How Class Matters: Examining Working-Class Children's Home Technology Environments from a Developmental Perspective

VIKKI KATZ[1]
Chapman University, USA

BRIANNA HIGHTOWER
Northwestern University, USA

Social class is seldom engaged by scholars as a lens for investigating variations in children's digital technology engagement. Drawing on semi-structured interviews with 33 working-class children in a postindustrial community, we examine how social class shapes these children's digital technology experiences. Bronfenbrenner's ecological theory of child development guides our examination of children's views on digital technology integration into their interactions with *proximal influences* (i.e., parents, siblings, and friends) and *distal influences* that indirectly shape their technology environments by affecting their parents' circumstances. We find that working-class children's experiences share key commonalities with both their lower- and higher-income peers, consistent with prior research. But we also uncover aspects of children's technology experiences that are distinctively working-class. These include parents' prioritization of raising self-sufficient children, including expecting children to self-regulate their technology use and exposure to online content.

Keywords: children, technology environments, social class, working class, child development

Automation and the advent of new communication technologies enabled the rise of globalized manufacturing in the 1970s, either obviating or relocating the industry and manufacturing jobs that had sustained working-class families for generations (Winant, 2021). The result for communities in the midwestern region of the United States, colloquially referred to as the "Rust Belt," has been a seismic shift in local economies and available job opportunities. While prior research has examined shifting relationships with technology from the perspectives of working-class adults (e.g., Halpern-Meekin, Edin, Tach, & Sykes,

Vikki Katz: vikkikatz@chapman.edu
Brianna Hightower: bri.hightower@gmail.com
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2015; Ticona, Mateescu, & Rosenblat, 2018), scholarship on children and technology engagement has by and large ignored social class (cf. Alper, Katz, & Clark, 2016; Davies & Eynon, 2018). This study centers on children's perspectives on technology integration and engagement in working-class homes with a focus on children growing up in a community where, for generations, life centered around the local steel mill.

Social Class and Children's Home Technology Environments

Research on children's engagement with media and technology frequently differentiates patterns of use by socioeconomic status (SES), a measure that captures the interaction of household income and parental educational attainment. And indeed, the social descriptor "working class" has traditionally described individuals with a high-school diploma but not a bachelor's degree, and educational attainment does closely relate to occupational niche and household income. However, the precipitous decline of the industrial and manufacturing sectors that traditionally employed working-class adults has made it increasingly difficult to define "working class" by these kinds of demographic markers (Cherlin, 2014).

Other scholars contend that a constellation of demographic indicators was never an adequate proxy for understanding social class. Halford and Savage (2010) argue, drawing on theorizing by both Bourdieu (1984) and Latour (2005), that social class is a dynamic set of processes, activities, and resources negotiated through interaction. In a similar vein, Williams (2020) notes the following:

> Class is not just about money. Nor is class an abiding characteristic of individuals . . . it's more like a cultural tradition that people riff off as they shape their everyday behavior and make sense of their lives. . . . [These are] parochial folkways—traditions, behaviors, and ways of life. (p. 12)

Drawing on this rich body of work, we demonstrate that social class is a productive lens through which to examine children's technology environments and activities—a lens that accounts for parental income and occupational niche while also explaining a great deal more about children's lived experiences and social relationships.

For example, interrogations of social class always invoke questions of power since the forms of work traditionally associated with the working class emphasize obedience and discipline (e.g., assembly-line work; Willis, 1977) rather than rewarding ingenuity or creativity. Resources and authority in such workplaces are likewise asymmetrical, with workers having to negotiate any measure of either from managers or bosses (Wright, Costello, Hachen, & Sprague, 1982). A focus on social class likewise reveals how power, hierarchy, and resource negotiations are at play within families. Children, by virtue of social positioning, developmental stage, and legal standing, are beholden to what parents allow for and expect from them (Katz, 2014). Prior research on social class and child-rearing finds that working-class parents expect their children to be more self-sufficient and obedient, and relationship between working-class parents and children have a clearer hierarchy than in professional-class families. Williams (2010) argues that working-class parenting practices are "crucial training for working-class jobs" (pp. 166–167), pointing to the ways in which family socialization relates to the reproduction of social class.

Lareau's (2003) landmark work on parenting practices and social class echoes these findings, noting that working-class parenting practices are guided by the "accomplishment of spontaneous growth . . . [with] children's development unfolding spontaneously, as long as they [are] provided with comfort, food, shelter" (p. 238). Williams (2020) points out that providing children with comfort, food, and shelter "represents a challenge and is held to be a considerable achievement" for working-class families (p. 53).

Such parenting practices are a far cry from the "concerted cultivation" of children's skills and talents that Lareau (2003) observed, and which have only intensified in the intervening two decades, among professional-class parents as "helicopter" or "transcendent" parenting has become normalized—not just regarding children's general development but specifically in relation to their technology engagement (Lim, 2019). Clark (2014) extends Lareau's (2003) work on social class and parenting practices and argues that social class informs the development of parental ethics around children's technology use, including parents' perspectives on whether and how much to restrict or encourage such activities. Clark (2014) also notes how parental ethics are shaped by distal forces related to household income, including the ability to afford pricey new technologies, whether such devices must be shared among family members, and the likelihood of children having private spaces at home to use devices independently (Alper et al., 2016).

An Ecological and Child-Centered Perspective

The preceding discussion makes the case for how social class influences parenting practices and therefore, the conditions in which children develop and grow. Children's perspectives on those social conditions, however, remain largely absent from the literature. To take a child-centered perspective on these everyday activities and socialization processes, our inquiry is guided by Urie Bronfenbrenner's (1986) influential theory of child development.

Bronfenbrenner's (1986) ecological systems theory places the child at the center of the model, identifying factors within and across levels of analysis that influence children's development. Bronfenbrenner (1986) identifies *distal* influences as influences that indirectly impact children's development: Their school and neighborhood characteristics, as well as policies that influence what resources are available within their local community. Distal influences are distinct from the *proximal* influences that directly affect children's development: The reciprocal interactions between the child and people, objects, or symbols in their immediate environments (Bronfenbrenner, 1995; Eriksson, Ghazinour, & Hammarström, 2018). At home, proximal influences include play with parents and siblings; at school, their interactions with peers and teachers. These proximal interactions are the everyday activities, processes, and negotiations by which children are socialized to working-class parochial folkways (Williams, 2020). We therefore consider children's home technology environments, and the extent to which social class influences them, from this developmental perspective.

Takeuchi and Levine (2014) argue that mobile technologies blur the lines between the most important settings in children's developmental ecologies by constantly connecting schools and parents' workplaces to the child's home. In the years since they made that argument, mobile technologies like smartphones and gaming consoles have proliferated further still. By 2019, 53% of 11-year-olds in the United States reported owning a smartphone (Rideout & Robb, 2019); in 2021, parents raising children below the

median U.S. household income reported that 96% of their three- to 13-year-olds had access to a smartphone, and 77% had access to a tablet (Katz & Rideout, 2021). Beyond device ownership and access, children aged eight to 12 years averaged nearly five hours of daily screen media before the pandemic (Rideout & Robb, 2019).

Mobile technologies have therefore become an integral part of children's everyday lives and interactions by virtue of (a) becoming increasingly intertwined within children's proximal interactions with family members and peers, and (b) offering children new possibilities for independent engagement because mobile technologies are often designed for personal use. We therefore develop Takeuchi and Levine's (2014) extension of ecological systems theory further still in this study, arguing that children's mobile technology use should be treated as a proximal influence on their development.

Since prior studies document the significance of local community features for understanding adults' technology use (e.g., Friedland, 2016), the influence of mobile technologies on children's development is also likely tied to place. We consider how the industrial technological innovations that have transformed working-class U.S. communities may have a lingering distal influence on the digital technologies available in children's ecosystems.

Guided by these theoretical considerations, this study examines how working-class children characterize their home technology environments—the digital technologies they can access, how they use them independently and with others, the meanings they attach to those activities, and the rules that may restrict those activities—during their early years of formal schooling. We interviewed third- and fourth-grade children growing up in a working-class community that was once a major industrial center, to address the following research questions:

RQ1:   *What proximal factors influence working-class children's technology engagement within their home technology environments?*

Specifically,

RQ1a: *Which devices do children prioritize, and to what extent do those preferences reflect engagement with their proximal influences?*

RQ1b: *How do children characterize the integration of digital devices into their interactions with their proximal influences: Their parents, siblings, and friends?*

RQ2:   *What distal factors do working-class children identify as key influences on their home technology environments?*

Research Setting

Our research site resembles many communities along the Monongahela River, a major waterway that supported the booming "Manufacturing Belt" in the midwestern United States during the 20th century.

Homestead was the site of industrial titan Andrew Carnegie's most profitable steel mill and the center of community life for generations, offering well-paid (if often dangerous) work to the men who lived there (Byington, 1910; Serrin, 1992). By the mid-1980s, the Manufacturing Belt was becoming the Rust Belt. After more than a decade of downturn, as neoliberal economic policies encouraged offshoring of manufacturing and industry, the Homestead Works was closed.

Some of the interviewed parents referenced fathers and grandfathers who worked in the mill, and many more felt the city's history informs its present, as shown by this exchange between a parent and one of the researchers:

> Parent: This is a blue-collar town still. . . . Our school district, the heritage is there in the name (i.e., Steel Valley). But also just in general, we keep it going . . . we renamed (the bridge) Homestead Grays,[2] so it's all kind of pulling from the past.
>
> R: What does it mean to you when you say, this is still a blue-collar town?
>
> Parent: The way I see it, I guess it's the nine to five, the working hard. There's no inheritances here.

Even though traditional signifiers of social class have become more elusive since the Homestead Works closed, interviewed parents still strongly identify as being "blue collar" or working-class.

Research Design

Homestead and neighboring Munhall have an independent school district comprised of two elementary schools, one middle school, and one high school. We interviewed children and families at both elementary schools. Families were eligible to participate if their child was in third or fourth grade. We selected these focal grades to capture children's experiences just before their transition into middle school for fifth grade. Families were randomly selected from school enrollment lists and invited to participate. The response rate was 55% at Bedrock Elementary and 62% at Ridge Elementary.[3]

From January 6 to 24, 2020, the authors led a team of four researchers who interviewed 34 parents and their focal child, separately and simultaneously ($N = 67$).[4] Interviews were conducted after school or at the local library. Table 1 presents the demographic information of the interviewed families.

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[2] The Homestead Grays was an industrial baseball team in the Negro Leagues for almost four decades. In July 2002, the bridge that connects Pittsburgh to Homestead was renamed in the team's honor.

[3] While the field site location has not been masked to enable our findings to straightforwardly inform practice and policy (Lubet, 2017), the two elementary school names have been masked to preserve confidentiality as assured to research participants.

[4] One child was absent on their interview day and could not reschedule during the study period.

Table 1. Interviewed Family Demographics.

	All Child Informants	Bedrock Elem.	Ridge Elem.
N	33	15	18
Child Demographics			
Age (mean)	9	9	9
Female (%)	39	40	39
Parent identifies child as White (%)	45	7	78
Parent identifies child as Black (%)	33	60	11
Parent identifies child as multiracial (%)	18	20	11
Parent Demographics			
Age (mean)	40	38	42
Female (%)	91	87	94
Identifies as White (%)	55	27	78
Identifies as Black (%)	39	67	17
Education (%)			
No high-school diploma or GED*	6	7	5
High-school graduate or GED	52	67	44
AA degree	21	20	22
BA degree	18	7	28
Employment status (%)			
Employed full time (40+ hrs/week)	55	53	56
Employed part-time (< 40 hrs/week)	12	20	6
Stay-at-home parent	18	0	33
Total household income (%)			
$15,001–$25,000	21	27	17
$25,001–$45,000	24	33	17
$45,001–$65,000	12	7	17
≥ $65,000	39	27	50
Household composition			
Household size (mean)	4	4	4
Number of children (mean)	3	3	2
Residential tenure (median)			
Years in neighborhood	10	9	11
Years in current residence	5	4	7

Note. AA, associate of arts; BA, bachelor of arts; GED, general education development test (a high school equivalency diploma in the United States).

Child interviews averaged 48 minutes (*SD* = 13 mins) and included mapping the technologies children can access at home and a detailed recounting of who uses which devices, where, for what purpose, and with whom, to establish how digital technologies are integrated into the family micro-system. Children were also asked a series of standardized questions about their favorite devices.

Researchers compiled field notes after each interview, noting information about child affect and other details that would not be captured on the audio recording. Analyses draw on verbatim transcripts and field notes from the 33 child interviews.

Researcher Positionality

In qualitative research, researcher behavior and attributes "is inextricably tied to data quality" (Lareau, 2014, p. 856), making it important to account for researcher positionality. The first author is an immigrant to the United States whose Jewish, European-origin family worked in manufacturing sectors for the two generations before her own. She therefore holds insider/outsider perspectives on both working-class and U.S. family life. The second author is a White, U.S.-born, first-generation college graduate whose family has been working-class for generations. The two research assistants on the interview team also came from working-class families. Since most research on working-class families has been conducted by researchers raised in more privileged contexts (Dews, 2010), we consider our varied abilities to relate to participants' experiences an asset for data collection and analysis.

Data Analysis

Data were analyzed via the "flexible coding" technique developed by Deterding and Waters (2018). Flexible coding reverses grounded theory (Corbin & Strauss, 1990) by beginning with broad themes and moving toward more granular insights. Deterding and Waters (2018) argue that flexible coding is a more appropriate analytical strategy because grounded theory was developed for data sets of 10 participants or fewer, and different analytical techniques are necessary to ensure systematic analysis of larger data sets. Furthermore, the fully inductive nature of grounded theory is, Deterding and Waters (2018) argue, a mismatch for the iterative nature of an interview-based study like ours, where the interview protocol is directly informed by extant research.

The second author began the flexible coding process by *index coding* child interview transcripts in Dedoose, an online program designed to support collaborative qualitative analysis. To index code interview data, the researcher identifies which portions of a transcript are relevant to specific research questions guiding the broader study. Index coding systematically organizes the data corpus for greater coding fidelity because in subsequent stages of analysis, researchers only analytically code data pertinent to specific research questions (Deterding & Waters, 2018). Our research questions corresponded to five index codes (e.g., children's favorite digital devices and perceived family rules for using technology).

Within those five index codes, we developed and applied 18 *analytic codes* to identify emergent themes within and across each index code. For example, analytic codes within perceived family rules for using technology include parental expectations of children self-enforcing rules, and child reactions when encountering content that violated parents' rules.[5]

Finally, we used Dedoose to "test and document key relationships in the data" (Deterding & Waters, 2018, p. 15), identifying emergent relationships between analytic codes and demographic data. Conducting

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[5] The analytic codebook is available on request.

index and analytic coding without sociodemographic attributes visible to the coder avoids confirmation biases about social patterns in the data, ensuring greater reliability and validity in the coding process. In this final stage of analysis, we linked sociodemographic identifiers to our analytic codes to assess, for example, whether there were patterned differences based on children's racial/ethnic or gender identities.[6] Table 2 presents relevant demographic data for interviewed children quoted in the next section.

Table 2. Demographics for Quoted Child Informants.

Pseudonym[7]	Elem. School	Age	Racial/ Ethnic ID	Gender ID	Household Income[8]	Interviewed Parent Occupation[8]
Ava	Bedrock	9	Black	F	25-35K	Phlebotomist
Avery	Bedrock	8	Black	F	15-25K	Home health aide
Caleb	Bedrock	8	Black	M	15-25K	Daycare worker
Chloe	Ridge	9	White	F	55–65 K	Cafeteria worker
Isabella	Ridge	8	White	F	> 100K	Office admin
Jacob	Ridge	10	White	M	> 65K	Stay-at-home parent
James	Bedrock	8	Black	M	35–45K	Customer service
Lucas	Ridge	8	Latino	M	55–65 K	Home health aide
Mia	Ridge	9	Black	F	> 65K	Nurse
Michael	Bedrock	9	Black	M	Not disclosed	Stay-at-home parent
Olivia	Bedrock	10	Latina	F	15–25K	House cleaner

Findings

The goals of this study were to identify the proximal and distal factors that working-class children identify as important influences on their home technology environments and technology engagement. By treating social class as a set of values and actions that children come to understand through their interactions with close ties, social class can be treated as a dynamic set of social signifiers (as opposed to static indicators of demographic distinction like SES or family income; Halford & Savage, 2010). By examining proximal and distal influences on children's development, as defined by Bronfenbrenner (1986), we examine children's socialization to their working-class status in relation to their technology interactions.

Our first research question examines proximal influences by identifying the devices children consider most important (RQ1a) and how those devices are integrated into their interactions with siblings, parents, and friends (RQ1b). We begin with a brief overview of the children's home technology environments, as necessary contextual information, before presenting findings related to RQ1a and RQ1b.

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[6] The final stage of flexible coding suggested less gender-based differences in favored devices and gaming activities than has been found in prior studies (e.g., Rideout & Robb, 2019) and did not reveal meaningful differences among interviewed children based on their racial/ethnic identities.

[7] Pseudonyms are the top baby names in the United States for years when interviewed children were born.

[8] Household income and parent occupation as reported by parents during their interviews.

Working-Class Children's Home Technology Environments

Like children across class backgrounds, working-class children's home technology environments comprise a range of both new (e.g., mobile gaming devices) and "old" technologies (e.g., television). Most participants (76%; *n* = 25) reported expensive digital devices were purchased for special occasions, including Christmas and birthdays. The devices in children's home technology environments reflect not only parents' abilities to buy these items but also their class-based values and priorities. As Livingstone and Sefton-Green (2016) note,

> In working-class homes, more media are generally seen as a good thing, if they can be afforded. For the middle classes, economic and cultural capital often clashed . . . [and] better-off homes might lack the largest and latest technologies. . . . Domestic media were determined as much by parental cultural capital as by economic capital. (pp. 157–158)

By asking children to focus on their favored devices rather than attempting to capture their full home technology environment, researchers can sidestep concerns about incomplete recall and empower children to describe the devices and activities most meaningful to them (Barriage, 2021). Focusing on favored devices also offers insight into family technology rules that might not be captured otherwise (Katz & Gonzalez, 2016). Children listed an average of six devices before elaborating on their favorite device for the remainder of the interview.

Gaming consoles were most children's favorite device; half of the boys and one-third of girls selected one, consistent with the popularity of these devices in national samples (e.g., Rideout & Robb, 2019). However, we would have underestimated the popularity of gaming among these children if we had focused only on favorite devices and not activities as well: Fourteen children identified a gaming console as their favorite device, and 13 more selected another device as their favorite because they could play games on it (*n* = 27; 82% of the sample). Ninety percent of boys (*n* = 18) and 69% of girls (*n* = 9) enjoyed gaming on their favorite device.

Smartphones were the second-most popular device (*n* = 8). Some children reported that they had their own smartphones with full data plans. Others had "hand-me-down" devices from parents, who had upgraded their own, and reported that their smartphone only "worked" when connected to WiFi, a factor we explore further in considering distal factors in a child's technology environment.

Children selected their favorite device based on affordances (e.g., gameplay), perceived ownership, and device mobility. Perceived ownership affects the social arrangements around technology use, including where those devices are used within the home, for what purposes, and with whom (Alper et al., 2016; Katz, 2014). Two-thirds (67%) of children selected personal devices as their favorites rather than devices they had to share with siblings or parents. Favorite devices were also usually mobile, enabling children to move them into their bedrooms or other private spaces for solo use. Children's favored devices also enabled interactions beyond their immediate physical environments by, for example, enabling play with friends who were in their own homes. The centrality of play in children's narratives further underscores how important

digital technologies—and particularly, mobile technologies—have become to children's interactions with their proximal influences, both in-person and remotely.

Favorite Devices and Proximal Interactions

Children frequently favored a device because of the interactions it enabled with their parents, siblings, and/or peers. Our analyses also reveal how class-based values affected children's interactions with digital devices when using them independently. Most children reported that their parents expected them to self-enforce family rules on technology use and independently manage age-inappropriate digital content if they encountered it. This contrasts with professional-class parents' practices of closely monitoring and managing their children's technology engagement (Lim, 2019) and reflects working-class parents' prioritization on developing their children's self-sufficiency (Lareau, 2003).

Technology Engagement With Close Ties

Children frequently referenced engaging with family members and friends as their primary reason for selecting a favorite device, whether that engagement was in-person or virtual. This emergent theme underscores how integrated digital technologies have become into the proximal interactions essential to children's development across physical settings, as Takeuchi and Levine (2014) argued.

When children selected a shared device as their favorite, they often described how family members negotiated taking turns selecting content or using the device. Children seldom felt they had complete control over shared devices. For example, while describing how she uses a shared device in a communal location, Olivia noted limited opportunities for "privacy":

> Olivia: I do use [my mom's phone] a lot on my stairs.
> R: On your stairs?
> Olivia: Yeah [. . .] because if I'm talking to my friends and all, I want some privacy. . . .I
> guess the stairs are my favorite spot in the house because I get to have privacy and all;
> me and my brother share a room.

Olivia's negotiation of shared devices and physical space reflects that working-class children may have fewer opportunities to use devices privately and less claims to ownership, as compared with children in professional-class families who can afford individual devices and their own bedrooms (Rideout & Robb, 2019). These differences have consequences for children's development; prior research shows that children with daily access to digital devices and the Internet are more likely to engage in interest-driven learning (Rideout & Katz, 2016). However, because families that identify as working class report a wide range of family incomes, there is also great diversity—even within our sample—in the kinds of digital access, and access to private space, reported by children.

Some children favored a shared device because it facilitated time with their loved ones. Avery said, "The TV [is my favorite] because I get to share it with everyone, and we get to do family night." Ava enjoyed using a shared device to play games with her sister:

R: Why would you say [the Nintendo Switch is] your favorite?
Ava: You can either play on your TV, you can play it with two people. Or you can just play it by yourself.
R: What's your favorite thing to do [on the Nintendo Switch]?
Ava: I like to play games by myself and with my sister.

Avery and Ava both echo the "ethic of respectful connectedness" Clark (2014; p. xviii) observed in working-class families—valuing communal media engagement as part of spending quality time together.

Parent-child co-engagement with technology is one way that digital media are integrated into the proximal influences that affect children's development. Parents also influence children's technology engagement by setting rules for how and when children can use devices independently and connect with others. In more affluent families, Clark (2014) observed that parents actively restrict children's technology use to primarily educational, rather than entertainment, purposes. Clark (2014) notes that children in less affluent families in her study were expected to use media and devices in ways that complied with their parents' needs by, for example, playing on their iPad while a parent prepared dinner. Our findings reflect the same class-based pattern of parental influence.

Self-Sufficiency in the Working-Class Family

Parental attitudes on child technology engagement, as reported by our informants, reflect what scholars of children and media call permissive mediation. While some children asserted their parents had rules for what they watched or when they used technology, most indicated that parents expected them to self-enforce those rules. These expectations of child self-enforcement likely reflect, at least in part, the temporal and physical constraints of shift work, which was common among parents in the sample. But it also suggests a digital corollary to Lareau's (2003) finding that working-class parents believe their children are capable of making their own informed decisions. Working-class parents know that they will not always be able to intervene or moderate social conditions for their children and thus encourage their children's self-sufficiency (Lareau, 2003; Williams, 2010).

An unintended consequence of this hands-off approach was the difficulty some children faced in self-selecting appropriate content. When some children (n =11; 33% of the sample) provided examples of content-related rules their parents expected them to follow, YouTube came up most often. Children used YouTube to watch favorite shows, other children playing games, and instructional videos for creating things, like slime. Children knew their parents expected them to only watch age-appropriate YouTube content and to make those determinations independently; for example, Avery related the following story:

R: Can you use the tablet whenever you want to or are there rules about it?
Avery: Rules. Don't download any movies and don't download anything bad.
R: How do you decide if something's bad? Do you ask mom or sister?
Avery: The name [of the video] or the way it looks. . . . I used to play Roblox and watch YouTube a lot, but when I suddenly noticed that some of the shows are bad, I stopped watching YouTube. I deleted it [the YouTube app].

> R: So, there's some bad stuff on YouTube? [child nods head in affirmation] You didn't like seeing that?
> Avery: No.
> R: Can you tell me an example of something you saw that you didn't want to see?
> Avery: A girl getting dressed, without any clothes on.

Avery thought she was in a child-friendly space on YouTube, but while searching for videos of other children playing Roblox, she accidentally found a video depicting nudity that was specifically targeting children by using Roblox-related naming and imagery.

Avery's experience exemplifies how a parental ethic that stresses children's self-sufficiency is a proximal influence on working-class children's technology environments, and on their developmental trajectories more broadly. Avery may have been less likely to see inappropriate content with more active parental supervision and content moderation. It is also noteworthy that her reaction to shocking content was not just to stop watching; she deleted the YouTube app entirely. That choice does not just prevent her from encountering distressing or harmful content in the future; it will also foreclose new opportunities for her to learn via YouTube's platform (Livingstone et al., 2017). While the best course of action here is debatable, what is indisputable is that Avery knew her parents expected her to solve this problem without seeking adult intervention, and she did so. Her actions reflect an understanding of her parents' class-based expectations of self-sufficiency.

Favorite Devices and Digital Proximal Interactions With Peers

Digital technologies facilitate children's connections with their parents and siblings, the proximal influences within their homes. Digital devices also enable children to interact with their peers, who are proximal influences beyond their households. When Mia described why a shared Xbox was her favorite device, she said, "Because there's a lot of cool games I can play, and I can play with my friends." Xbox and PlayStation consoles have social functionality features that permit users to play games from different locations if they pay for a subscription to Xbox Live. Popular shared games among interviewed children included Roblox, Minecraft, and Fortnite, which all offer in-game communication and are extremely popular with tweens and adolescents across social classes (Du, Grace, Jagannath, & Salen-Tekinbas, 2021).

Children often described using gaming headsets to talk with friends, a favored form of communication that extends the rich sociality of tweens and adolescents (Carter, Moore, Mavoa, Horst, & Gaspard, 2020). However, the working-class children in this study described differing levels of Internet connectivity and limited access to device extensions, like headsets. These children devised creative, collaborative ways to work around these constraints. While children with more consistent Internet connectivity and whose families can afford to replace a broken headset might opt to simply delay gameplay until devices are replaced or the Internet is restored, these working-class children were accustomed to working around chronic technical limitations to remain digitally connected to their peers.

For example, Jacob described initiating group FaceTime calls so that friends without gaming headsets could still participate in group conversation as they played together: "I play [Fortnite]. If my

friends are online, I see if they can play, and I call them because they don't have a mic to talk into. . . . So, we FaceTime, and we can talk through there." This peer group had cleverly devised a solution for their social play that included friends with varying levels of device ownership and connectivity.

Interviewed children also reported developing solutions to leverage the limited connection capacities of other favorite devices. For example, children with hand-me-down smartphones without data plans did not have short-messaging-service (SMS) capabilities. Isabella said that her hand-me-down phone from her father was her favorite device. When asked to describe what she most enjoyed doing with the device, she said, "Text people something."

> R: But you said sometimes the texts don't show up [on your phone], so how do you text them?
> Isabella: With Snapchat.

By sending "text messages" via Snapchat's private messaging, Isabella's communicative capabilities were similar to what would have been possible with a data plan. Other children described similarly innovative strategies, such as using iMessage and FaceTime while connected to WiFi, to work around not having data plans on their smartphones.

These examples of children's communicative ingenuity, from text message work-arounds to including friends without costly subscription services and device extensions in shared gameplay, exemplify how working-class children optimize engagement with proximal influences while negotiating device and connectivity limitations. Bourdieu (1984) defines capital as "the set of actually usable resources" an individual has at their disposal (p. 122); Halford and Savage (2010) note that whether and how such resources can be converted into advantages across social domains depends on how others respond to attempted conversions of capital. Jacob and Isabella's stories reveal working-class peer groups being willing to work around their friends' technological constraints by collectively broadening their definition of which resources are usable for a particular purpose, thereby maintaining peers' play and technology engagement in distinctive ways. These creative strategies also reflect peer group solidarity, demonstrating to less-connected peers that their inclusion in collective digital play is important.

Distal Factors on Working-Class Children's Technology Use

In contrast to the proximal factors in a child's micro-system, distal factors do not directly affect children's developmental trajectories in Bronfenbrenner's (1986) ecological systems theory. Distal factors influence proximal factors in a child's micro-system (e.g., their parents) and thereby indirectly influence child development. Our second research question sought to identify the distal factors that working-class children consider important influences on their home technology environments.

Under-Connectivity as a Distal Factor

The most prominent distal factor, from children's perspectives, was their Internet connectivity. Prior research shows that school-aged children in these income ranges are often "under-connected" by virtue of interrupted home broadband or data plan connectivity due to family financial constraints (Katz & Rideout, 2021). Since mobile technologies require an Internet connection for full functionality, connectivity is a distal factor with considerable influence on these children's home technology environments and engagement.

Because elementary school-aged children may not be aware that Internet connectivity is tied to paying bills, we asked children if there were times their device did not work properly. If they said yes, we probed whether it was a temporary issue (e.g., a power outage), a technical difficulty (e.g., a router reset), or a true service interruption caused by nonpayment or service cancelation. One in four children reported interrupted connectivity due to nonpayment or service cancelation, from households with incomes (reported in parent interviews) of $15,000 to more than $65,000 annually. This is consistent with prior research showing that under-connectedness involves a spectrum of experiences that occur, to varying degrees, across the income brackets occupied by working-class families (Katz & Rideout, 2021).

Only two children made explicit connections between service interruptions and family finances. Michael and Caleb both expressed the discomfort they feel, or perceived their parents to feel, during periods of acute financial strain:

> R: Does your WiFi ever go away, or is it usually always there?
> Michael: My mom pays the bill every month.
> R: So you've always got the WiFi?
> Michael: I mean, not really. Because if my mom pays her bills—like, the house bills, she probably won't have enough money to pay the WiFi bill.
> R: Is she not able to pay the WiFi bill sometimes?
> Michael: Sometimes, I think. I feel like she's getting stressed out because the bills are so high. . . . I'd like to try to help her, but I don't got no money.

Michael begins by claiming that his mother pays for WiFi each month before acknowledging the difficulties his single parent faces in covering their monthly expenses. His framing of their circumstances is protective; he says he wishes he could help her, but he does not have money—the support he recognizes she needs most. Michael's comments also reflect a pattern in the data (detailed more fully below) of working-class children's acute understanding of their parents' financial circumstances.

Other informants detailed how service interruptions constrain their technology engagement. James noted,

> When the Internet doesn't work, we don't watch nothing. Nothing works when the Internet goes down. . . . Not even—well, the TV does, but nothing. No PS4, no Wii U,

no Nintendo Switch, no tablet. And my mom's phone works when the Internet is off,
but not my phone.

James' description of what digital capabilities are lost when their Internet is disconnected is telling. His mother's phone presumably still works because she has a data plan. His does not because it is WiFi-dependent. But his description of what counts as "nothing" working is even more revealing. He dismisses the TV as "nothing," in sharp contrast to the value he places on his many Internet-dependent mobile gaming consoles.

Variations in connectivity also affect whether children can complete schoolwork from home. While we collected our data in January 2020, the variations in connectivity these children reported just weeks before the COVID-19 pandemic began and obliged them to rapidly shift to remote learning, undoubtedly affected their learning experiences for the rest of the academic year, as was true for under-connected children nationally (Katz & Rideout, 2021).

Parents' Working Conditions as a Distal Factor

The nature of parents' work affects children's technology engagement across social classes. For example, children's technology use is generally more closely monitored when they have a stay-at-home parent as compared with living in a dual-income household, and children whose parents are knowledge workers benefit from having a live-in skilled guide for their creative digital pursuits (Lim, 2019; Livingstone & Blum-Ross, 2020).

Similarly, parents' working conditions were a distal factor for these working-class children's development, by indirectly influencing how they are parented. These influences include parents' temperaments when they come home from work, how much time they can spend with children on weekdays, and the realities of physical labor and rigid shift work schedules. Chloe described how her father, a metal worker, comes home from work "angry and tired":

Chloe: He doesn't talk about it, but I feel like he doesn't think he's getting enough money sometimes. . . . [Dad's boss] instructs him [how] to do everything. He comes home angry and tired, and he burns himself every day.
R: He burns himself? What do you mean?
Chloe: On the metal, and I feel like sometimes he comes home with cuts on his face.

Lucas noted how his dad sacrifices family time because of his labor-intensive job as a construction worker:

R: What do you hear dad say when he talks about work?

Lucas: It's a pain in the butt too,[9] but it's the richest job we have in the house and without him sacrificing family time we wouldn't have the house right now. . . because we're short on money.

These young children's keen awareness of their families' economic circumstances, and economic precarity, is inherently class-based; Zaloom (2019) notes that a hallmark of middle-class family values is shielding children (even in late adolescence) from the details of family finances. Our child informants' perceptions are consistent with Williams' (2020) assertion that providing children a stable life is a hallmark of working-class success, and reveal that children are keenly aware of the kinds of sacrifices providing that life requires of their parents.

The nature of parents' employment is also notable. Chloe describes how physically tired her dad is after a long and dangerous shift as a metal worker. Lucas notes that his father has less family time due to the demands of his construction job, which he nonetheless describes as an essential sacrifice to maintain their home. Interviewed children frequently described their parents as tired or stressed after they come home from work. While working-class parents are less likely to experience "technoference" from work e-mails and calls during their off-hours than knowledge workers (McDaniel, O'Connor, K., & Drouin, 2021), parents who are physically tired after a long shift have less time and energy to proactively evaluate and select appropriate media content for their children.

Parents' working conditions therefore become a distal factor in working-class children's technology experiences, converging with the moral value they place on raising self-sufficient children (Lareau, 2003). These patterns often manifest in parents expecting children to entertain themselves while the former complete household chores (Connell, Lauricella, & Wartella, 2015). Tight family budgets might mean prioritizing other bills over Internet connections or having to wait for tax refunds, birthdays, or Christmas to purchase new devices. The economic and physical stresses associated with working-class employment directly affect how mothers and fathers parent their children, thereby trickling down into the proximal influences that shape children's home technology environments and, ultimately, children's developmental trajectories.

Discussion

The broad goal of this study was to investigate how social class shapes working-class children's experiences with digital technologies, and how those experiences relate to their developmental trajectories. Our research was guided by Bronfenbrenner's (1986) ecological theory of child development and by the question of where, precisely, digital technologies should be located within this developmental model. Our findings make a theoretical contribution by extending Takeuchi and Levine's (2014) extension of Bronfenbrenner's model further still, in arguing that digital devices now not only connect the people and places that matter most to children; they have also become fully integrated into the interactions that directly affect children's development. Our research questions examine, from children's perspectives, how digital technologies are integrated into interactions with *proximal influences* on their development (i.e., siblings,

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[9] Lucas used the term "pain in the butt" to describe his mother's job as a house cleaner as well.

parents, and friends) and the *distal influences* that indirectly shape the contexts in which children engage with technology, by affecting the parents who raise them.

There are aspects of children's technology experiences that are consistent across social classes, and our findings reflect those points of common experience. Since prior research on children and media in the United States has paid limited attention to social class (Alper et al., 2016), some aspects of these working-class children's technology experiences align with economic constraints noted among lower-income families (Katz & Rideout, 2021), while other aspects are more consistent with those of higher-income families (Rideout & Robb, 2019). This is not surprising, given that working-class families report a relatively broad range of household incomes. However, social class can—and does—explain much more about working-class children's experiences than a static measure of household income. Our findings reveal how children's engagement with digital technologies reflect the working-class values and behaviors their parents expect from them and how those working-class values manifest in their interactions with peers.

Our first research question asks what devices working-class children prioritize (RQ1a) and how these devices are integrated into their proximal interactions with family members and peers (RQ1b). Two sets of distinctively working-class themes emerge from the data. First, children describe self-selecting content and using their devices in accordance with their parents' rules—but, with little direct parental oversight. This largely hands-off parental approach to monitoring digital content and device usage is consistent with prior findings on the working-class emphasis on personal responsibility and self-reliance (Cherlin, 2014; Lareau, 2003). Our findings suggest a digital corollary to working-class parents' prioritization of raising self-sufficient children (Lareau, 2003), which warrants further scholarly attention.

The second distinctively working-class theme emerged from children's descriptions of how their peer groups adapt to differential and inconsistent access to the Internet and digital devices. They demonstrate considerable ingenuity in enabling collective digital play by, for example, using FaceTime so that friends without headsets can still communicate as they play video games together. Children's strategies for collectively broadening what counts as capital, "the set of actually useable resources" (Bourdieu, 1984, p. 122) available to them, enables collective digital play and reinforces peer solidarity. These findings reveal how a focus on social class can reveal children's agentic negotiations within their technology use, as well as how those activities are integrated into distinctively class-based developmental pathways.

Our second research question (RQ2) examined distal influences on working-class children's technology environments: The social factors that directly affect their parents, and therefore indirectly shape how children are parented. One-quarter of this study's sample was under-connected, in that children reported experiencing interrupted or inconsistent Internet access when parents had to prioritize other bills (Katz & Rideout, 2021). The prevalence of under-connectivity is not surprising, but it does contribute to more complex home technology environments than have been normalized in research on more privileged children (Alper et al., 2016). Likewise, the self-regulation parents expected from their children's technology use (detailed in RQ1b) is reinforced by a second distal factor that emerged from the findings: Parents' working conditions. Unlike knowledge workers' more flexible schedules, most parents in this study work in shifts. They come home physically tired and need children to occupy

themselves while they make dinner or complete chores. Expectations of independent technology use are therefore driven not only by working-class values but also by the distinctive constraints of working-class occupations and how they influence family life.

Practical Implications

Our findings also raise troubling questions about class-based assumptions of who digital devices and content are "for." In the absence of effective governmental regulation, parents have had to assume the burden of ensuring that their children are not exposed to harmful, upsetting, or age-inappropriate content—a burden that has been absorbed by professional-class, "transcendent" parents (Lim, 2019). But what does that mean for children like Avery, who deleted YouTube entirely after stumbling onto inappropriate content? Her solution honored her parents' expectations of self-enforcing their rule and obviates potentially upsetting experiences in the future. But it also forecloses future learning opportunities and suggests that Avery understands YouTube as an unsafe digital space for her. If children's digital engagement requires the "concerted cultivation" practiced by middle- and professional-class parents, then working-class children whose parents value their "spontaneous growth," are at risk of being marginalized from full participation in digital spaces[10] (Lareau, 2003). By focusing on social class, researchers will be better equipped to account for variations in children's equitable digital access and to inform the development of better interventions to address those concerns.

Study Limitations

While this study makes valuable contributions by examining the intersections of social class, technology engagement, and child development from a child-centered perspective, interviews rely on individuals' self-reports of behavior rather than direct observations of their actions (Jerolmack & Khan, 2014). While interviews may be inappropriate for measuring behavior, they are an effective means of uncovering people's perceptions of their social worlds, their positions within them, and their accounts of their own motivations (Small & Calarco, 2022). Mindful of the strengths and weaknesses of interviews as a method, we structured our questions to capture how children perceive the social arrangements and activities that shape their home technology environments. We contend that those perceptions reveal more about their lived experiences with technology than observations of behavior could.

Conclusions

We still have much to learn about how working-class children's home technology environments and experiences differ from dominant narratives about U.S. childhoods. To the extent that scholars have previously documented diversity in children's technology experiences, they have focused on racial and ethnic identity, gender identity, immigrant generation, and household income (Alper et al., 2016). Social class offers a different, dynamic lens for understanding similarities and differences across social groups within and across countries. This study was conducted in a former steel mill town in the United States. But growing up in postindustrial communities is not just a common experience within the U.S. "Rust

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[10] We thank Julia Ticona for her helpful insights on these implications.

Belt"—places like Birmingham, England, or Lyon, France, have similar histories (Webman, 1982). Indeed, prior scholarship in the United Kingdom shows that working-class youth's orientations to technology are shaped by their families' experiences with deindustrialization (Davies & Eynon, 2018). Future research should establish the extent to which these experiences are shared or vary across working-class communities internationally.

Truly understanding how technology engagement is embedded within children's developmental trajectories requires accounting for the diversity of proximal and distal influences in diverse social and geographic locations. We hope our work contributes to conversations about how to elevate social class as a productive way for media and technology scholars to understand the contours of children's lives.

References

Alper, M., Katz, V., & Clark, L. (2016). Researching children, intersectionality, and diversity in the digital age. *Journal of Children and Media, 10*(1), 107–114. doi:10.1080/17482798.2015.1121886

Barriage, S. (2021). Examining young children's information practices and experiences: A child-centered methodological approach. *Library & Information Science Research, 43*(3), 1–8. doi:10.1016/j.lisr.2021.101106

Bourdieu, P. (1984). *Distinction*. London, UK: Routledge.

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development. *Developmental Psychology, 22*(6), 723–742. doi:10.1037/0012-1649.22.6.723

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. Moen, G. H. Elder, Jr., & K. Lüscher (Eds.), *Examining lives in context: Perspectives on the ecology of human development* (pp. 619–647). Washington, DC: American Psychological Association.

Byington, M. (1910). *Homestead: The households of a mill town*. New York, NY: Russell Sage Foundation Press.

Carter, M., Moore, K., Mavoa, J., Horst, H., & Gaspard, L. (2020). Situating the appeal of Fortnite within children's changing play cultures. *Games and Culture, 15*(4), 453–471. doi:10.1177/1555412020913771

Cherlin, A. (2014). *Labor's love lost: The rise and fall of the working-class family in America*. New York, NY: Russell Sage Foundation Press.

Clark, L. (2014). *The parent app: Understanding families in the digital age*. Oxford, UK: Oxford University Press.

Connell, S., Lauricella, A., & Wartella, E. (2015). Parental co-use of media and technology with their young children in the USA. *Journal of Children and Media, 9*(1), 5–21. doi:10.1080/17482798.2015.997440

Corbin, J., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology, 13*(1), 3–21. doi:10.1007/bf00988593

Davies, H., & Eynon, R. (2018). Is digital upskilling the next generation our "pipeline to prosperity"? *New Media & Society, 20*(11), 3961–3971. doi:10.1177/1461444818783102

Deterding, N., & Waters, M. C. (2018). Flexible coding of in-depth interviews: A twenty-first-century approach. *Sociological Methods & Research, 50*(2), 708–739. doi:10.1177/0049124118799377

Dews, C. (2010). *This fine place so far from home: Voices of academics from the working class*. Philadelphia, PA: Temple University Press.

Du, Y., Grace, T., Jagannath, K., & Salen-Tekinbas, K. (2021). Connected play in virtual worlds: Communication and control mechanisms in virtual worlds for children and adolescents. *Multimodal Technologies and Interaction, 5*(5), 11–20. doi:10.3390/mti5050027

Eriksson, M., Ghazinour, M. & Hammarström, A. (2018). Different uses of Bronfenbrenner's ecological theory in public mental health research. *Social Theory & Health, 16*(4), 414–433. doi:10.1057/s41285-018-0065-6

Friedland, L. (2016). Networks in place. *American Behavioral Scientist, 60*(1), 24–42. doi:10.1177/00027642156017

Halford, S., & Savage, M. (2010). Reconceptualizing digital social inequality. *Information, Communication & Society, 13*(7), 937–955. doi:10.1080/1369118X.2010.499956

Halpern-Meekin, S., Edin, K., Tach, L., & Sykes, J. (2015). *It's not like I'm poor: How working families make ends meet in a post-welfare world*. Berkeley: University of California Press.

Jerolmack, C., & Khan, S. (2014). Talk is cheap: Ethnography and the attitudinal fallacy. *Sociological Methods & Research, 43*(2), 178–209. doi:10.1177/0049124114523396

Katz, V. (2014). *Kids in the middle: How children of immigrants negotiate community interactions for their families*. New Brunswick, NJ: Rutgers University Press.

Katz, V., & Gonzalez, C. (2016). Community variations in low-income Latino families' technology adoption and integration. *American Behavioral Scientist, 60*(1), 59–80. doi:10.1177/0002764215601712

Katz, V., & Rideout, V. (2021). *Learning at home while under-connected: Lower-income families during the COVID-19 pandemic*. Washington, DC: New America. Retrieved from https://www.newamerica.org/education-policy/reports/learning-at-home-while-underconnected/

Lareau, A. (2003). *Unequal childhoods: Class, race, and family life*. Berkeley: University of California Press.

Lareau, A. (2014). Reflections on longitudinal ethnography and the families' reactions to Unequal Childhoods. In M. Duneier, P. Kasinitz, & A. Murphy (Eds.), *The urban ethnography reader* (pp. 850–872). Oxford, UK: Oxford University Press.

Latour, B. (2005). *Re-assembling the social: An introduction to actor network theory*. Oxford, UK: Oxford University Press.

Lim, S. (2019). *Transcendent parenting: Raising children in the digital age*. Oxford, UK: Oxford University Press.

Livingstone, S., & Blum-Ross, A. (2020). *Parenting for a digital future: How hopes and fears about technology shape children's lives*. Oxford, UK: Oxford University Press.

Livingstone, S., & Sefton-Green, J. (2016). *The class: Living and learning in the digital age*. New York: NYU Press.

Livingstone, S., Ólafsson, K., Helsper, E., Lupiáñez-Villanueva, F., Veltri, G., & Folkvord, F. (2017). Maximizing opportunities and minimizing risks for children online: The role of digital skills in emerging strategies of parental mediation. *Journal of Communication, 67*(1), 82–105. doi:10.1111/jcom.12277

Lubet, S. (2017). *Interrogating ethnography: Why evidence matters*. Oxford, UK: Oxford University Press.

McDaniel, B., O'Connor, K., & Drouin, M. (2021). Work-related technoference at home and feelings of work spillover, overload, life satisfaction and job satisfaction. *International Journal of Workplace Health Management, 14*(5), 526–541. doi:10.1108/IJWHM-11-2020-0197

Rideout, V., & Katz, V. (2016). *Opportunity for all? Technology and learning in lower-income families*. New York, NY: Joan Ganz Cooney Center at Sesame Workshop. Retrieved from https://joanganzcooneycenter.org/publication/opportunity-for-all-technology-and-learning-in-lower-income-families/

Rideout, V., & Robb, M. (2019). *The common sense census: Media use by tweens and teens, 2019*. San Francisco, CA: Common Sense Media.

Serrin, W. (1992). *Homestead: The glory and tragedy of an American steel town*. New York, NY: Times Books.

Small, M., & Calarco, J. (2022). *Qualitative literacy*. Berkeley: University of California Press.

Takeuchi, L., & Levine, M. (2014). Learning in a digital age: Toward a new ecology of human development. In A. B. Jordan & D. Romer (Eds.), *Media and the well-being of children and adolescents* (pp. 20–43). Oxford, UK: Oxford University Press.

Ticona, J., Mateescu, A., & Rosenblat, A. (2018). *Beyond disruption: How tech shapes labor across domestic work & ridehailing*. New York, NY: Data & Society.

Webman, J. (1982). *Reviving the industrial city: The politics of urban renewal in Lyon and Birmingham*. New Brunswick, NJ: Rutgers University Press.

Williams, J. (2010). *Reshaping the work-family debate: Why men and class matter*. Cambridge, MA: Harvard University Press.

Williams, J. (2020). *White working class: Overcoming class cluelessness in America*. Cambridge, MA: Harvard Business Review Press.

Willis, P. (1977). *Learning to labor: How working-class kids get working class jobs*. New York, NY: Columbia University Press.

Winant, G. (2021). *The next shift: The fall of industry and the rise of health care in Rust Belt America*. Cambridge, MA: Harvard University Press.

Wright, E., Costello, C., Hachen, D., & Sprague, J. (1982). The American class structure. *American Sociological Review, 47*(6), 709–726. doi:10.2307/2095208

Zaloom, C. (2019). *Indebted: How families make college work at any cost*. Princeton, NJ: Princeton University Press.