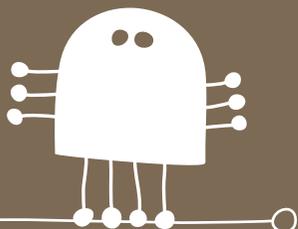


Always connected:

The new digital media
habits of young children



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With a Preface by:
Lewis Bernstein & Michael H. Levine

The Joan Ganz Cooney Center at Sesame Workshop

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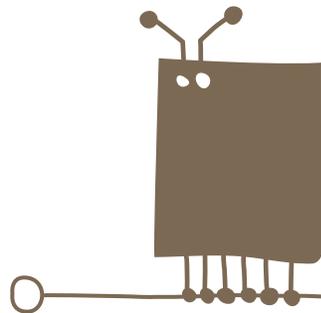
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preface

In a recent report from the Joan Ganz Cooney Center and Stanford University on media multitasking, Claudia Wallis concluded, “New technology sometimes brings change that is so swift and sweeping, that the implications are hard to grasp.” Such is certainly the case with the rapid expansion of media use by children and youth for ever-larger portions of their waking hours. Academics, policymakers, and practitioners show a keen interest in the digital age. And, of course, parents are scrambling to keep up with the preponderance of new gadgets that influences modern household arrangements and communication patterns.

A vigorous national dialogue is taking place over the right balance between media consumption, the potential negative impact that inappropriate digital content can have on vulnerable children, and the worry that children are increasingly leading physically inactive lives. These legitimate concerns must be juxtaposed with emerging evidence from the learning sciences and innovative practices showing how well-deployed digital media can promote new skills, raise achievement, and bring children together across time and space.

Since 1999, a series of studies undertaken by academic experts and philanthropies has documented the rise of media multitasking by youth, with most of the studies focused on children ages 8 and up.¹ Relatively little research, however, has been done on children during the preschool and middle-childhood periods, which scholars in child development, behavioral and cognitive psychology, and neuroscience have pointed to as critical for all that follows. Surely a better understanding of the new norms of behavior among younger children will help prepare educators, parents, and policymakers to promote learning and healthy development.

This report was undertaken to better understand the evolving patterns of younger children’s media use, drawing on previous studies as well as data released here for the first time. As members of both the entertainment and educational media communities, Sesame Workshop and the Cooney Center have been following the media consumption dialogue with great interest and urgency. With a four-decade track record as a research-driven producer of educational media for preschool and primary-grade children, the Workshop seeks to ensure that digital media will continue to have a positive influence, especially for children who experience too little educational stimulation.

This report is intended to add insight for this conversation and to challenge colleagues to keep a close eye on what young children are doing now and will soon be doing. The findings establish clear trends, rebut the growing mantra that only new media matter, and should be cause for action by industry, scholars, practitioners, and parents.

The report may also help reestablish principles that often get overlooked in the “Are media good or bad for kids?” debate. Media platforms by themselves are neutral; what matters most are the choices made by parents, educators, educational production companies, and other content providers in order to encourage a balanced pattern of consumption. As we see it, the figures in this report provide strong evidence that children’s media habits are, in fact, out of balance. In the final analysis, we need higher-quality educational offerings to promote critical thinking for children and adults in their selection and use of media. While we can imagine a day when young children themselves will produce their own media, for the time being they are still counting on us!

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executive summary

This report takes a fresh look at data emerging from studies undertaken by Sesame Workshop, independent scholars, foundations, and market researchers on the media habits of young children, who are often overlooked in the public discourse that focuses on teens and tweens.

We reviewed seven recent studies — several never before released — about young children and their ownership and use of media. By focusing on very young children and analyzing multiple studies over time, we were able to arrive at a new, balanced portrait of children’s media habits. We also introduce portraits of children’s digital media use from a smaller qualitative study conducted by the Joan Ganz Cooney Center to add some tint and texture to the quantitative findings.

Not everything we’re reporting here will be newsworthy. But taken in its entirety, the view is of a settled pattern: Even as technology evolves and young children increasingly turn to games and mobile media, they still love television best.

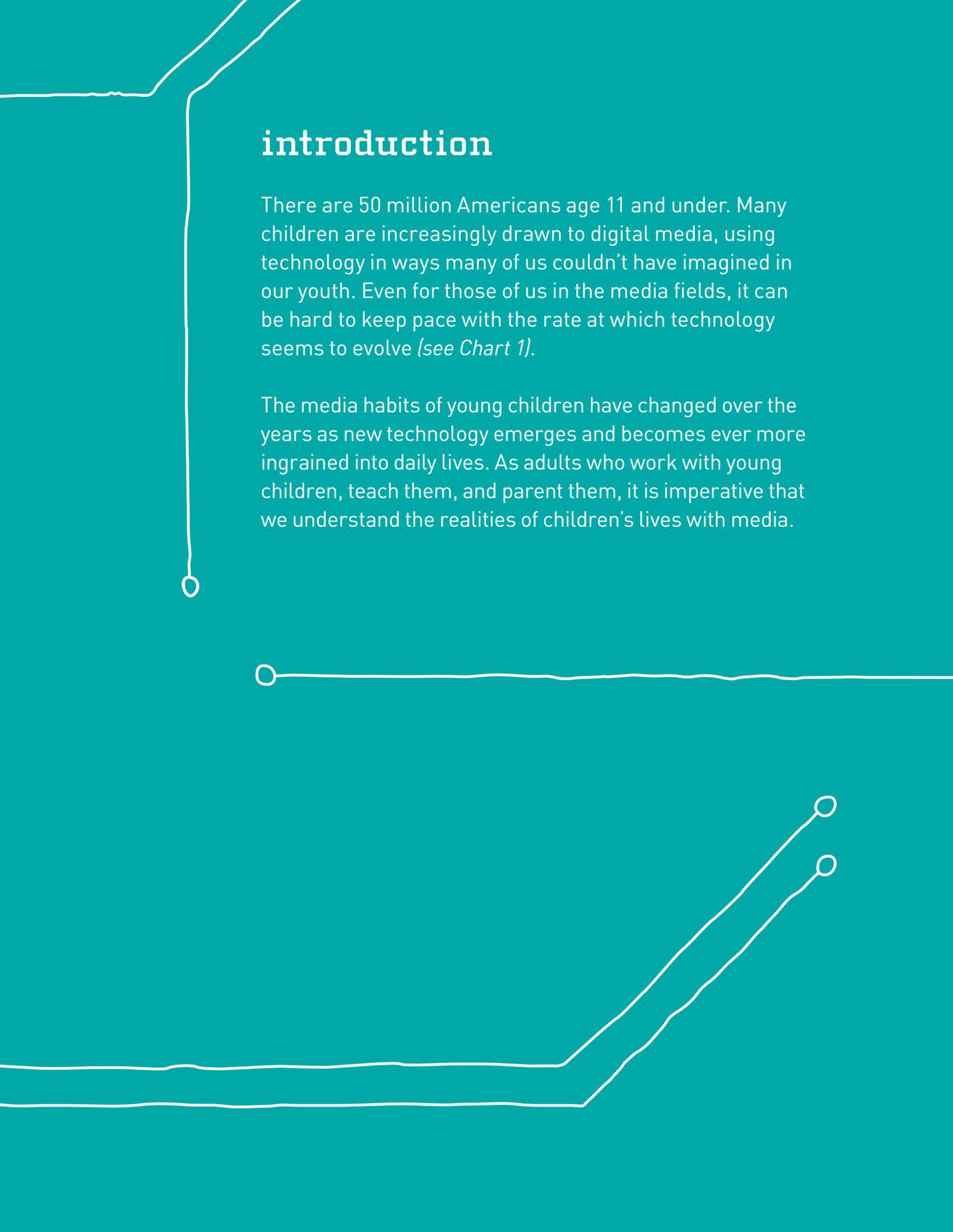
Here is a snapshot of our findings:

- Children have more access to all kinds of digital media, and are spending more time during the day with them than ever before.
- Television continues to exert a strong hold over young children, who spend more time with this medium than any other.
- Not all children have access to newer digital technologies, nor do all children use media in the same ways once they do own them. Family income continues to be a barrier to some children owning technology, even as the price of devices falls.
- Lower-income, Hispanic, and African American children consume far more media than their middle-class and white counterparts.
- Children appear to shift their digital media habits around age 8, when they increasingly open their eyes to the wide world of media beyond television.
- Mobile media appears to be the next “it” technology, from handheld video games to portable music players to cell phones. Kids like to use their media on the go.

introduction

There are 50 million Americans age 11 and under. Many children are increasingly drawn to digital media, using technology in ways many of us couldn't have imagined in our youth. Even for those of us in the media fields, it can be hard to keep pace with the rate at which technology seems to evolve (*see Chart 1*).

The media habits of young children have changed over the years as new technology emerges and becomes ever more ingrained into daily lives. As adults who work with young children, teach them, and parent them, it is imperative that we understand the realities of children's lives with media.



This report aims to portray the role of media in children’s lives today. To arrive at this picture, we examined seven recent studies that focused on young children (covering a range of ages) and their ownership and use of media. Some questions we hoped to answer included: What media are children using in their non-school hours and for which purposes? How much time do they spend with technology? Are there any trends in children’s media use? And what are the implications of such developments?

The studies we analyzed were merely descriptions of behavior, not an endorsement of that behavior. Our purpose here was simply to lay bare the facts of how children use media today. We share no preconceived notions of how it *should be* — just the reality of the extent to which children are immersed in media today.

At the heart of our findings is the fact that media is a major presence in the everyday lives of young children. Not only are children exposed to increasing amounts and types of media, they are avid consumers as well.

It’s worth noting that even though children spend significant portions of their day with media, the current economic climate has affected media consumption as families across America tighten their belts. About one-third of parents say their children’s media habits have changed since the economy began to sour in 2008, most notably among lower-income families, who report an uptick in reading printed books or magazines and less mobile-phone texting.²

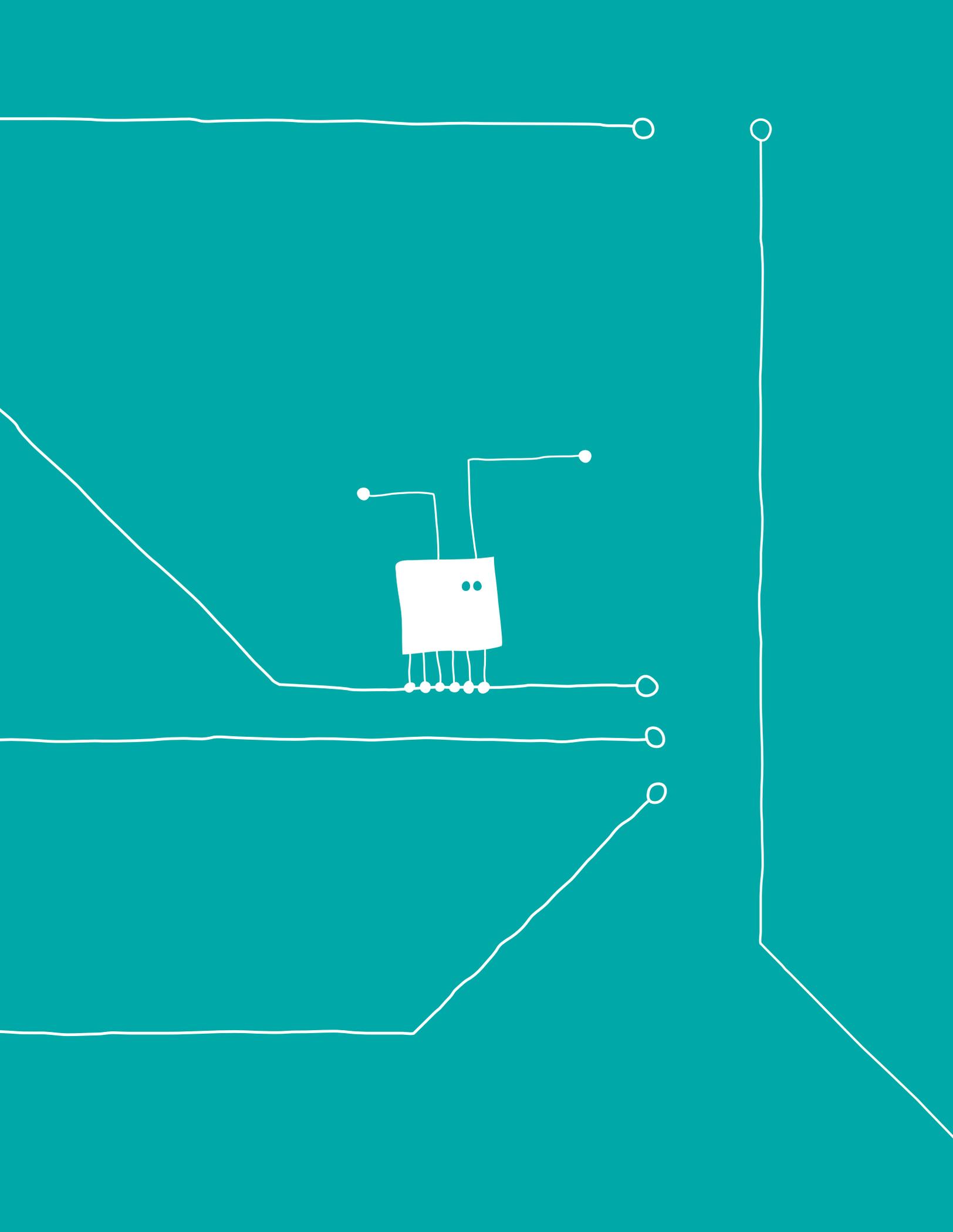
It’s important to remember that *Always Connected* is just a snapshot in time, and that media and technology use several years from now may be different in quantity or kind than it is today. However, this report can offer critical background about the reality of children’s lives so that those who care about children can have a better grasp of, and make better decisions about, appropriate media use, regardless of the media landscape.

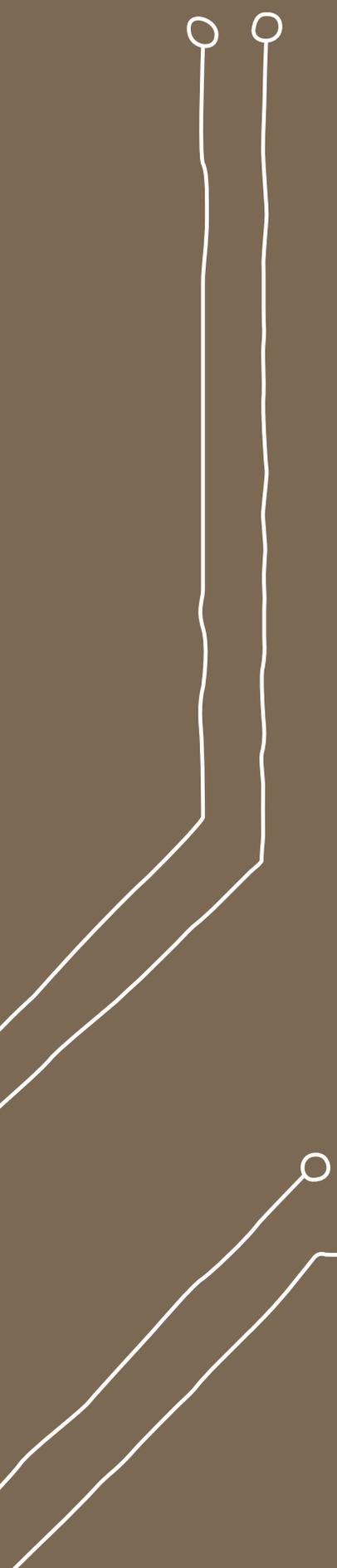


Chart 1: Media use across the decades



| 1930s | 1950s | 1960s | 1970s | 1980s | 1990s | 2000s |
|---|--|---|---|--|--|--|
| <p>Popular media platforms: Movies, print, radio</p> <p>Movies: Elementary-school-age children estimated to attend about twice a month (Dale, 1935).</p> <p>Radio: Children 9 to 12 years old listen about 2-3 hours a day (DeBoer, 1937; Jersild, 1939).</p> <p>Overall media exposure: Children spend about 10 hours per week on mass media including radio, television, and records.</p> | <p>Popular media platforms: Movies, print, radio, television</p> <p>Television: In 1950, about 10% of homes own a television; by 1960 almost 90% of homes own a television (Nielsen Media Research, 1998).</p> | <p>Popular media platforms: Movies, print, radio, television</p> <p>Television: The average 3-year-old spends about 45 minutes viewing per day, increasing as children get older. (Schramm, Lyle, & Parker, 1962).</p> <p>Television sets are on for about 6 hours a day. (Comstock, 1989).</p> | <p>Popular media platforms: Movies, print, radio, television, cable television, arcade video games</p> <p>Television: Children as young as 12-months viewing television an average of 1-2 hours a day (Hollenbeck & Slaby, 1979).</p> <p>Television sets are on for about 7 hours a day. (Comstock, 1989).</p> <p>Cable television: FCC regulations on cable begin to relax, allowing for a substantial increase in the number of channels available for consumers (Park, 2001).</p> | <p>Popular media platforms: Movies, print, radio, television, cable television, home video game consoles, portable music players (i.e. Sony Walkman), VCRs, home computers.</p> <p>Television: Elementary school children spend roughly 2.3 hours a day watching television (Timmer, Eccles, & O'Brien, 1985).</p> <p>Television sets are on for about 8 hours a day. (Comstock 1989).</p> | <p>Popular media platforms: Movies, print, radio, television, cable television, home video game consoles, portable music players, VCRs, home computers, portable handheld video game systems, internet, cell phones</p> <p>Television: Children as young as 2 years old watch over 3 hours a day (Nielsen Media Research, 1998).</p> <p>Computer and video games: Children 8 to 18 spend just under an hour a day on the computer or playing video games (Kaiser Family Foundation, 1999).</p> <p>Internet: Children 2 to 18 use the internet for eight minutes a day (Kaiser Family Foundation, 1999).</p> <p>Overall media exposure: Children 8 to 18 are exposed to media for 7 hours 29 minutes a day (Kaiser Family Foundation, 1999).</p> | <p>Popular media platforms: Movies, print, radio, television, cable television, home video game consoles, portable music players, DVDs, home computers, portable handheld video game systems, internet, cell phones, MP3 players, DVRs, electronic interactive toys, internet-connected smart phones, tablet computers</p> <p>Television: Children under 1 spend about 49 minutes a day using screen media; children 2-3 years of age spend about 1 hour 51 minutes using screen media (Kaiser Family Foundation, 2006).</p> <p>Overall media exposure: Children 8 to 18 are exposed to media for 10 hours 45 minutes a day (Kaiser Family Foundation, 2010).</p> |





methodology

To develop this report, Sesame Workshop reviewed seven recent studies from 2006 through 2010 on media use among children of various ages:

- Sesame Workshop Media Utilization Study, 2006 (1), fielded by Russell Research
- Sesame Workshop Media Utilization Study, 2006 (2), fielded by Russell Research
- Sesame Workshop Media Utilization Study, 2008, fielded by Russell Research
- Sesame Workshop Media Utilization Study, 2009, fielded by OTX
- Children, Families & Media: A Benchmark, 2007, Michael Cohen Group and U.S. Department of Education Ready to Learn Program
- Generation M²: Media in the Lives of 8-to-18-Year-Olds, 2010, Kaiser Family Foundation
- Youth and Media...Television and Beyond, 2009, The Nielsen Company

We compared data from these studies — synthesizing commonalities, pointing out important inconsistencies, and pulling in additional recent studies when appropriate — to illustrate a broad portrait of the relationship between young children today and digital media.

Our goal was to focus on children ages 0 to 11, in part because young children form the core of Sesame Workshop’s organizational interests, and also because large portions of this age group tend to be overlooked by research on youth and media. But precisely because this age group has been less studied, there is not a lot of available data combined in one cohesive report.

Lack of data was one factor complicating our effort to paint a picture of young children’s media habits. Many of the studies only partially overlap in their target age groups, making direct comparisons between studies difficult. For example, two of the Sesame Workshop studies focused on children 6 months to 5 years old, while the Nielsen report covered children ages 2 to 5. The Kaiser Family Foundation study looked at children ages 8 to 18, with limited age-breakdown data available for 8-to-10-year-olds.

(See Appendix for a detailed methodology chart of the studies, including sample size, ages studied, and dates conducted.)

Researchers used different methodologies to conduct their studies (see section below about measuring media use), and each study was driven by different organizational interests (for example, market research vs. field-building).

On the surface, it might appear impossible to make sense of the seemingly disparate findings from the seven studies. Taken as a whole, however, there are clear commonalities and trends in how young children use media. The work begun with this report is much needed in the field as a complement to the admirable work done by other groups, such as the Kaiser Family Foundation.

Finally, to add a human dimension to the facts and figures that follow, we have included a few sidebars to illustrate how young children today engage with media in their everyday lives. The vignettes are based upon real children that the Cooney Center interviewed and observed in 2008 and 2009 (all names are pseudonyms).

Definition of terms

Media ownership

A child or family’s access to a given medium. In this report, we interpret a child having access to a medium if it is present in a child’s home, regardless of whether it is a household item or a child’s personal possession. Although we recognize that some children may have opportunities to use media even if their families do not own any (for example, at a library or friend’s house), such access was not quantified here.

Media use

The amount of time spent actively consuming a given medium. Multitasking complicates accurate measures of media consumption. (See section below for more on measuring media use.)

Media exposure

The combined amount of media content children experience in a given day, including cumulative time spent using more than one medium at a time.

Media multitasking

The use of more than one type of medium at a time (e.g., watching television while surfing the Internet).

Screen media

Visual media consumed on a screen, such as television, computers, and video games.

Ways to measure media use

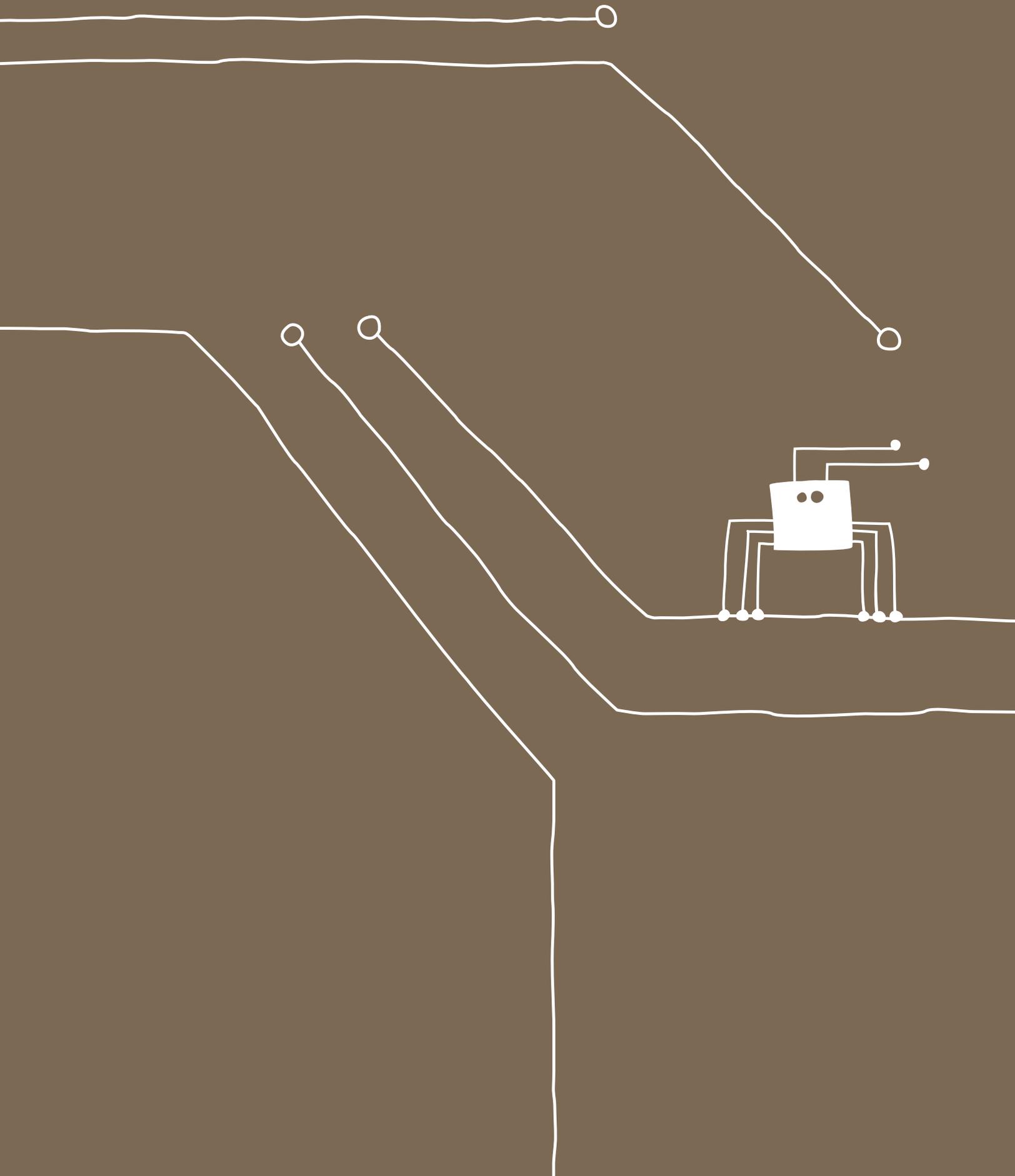
Accurately measuring media use has been, and continues to be, a difficult challenge. Researchers typically employ one of a variety of techniques to pin down how much media children use and the kinds of content to which they are exposed. In the digital age, measurement questions are complicated by such seemingly simple questions as “What is use?” Watching television used to be the primary activity considered in use measures, but children now grow up in a world that supports and sometimes encourages multitasking, the ability to use multiple media at the same time. For example, what if children are texting while watching TV? Is there a way to accurately capture both elements of use?

The studies reviewed in this report use two main methods: self-reports (in the forms of surveys, interviews, and questionnaires) and electronic monitoring. The first method, self-report, is a quick way to get a global estimate of media use. Researchers can quickly get answers to questions like: “How much time do you spend playing computer games on a typical weekday?” or “How many days a week does your child watch PBS children’s shows?” Respondents typically answer frequency questions on ordered scales that provide a range of answers, such as “never,” “one to three times a week,” “four to six times a week,” or “every day.” The advantage of using self-report methods is that they are relatively inexpensive and easy to administer to large groups of people. However, self-reports are subject to bias, especially if respondents are concerned with providing socially desirable responses. In the case of media use, there may be a tendency to underreport true time use. It may also be difficult for people to accurately estimate their media use in the short time that people typically respond to survey questions. Most of the studies in this report use this methodology (*see Appendix*).

Electronic monitoring by the Nielsen Company uses People Meters, which passively monitor television use in the home and are able to determine what channel is being tuned to and for how long. The People Meter allows users to indicate who is watching by pressing a button on the meter itself or on a special remote control. The button is pressed again to indicate that a user has finished viewing. Electronic monitoring can help relieve problems associated with bias or poor memory. It is also more accurate and relatively inconspicuous. However, problems can occur if users fail to indicate their viewing status by pressing the button on the meter or remote control. Additionally, People Meters are currently only viable for TV viewing in the home environment, so they are unable to measure other media use or TV viewing outside the home.

People Meter estimates of TV viewing tend to be larger than other studies. This may be a reflection of greater accuracy, but it may also reflect user errors, such as people forgetting to turn meters off, resulting in an inflated time use estimate.

We believe both methodologies — self-reports and electronic monitoring — offer advantages and disadvantages, and we therefore report findings that use each. In reporting television use, for example, there are sometimes large discrepancies between seemingly similar studies. Discrepancies between studies may be a result of time-measurement issues, subtle differences in question wording, or cohort effects based on the year the study was conducted.



key findings:

FINDING 1:

children's exposure to and consumption of different types of digital media are growing rapidly

Technology has become a mainstay in the lives of most American children. As digital media has transformed adults' lives — how we work, play, and get information — it seems natural that such technology has filtered down to our children's lives as well.

Today it is almost unimaginable for an American child to not have a television at home. Television is ubiquitous, and so too are other media in the American home. As the price of digital technologies continues to fall, children of all ages are becoming regular consumers of digital media. Not only do more children than ever have access to digital media, they have an increasing number of choices in the types of media they can own and use. The definition of a media "platform" has blurred as it has become possible to consume media in a variety of ways. Television, for example, can be streamed via the Internet and viewed on a personal computer. Children's books can be read on iPads. Cell phones can browse the Web, play video games, and hold a 5,000-song music collection, in addition to making calls. There is an ever-increasing menu of options in how kids access content.

Across all the studies reviewed for this report, the data paint a picture of a generation whose early years are studded with gadgets and of media technologies that are rapidly integrating into daily life across the income spectrum.

Which media are available to kids?

Children who attend school are captive consumers of information six to seven hours every day. In addition, they are captivated by almost eight hours of media every day at home.³

Television remains a universal technology, although related media like DVR and video on demand are not. About 80% of families have cable or satellite TV, but fewer than half of all young children have television recording capabilities such as DVR or Tivo.⁴ Video on demand access hovers at about 25%.

There is also a wide range of new digital technologies available to children and their families. About two-thirds of families with children under age 11 have computers, and virtually every family that owns a computer has an Internet connection. More than half have some type of video game system.² And about three-quarters of families have cell phones⁵ (see Chart 2).

There's more to this story than just the variety of media available to children today. One of the big

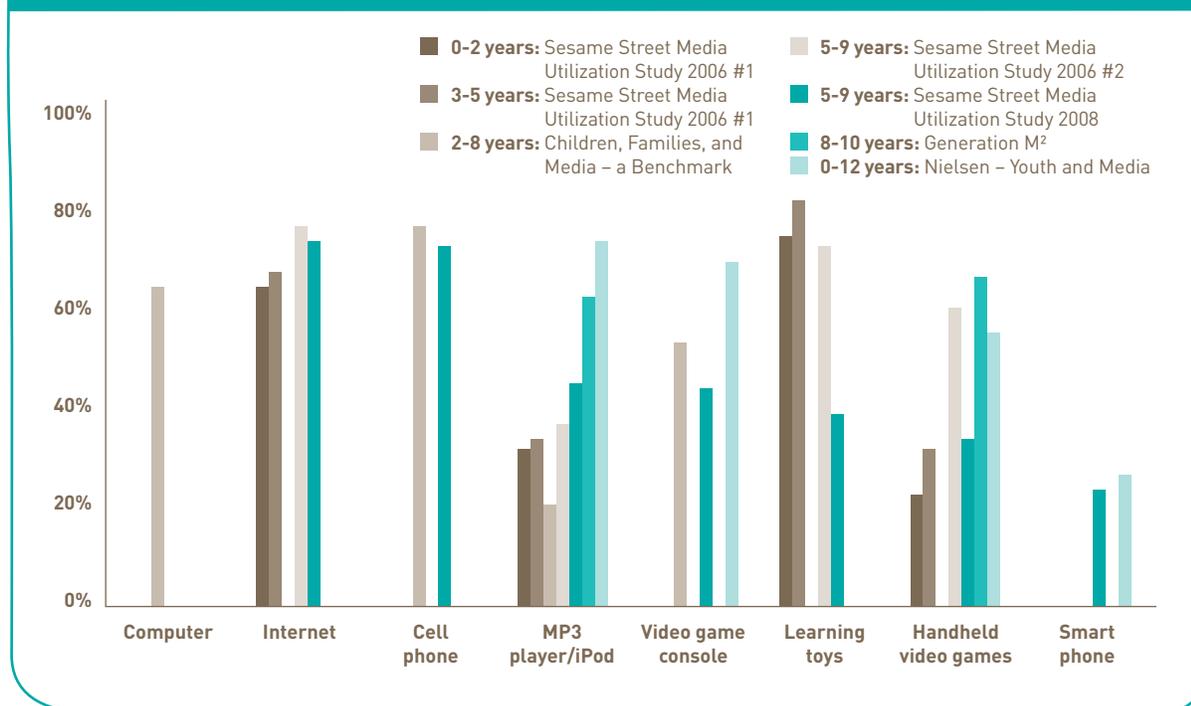
trends is the rise in popularity of portable media devices. Not only do kids use the Internet or play a video game on home computers or consoles; they like to do these things on the go via a laptop or handheld device. Children like their media to move with them. For example, in 2005 the vast majority of families with computers had a desktop model. Since then, desktop ownership has dropped by 18% while laptop ownership has jumped 31%, to 60% of families.⁶

The popularity of portability is also evident in children's music consumption. More than 90% of families own a radio, CD player or stereo.² But there has been a 27% drop in ownership of stereos since 2005.⁶ At the same time, almost two-thirds of children now have an iPod or MP3 player, up from just 12% in 2004.³ The impact of new tablet media devices, such as the iPad, is unknown.

Of course, not every medium is available to all children. There are big differences in rates of ownership between households, particularly by family income level, which are explored in depth in later sections of this report.



Chart 2: Household ownership and new technologies



What are kids using?

Not only do children have access to increasing types of media; they consume more electronic media than ever before. Use of virtually every type of digital media has increased over the past decade.

In a typical day, most young children read a book and watch television or DVDs (see Chart 3). Use of newer media, such as the Internet, video games, or portable music players, is not as universal and varies with age.

Today, children ages 8 to 10 spend about 5.5 hours each day using media, but they're actually exposed to almost 8 hours of media, because they use multiple media simultaneously.³ Most of that time, more than 3.5 hours per day, is spent with television.

More children use the Internet regularly and for longer periods of time than ever before. Most children who go online do so a few times a week, and unsurprisingly, usage increases with age.

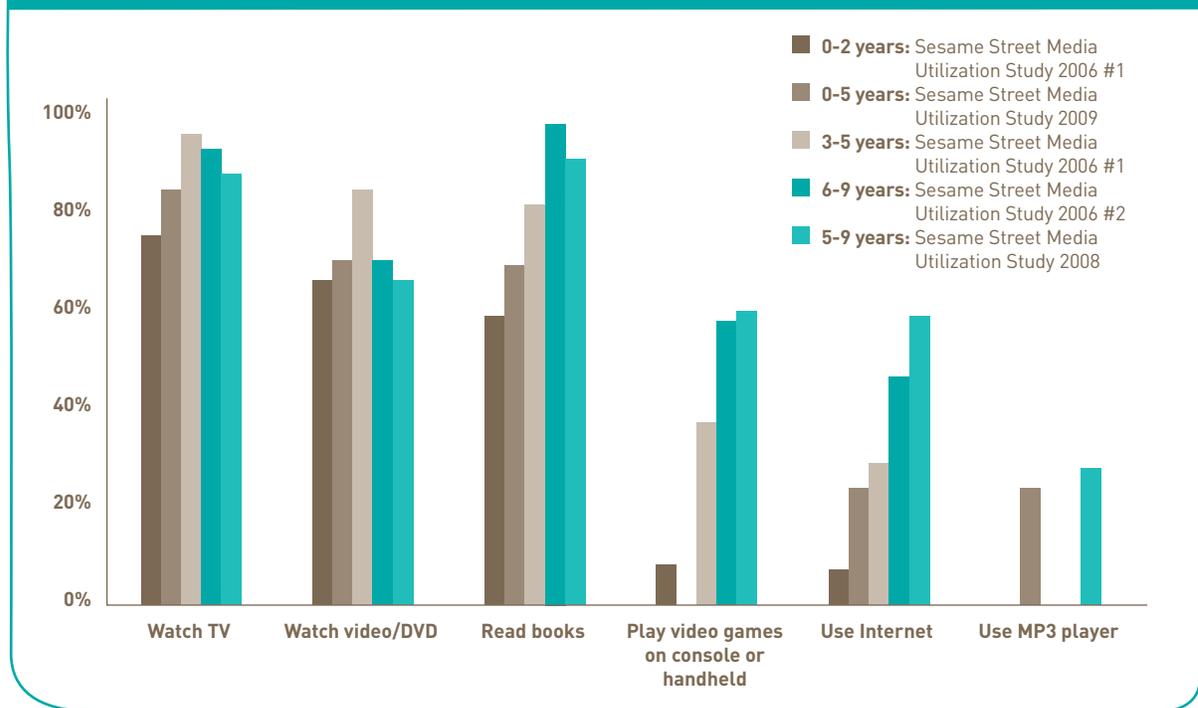
Among very young children (0 to 5) who use the Internet, about 80% do so at least once a week.²⁸ At age 3, about one-quarter of children go online daily, increasing to about half by age 5. And by age 8, more than two-thirds use the Internet on any given weekday.^{2,5} Children ages 5 to 9 average about 28 minutes online daily.⁵ In 2009, the oldest children in our review (8 to 10) spent about 46 minutes on a computer every day³ (see Chart 4). This is more than double the amount of time 8-to-10-year olds spent online in 2006 (19 minutes).

Although computer and Internet use are rising, they are still just a fraction of children's overall media use, and nowhere near the amount of time spent with television.

It is reasonable to assume, then, that children consume more media as they age. But it turns out that children ages 2 to 5 actually consume more television (including DVD and videos) overall than 6-to-11-year-olds.⁴



Chart 3: Percent of children who participate in activity in typical day



Of course, different digital media interest children at different ages. For example, most children don't start using portable music players regularly until age 8, or playing video games (either portable or console) en masse until age 6. About 20% of 4- and 5-year-olds use handheld video games. By age 7, usage more than doubles, to 46%. By the time a child turns 9, well over half of all children are using video games.⁶

The only type of electronic media among those surveyed that does not gain more users with age are learning toys, defined as electronic toys that promote educational content, separate from video games or computer games. Just about half of all children under age 5 use some type of electronic learning toy. But usage drops to 33% of 6-to-8-year-olds and to just 13% of 9-to-11-year-olds.^{6,7} Learning toys is also the only category to show a drop in usage over time. In 2006, for example, 65% of children ages 5 to 9 used learning toys regularly. By 2008, that number had dropped to 50%.⁵ This may reflect the preponderance of content for learning toys directed at preschoolers rather than older children. This pattern may also be explained by the increased availability of content available for elementary-aged children on other electronic devices, such as the iPhone or iPod touch.

It is important to mention that even in an era of widespread electronic-screen exposure, print remains a constant in children's media diets, although it varies dramatically by age. About 90% of kids 5-to-9-years-old read books most days of the week, and they spend about an hour per day

doing so, either reading by themselves or being read to by an adult.⁵ Although most other forms of media use have increased over time, print has not, at least among children ages 8 to 10.³

Media multitasking

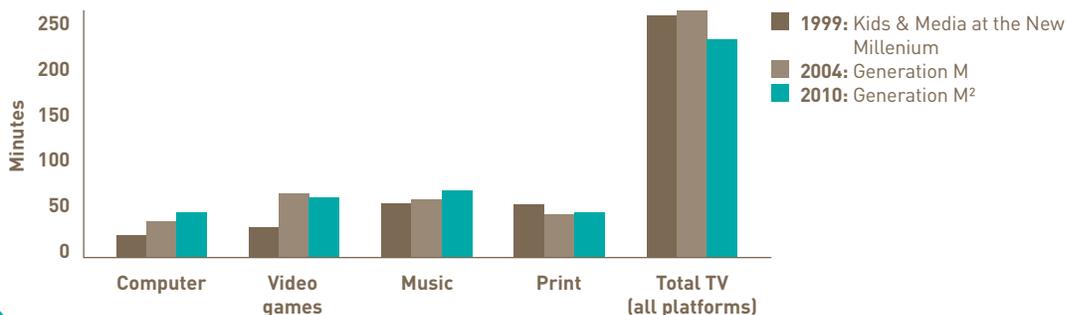
Each day, school-age children pack almost 8 hours of media exposure (7:51) into 5.5 hours of time.³ By using more than one medium at a time, also known as media multitasking, children can up their media consumption and squeeze more technology into their few non-school hours.

Media multitasking is tricky to define, and just as difficult to measure. According to Patricia Greenfield (as cited by Wallis⁸), there are three types of media multitasking:

1. Combining media with a real-life interaction, such as texting at the dinner table.
2. Using two or more types of media at the same time, such as listening to a CD while playing a video game.
3. Engaging in multiple tasks within a single medium, such as listening to iTunes while doing homework on the computer.⁸

How do children multitask? According to the Kaiser Family Foundation, two-thirds of the time older children (7th to 12th grade) are on computers they are multitasking, for example,

Chart 4: Amount of time spent with medium in typical day, 8- to 10-year-olds



simultaneously listening to music, surfing the Web, and chatting with their friends using instant-messaging tools, etc. While there is little data on multitasking for younger children, researchers at the University of Massachusetts at Amherst found that when television is on in a room, it disrupts toddlers' toy play. The 1-to-3-years-old children in the study split their attention between what was happening on the TV screen and their toys. Their play episodes were shorter, and attention during play was less focused as a result.⁹

Nielsen, which traditionally measures television watching via passive electronic monitors on home television sets, has begun an effort to measure usage of two screens simultaneously — TV and computer. The addition of a computer meter to homes already measuring TV habits has yielded some insight into the multitasking habits of children: Among children ages 2 to 11, about 36% use the TV and Internet simultaneously.¹⁰

Nielsen has also begun to track video viewing on mobile phones to assess screen consumption across three platforms. Multitasking research is still in its infancy, and we hope this marks the beginning of further exploration into this topic in coming years.

The *Kids Closer Up* boxes scattered throughout this report are based upon ethnographic research conducted by the Joan Ganz Cooney Center. Gabriela, Katie, Victoria, Cierra and Stephen are pseudonyms for real children interviewed and observed between 2008 and 2009.



Kids closer up: A typical day media log

Gabriela Perez is 8 years old and lives in a northeastern neighborhood of Los Angeles. The following is a time log of her after-school hours on an average Tuesday:

1:45 p.m. - 2:30 p.m.

Watches TV (Disney Channel and ABC Family Network)

2:30 p.m. - 3:15 p.m.

Homework, interrupted by online video viewing with Mom

3:15 p.m.

Homework, done on coffee table in front of TV (*Oprah*)

4:00 p.m. - 5:00 p.m.

Online gaming (Club Penguin)

5:15 p.m. - 6:00 p.m.

Goes with Mom to pick up Dad from work, calls cousin on cell phone during the drive

7:00 p.m. - 7:30 p.m.

Dinner

7:30 p.m. - 8:00 p.m.

Watches TV with Dad (Discovery Channel)

8:00 p.m. - 8:20 p.m.

Plays Nintendo DS (*Pictochat* with next-door neighbor)

8:20 p.m. - 9:00 p.m.

Watches TV with parents until bedtime

FINDING 2: television remains a major influence

To a generation of media-savvy parents, television is as familiar and comfortable as an old family friend. As such, television is present in virtually every American home, part of the landscape for even the youngest children.

TV is readily available to children and for the most part, is a routine part of their day. Even as use of other media rises, television persists. It is by far the dominant medium used by children ages 0 to 11.

On a typical day, almost 9 out of 10 children over age 5 watch television,⁵ compared with slightly more than half of children who play video games or use the Internet. Among toddlers and preschoolers, more than 80% watch TV on any given day.⁷

To “watch television” today means not only viewing a program as it airs at a set broadcast time, but also via time-shifted TV options such as Tivo, DVR, and on-demand. DVDs and videos are also largely consumed on television, adding additional time in front of the screen. The studies reviewed in this report did not count online video or YouTube as television viewing.

How much TV are kids watching?

During the week, most children spend at least three hours each day in front of a television set, and four hours on weekend days. Despite the range of ages covered by the studies in this review, all paint a remarkably similar picture of television viewing habits.

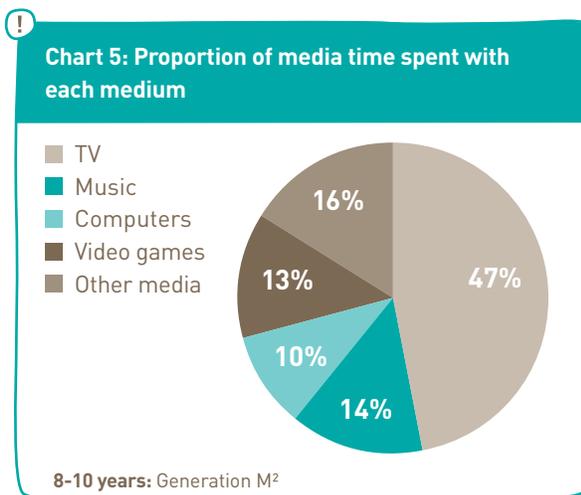
Television usage among preschoolers is at an eight-year high, coinciding with the ability to watch TV in new ways, such as video on-demand and DVR technology.⁷ Children ages 2 to 5 watch more than 3.5 hours (213 minutes) of television in an average day.⁴

Sesame Workshop found that children ages 5 to 9 spend 1.75 hours per day (105 minutes) watching TV, and almost 1.25 hours watching videos (74 minutes), for a total of about three hours each day. Children ages 8 through 10 watch half as many videos (32 minutes), but more TV (165 minutes), for a total of about 3.25 hours.³

Compare these figures with time spent on other media — 72 minutes on reading (5-to-9-year-olds), 1 hour on video games (8-to-10-year-olds), 46 minutes on the Internet (8-to-10-year-olds) — and it’s clear that television remains the go-to medium. The proportion of time spent with each medium is clearly weighted toward television use (see Chart 5).

Even as children enter elementary school, spending several hours per day there, the data show barely a drop in TV usage. For example, Nielsen tracking data shows that children ages 6 to 11 watch just about 7 minutes less TV and video per day than preschoolers.

If children are spending six to eight hours a day in school, then they have fewer hours available to watch television than preschoolers, many of



whom are not away from home all day. This means that even though 6-to-11-year-olds watch less television overall, they spend a higher percentage of their non-school hours consuming TV programming.

Television is so ubiquitous that it has, in essence, become the backdrop to family life. Not only is it an active source of entertainment, but TV is also part of the ambient noise of a household, a constant background presence. In almost half of homes (48%), TV is on most of the time even when no one is watching it.² Children in those *constant TV* homes naturally watch more television overall.³ *Background television* can disrupt the quantity and quality of parent-child interaction, negatively affecting developmental outcomes that come from parent engagement and social interaction.¹¹

Where are they watching?

We live in an environment where media is ubiquitous, even in the bedrooms of young children. The data show that as children grow older, they are more likely to have a TV set in their bedroom (see Chart 6).¹² For example, one-quarter of 5-year-olds have a TV in their bedroom, a figure that holds steady even in low-income homes. By age 8, well over half of all children have bedroom televisions.^{2,3}

Although children watch most of their daily television in the family living room or den, Nielsen tracking data show that a substantial

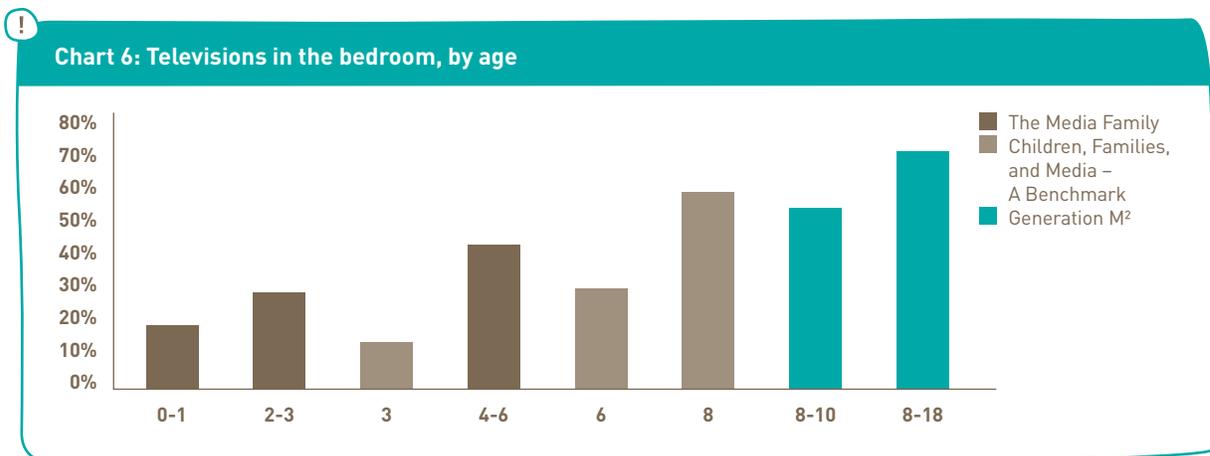
percentage of daily TV viewing does occur in a child's bedroom. Children ages 2 to 5 watch TV in their bedroom almost 20% of the time. Among children ages 6 to 11, more than 25% of their TV time occurs in their rooms.⁴

What are kids watching?

Public television remains popular among toddlers and preschoolers, especially in the mornings. Of children under age 5, PBS accounts for 13% of morning television viewing, although they watch much more children's cable programming overall. For this age group, PBS is the third most popular channel in the morning, behind Nickelodeon (27%) and the Disney Channel (16%).⁴

There is a clear trajectory among regular PBS viewers, who peak at about age 5, and then lose interest as they grow older (see Chart 7). This is around the age when viewing of cable programming increases and public television viewing drops.²

When 5-to-9-year-old children turn on the television (or when an adult turns it on for them), which channels do they choose to watch? Three kid-centric cable channels — Disney, Nickelodeon, and the Cartoon Network — followed by PBS. Coupled with those who watch one to three times per week, well over half of those channels' viewers are regulars. PBS counts only 17% of its audience as heavy viewers.⁵



The influence of TV

Television content children once consumed only by sitting in front of a screen at a scheduled time is now available whenever and wherever they want, not only on TV sets in their bedrooms but also on computers, mobile phones, and handheld media devices, like iPods and iPads.³

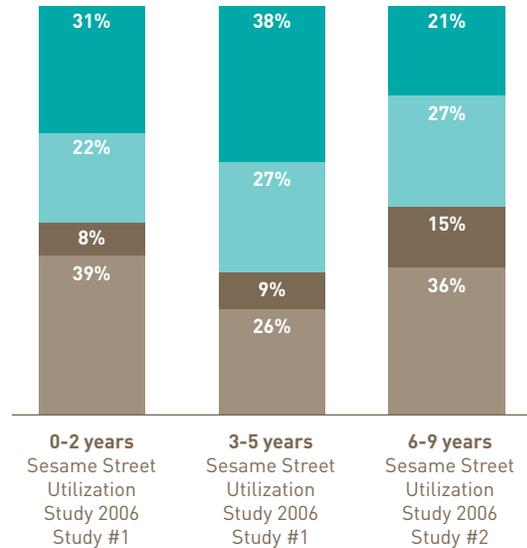
Across the studies we reviewed, it's clear that television remains a strong influence on children even as new delivery systems become available. For example, viewing video and TV programming online is growing in popularity, especially among the very youngest children. Parents indicate that just over 60% of children under age 3 watch video online, although viewing decreases with age.⁷

That the very youngest children are watching more online videos may simply reflect the reality that they are at home, with a computer, for more time than their older siblings. Also, “safe,” age-appropriate content is not available on TV for small children all the time, so parents may turn to on-demand sources like YouTube more often for that age group.



Chart 7: Percentage of children who view PBS, by age and frequency of viewing

- **Heavy viewers:** 4x a week or more
- **Medium viewers:** 1-3x a week
- **Light viewers:** Less than once a week but still watch
- **Non-viewers:** Never watch



Kids closer up: TV as constant companion

For most of her half-hour stretch of homework time, 8-year-old Katie Yamato is alone in the living room. But a lot of activity takes place in the adjacent rooms of the small house, spilling ambient sound into Katie's workspace. Grandma is in her bedroom ironing and watching the local news on TV. Grandpa is in the dining room clicking away on his laptop, a finance show airing on an unwatched TV is on in the lanai next door. And Katie's stepmother is chopping vegetables for dinner with the kitchen TV on, too.

Television is a popular medium in the Yamato house. Katie's grandparents are both retired and pass much of the day watching TV in their own separate spaces. They also regularly read the newspaper in the mornings but keep AM talk radio or *Good Morning America* on in the background. There are five TV sets in the house: one in the lanai, one in

each of the three bedrooms, and one in the kitchen. Each, except the kitchen set, is connected to a DVD player. Other than overnight and when nobody's home, at least one TV is usually on, whether or not anyone is actively watching it.

On a recent night, Katie talks over math problems with her stepmother while her father downloads music and movies in the office. Grandpa watches TV in the lanai and Grandma wraps holiday gifts while watching TV in her bedroom. Around 8 p.m., Katie, her father, and her stepmother settle in to spend the remainder of the evening watching a DVD of the critically acclaimed, but R-rated, film *Milk* together. Katie ends up falling asleep around 9:30, well before the movie ends, because she has school the next day and needs to get up before 7 a.m.

Still, among children 8-to-18 years old, the proportion of total video content consumed online or on portable devices like iPods or cell phones is still about 20%, a substantial chunk of time considering that the pioneer online video Web site YouTube was founded only in 2005.

More than one-third of children over age 5 say their favorite Web sites are those tied to television networks (the Disney Channel Web site, PBSKids.org, etc.).⁵ By large measure, the sources of the Web sites children are browsing are TV shows and networks (57%) and TV commercials (36%).⁷

This raises the question of content: Traditionally, story lines were developed for a 30- or 60-minute television program, with a distinct beginning and end. But with newer delivery platforms entering homes, media producers are taking a closer look at the idea of *transmedia storytelling*, or the concept of developing a story across multiple forms of media.

Transmedia storytelling takes the elements of a character's narrative and applies them to the unique features of multiple media to extend the story and offer different entry points in the story. As media producers increasingly reimagine a story as content, we are seeing their intentions played out as they, for example, drive kids from TV shows to the related Web site, and vice versa. Sesame Workshop has done this with *The Electric Company*, creating literacy content for a variety of platforms to be used in a variety of contexts.

FINDING 3: **digital divides still exist, in both access to and usage of media**

The term *digital divide* typically refers to the gap, usually falling across income and ethnic-minority lines, between children who have access to technologies, such as the Internet, and those who do not. The research shows that the access divide is shrinking, although not by much. As electronics drop in price — becoming affordable for more families — another divide persists: compared with their middle-income peers, low-income children are less likely to use digital media to build the type of knowledge and skills they will need to compete and cooperate in the global economy.

Among children who own or have access to a given technology, there is a noticeable difference in how much they use the media. Black, Hispanic, and low-income families typically consume more media across almost all platforms.^{3,5}

And yet, because low-income and ethnic-minority children are less likely to have adult guidance when accessing the Internet, these children spend more time on lower-quality Web sites or activities that won't help them develop school-based skills.

For example, research has found that low-income children who use the Internet at libraries are more likely to visit Web sites that are more

image-based and less text-based, missing out on opportunities to develop reading skills.¹³ Another study found that compared with their middle-income peers, children from low-income homes prefer console video games to computer games. This may have significant implications, as students who play computer games are more likely to engage in online literacy activities related to their gaming (e.g., reading comments, using walk-throughs, or viewing screenshots), compared with students who primarily play console games.¹⁴

By the numbers, then, the following sections describe the differences in digital media ownership and usage by income and by race. Taken as a whole, research suggests that steady progress has been made in extending digital media such as home Internet access to low-income and minority households. However, differences based on income and ethnicity are substantial, increasing the potential for educational inequity.

Ownership

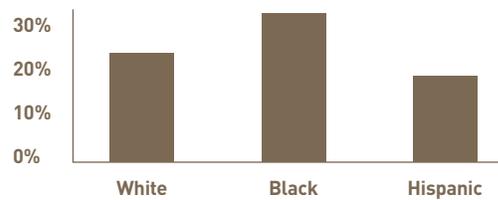
Older media technologies, such as television and VCRs/DVD players, are nearly universal in homes, regardless of income level or ethnic background.

Children of different ethnic backgrounds have access to many newer digital media devices — such as electronic learning toys, video games, and portable music players — at roughly comparable rates. The notable exceptions are Internet access and cell phones.

For example, access to a cell phones ranges from 63% for black children to 66% for Hispanic children to 76% for white children.^{15,16} Although white families are more likely to have cell phones, black families are more likely than white or Hispanic families to own Internet-equipped cell phones (see Chart 8).⁴ In fact, a recent study conducted by the Pew Research Center's Internet and American Life Project found that for a significant portion of low-income and non-white adults, cell phones are the only means of accessing the Internet and engaging in online activities.¹⁷



Chart 8: Percentage of families owning cell phones with Internet access, by race/ethnicity



5-9 years: Sesame Street Media Utilization Study 2008

Across the board, there are clear differences in household ownership of digital media devices by income level, especially among newer and more expensive technologies. For example, more than half of children from households earning more than \$75,000 have wireless handheld devices, compared with 8% from families earning \$25,000 or less.³

One other difference to note concerns the print medium: Access to children's books does vary somewhat by household income.³ For example, low-income households own an average of 40 children's books, compared with about 50 in the highest-income homes. Newspapers and magazines are also more prevalent in high-income homes.

Computers and the Internet

Overall, about two-thirds of American families have computers at home, and almost all of them have Internet access (see Chart 9). But there are differences between white children and their Hispanic and black peers. Among 5-to-9-year-olds, more than 75% of white children have home Internet access, compared with about 62% of Hispanic and black children.⁵

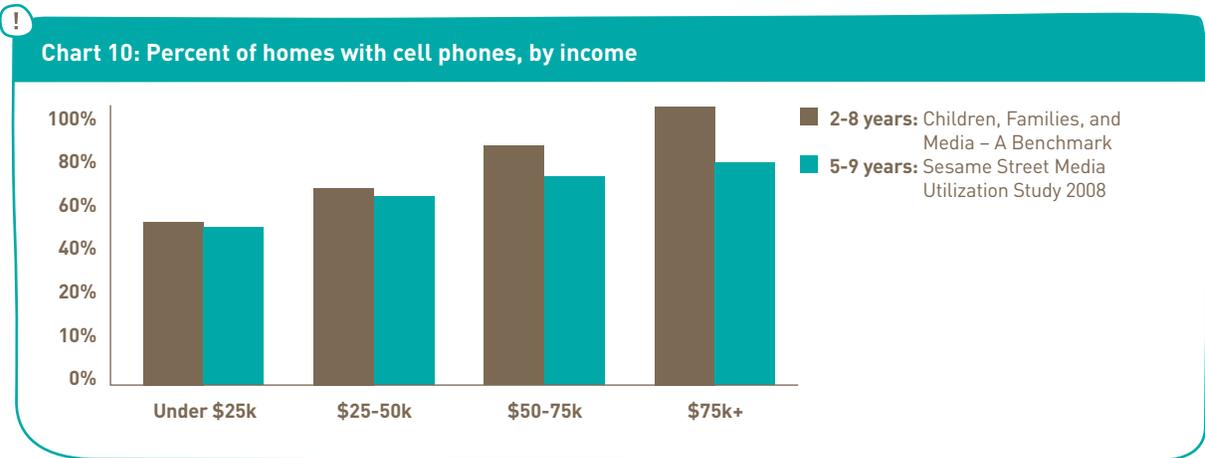
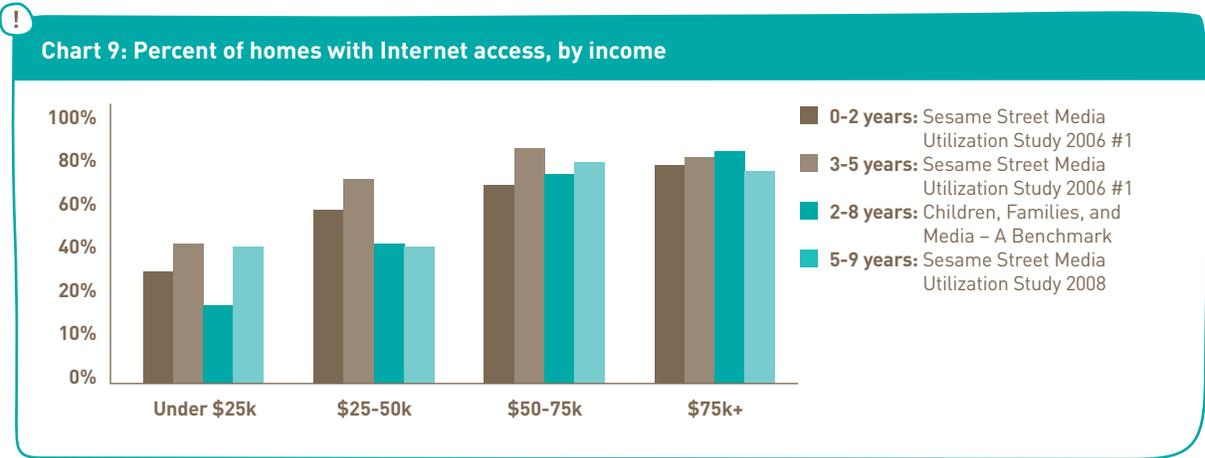
Roughly three-quarters of families earning more than \$50,000 have home computers with Internet access, with little distinction between the middle- and highest-income levels. However, only between 28%² and 49%⁵ of families at the lowest end of the income spectrum — those earning \$25,000 or less — have Internet access at home.

Although most households with computers are wired for the Internet, connection types (broadband or dial-up) vary by demographic group. Among families earning more than \$75,000, the vast majority (93%) have broadband connections, while more than a third of the remaining population uses dial-up.² However, these figures are from 2007, and we expect that more families across income levels will turn to high-speed Internet connections as companies bundle it with other services, such as cable TV and telephone, and as federal initiatives to ensure broadband coverage for everyone expand. It is also important to note that children are able to go online in a variety of out-of-home contexts, including in libraries, after-school centers, schools, and at friends' houses.

Cell phones

Mobile technologies appear to be the fastest-growing type of digital media, and cell phones are among the most popular devices, even among low-income households. About 60% of households earning less than \$25,000 have a cell phone, compared with more than 80% of the highest-earning families (see Chart 10).^{15,16}

There is limited data available to compare smartphone ownership among families of different economic backgrounds, although the high cost of Internet connectivity on wireless devices may be prohibitive for families in low-to-middle-income households. Ownership of Internet-equipped cell phones ranges from 8% for families earning less than \$25,000 a year to 32% of families earning more than \$75,000 a year.



Video games

Video game systems, particularly handheld devices, defy typical patterns based on household income. Rates of ownership appear to be largely equal in all families earning more than \$25,000 (see Chart 11).

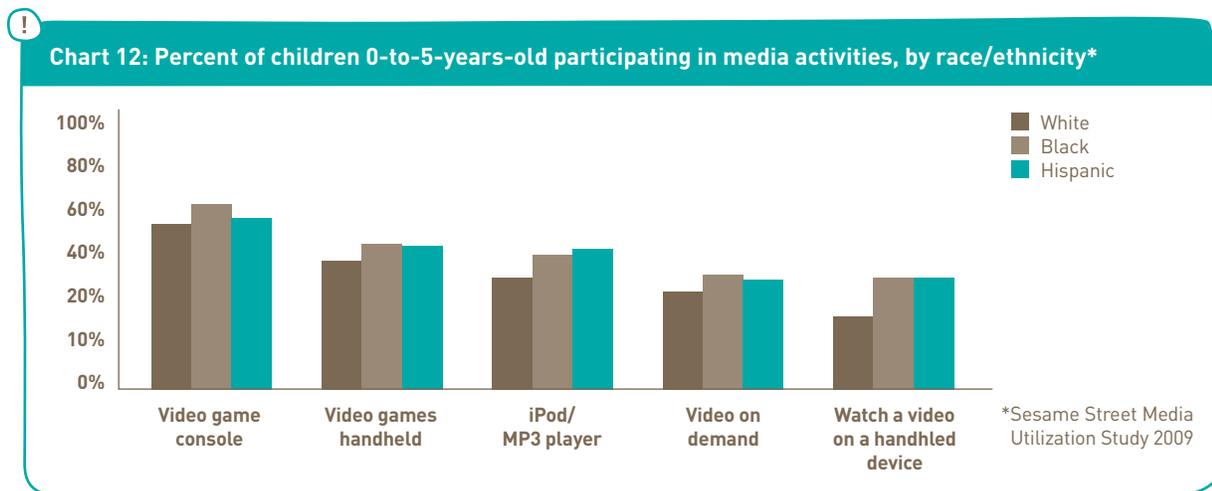
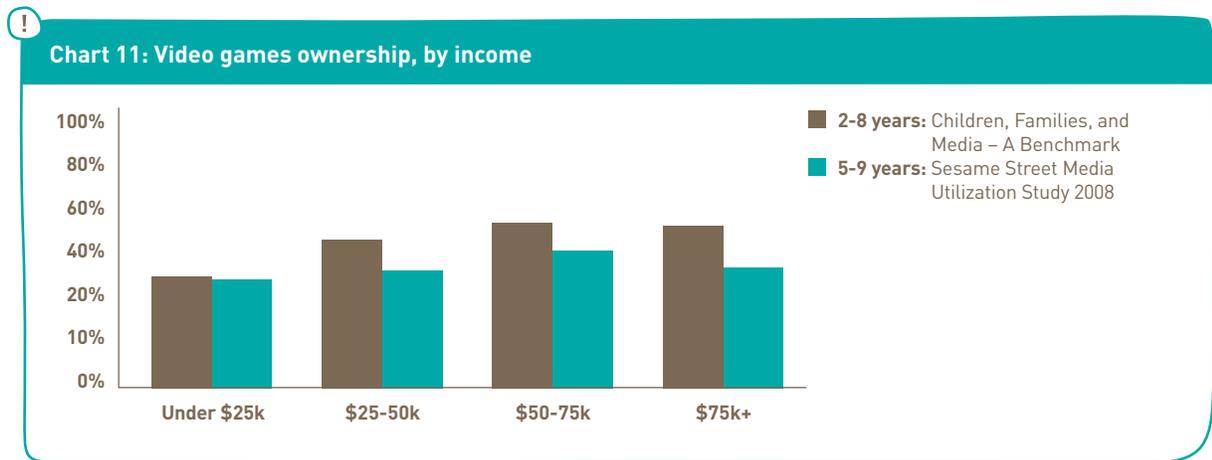
Estimates on the proportions of families owning video game systems vary by study. For example, Sesame Workshop found that among families earning more than \$25,000, about 45% of children ages 5 to 9 own video games. The U.S. Department of Education shows numbers closer to 55%.²

In general, new technologies tend to be relatively expensive, so people with higher incomes are usually first adopters. As prices drop, ownership becomes more commonplace. Yet we found that video-game systems, especially newer,

portable ones, defy these conventional patterns of ownership. Roughly the same percentages of children have handheld video games whether their family income is less than \$25,000 or more than \$75,000.^{2,5,15,16}

Usage

Once lower-income and ethnic-minority families own a given technology, their children are just as likely to use it, if not more so. Across every digital platform, we have found that black and Hispanic children use far more media than white children (see Chart 12). And children from families with lower incomes use more digital media overall, except for the Internet.



On a typical weekday, 71% of children ages 5 to 9 in the wealthiest households (earning more than \$100,000) use the Internet, compared with 51% of children in households earning less than \$50,000.⁵ Although children from the wealthiest families access the Internet at greater rates, they spend less time online than their lower-income peers.

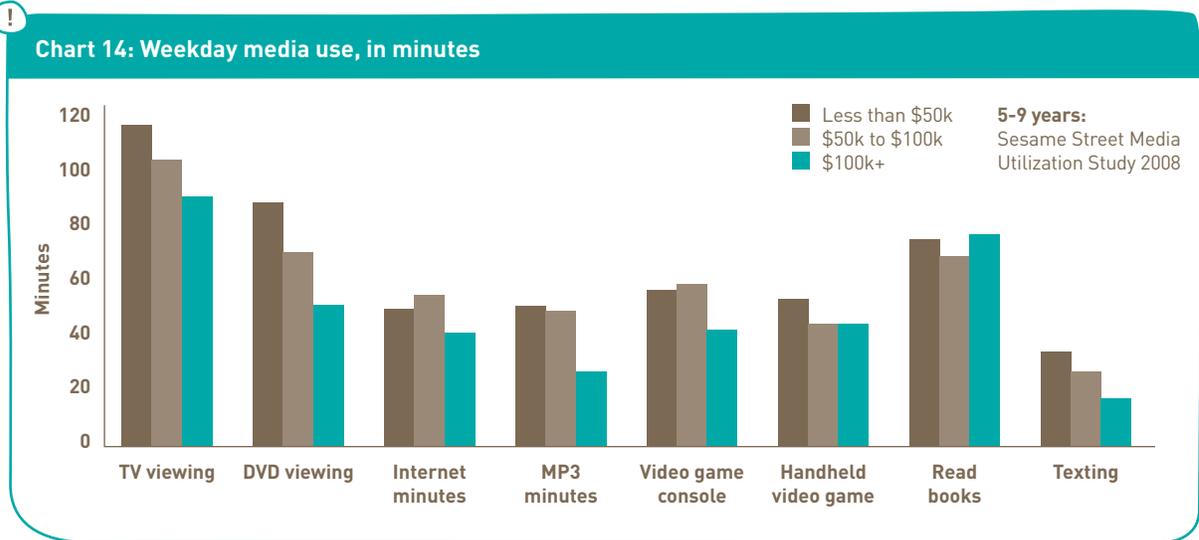
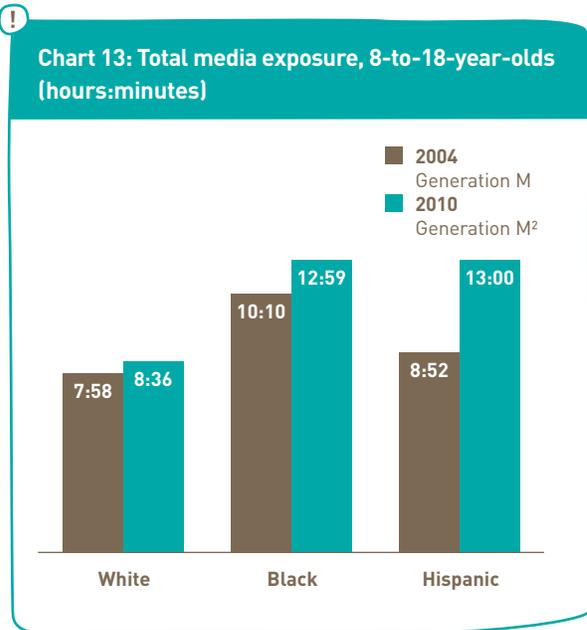
Black children ages 8 to 14 are exposed to about 13.5 hours of recreational media each day; Hispanic children get more than 12.5, and white children about 8.5.³ This is a difference of five hours of media exposure per day between black and white children. These differences aren't new, either: Over the past five years, there has been a steady increase in media exposure for all children, but an especially large one — more than an hour — for black and Hispanic youth³ (see Chart 13).

Every medium, with the exception of print, follows this pattern: Children from families with higher incomes (above \$100,000) spend less time with media (see Chart 14). The differences also hold true on weekends, when children's overall media consumption is higher. For example, on weekends, children from families earning less than \$50,000 spend 75 minutes listening to music on MP3 players, compared with 48 minutes for children from families earning more than \$100,000.⁵

The relationship between income and digital media is complex. It's not just about being able to afford

a given technology. Ownership and media usage is also about perceived value. Families may not want new technologies, even if they can afford them.

Several studies show a plateau effect in ownership of new media, or even a slight drop at the highest income levels. For example, there is little income difference in ownership of video games, but it tops out at 58% of households earning more than \$75,000 a year.² The same pattern holds true for electronic learning toys: Use of this technology also shows a drop beyond certain income levels.^{5,15,16}



Television

While virtually every household in America owns a television, regardless of income or ethnicity, black and Hispanic children watch more TV than their white counterparts.

Just how much of a time difference that constitutes, however, is hard to define. Sesame Workshop found that among children ages 5 to 9, for example, Hispanic and black children watch about 20 minutes more television and DVDs every day than do white children.⁵ The Kaiser Family Foundation, which studied children ages 8 to 14, found that Hispanic and black children watch about two hours more television every day than their white counterparts and consume more media than white children as they grow older. Black and Hispanic children are also accessing more TV content across all platforms, such as on the Internet, digital media players, and cell phones.

Internet

Black and Hispanic children have less home Internet access, but those that have access use the Internet more than white children. Among children ages 8 to 14, for example, Hispanic children spend almost two hours online each day, 40 minutes more than white children.³

Among younger children (ages 5 to 9), on a typical weekday, 60% of white and black children use the Internet, compared with 45% of Hispanic children.⁵ But although black and white children access the Internet at roughly the same rate, black children spend more time online per session (41 minutes) than their white peers (27 minutes).⁵

While income is not the most important predictor of a child's Internet usage, the ways children use computers at home or in community settings such as libraries does differ by income, as well as ethnicity. Children from higher-income families are more likely to use computers for creative endeavors such as making videos, for example, than children from lower-income families, who are more likely to play video games on the computer.¹¹

Video games

Among the youngest children (ages 0 to 5), minority children play more video games on both console and handheld systems than white children do.

This disparity persists as children age. Black children ages 5 to 9 spend more than an hour each day playing handheld and console video games, compared with 54 minutes for Hispanic children, and 41 minutes for white children.⁵

By the time they reach the tween years, Hispanic children have caught up with their black peers, with both groups spending about 100 minutes on video games each day. White children ages 8 to 14 spend about an hour.³

Cell phones

Black and Hispanic children under age 10 are less likely to own cell phones than white children.^{5,15,16} Minority tweens and teens who do own phones, however, spend more time talking, texting, and using media on cell phones than white children.³

What conclusions can we draw from parsing out media ownership and usage by income and ethnic group? It's clear that income affects a family's ability to access digital media. What's not clear is why lower-income and black and Hispanic children watch more television and consume more digital media overall than their higher-income, white peers. Ronald Ferguson of Harvard University, among others, has suggested that low-income neighborhoods are not as safe and offer less suitable options for young children to play outdoors, and thus parents choose to keep their children entertained indoors. Another possible explanation is that lower-income families are less able to afford the types of extracurricular activities, such as music or dance lessons, that higher income families can afford. Annette Lareau offers a third possibility that may explain the variation in media consumption: Lower-income parents choose to let their children entertain themselves and trust they will turn out fine, while middle-class parents plan their children's after-school and weekend activities in an effort to cultivate certain skills necessary for the adult world of work.¹⁸



Club Penguin: Meet me in front of the nightclub

At 3:30 p.m. Stacey (age 7) and Jessica (age 10) appear on the Guzman's front stoop as they do nearly every weekday afternoon to hang out with Gabriela and Dora. Mrs. Guzman lets them inside. The girls usually play around the apartment complex, but today Mrs. Guzman asks them to stay in because it's cold outside, Dora's got a cough, and because Stacey is wearing just shorts and a T-shirt.

"So, you wanna do Club Penguin?" Gabriela asks Jessica.

"Okay. You can check out my new palace!"

Jessica and Stacey fly out the front door to their apartment across the courtyard, and Gabriela runs upstairs to her parents' bedroom. The computer is already on, so it takes Gabriela just a minute to make her way to the Club Penguin homepage, where she logs on as Caliope G — Caliope is Gabriela's middle name. Caliope G is a red penguin with long black hair — not unlike Gabriela's — and is smartly dressed for the winter weather in blue jeans, a lavender jacket, scarf, and mittens.

Gabriela immediately opens and scrolls down her Buddy List to see if Jessica C5 is online. Nope, not yet. She decides to play Thin Ice while she waits. Gabriela uses the computer's arrow keys to guide the puffle¹ through a Pac-Man-like maze, earning coins for each tile the puffle melts in its wake. Fifteen minutes, 13 mazes, and 250 coins later, Gabriela remembers that she's supposed to look out for Jessica. She pops open her Buddy List and sees that Jessica C5 is still offline. Gabriela calls out to Stacey, who is playing with Dora in her bedroom across the hall.

"Where's Jessica? Didn't she say she was going online?"

Stacey and Dora drop what they are doing and rush from the next room to Gabriela's side. Stacey volunteers to check on her sister. As she skips off, Gabriela calls out, "Tell Jessica to meet me on Christmas² in front of the nightclub!"

Gabriela changes Caliope G's outfit to something more appropriate for nightclubbing. From the Club Penguin wardrobe, she picks a studded belt, neon green arm warmers, a pair of black plaid sneakers, and blond wig to top it off. This is Caliope G's favorite ensemble for a night on the town. While Gabriela waits for Jessica C5 to light up on her Buddy List, she decides to check out Jessica's new digs by clicking Jessica C5's home button. It's huge compared with Caliope G's igloo, and Gabriela is a bit envious that Jessica has already earned enough coins for the palace upgrade. Gabriela is, after all, the one who told Jessica about Club Penguin in the first place.

After snooping around Jessica C5's palace, Gabriela checks her Buddy List once again. It's 4:00 p.m. and still no sign of her friend. Gabriela picks up the phone to dial Jessica's house when Stacey and Dora come scampering upstairs. Breathless, Stacey explains that her sister is still just waiting to get past the Christmas screen. Gabriela sighs. Jessica's family has a dial-up Internet connection, so some days it takes her a really long time to get on to Club Penguin. Today is one of those days.

"Go tell Jessica that I'ma play Ice Fishing now so she can just call me when she gets online." Stacey turns around and runs back to her apartment to deliver Gabriela's message to her sister.

Jessica's penguin and Gabriela's cousin Stephen's penguin are the only two of the dozens on Gabriela's Buddy List that stand for people she knows in real life. Gabriela says that she learns most about Club Penguin from Stephen. He's been playing for a while now and has become quite skilled at the games, thanks to his friends at school and a Club Penguin guide he bought his sister Cierra for her birthday, and plenty of practice. Stephen is the one who showed Gabriela how to play Thin Ice and Pizzatron 3000.

Jessica, Stephen, and Cierra are the only other people Gabriela coordinates with to be on Club Penguin at the same time. Even though she rarely plays against them on one of Club Penguin's

multiplayer games, she enjoys seeing their avatars roaming around in the same space as Caliope G. Of the hundred or so Club Penguin servers she can choose to log on to, “I like to go on Snow Angel,” says Gabriela, “because like my nephew goes on Snow Angel. But they’re all the same. But I’m used to going on Snow Angel.” This social aspect of the game — connecting with people she knows in real life either about Club Penguin or inside Club Penguin — is what Gabriela consistently highlights as her favorite part about the virtual world:

It’s fun. I like to play it. And like when I’m at school, I ask my friends, “Oh, do you go to Club Penguin?” And they’re like, “No, how do you get on it?” And I show them, I tell them about it, and um... Just one classmate of mine goes to Club Penguin, and her name is Elena Guerrero. And she’s the only one that goes to Club Penguin.

Still, as Gabriela says, there aren’t many kids at school who are on Club Penguin yet. Technology-wise, Gabriela is well ahead of most kids at her public elementary school. According to her school’s librarian, only about half of the families in this primarily Hispanic community have an Internet connection at home, or an Internet connection that can support high-bandwidth activities like Club Penguin.

Gabriela is excited to go ice fishing. She spoke with Stephen yesterday, who shared a tip on how to catch the big red mullet and score 50 bonus coins. All this time she has been trying to hook it with a worm and has thus far failed. Stephen told her that when the mullet appears near the end of the game to keep the last hooked fish on her line, and the mullet will chomp the bait. If Stephen is right, and she does manage to catch the big red mullet today, Gabriela plans to share this strategy with Jessica and maybe even Ellen Guerrero.

At 4:15 p.m., before the big fish has had a chance to swim into the scene, Jessica appears in Gabriela’s parents’ room. Dora and Stacey are behind her.

“What happened?” Gabriela asks without taking her eyes off of the screen.

“It’s so slow today! I couldn’t get online.”

“That’s okay. Wanna see me try to catch the mullet? I’m about to do it right now!”

Jessica, Stacey, and Dora all crowd around Gabriela’s chair and watch as Gabriela reels in the big red fish for the first time.

¹ A puffle is a domestic animal that penguins can purchase and keep as pets. Puffles also star in various Club Penguin games.

² Christmas is one of several Club Penguin servers that players may choose to play on when they log on.

FINDING 4: media habits change around age 8

For a variety of reasons, children begin to extend their media habits deeper into the digital realm between the ages of 7 and 9. This shift is evident in video-game use, for example. Just under half of all 6-year-olds play video games, either on a console or handheld device, on an average day. By age 8, more than 70% do⁵ (see Chart 15).

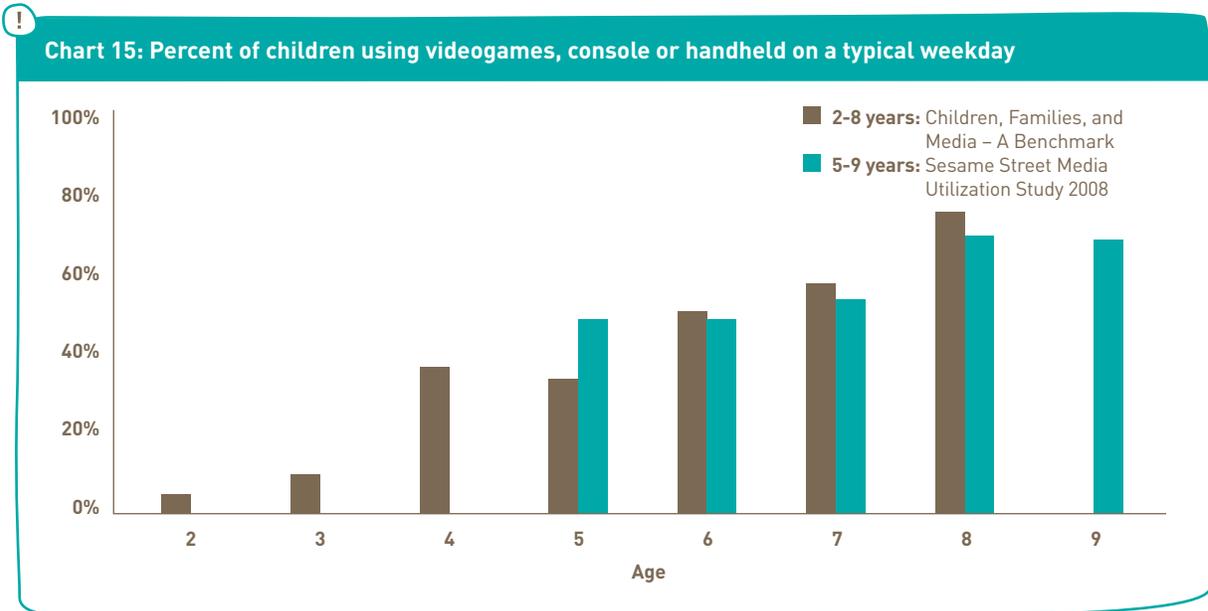
Similar increases occur in Internet use. In a typical day, about 30% of 3-to-5-year-old children use the Internet, compared with about 50% of 6-to-9-year-olds.^{15,16} And within this 6-to-9-year-old group, the numbers confirm the shift in media habits. Fewer than half of 6-year-olds (47%) use the Internet on a typical day, compared with more than two-thirds (67%) of 8-year-olds.⁵

As they reach age 8, children are not only regularly using a wider selection of media, they are also more likely to personally own media devices. For example, 30% of 6-year-olds have a television set in their room. By age 8, that number has almost doubled, to 59%.²

These observations make sense considering the developmental changes occurring in most children around ages 7 and 8. This is a period when children are honing their fine-motor skills and can more easily manipulate small keys, gadgets, and controllers.

Once children get to 7 and 8 years, they are able to focus on activities for longer stretches of time, and their memory, logical reasoning, and problem-solving skills sharpen. Children at this age can also apply their literacy skills to operate or communicate with digital media (e.g., via Internet searching or texting).

Children at this age are also starting to form stronger, more complex relationships outside the family, especially with same-sex peers, and showing more concern about group acceptance.¹⁹ Peer acceptance may be an important reason why music use jumps, as children look to share popular culture with their friends. And video games are a social context for many children, encouraging



cooperation and competition. They also begin to need — and want — some alone time for activities that do not require parental support.

Also important are the environmental factors at play that could affect media habits. Children are often in school environments, where they can talk about and share a culture of media use. Media and device producers are important players in the relationship between children and media. Recognizing that parents often use devices like smartphones to entertain children, media producers are beginning to design for younger and younger users.²¹



Kids closer up: Tech use among siblings, ages 7 and 8

Cierra, age 7, enjoys playing Club Penguin with her brother, typically sitting side-by-side in front of the laptop. But in general, she is less enthusiastic about the virtual world and interactive media than “8-year-old Stephen is. Given the choice, she prefers to watch TV or play with her Barbie and Polly Pocket dolls than get online or play with the Wii they got for Christmas. Both siblings used to take word-processing lessons at their after-school program, but according to Cierra, “Now I don’t like it; so only he does it.”

When Cierra does go online, she often visits the Nickelodeon, Cartoon Network, and Disney Channel web sites. Here she recently discovered online coloring books and, according to her father, went “print crazy.” Cierra figured out how to print the outlines on the family printer so she could color

them in with crayons and pens. Her parents had to “change the [printer’s] defaults because we ran out of ink,” but Cierra then figured out how to change those, too, so she could continue coloring this way. They attribute their daughter’s fascination with this activity to the fact that the outlines are coming from the Internet. More likely, though, Cierra is still at the developmental stage at which physical objects are more engaging than virtual ones. The productive aspect of the online coloring book may also explain their appeal — Cierra likes creating things. While she enjoys occasionally playing the Wii with Stephen, she prefers designing a Wii Mii characters to playing the games themselves. In fact, “I get scared I might lose on boxing, so I mostly just play by myself.” The competitive aspect of video games is apparently a turnoff for Cierra.

FINDING 5: mobile device use is on the rise

Over the past several years, adults and teens have become avid consumers of mobile media. Texting, downloading music, or playing games on-the-go are new norms in our media consumption. Young children love to imitate their parents and older siblings, so it seems natural that they, too, want to use mobile devices. Increasing mobility means that children today can now consume media anytime and anyplace, which may account for increases in video-game play, listening to music, and watching videos over the last decade.³

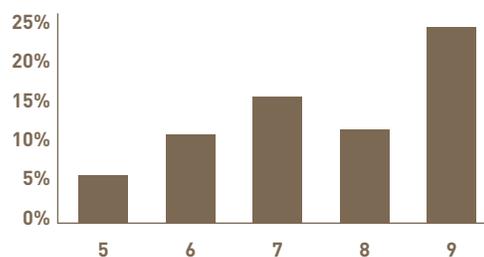
There is only limited data on mobile device use among children 0 to 11. However, it is clear that portable-device ownership and usage is exploding among families with young children. Many recent reports have hypothesized that the next generation of digital media will emphasize portability. The marketplace has taken note of this increasing demand: of the top five electronic devices personally owned by young children, four of them are mobile: handheld video games, portable digital-music players, digital cameras, and cell phones (the fifth in the group is console video games).⁶

Cell phones

The proportion of children with their own cell phones has nearly doubled since 2005, according to Mediamark Research and Intelligence.²⁰



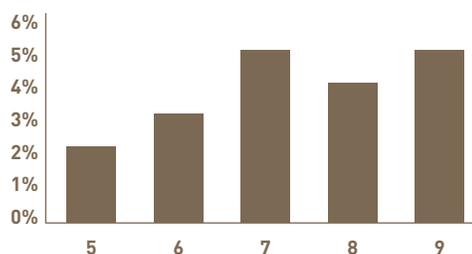
Chart 16: Percent of children using cell phones on a typical weekday



5-9 years: Sesame Street Media Utilization Study 2008



Chart 17: Percent of children using smartphones on a typical weekday



5-9 years: Sesame Street Media Utilization Study 2008

Of children ages 6 to 11, 20% own cell phones, compared with less than 12% five years ago.

Ownership rates grow as children age. Among 4-to-5-year-olds, just 2% own cell phones.⁶ For children ages 8 to 10, personal-ownership rates rise to 31%, a jump from 21% five years ago.³

But how often are they using those phones? Less than one-quarter of 9-year-olds, for example, use a cell phone on an average weekday⁵ (see Chart 16). When they are using their cell phones, they average 10 minutes talking and 20 minutes consuming media such as games, music, and video.³

This might imply that most cell phones used by children are smartphones, which generally allow enhanced functionality, including installation of apps and games, easy access to the Internet,

streaming music and video, e-mail, and instant messaging. But most cell phones are not connected to the Internet. More than 70% of families with young children own cell phones, but only 23% own smartphones.^{2,5} Additionally, household ownership does not imply use by young children; only 5% of 9-year-olds reportedly use smartphones on a typical weekday⁵ (see Chart 17).

Although smartphones currently make up a small percentage of the media consumed by children, they have caught the attention of educators who see potential in these pocket-sized devices, as well as media developers looking for the next wave of consumers. For example, children's content makes up a substantial proportion (47%) of the 100 top-selling educational apps on iTunes, an interesting trend considering that children are not a primary market for either the iPhone or iPod touch devices.²¹

As the cost of smartphones and data plans decrease, we anticipate that more families will use them in coming years.

Video games

More than half of families with children ages 5 to 9 own either a console or handheld video game.⁵ (Computer games are not included in this discussion.) Among older children in this review (ages 8 to 10), two-thirds own such devices, a number virtually unchanged from five years ago.³ However, closer examination reveals that children are increasingly turning to portable video games. In 2010, 65% of children ages 4 to 14 had console video-game systems, down from 70% in 2005. At the same time, ownership of handheld video games appears to be increasing.⁶

Portable digital-music players

In just a few years, use of portable digital-music players, such as iPods and other MP3 players, among young children has quintupled. Among children 8 to 10, more than 60% now have access to an iPod or MP3 player, compared with just 12% five years ago.³ Whether those children



Kids closer up: An 8-year-old and her portables

Hello Kitty Daily is Victoria's favorite Nintendo DS game at the moment, and before getting the pink gadget for Christmas a few months ago, she had to memorize friends' phone numbers, and count on Mom to remind her when homework assignments were due. Now she can keep track of these things on her own DS-based PDA, which has many of the same functions as her mom's Palm Centro smartphone. Victoria loves her device, and uses it daily to keep track of her allowance and plan out her day, tasks she never managed until the tool gave her an ability to do so.

Hello Kitty says the report isn't due until next Friday, not tomorrow. Relieved and pleased that she thought to record the deadline in *Hello Kitty Daily*, Victoria shuts her Nintendo DS and brings it downstairs with her to the kitchen table, where she plops down to start her Weekly Reader worksheet.

Victoria spots her iPod on the kitchen counter and decides to plug in to the new Jonas Brothers songs her mom just downloaded on iTunes for her. Victoria says that listening to music while she works helps her focus because it blocks out all the other noises around her. But when she finishes her Weekly Reader and shifts to her word problems, she pulls out her earphones. She has a harder time concentrating on math than reading with music in the background.

own such players or whether the devices belong to the family for all members to use is unclear.

Sesame Workshop found that among children ages 8 to 9, less than 40% use iPods or other music players regularly. About a quarter of the very youngest children, those below age 5, are using a portable digital-music player.⁶

Children ages 8 to 10 spend a little over an hour with music each day, an increase of less than 15 minutes over the past decade.³ Their slightly younger siblings, children ages 5 to 9, spend about 43 minutes using an MP3 player each day.⁵

These figures demonstrate the growth over the past decade of mobile media devices among families with young children. Not only are children and their parents flocking to portable media, they are also expanding the range of activities they do on such devices, such as using cell phones for gaming and music and iPods for viewing videos. As these gadgets continue to get smaller, their potential for learning seems to get bigger. (Further discussion of this topic is in the Implications section.)



recommendations

1. Guiding parents on providing a balanced media diet

The American Academy of Pediatrics recommends that children under age 2 avoid watching any television at all, and parents should limit the viewing time of older children to no more than 2 hours a day. These are the most widely cited guidelines about media consumption, and it's questionable whether most parents even know about these guidelines, simply ignore them for babysitting exigency, or actively disregard them because they think media exposure promotes intellectual development.

For parents intent on figuring out how to navigate the new terrain of digital media for their children, there are a few places to turn for advice on best practices — Common Sense Media, *Children's Technology Review*, and *Parents' Choice* offer specific guidance, to name a few — but more needs to be established in the way of rigorous, research-based guidelines. A new review of research and best practices for children's technology consumption by the National Association for the Education of Young Children is under way, and new draft guidelines will be issued in 2011.



There is little agreement among educators, researchers, parents, and media producers about appropriate amounts of media time for school-age children. So while conventional wisdom might dictate concern about the 8 hours a day an 8-year-old spends on media consumption as being too much, we don't yet have precise data based on research. Parental guidance and wisdom is called for as we continue to hope that further research in these areas will yield better answers.

In the absence of research evidence and professional advice, attention has shifted to common-sense monitoring of the content of the media. Some researchers use the metaphor of a diet, where what you eat is just as important, if not more so, as how much you eat. This translates to a well-balanced media diet heavy on quality and *intentional* learning time. In this analysis, certain media influences could be viewed as “sometimes foods” to be enjoyed once in a while and other media as “anytime foods.” Thus, for example, children may benefit most from educational programming (anytime food), with some entertainment sprinkled in as dessert (sometimes food).

In sum, if we can't yet agree on exact quantities of media consumption, we should consider measures to ensure the quality of the media being consumed. High-quality educational media, when supported by parents or teachers in other contexts, can significantly affect children's learning.

2. Digital media: Intergenerational opportunities missed?

Despite widespread media coverage of preschool-age digital kids, our data show that television remains the most popular medium for children well into the primary grades. Coviewing, where children watch TV with an adult, is common, especially among very young children. The majority of children ages 4 and younger watch television with an adult, even as parents have less time to coview.² Since the 1970s, Sesame Workshop and others have encouraged television coviewing, based on research studies demonstrating that children learn more from educational programs when viewed with an adult. The implication is

that actively engaging with an adult, who comments on and questions the content, increases a children's learning from a show.^{2,22,23,24}

Parents are an important influence in shaping the media experiences of their children. Parents help explain information children may not understand on their own, as well as elaborate on what is being presented. Research shows that parental guidance can improve young children's learning and advance their language development.

Digital media provide opportunities for a new type of coviewing, which scholars are now referring to as *joint media engagement*.^{*} Our data show that well over half of parents (57%) say they most like reading books with their children, while another third of parents report most enjoying video or TV watching with their kids. Opportunities such as playing console video games or using the Internet garner meager enthusiasm.⁵ This is likely because print and TV provide established opportunities for parents and children to learn together, whereas most widely used digital media was not necessarily designed to support shared interaction. What if video-game play and other mobile media such as smart phones were intentionally designed for intergenerational play? Recent research by the Cooney Center, Nokia Research Lab, and the USC Game Innovation Lab^{25,26}, among others, suggests that there may be a new opportunity to link generations in playing and learning together via games, mobile media, or Internet-based experiences. One popular game device, the Nintendo Wii, has been cited as a successful model for how video games can facilitate parent-child interaction and play.²⁵

We recommend that media producers consider designing content that actively involves parents and children. Programming that appeals to multiple generations has been an important factor in family learning via television over the past 40 years, and we believe that newer technologies hold intergenerational potential as well.

^{*}*Joint media engagement (JME)* is a term first coined by researchers at the LIFE Center (<http://life-slc.org>). JME refers to spontaneous and designed experiences of people using media together. Modes include viewing, playing, searching, reading, contributing, and creating, with either digital or traditional media.

3. Bridging home, school, and community with digital media

As the studies explored in this paper make clear, children spend a good chunk of their non-school hours using digital media. They are exposed to various types of media in an increasingly technology-reliant society and are becoming adept at navigating informal learning environments.

What role can technology play in bridging what children are doing at home and the structured learning environment of school? A New York City pilot program for middle-school children called School of One, for example, uses a combination of learning situations, including computers with online tutors, to tailor math lessons to individual students' learning styles. Children are given laptops for the year and use them to complete assignments both at home and in school. Sesame Workshop and other public media-oriented producers are also experimenting with ways to connect home and school environments with curriculum tools, games, and mobile media that can be accessed anytime, anywhere. The recent launch of the *Sesame Street* and *The Electric Company* Websites, which make hundreds of tailored curriculum-based video segments and games available to educators, parents, and children, demonstrate the potential of *media convergence* in scaffolded learning for young children.

The ubiquity of mobile technology may also allow for new breakthroughs in helping learners bridge different settings. Mobile devices help kids make connections between spheres of their everyday world, helping them link what they're doing in school with what they do in after-school programs and at home. But more research is needed into how new technologies can be integrated into education. We need to understand how regular use of technology affects children's cognitive and physical development. Researchers are looking at the unique affordances of mobile media to develop strategies for learning on those new platforms. Further, educators must be involved in any such discussions of the role of technology in school.

4. Avenues for future research

In poring over the most recent studies of young children and digital media, we found several holes in the research that are critical to fill:

Media multitasking

Currently, there is a need for quality measurements of media multitasking over time for young children. We don't have good data on how children multitask across various developmental periods, nor do we have any data on the long-term effects of multitasking on child development.

Perceived value of media

It would be invaluable for media producers, educators, and researchers to understand why families choose, or don't choose, to buy or use a certain medium. For example, high-income families don't use video games as much as low-income families. Could there be something about video games that is seen as a less valuable use of time than other media?

The role of families

Young children today are surrounded by more types of media for longer periods of their waking hours than ever before. But babies, toddlers, and preschoolers aren't surrounding themselves with these media. Parents and other family members are providing them with this access through both intentional and incidental acts of childrearing: purchases, scheduling, household-space arrangements, supervision, rule setting, and so on. Research should examine the larger contexts in which media consumption takes place, and how parents may be unwittingly contributing to these patterns. Raising parents' awareness of their own roles may be the simplest way to bring a healthier balance to children's media practices.

Co-participation

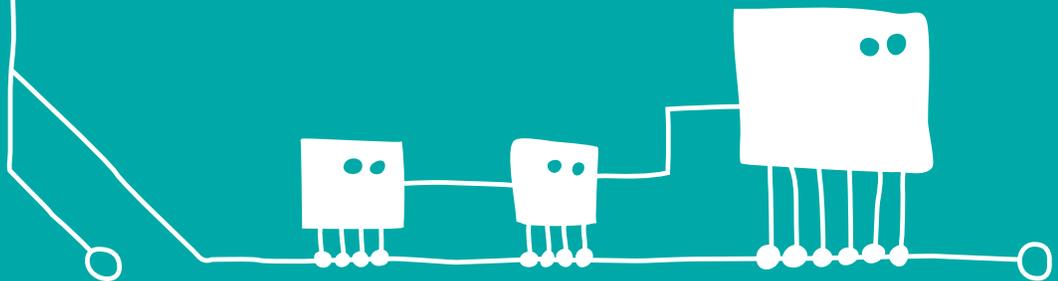
On a related note, how can producers create new media experiences that actively engage children with their parents and siblings? Is it possible to create social experiences that can be informal contexts for learning?

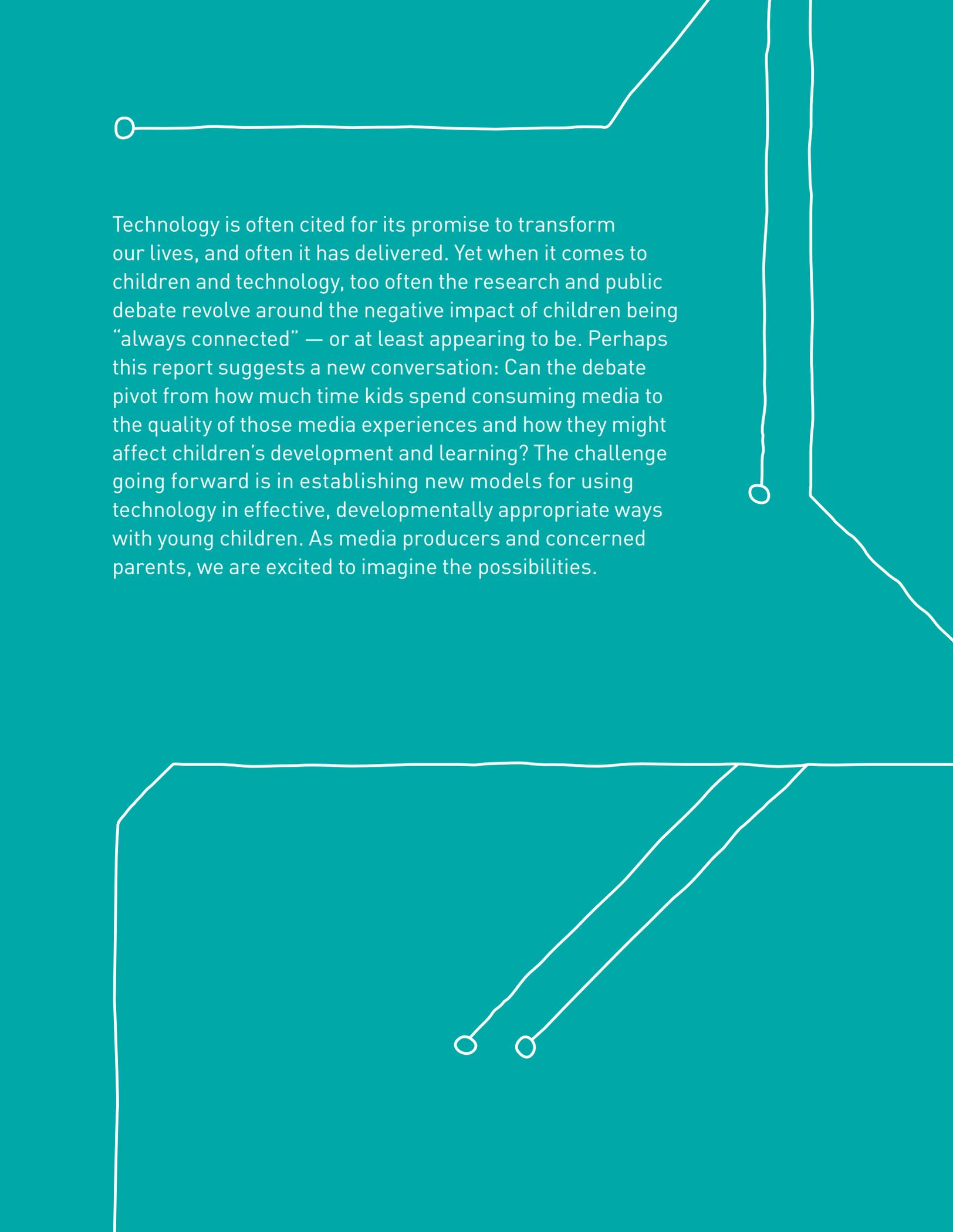
Cultural differences

A recent study conducted by the Pew Research Center found that for many low-income and non-white adults, cell phones are the only means of accessing the Internet and engaging in online searches and with online communities. Craig Watkins of the University of Texas has developed a line of rich research,²⁷ which shows that black and Latino youth use mobile phones in different ways than their white peers to access information and entertainment sites on the Internet. In general, we need far more information than we currently have on cultural variation in the use of digital devices and access to quality educational content.

conclusion

The data in this report clearly show that children of all ages and backgrounds spend a great deal of time using digital media. Most parents today believe in the positive value of technology and use it themselves, so children may be more likely to be exposed at younger ages. It's also likely that many parents choose to use media as a way to occupy their children, even those who are very young, while they engage in household tasks. Media use by preschool and school-age children is not necessarily a bad thing, but it doesn't have to be mindless, either. It should be balanced by — or perhaps integrated with — other rich learning experiences, such as play and reading.





Technology is often cited for its promise to transform our lives, and often it has delivered. Yet when it comes to children and technology, too often the research and public debate revolve around the negative impact of children being “always connected” — or at least appearing to be. Perhaps this report suggests a new conversation: Can the debate pivot from how much time kids spend consuming media to the quality of those media experiences and how they might affect children’s development and learning? The challenge going forward is in establishing new models for using technology in effective, developmentally appropriate ways with young children. As media producers and concerned parents, we are excited to imagine the possibilities.

appendix: methodology

In this report, we have attempted to construct meaningful graphical representations of children’s media use, with age overlaps noted throughout. Unless otherwise noted, placement of the studies within charts was determined by the top age of child participants within a study. If more than one study had the same top age, the study with a larger age range was placed after the study with the narrower age range. While imperfect, arranging studies in this manner provides a sense of change across age groups.

| This paper synthesized results from the following studies: | | | | |
|---|---------------------|---------------------------|----------------|-----------------|
| | Year data collected | Age of children in sample | Methodology | Sample size (N) |
| Sesame Street Media Utilization Study 2006 (Study 1) | 2006 | 6 months – 5 years | Phone survey | 1,764 |
| Sesame Street Media Utilization Study 2006 (Study 2) | 2006 | 6 years – 9 years | Phone survey | 1,249 |
| Children, Families, and Media — A Benchmark | 2006 | 2 years – 8 years | Phone survey | 1,601 |
| Sesame Street Media Utilization Study 2008 | 2008 | 5 years – 9 years | Phone survey | 1,508 |
| Generation M² — Media in the Lives of 8-to-18-Year-Olds | 2008 - 2009 | 8 years – 18 years | Written survey | 2,002 |
| Nielsen: Youth and Media | 2009 | 2 years – 11 years | People Meter | 20,700 |
| Sesame Street Media Utilization Study | 2009 | 0 – 5 years | Online Survey | 11,217 |

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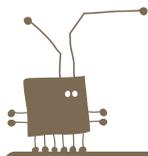
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