

From Show, To Room, To World: A Cross-Context Investigation of How Children Learn from Media Programming

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Abstract: We conducted a year-long, naturalistic study that investigated what actually happens when children watch television. We video-recorded children's actions and interactions while watching television and simultaneously recorded the video stream from the television screen; these data were supported with parent diaries and interviews with parents and children. This paper describes two case studies, in which we consider children's interactions with others while watching television and the ways in which their television viewing influences other parts of their everyday lives. We find that both children actively applied knowledge they obtained from visual media to other contexts. In addition, they both shared their media viewing experiences with others, either by directly teaching others about what they had viewed or by creating new content based on what they had viewed.

Television viewing remains an activity that consumes a great deal of young people's time (Kaiser Family Foundation, 2010). Television programming has been criticized for many reasons, including its potential to influence children's behavior and absorb time that might otherwise have been used more productively (Buckingham, 1993; Fisch, 2004; Kirkorian, Wartella, & Anderson, 2008; Maccoby, 1952). Zimmerman, Christakis, and Meltzoff (2007) found that viewing television was associated with slower vocabulary development in children under three years of age. Another recent study (Christakis et al., 2009) found that audible television in a child's environment is associated with lower levels of adult and child interaction. Additionally, Christakis, Zimmerman, Di Giuseppe, and McCarty (2004) suggest that young children's television viewing may have some relationship to attention problems. In response to studies like these, France banned educational television for children under three (France bans broadcast of TV shows for babies, 2008) despite the existence of other research that found benefits of children's viewing (Fisch, 2004; Fisch & Truglio, 2001; Kirkorian et al., 2008; Pecora, Murray, & Wartella, 2006).

This project is informed by studies of how people learn in informal environments and situates itself among similar research studies investigating social interaction and learning (Stevens & Hall, 1998; Stevens, 2000; Stevens, Satwicz, & McCarthy, 2007). Our study directly examines what happens when children watch television in order to understand what types of learning may occur.

In this paper we describe how two children in our study watch and respond to television and YouTube videos, and how their viewing affects other aspects of their everyday lives. We employ an "in show/in room/in world" framework (adapted from Stevens et al., 2007) for the description of children's media viewing and learning. "In show" refers to the television, structure, and conventions of a specific television show. For example, some educational children's shows use conventions, such as dialogue in which TV characters directly address viewers with questions or requests (e.g., to "help" them solve a problem or complete a task), in order to achieve their learning goals. These characters elicit viewer actions by "talking" directly to viewers and leaving time for viewers to respond. Typical prompts include asking viewers to repeat words, actions, and phrases, or to sing along. However, unlike the "in game" designation from Stevens et al. (2007), which was a study of digital games, the viewers of television shows cannot change the action on screen. All interaction occurs entirely in the room. "In room" refers to the social and material characteristics of the environment in which the viewing takes place, particularly the interactions with others that occur there. Finally, "in world" refers to the ways in which the show and viewer responses elicited by the show or by others viewing in the room manifest in other aspects of a child's everyday life.

Methods

We collected data for 6 months, followed by 6 months of analysis and follow-up interviews. The study included 16 children, 8 boys and 8 girls, aged between 9 months and 6 years. Children were observed and videotaped in their homes for 1-2 hours approximately once each week as they watched different types of media (such as television programming, DVDs, movies, and YouTube videos), and interacted with parents, friends, siblings, toys, and pets. During each session, a videotape record was created and ethnographic field notes were written.

A goal in this study was to record as accurately and completely as possible children's actual experience of watching television in their homes. In order to do this, we scheduled sessions at times when the children were most likely to be watching television in order to avoid interfering with their schedules and routines. We simultaneously recorded the in-show video stream from the television and the in-room activity of children and

others in the viewing space (Stevens et al., 2007). We employed a device that synchronized the two streams at the time of recording in the field. In the early stages of the study, we set up the dual-recording equipment and then stepped out of the room while the children were watching. As the study progressed, we were able to further minimize our intrusion by leaving the equipment with the families for a week or more, during which periods the parents turned on the equipment as often as possible when the children watched television. In order to record children when they watched video on a computer, we also used a software program (Screenium) that simultaneously recorded the computer screen and the video stream from the computer's internal camera.



Figure 1: Split-screen image illustrating Harrison “in room” showing his brother Max how to follow the “blast-off” sequence from Leo, and the “in show” *Little Einsteins* program on the television.

We also interviewed or provided written questionnaires to the parents of the children about their child's viewing habits, television learning experiences, and their own feelings about television, movies, and online media usage in their homes. We asked parents to informally interview their children (these interviews were recorded) and we asked specific follow-up questions in a separate questionnaire distributed to parents via email. Finally, parents used journals to record instances of learning and discovery in their children's everyday lives when researchers were not present. These journals were critical with regard to determining whether and how children's viewing habits and interactions when watching visual media affected their everyday activities “in world.”

Data Analysis

All of the video-recorded data were logged and tagged to locate examples of children's responses to television and interactions in the room. Next, we analyzed the actions taking place within each individual clip in greater detail (Stevens et al., 2007), looking specifically at highlighted moments of activity using interaction and conversational analysis techniques (Erickson, 2004; Schegloff, 1998). We devised a transcription method (illustrated in the next section) to distinguish between activities in the show and in the room, and to display activities simultaneously. We used these techniques to illustrate how each viewer action began, what happened during the action, and how long each action lasted. Case studies were created that tied together our video analyses with interviews and diary reports in order to tell the story of an individual child's television viewing experience and relevant learning.

Case Studies

This section is organized around the case studies of Harrison (age 3 at the beginning of the study and age 4 at the end) and Owen (age 5 at the beginning of the study and age 6 at the end), starting with the television shows they viewed and then examining their in-room interactions and in-world connections to their media viewing behavior. Both children live in the Pacific Northwest, each with a mother and father. Harrison has 1 younger brother and 1 older sister, and attends pre-school every day for a half day. Owen has 1 younger sister and attends kindergarten each day for a full day.

Harrison

Show Viewing Habits

Harrison mainly watched television shows on DVD. In a pre-study questionnaire (April 2008) his mother stated that he usually watched about “four to six hours of television a week,” including “*Dora and Diego*; *Super Why?* ... movies about animals, non-fiction; some Disney movies; basically anything he can get his hands on; no *Sesame Street* ([he] doesn't like [it]), [and] age-appropriate videos.” Many of the shows he watched were animated shows designed to elicit viewer actions, like *Dora the Explorer*, *Little Einsteins*, and *Go Diego Go*.

In addition to the shows mentioned above that are designed to elicit viewer actions, Harrison also watched non-fiction nature programs such as *Eyewitness Amphibians* and *Henry's Amazing Animals*. These shows employ a narrator and use video footage along with animation to explore animals, their habitats, and their


behaviors. In a post-study interview (February 2009), Harrison said he liked “*nature shows the best*” and would watch them over anything else because they “*were real.*”

In Room

Harrison was a very social television viewer in terms of the level of interaction he maintained with other people while watching television shows. He watched shows in his living room, typically with one or more people, who might include his older sister Leanne (aged 5 to 6 during the study), his mother, and his younger brother Max (aged 9 to 21 months during the study). His mother closely monitored what he viewed on television because he did not like to watch shows he had not already seen and because he would get scared easily: “[*he*] tends to distrust any show if it has new characters” (May 2009). Harrison’s mother also stated that Harrison usually watched shows that allowed him to learn new facts he could share with her and his other family members. “[*Harrison*] enjoys yelling out facts he learns [*from shows that*] engage him” (May 2009). When watching television with his sister, his mother said that “*they usually sit by each other and talk about the show. If they get scared, they work together to turn the volume down, hide under a blanket, etc. If they are learning something, they shout out to me. Once in a while they correct each other or bicker a little about a show*” (May 2009).



While viewing shows, Harrison tended to speak to and about the show, regardless of whether the show elicited viewer responses. He responded to shows that prompted him to repeat words, answer questions, repeat actions, and sing songs. Even while viewing shows that lacked prompts for response, Harrison responded to them. Tables 1 and 2 illustrate a sequence of two transcripts, several seconds apart, that exemplify Harrison’s response to an episode of a nature show. The top part of the transcript records what is happening sequentially in the show and the bottom of the transcript describes what is happening in the room. The picture in the middle is a frame from the split-screen image from which the segment was taken. Actions on screen are represented in parentheses, while actions in the room are represented in italics.

Table 1: Harrison imitating the movements of the frog’s mouth as its froglets jump out (October 30, 2008).

Participant	11th sec.	12	13	14	15	16	17	18	19	20th sec.
18.	Narrator: are ready to jump out									
19.	Screen: (tiny frog jumps out of bigger frog's mouth)									
20.	(frog baby lands on the ground)									
21.	(slow motion shot of baby frog jumping out of larger frogs mouth)									
	<div></div>									
22.	<i>In Show</i>									
23.	<i>In Room</i>									
24.	<i>In Room</i>									
25.	Harrison: (laying on rocking chair leaning on arm rest gaze towards show) (opens mouth slightly like frog)									

Harrison responds to the nature show both verbally and physically by simulating the movements, actions, and sounds of a frog on the screen. In Table 1, Harrison, while seated on a chair, imitates the mouth movements of a male frog shown on television (which stores its young in its mouth until they jump out fully formed). In Table 2, several moments later, Harrison explains the frog gestation information he just learned to his mother while continuing to watch the show.


Table 2: Harrison explaining the frog's unique gestational practice to his mother (October, 30, 2008).

Participant	31th sec.	32	33	34	35	36	37	38	39	40th sec.
37.	Narrator: After twelve weeks the frog leaves the pond			one small hop for the frog one giant leap for evolution						
38.	Screen: (frog leaves pond and hops onto land)			(frog jumps)						
39.										
	<div></div>									
40.										
41.	InShow									
42.	In Room									
43.	Harrison: they they grow in its mouth he opens it and then he closes and the frog when its ready jumps out									
44.	(sits up and looks into camera) (looks back at show imitates the frog by opening and shutting his mouth)									
45.	(moves arm to show motion of froglets coming out of mouth)									
46.	(sits back in chair)									
47.	Mom:					wow				

These transcripts reflect Harrison's desire to perform actions along with the show and invite his mother to share in his newfound knowledge about frog gestation. It follows that television shows provide children with information they can learn and teach to others, and that young children who view a television show sometimes imitate and simulate an experience presented in the show, such as how a frog stores its babies in its mouth until they are mature enough to survive on their own. In Harrison's case, he uses his body and voice as he actively responds to the content of the show.

Furthermore, Harrison and his sister are quite familiar with the conventions of certain shows (such as the "blast-off" sequence from shows like *Little Einsteins*), which is the result of "years of viewing" according to their mother (March, 2009). Given this familiarity, they are able to coach their younger brother Max (17 months) to share in the experience of responding to prompts from a television show. They demonstrate this by performing the "blast-off" sequence from *Little Einsteins* for Max and he learns to participate appropriately (see Table 3 below). After a few viewings, Max was able to also perform the sequence on his own. Their mother stated that Harrison and Leanne "encourage him to do actions or sing along" to shows that elicit viewer responses and in other contexts. They also like to support Max "...and teach him new words. He's their little prodigy. I think they are excited at the prospect of being able to share their knowledge with him" (May, 2009).

Table 3: Harrison teaches Max the "blast-off" sequence from *Little Einsteins* (November 25, 2008).

Participant	1st sec.	2	3	4	5	6	7	8	9	10th sec.
1.	Lex:	Prepare for blast off we're going to need a lot of power to blastoff pat, pat, pat, pat June is patting,								
2.		(begins patting his lap)				(continues to pat lap)				
3.	Rocket:	(Rocket wiggles)								
4.	June:	(blinks, smiles and pats lap)								
										
5.										
6.	In Show									
7.	In Room									
8.	Leanne:	Max remember? pat, pat, pat, pat, pat, pat, pat							Max likes it	
9.		(eans forward and stretches out arm and sits up on knees and begins patting her lap)								
10.	Harrison:	pat, pat, pat			hee hee hee					
11.		(camera pans to Harrison who is patting and looking at Max)								
12.	Max:	pa								
13.		(camera pans to Max patting lap)								

In sum, Harrison was an active viewer who responded verbally and physically to television shows that were designed to elicit responses, and to shows that were not designed to elicit any responses. According to his mother's journal, as well as our interviews and observations with him and his family, as Harrison viewed specific television programs designed to elicit viewer responses he developed techniques for how to act while watching those programs. He passed along these techniques by encouraging his younger brother to also share in the experience of responding to a show that elicited viewer responses. He also liked to share facts and

information he learned from watching nature shows with his family, and applied these skills in his interactions with his family while watching television and in other contexts.

In World

During the study, Harrison also began applying information learned while watching one show to other experiences, including other shows that did not elicit viewer responses. For example, his family went on a trip to Arizona to visit his grandparents. While there, they all viewed *Disney's Planet Earth* as a family. Harrison's mother said she was stunned when Harrison began to name the locations of certain waterfalls and demonstrate knowledge about many of the caves, animals, and rock formations in the show. She stated that Harrison and Leanne said they "*learned*" about them from *Dora the Explorer*, *Go Diego Go*, and *Little Einsteins* (March 2009). "*This instance was unusual because it crossed the bridge between cartoons and non-fiction videos,*" She thought it was interesting that Harrison was discussing information he saw and learned about in an animated fictional show and was relating that information while watching a documentary about nature (May 2009).

In addition, Harrison's mother stated that television viewing helped him make learning connections away from the television set. In her viewing journal and interview, Harrison's mother stated that "*about twice a month [Harrison] will randomly say something that he 'learned' from TV.*" For example, "*if we go to the zoo, he will say facts about the animals*" (May 2009). Furthermore, in her parent journal she wrote that Harrison asked to watch shows such as *Reading Rainbow* because "*they helped him learn to read*" (December 2008). She also said in a post-study interview, "*we did get some Diego phonics readers...because he asked for them*" (May 2009). She believed that, when Harrison asked for a Diego book for Christmas, he thought it would help him learn to read. So Harrison connected the shows he viewed to other aspects of his life.

Owen

Show Viewing Habits

Owen, who turned 6 years old during the study, did not watch any shows that elicited viewer responses in our study observations, yet he frequently responded to the shows he watched. His mother indicated in her journal and interviews that Owen previously watched shows such as *SuperWhy* and *Little Einsteins* that elicited viewer responses when he was a bit younger (April 2008). In a pre-study questionnaire (April 2008) his mother stated that Owen usually watched about "*fifteen to sixteen*" hours of media each week, including television shows on PBS such as "*Curious George; Dragon Tales; whatever is on when he comes home,*" as well as videos on YouTube about "*Bionicles movies; commercials; vintage tv ads for toys; reviews of toys (home movies), for example Bionicles (showing how to put toys together),*" and movies such as "*...Pokemon, Digimon movies; The Black Stallion; [and the] Marx Brothers.*" We observed Owen mainly watching shows on the afternoon block of PBS Kids (*Curious George, Arthur, Dragon Tales, Word Girl, and Fetch with Ruff Ruffman*); we also observed him watching toy reviews on YouTube for Lego Bionicles as well as Hot Wheels cars and Transformers. Furthermore, we observed Owen viewing the live-action nature documentary series *Nature: The Beauty of Ugly* and the animated DVD series *Avatar the Airbender*.

In a post-study interview (May 2009), Owen stated that his favorite shows were "*Curious George because he can do things we can't,*" "*Fetch with Ruffman because it's funny,*" and "*...Nature...because...my favorite thing [is] the rat-tailed scorpion... they, they were – they're not...insects like scorpions, but they're not, they're not like spiders but they're a different species... and they look weird.*" The nature shows were generally more realistic than the other types of programming that Owen viewed in terms of their settings (real life vs. cartoon fantasies).

In Room

On an average day, Owen watched media for up to 4 hours in his basement. He was usually unaccompanied when he watched video, although he sometimes watched shows with a friend, with his mother and younger sister Mia (who was 1 year old) in the afternoon, or with his father before bedtime.

Owen often displayed sensitivity to what he saw on the screen. On several occasions Owen became upset when he viewed show characters in embarrassing or suspenseful situations. His responses to these kinds of situations included running away screaming, hiding his head under a pillow or in his hands, or shouting that he hated it or that it made him scared. With regard to these observations, Owen's mother stated that "*he seems to be frightened when something 'bad' is about to happen, whether that be someone getting angry or someone getting hurt. It does confuse me. The best answer I can give right now would be that he takes things very literally. He doesn't do a lot of 'pretending to be a character'. He gets frustrated and confused when his friends claim something that is just not true. Also, he has an explosive personality himself, and so maybe he is afraid that the characters in the show would react the same way he would, and that scares him. [Owen] feels things very deeply, so if there are scary things happening he will feel very scared!*" (May 2009).

Owen developed coping mechanisms that he employed as he watched television, even as he watched programs that were designed for children his age and that did not contain purposefully frightening content. Table 4 illustrates how Owen coped with a segment from *Curious George* that scared him.

Table 4: Owen copes with an unsettling situation in *Curious George* (January 12, 2009).

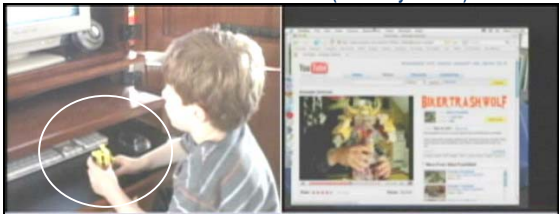
Participants	11th sec.	12	13	14	15	16	17	18	19	20th sec.
1. Narrator:				George didn't want to get in trouble						but he
2. George:		(looks up)		(stands with hands clutched)						
3. MWYH:		just tell the truth							no one will be upset	
4. Dog:				(looks displeased and frowns)						
										
5. InShow										
6. In Room										
7. Owen:				tiss huhh	I can just see it I can't do this			ok	I'll look again	
8.				(covers eyes with hands)	(kicks up leg and lunges towards couch)			(sighs; uncovers eyes)		
9.										
10.										

While watching *All New Hundley*, an episode of *Curious George*, in which Hundley the dog messes up the room and George is accused of making the mess, Owen was visibly upset by the fact that George was accused of something he did not do. Owen got through the unsettling situation by telling himself (out loud) that he could not look, but then decided to make himself start viewing again to see whether George would be exonerated (line 8). This behavior matches his mother's observation that Owen disliked scary and misleading situations.

According to the PBS Parents Web site, the educational objective for this episode was to “demonstrate inquiry about the world and solving problems,” a process that “includes a variety of skills,” and to “model positive attitudes toward learning like persistence and curiosity” (*All New Hundley*). Owen's reaction suggests that he missed the show's intended message because of the context in which that message was presented. Rather than reflecting an interest in persistence and curiosity, Owen relied on his technique for coping with the emotionally challenging content of the show, and engaged with the show again after George had been cleared of wrongdoing. Therefore, the way in which Owen shared George's experience was, most likely, not what the producers of the show intended.

Other forms of media also have a powerful impact on Owen, such as the toy review videos that he watched on YouTube. Owen viewed toy reviews because he found them interesting and wanted to learn about specific toys and their differences to aid his decision-making process for purchasing new toys. As Table 5 illustrates, Owen used the computer in his living room to watch a YouTube toy review about a Transformer.

Table 5: Owen manipulates Transformer toy when watching YouTube toy review (July 23, 2008).

Participants	1st sec.	2	3	4	5	6	7	8	9	10th sec.
1. Biker T:	And that's him Rotate the other part of this plan it have right here?									
2.				Turn them around to expose the orange cuz I like the orange better than the purple						
3.	(touches head of toy)			(adjusts plate on transformer leg) (adjusts plate on other leg)						
4.				(moves toy forward)						
										
5. InShow										
6. In Room										
7. Owen:	(holding transformer and watching video)			(turns his transformer to the right)				(moves transformer back to face video)		
8.										

As the video narrator discussed the toy he was reviewing, Owen (line 8) manipulated his own similar but smaller toy along with the narrator's description. The narrator did not ask viewers to have a similar toy handy during his review, yet Owen had his toy with him anyway. Owen said he always tried to have a toy or

object similar to the one being reviewed so he could more carefully inspect his own toys and see how they compared to those being reviewed (May 2009). He told us he considered these reviews useful because “*you know what to expect*” before buying something (May 2009), which could indicate that Owen was making a judgment about whether a given toy was different enough from his current toys to warrant a purchase.

The notable difference between Owen’s behavior in these two examples is the level of emotional arousal he exhibits while viewing *Curious George* and the toy review. The *Curious George* show elicited a highly-charged emotional, empathetic reaction that seemed quite visceral and difficult for Owen to control. He reacted in a way that, according to his mother, mirrored several other outbursts, many of which resulted in a temporary cessation of viewing. By contrast, his viewing of the YouTube toy review was steady and controlled from an emotional perspective, and Owen’s activity was limited to his manipulation of a similar toy. Instead of responding reactively, Owen ultimately responded proactively to the toy reviews he watched.

In World

As Owen viewed more toy reviews on YouTube, he engaged directly with this form of media by becoming a toy reviewer. He came to the conclusion that other toy reviewers did not always provide helpful reviews, and he began to examine more closely how people reviewed products and how good and bad toys were differentiated. After a while, according to his mother, Owen wanted to let people know what he learned, so he recorded his own review of Jazz, a Transformers toy that he enjoyed playing with, and posted his review on YouTube. He stated that he wanted to create a review that would give viewers a more honest assessment of the product they were researching compared to some of the other reviews (May 2009). After posting the video, a few people left complimentary and encouraging comments for Owen on his YouTube page that stated how helpful his review had been for them (see Figure 2).



Figure 2: Owen’s YouTube Toy Review

In this context, Owen developed proactive viewing skills that were not reflected in his highly reactive style of viewing television shows such as *Curious George*. Owen learned to watch toy reviews with a critical eye and he chose to apply that learning in practice by becoming a producer of reviews for others to watch. As stated earlier, television shows and YouTube videos provide children with information they can learn and, subsequently, teach to others. In Owen’s case, the YouTube toy reviews that he watched filled in gaps in his desired knowledge about a toy that he owned, gaps that neither his parents nor his teachers could fill. His viewing of these videos also triggered an interest in producing a video review of his own with distinctive features, a video that generated enough interest to accumulate over 1,000 views and a 3-star rating.

Discussion and Implications

While current research (Christakis et al., 2004, 2009; Zimmerman et al., 2007) indicates that young children are passive viewers who should not watch television because of potential language development and attention problems, the present study provides a more nuanced perspective. This study is important in part because little is known about how young children watch television in natural settings. Our observations demonstrate that young children can be active viewers who are indeed learning from their experiences with media and who act to draw others into their viewing experiences. Our study suggests that we might want to worry less about the mere fact of whether children watch television but rather pay more attention to what they do with it and how that might be cultivated in ways that support their development as people (cf. Penuel et al., 2009).

A good assessment of learning is the ability to actively apply knowledge from one context to another. Regardless of the media formats that Harrison and Owen viewed, both boys actively applied knowledge they obtained from those media to other contexts. The similarities between these boys center around their sharing of media viewing experiences with others, either by helping others understand television shows they viewed or creating new content they considered superior to what they had watched.

Harrison and Owen both developed specific, active viewing habits while watching and responding to television shows. Furthermore, both boys seemed to engage emotionally through embodied responses when viewing these shows. After repeated viewing of children’s television shows that elicited responses from young

viewers, Harrison developed the skills needed to interact with television shows and he even taught his younger brother the same skills. Moreover, when viewing a show Harrison imitated and acted out the movements and actions of the animals on screen. Harrison also shared the facts he learned from shows with other members of his family, a desire to teach that resembles Owen's proactive creation of YouTube toy reviews. Owen was also an active and sensitive viewer who developed ways of exerting control in relation to visual media. He taught himself coping techniques for viewing some television content that he found disturbing, and he recorded and published on YouTube his own toy review.

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