & Information Science Research* 36, 1 (2014), 59–65. <https://doi.org/10.1016/j.lisr.2013.10.004>
- [95] Christina Schwenck, Bettina Göhle, Juliane Hauf, Andreas Warnke, Christine M Freitag, and Wolfgang Schneider. 2014. Cognitive and emotional empathy in typically developing children: The influence of age, gender, and intelligence. *European Journal of Developmental Psychology* 11, 1 (2014), 63–76. <https://doi.org/10.1037/xlm0000977>
- [96] Florence Namasanga Selnes. 2024. Fake news on social media: Understanding teens' (Dis) engagement with news. *Media, Culture & Society* 46, 2 (2024), 376–392. <https://doi.org/10.1177/01634437231198447>
- [97] Filip Sharevski and Jennifer Vander Loop. 2024. Children, parents, and misinformation on social media. In *2024 IEEE Symposium on Security and Privacy (SP)*. IEEE, 1536–1553. <https://doi.org/10.1109/SP54263.2024.00221>
- [98] Donghee Shin and Fokiya Akhtar. 2024. Algorithmic inoculation against misinformation: how to build cognitive immunity against misinformation. *Journal of Broadcasting & Electronic Media* 68, 2 (2024), 153–175. <https://doi.org/10.1080/08838151.2024.2323712>
- [99] Andrew Shtulman. 2024. Children's susceptibility to online misinformation. *Current Opinion in Psychology* 55 (2024), 101753. <https://doi.org/10.1016/j.copsyc.2023.101753>
- [100] Andrew Shtulman, Lucy Stoll, Lesly Sabroso, and Andrew G Young. 2025. Children's detection of online misinformation. *Cognition* 265 (2025), 106279. <https://doi.org/10.1016/j.cognition.2025.106279>
- [101] Lucy Simko, Britnie Chin, Sungmin Na, Harkiran Kaur Saluja, Tian Qi Zhu, Tadayoshi Kohno, Alexis Hiniker, Jason Yip, and Camille Cobb. 2021. Would you rather: A focus group method for eliciting and discussing formative design insights with children. In *Proceedings of the 20th Annual ACM Interaction Design and Children Conference*. 131–146. <https://doi.org/10.1145/3459990.3460708>
- [102] Mai Skjott Linneberg and Steffen Korsgaard. 2019. Coding qualitative data: A synthesis guiding the novice. *Qualitative Research Journal* 19, 3 (2019), 259–270. <https://doi.org/10.1108/QRJ-12-2018-0012>
- [103] Danielle Soliman, Erica Frydenberg, Rachel Liang, and Jan Deans. 2021. Enhancing empathy in preschoolers: A comparison of social and emotional learning approaches. *The Educational and Developmental Psychologist* 38, 1 (2021), 64–76. <https://doi.org/10.1080/20590776.2020.1839883>
- [104] Nicola J Spalding and Terry Phillips. 2007. Exploring the use of vignettes: From validity to trustworthiness. *Qualitative Health Research* 17, 7 (2007), 954–962. <https://doi.org/10.1177/1049732307306187>
- [105] Dan Sperber, Fabrice Clément, Christophe Heintz, Olivier Mascaro, Hugo Mercier, Gloria Origgi, and Deirdre Wilson. 2010. Epistemic vigilance. *Mind & Language* 25, 4 (2010), 359–393. <https://doi.org/10.1111/j.1468-0017.2010.01394.x>
- [106] Kate Starbird, Ahmer Arif, and Tom Wilson. 2019. Disinformation as collaborative work: Surfacing the participatory nature of strategic information operations. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–26. <https://doi.org/10.1145/3359229>
- [107] Stefan Timmermans and Iddo Tavory. 2024. *Data Analysis in Qualitative Research: Theorizing With Abductive Analysis*. University of Chicago Press.
- [108] Kentaro Toyama. 2015. *Geek Heresy: Rescuing Social Change From the Cult of Technology*. PublicAffairs.
- [109] Cecilie S Traberg, Jon Roozenbeek, and Sander Van Der Linden. 2022. Psychological inoculation against misinformation: Current evidence and future directions. *The ANNALS of the American Academy of Political and Social Science* 700, 1 (2022), 136–151. <https://doi.org/10.1177/00027162221087936>
- [110] Ofir Turel and Hamed Qahri-Saremi. 2024. Role of "likes" and "dislikes" in influencing user behaviors on social media. *Journal of Management Information Systems* 41, 2 (2024), 515–545. <https://doi.org/10.1080/07421222.2024.2340829>
- [111] Jos van Helvoort. 2020. Effectiveness of educational approaches to elementary school pupils (11 or 12 years old) to combat fake news. *Media Literacy and Academic Research* 3, 2 (2020), 38–47. https://www.mlar.sk/wp-content/uploads/2020/12/3_Helvoort_Hermans.pdf

- [112] Henriikka Vartiainen, Juho Kahila, Matti Tedre, Erkkö Sointu, and Teemu Valtonen. 2023. More than fabricated news reports: Children's perspectives and experiences of fake news. *Journal of Media Literacy Education* 15, 2 (2023), 17–30. <https://doi.org/10.23860/JMLE-2023-15-2-2>
- [113] Nathan Walter and Sheila T Murphy. 2018. How to unring the bell: A meta-analytic approach to correction of misinformation. *Communication Monographs* 85, 3 (2018), 423–441. <https://doi.org/10.1080/03637751.2018.1467564>
- [114] Ming-Te Wang, Jessica L Degol, and Daphne A Henry. 2019. An integrative development-in-sociocultural-context model for children's engagement in learning. *American Psychologist* 74, 9 (2019), 1086. <https://doi.org/10.1037/amp0000522>
- [115] Claire Wardle. 2023. Misunderstanding misinformation. *Issues in Science and Technology* 39, 3 (2023), 37–40. <https://doi.org/10.58875/ZAUD1691>
- [116] Stacey Wedlake, Chris Coward, and Jin Ha Lee. 2024. How games can support misinformation education: A sociocultural perspective. *Journal of the Association for Information Science and Technology* 75, 13 (2024), 1480–1497. <https://doi.org/10.1002/asi.24954>
- [117] Michael Williams and Tami Moser. 2019. The art of coding and thematic exploration in qualitative research. *International Management Review* 15, 1 (2019), 45–55. <https://imrjournal.org/uploads/1/4/2/8/14286482/imr-v15n1art4.pdf>
- [118] Julia Woodward, Feben Alemu, Natalia E. López Adames, Lisa Anthony, Jason C. Yip, and Jaime Ruiz. 2022. "It would be cool to get stamped by dinosaurs": Analyzing children's conceptual model of AR headsets through co-design. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–13. <https://doi.org/10.1145/3491102.3501979>
- [119] Julia Woodward, Zari McFadden, Nicole Shiver, Amir Ben-Hayon, Jason C Yip, and Lisa Anthony. 2018. Using co-design to examine how children conceptualize intelligent interfaces. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. 1–14. <https://doi.org/10.1145/3173574.3174149>
- [120] Yushan Xing, Ryan M Kelly, Melissa J Rogerson, Jenny Waycott, and Kashifa Aslam. 2024. Designing for inclusive experiences: Investigating opportunities for supporting older adults in community-based social programs. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*. 1–20. <https://doi.org/10.1145/3613904.3641892>
- [121] Robert K Yin. 2009. *Case Study Research: Design and Methods*. Vol. 5. sage.
- [122] Jason C Yip, Frances Marie Tabio Ello, Fumi Tsukiyama, Atharv Wairagade, and June Ahn. 2023. "Money shouldn't be money!": An examination of financial literacy and technology for children through co-design. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference*. 82–93. <https://doi.org/10.1145/3585088.3589355>
- [123] Jason C Yip, Kiley Sobel, Xin Gao, Allison Marie Hishikawa, Alexis Lim, Laura Meng, Romaine Flor Ofiana, Justin Park, and Alexis Hiniker. 2019. Laughing is scary, but farting is cute: A conceptual model of children's perspectives of creepy technologies. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–15. <https://doi.org/10.1145/3290605.3300303>
- [124] Jason C Yip, Kiley Sobel, Caroline Pitt, Kung Jim Lee, Sijin Chen, Kari Nasu, and Laura R Pina. 2017. Examining adult-child interactions in intergenerational participatory design. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. 5742–5754. <https://doi.org/10.1145/3025453.3025787>
- [125] Jun Zhao, Ge Wang, Carys Dally, Petr Slovak, Julian Edbrooke-Childs, Max Van Kleek, and Nigel Shadbolt. 2019. 'I make up a silly name': Understanding children's perception of privacy risks online. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–13. <https://doi.org/10.1145/3290605.3300336>
- [126] Fabiana Zollo, Petra Kralj Novak, Michela Del Vicario, Alessandro Bessi, Igor Mozetič, Antonio Scala, Guido Caldarelli, and Walter Quattrociocchi. 2015. Emotional dynamics in the age of misinformation. *PLOS One* 10, 9 (2015), e0138740. <https://doi.org/10.1371/journal.pone.0138740>
- [127] Luisa Dolores Zozaya-Durazo, Charo Sádaba-Chalezquer, and Beatriz Feijoo-Fernández. 2024. "Fake or not, I'm sharing it": Teen perception about disinformation in social networks. *Young Consumers* 25, 4 (2024), 425–438. <https://doi.org/10.1108/YC-06-2022-1552>

A Participant Demographics

A.1 KidsTeam UW Demographics

Children in KidsTeam UW could have participated either in 2022, 2023, or both years (Table 5). During these years, children mostly worked with our group one week during the summer and twice a week afterschool at our university lab on campus. Children in this group mainly worked with undergraduates, masters, and doctoral students.

A.2 KidsTeam Libraries - Rolling Way Demographics

Rolling Way is a library branch located in an urban area. The area is home to many immigrants and lower-socioeconomic families.

We were only able to participate one year (2022) at Rolling Way (Table 6). The children in this group met from October to December 2022 for 8 sessions once a week. Children worked with teenagers as co-leads and library and information science masters students.

A.3 KidsTeam Libraries - Acorn Summit Demographics

Acorn Summit is also a library branch located in an urban area, with many immigrants and lower-socioeconomic families. We participated for two years (2022 and 2023) at Acorn Summit (Table 7). In 2022, the children in this group met from October to December for 8 sessions. In 2023, the children met for 2 sessions in October 2023. Children worked with teenagers as co-leads and library and information science masters students.

Table 5: KidsTeam UW 2022 - 2023 Demographics: Location - University Campus - 21 children total

Name of child (pseudonym)	Age at time of study	Gender at the time of study	Year of attendance
Abel	10	Boy	2022
Amelie	6	Girl	2023
Asher	9	Boy	2022
Callie	11	Girl	2022; 2023
Eli	7	Boy	2022; 2023
Emily	9	Girl	2022; 2023
Idris	9	Boy	2022; 2023
Liam	11	Boy	2022
Jinu	7	Boy	2023
Kennedy	9	Boy	2023
Mandy	9	Girl	2022; 2023
Martin	9	Boy	2023
Mira	8	Girl	2023
Robin	10	Boy	2022
Rumi	8	Girl	2023
Tamara	7	Girl	2022; 2023
Terrel	9	Boy	2023
Tess	10	Girl	2023
Trent	10	Boy	2022; 2023
Veronika	9	Girl	2023
Zach	7	Boy	2022; 2023

Table 6: KidsTeam Libraries 2022 Demographics: Location - Rolling Way. * indicates children that also later participated in KidsTeam Libraries at Acorn Summit in 2023.

Name of child (pseudonym)	Age at time of study	Gender at the time of study	Year of attendance
Alex	9	Girl	2022
Annie	9	Girl	2022
Elena*	10	Girl	2022
Jordan	10	Boy	2022
Jean*	10	Girl	2022
Lisa	8	Girl	2022
Sarah	9	Girl	2022

Table 7: KidsTeam Libraries 2022 - 2023 Demographics: Location - Acorn Summit. * indicates children that also participated in KidsTeam Libraries at Rolling Way in 2022.

Name of child (pseudonym)	Age at time of study	Gender at the time of study	Year of attendance
Amy	7	Girl	2022
Bryson	11	Boy	2023
Cynthia	10	Girl	2023
Dustin	9	Boy	2022
Eden	8	Girl	2023
Elena*	11	Girl	2023
Evelyn	9	Girl	2023
Jared	7	Boy	2023
Jean*	11	Girl	2023
Joanne	10	Girl	2023
Kasey	8	Girl	2023
Margaret	8	Girl	2023
Mary	7	Girl	2022
Naomi	10	Girl	2023
Peter	9	Boy	2022
Scott	9	Boy	2022
Theodore	8	Boy	2022
Vanessa	8	Girl	2022
Willow	8	Girl	2023
Yusuf	8	Girl	2023