CHAPTER 13

Measuring the Digital and Media Literacy Competencies of Children and Teens

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Arguably, media literacy entered the mainstream of public education when educational testing companies began including media literacy themes in their testing regimes. For example, in 2011, the College Board's essay test included a prompt about reality TV in which the question read:

> *Reality television programs, which feature real people engaged in real activities rather than professional actors performing scripted scenes, are increasingly popular. These shows depict ordinary people competing in everything from singing and dancing to losing weight, or just living their everyday lives. Most people believe that the reality these shows portray is authentic, but they are being misled. How authentic can these shows be when producers design challenges for the participants and then editors alter filmed scenes? Do people benefit from forms of entertainment that show so-called reality, or are such forms of entertainment harmful?*

The *Washington Post* and some other media outlets critiqued the College Board's choice of question, wondering whether an intimate knowledge of reality shows would give an essay-writer an advantage in presenting examples and vivid details about TV shows like *Jersey Shore* and reality TV celebrities like Snooki. Because the essay test invites students to take one side of an issue and develop an argument, such questions are valuable to learners. However, students were likely interested in the underlying issues covered in the prompt, that include the effects of television on society, the desire for fame and celebrity on the part of ordinary people, and the authenticity and value of various realistic representations. Indeed, issues of representation are central to the study of all the arts, including media, painting, film, drama, and literature (Bunin, 2011).

The framing of the College Board essay question is structured such that it embodies the mainstreaming of the empowerment-protection dialectic of

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media literacy. For most of the 20th century, media literacy has been alternately framed in one of two ways: empowerment is a form of taste discrimination enabling people to make good decisions about evaluating the quality of media content, while protection is rooted in the idea that critical thinking about media reduces people's likelihood of negative influence to media content, including violence, sexuality, propaganda, and misrepresentation. By embracing the empowerment-protection dialectic, media literacy advocates conceptualize the audience as simultaneously active as constructors of messages and meanings and also passive and potentially vulnerable to media's cultural influence on attitudes, beliefs and values, including potential risks and harms associated with negative media effects, including gender, race and ethnic stereotyping, materialism, desensitization to media violence and bystander effects, and more (Hobbs, 2011b). As will be discussed below, both empowerment and protectionist paradigms underlie the measurement of digital and media literacy competencies. In this chapter, I outline research and scholarship that has made progress in refining the measurement of media literacy through competency-based and self-report approaches to measurement and consider the need for some new strategies that connect cognitive and affective domains while being sensitive to the role of the teacher in shaping the learning context.

CONTEXT AND BACKGROUND

Contemporary framing of children's use of media and technology has been undergoing a transformation that has resulted from the rise of the Internet and the availability of ubiquitous wireless broadband (Aspen Institute Task Force on Learning and the Internet, 2014). Children's immersion in digital media texts and technologies and the larger media culture in which they circulate has interested professionals in human development, communication and media studies, and education (Anderson & Hanson, 2010; Bawden, 2007; Bazalgette, 1991). Although social norms for media use at home and school are quite varied, most American children have a television in their bedroom and by the age of 10 have access to a tablet, computer, and/or cell phone for their personal use (Lenhart, 2015). Although some scholarship in media studies frames youth media use as uniformly active and participatory, a nationally representative sample of children and youth ages 8–17 found that preadolescents and adolescents spent about 40% of their time in *passive* media consumption, including the watching of online videos, TV, reading, and listening to music. *Interactive* consumption, including playing games and

browsing websites, represented about 37% of preadolescents' time with media and 25% of a teen's daily media use. *Communication* activities, including using social media and video chatting, represented 26% of teen's daily media use. Children and young people today use media to access entertainment and information, interact with content, and socialize with peers. By contrast, findings show that creative digital media *production* activities including making art or music or writing represented only 3% of time spent with media (Common Sense Media, 2015).

Parents, classroom educators, and researchers may differ in their perceptions of the risks and rewards of integrating digital media into the context of public education (Howard, 2010; Livingstone, 2012). Although quality of access is still uneven, schools are increasingly likely to provide learners with wireless Internet access throughout the K-12 spectrum. Increasing numbers of schools use tablets, laptops, and other digital media as a part of instruction, encouraging children to use information sources and interact with digital texts and technologies (Bakia, Murphy, Anderson, & Trinidad, 2011). Since the birth of social media in 2007, widespread understanding is emerging among parents, educators, and future employers that *digital literacy* competencies are required to use the Internet and digital technologies effectively (Belshaw, 2012).

Among educators, there is a growing awareness that the concept of literacy is expanding to include mass media, popular culture, and digital media (Felini, 2014). The term *media literacy* intentionally transforms and expands the concept of literacy from a narrow focus on reading and writing of alphabetic text to a broader focus on the sharing of meaning through symbolic forms. By expanding the concepts of text and authorship to include images, video, infographics, and popular culture, media literacy is gradually becoming a mainstream part of English instruction (Behrman, 2006; Bruce, 2012; Hobbs, 2007). People who are media literate can "access, analyze, evaluate, and communicate messages using a wide variety of forms" (Aufderheide & Firestone, 1993; p. 1). Media literacy education is aligned with inquiry learning and emphasizes the practice of "asking critical questions about what we watch, see, and read" (Hobbs, 2010, p. iii). By analyzing and deconstructing messages through asking "how" and "why" questions, learners come to recognize the constructed nature of symbol systems. Media literacy education focuses on critical analysis and inquiry through a pedagogy of asking questions about media form and content, including issues of authorship, ownership, distribution, and impact while the term *digital and media literacy* includes the skills, knowledge, and

competencies associated with the Internet and social media (Hobbs, 2010). Advocates want learners to

> *acquire a basic understanding of the ways media representations structure our perceptions of the world; the economic and cultural contexts in which mass media is produced and circulated; the motives and goals that shape the media they consume; and alternative practices that operate outside the commercial mainstream.*
> ***(Jenkins, Purushotma, Weigel, Clinton, & Robison, 2006, p. 20)***

APPROACHES TO MEASUREMENT

Digital and media literacy have been called "a constellation of life skills" (Hobbs, 2010, p. vii) given the diverse definitions, uses, purposes, and contexts in which these literacies are applied. Accordingly, in the scholarship within the discipline of education, there is as yet no consensus as to how these competencies should be measured. Academic researchers have been especially challenged to create research that meets the needs of educators in the field. Competency-based or performance measures of media literacy are appealing to both educators and pragmatic researchers: the use of naturalistic measurement of tasks resembling school assignments may help link academic research on media literacy with assessment of student learning, increasing the perceived relevance of academic scholarship among K-12 educators. However, researcher-initiated interventions that rely on large-scale surveys and self-report measures are useful for developing theoretical models and testing some of the explicit and implicit benefits of media literacy education. Martens (2010) wrote: "It has become widely accepted that evaluating and explaining effectiveness is one of the most profound challenges for contemporary research on media literacy education" (p. 9).

Theoretically, the measurement of media literacy competencies has been influenced by the development of perspectives from both the humanities and the social sciences. Humanistic approaches to media literacy tend to emphasize ideas from semiotics, meaning, interpretation, and political economy; social scientific approaches to media literacy emphasize media effects. The core concepts of media literacy are a set of humanistic principles developed at the Aspen Institute Leadership Conference on Media Literacy in the early 1990s. The concepts emphasize that: (1) all media messages are constructed; (2) media messages are constructed using a creative language with its own rules; (3) different people interpret the same media message differently; (4) media have embedded values and points of view; and (5) most media are organized to gain profit and/or power. These ideas serve as foundational understandings that media literate individuals use as both consumers

and producers of media messages (Center for Media Literacy, 2002). In synthesizing the core ideas of media literacy, information literacy, visual literacy, and new literacies, Hobbs (2006) structured key humanistic ideas around the theoretical frames of authors and audiences (AA), messages and meanings (MM), and representations and reality (RR). Reflecting the British media education tradition, Buckingham (2007) identifies the concepts of language, production, audience, and representation as reflecting the core theoretical ideas that serve to focus critical inquiry.

Social scientific perspectives to media literacy education generally emphasize the negative effects of media and efforts to use media literacy education to mitigate those effects. Some examples include a focus on media violence, sexual representation, and body image (Potter, 2010). In the social science conceptualization of media literacy, since the mass media have the potential to exert a wide range of potentially negative (and positive) effects, the purpose of media literacy is "to help people to protect themselves from the potentially negative effects" (Potter, 2010, p. 681). Scholars working in this tradition tend to target a specific "problem" whereby a particular vulnerability to media messages is identified and an intervention is designed. This work often relies on survey research to measure digital and media literacy competencies and test hypotheses about the relationships between variables that assess the impact of advertising, news media, media violence, racism, sexism and issues of representation, and perceptions of credibility of news and information.

Children's vulnerability to advertising and persuasion has long been a concern of media literacy educators (Rozendaal, Lapierre, van Reijmersdal, & Buijzen, 2011). As a result of deregulation of media industries in Great Britain, media literacy has become the official remit of the British media regulator, OFCOM (Wallis & Buckingham, 2013). There, government researchers have examined how British children interpret a variety of new forms of advertising. For example, research has shown that many children and young people are relatively unfamiliar with how to recognize online advertising. In one performance-based measure of media literacy, children were shown a picture of the results returned by Google for an online search for "trainers," the British term for athletic shoes, and then asked to identify advertising displayed in online search results. Although the sponsored links were presented in an orange box with the word "Ad" written in them, less than one in five children and only one-third of teens were able to identify correctly these sponsored links as a form of advertising. Half of British teens were aware of personalized advertising, by recognizing that some people might see ads that differ from those they see when visiting the same website or app. However, less than half of the teens were aware of the potential for vloggers (creators of

video blogs) to be paid for endorsing products or brands (OFCOM, 2016). This evidence suggests that media literacy competencies are still not developed fully among British children and teens, although media education has had a long and distinguished tradition in the context of English instruction.

In recent years, performance-based empirical research on media literacy measures have been outstripped by qualitative research studies that dominate the education literature. In many studies of digital media and learning, researchers develop a short-term (often), grant-funded intervention and report on informal learning practices that involve children and youth who participate in digital media literacy programs or online communities (Barron, Gomez, Pinkard, & Martin, 2014). Numerous case studies of practice also fill practitioner journals, such as the *Journal of Adolescent and Adult Literacy*, demonstrating the varied contexts in which teachers, and those working in afterschool settings, have developed programs and activities that blend critical thinking and creative media production using digital media and technologies. Case studies of individual learners/classrooms help scholars and educators visualize the learning process inside the classroom and advance theory about digital and media literacy education pedagogy but may not elucidate how to evaluate, scale, or assess the quality of school-wide or district level initiatives.

Below, I identify the distinctive characteristics of performance or competency-based measures of media literacy and measures that rely on self-report of attitudes and knowledge. Performance-based measures represent the "gold standard" because they precisely capture dimensions of media literacy competencies using tasks that are highly similar to the everyday practices of analyzing and creating media in the real world. Self-report measures can help researchers test theories by asking users to self-assess their knowledge, skills, attitudes, and behaviors, and by considering the relationship between media literacy competencies and other variables. Each of these approaches has value to practitioners and scholars. I now examine some characteristics of competency-based and self-report measures to assess media literacy education.

COMPETENCY-BASED MEASURES

Competency-based measures of digital and media literacy have generally focused on behaviors within the cognitive domain, engaging learners in using, analyzing, and creating media texts. Specifically, users are asked to demonstrate their analysis and creative skills, often via questions requiring

students to analyze media or create media. Measuring media literacy through performance tasks is a practice that is well aligned with classroom routines, as elementary and secondary teachers routinely create assignments where demonstration of critical analysis is required. Among the first to develop such methods were Quin and McMahon (1995) who studied two tests that were developed by a panel of Australian teachers to measure students' media literacy learning. High-school students were asked to analyze the language, narrative, and target audience of print advertisements and an excerpt from a situation comedy. After receiving media instruction as a part of their standard curriculum, students could identify compositional elements and analyze the impact of those elements on the mood of a piece. Students were less skilled in analyzing the more complex relationships among issues of authorship, purpose, cultural context, and audience. The authors acknowledged that this measurement tool may have been biased in favor of girls and native English speakers, who scored higher relative to the other subgroups.

In studying teens in American high schools, Hobbs and Frost (2003) used a quasi-experimental design to compare a group of 11th graders who were involved in a year-long media literacy curriculum to students in a matched control school who were exposed to a traditional literature-based English curriculum. The researchers examined students' ability to critically analyze print advertising, radio, and television news, via their ability to identify the purpose, target audience, point of view, and construction techniques used in media messages. Students were also asked to identify omitted information as a means to measure their ability to recognize a message's distinctive point of view. Pre- and posttest responses of students in the two schools showed that students enrolled in the media literacy program showed higher levels of comprehension and analysis of media messages, including print, video, and audio messages as compared to the control group. Students in the media literacy group also produced longer paragraphs in their writing, perhaps because they had a better understanding of how to critically analyze a news media message as compared to students who did not receive instruction in media literacy.

Performance-based measures of media literacy generally require hand scoring and decisions about scoring test responses may involve examining the variation in student responses to an expert group (for example a panel of high-school teachers) or by examining individual responses in relation to the range of responses within a particular peer group of those who completed the test. For example, in the Hobbs and Frost (2003) study, after watching a TV news segment about hurricanes, students were asked, "What values or points of view were presented in this message?" A response such as,

"Much of this story was presented from the point of view of the people who were affected by the storm" was deemed a higher-level answer than a responses such as, "Hurricanes are destructive, dangerous, and unpredictable." Hand scoring generally involves the construction of a codebook, training of two or more coders, and careful attention to language, inferential meaning, and interpretation in judging responses.

Other researchers have used performance-based measures of media literacy to demonstrate its correlation with traditional measures of critical thinking. Arke and Primack (2009) found, with a small sample of college students, good internal consistency among the five subscales of the measure: recall, purpose, viewpoint, technique, and evaluation. In their measures, closely adapted from the work of Hobbs and Frost, "recall" assesses basic comprehension of the media message, "purpose" assesses understanding of the author's intent, "viewpoint" assesses whether the participant can identify the sender of the message, and what points-of-view may be omitted from the message, "technique" assesses an individual's ability to analyze the production techniques that were used to attract attention, and finally, "evaluation" assesses how individuals evaluate that message in comparison to their own perspective. These measures of media literacy were found to correlate strongly with the California Critical Thinking Skills Test (CCTST), which assess critical thinking and reasoning skills.

As noted earlier, the for-profit testing industry has also explored the value of measuring digital and media literacy competencies. The pressure for accountability in higher education has inspired the development of various instruments designed to measure learners' ability to navigate, understand, and critically evaluate information available through digital technology (ETS, 2003). The iSkills test is a performance-based measure that utilizes real-world scenarios to measure the ability to navigate, critically evaluate, and make sense of the wealth of information available through digital technology. These scenarios are set in the context of the humanities, social sciences, natural sciences, business/workplace, practical affairs, and popular culture, and assess information, communication, and technology (ICT) content areas, including task types aligned with the ACRL standards: define, assess, evaluate, manage, integrate, create, and communicate (Educational Testing Service, 2004).

For example, one task entails reviewing information sent by seven people about training courses taken by people in an organization and creating a memo to summarize information and data. To perform the task, users must read the material, identify the relevant data and information about training

course attendance, and summarize key themes, using both word processing and spreadsheet software tools. In another scenario, users are asked to evaluate medical information about arthroscopic surgery to repair a tennis injury. This task requires test takers to use a search engine to locate sites that have articles about connective-tissue injuries, anterior cruciate ligament tears, arthroscopic surgery, and rehabilitation programs. Users must effectively and efficiently locate information, evaluate its sufficiency for the purpose, and to evaluate the degree to which the source is trustworthy (Somerville, Smith, & Macklin, 2008).

After completing a series of simulation tasks like this one, students receive a score based on their ability to evaluate the usefulness and sufficiency of information for a specific purpose; create, generate, or adapt information to express and support a point; communicate information to a particular audience or in a different medium; define an information problem or formulate a research statement; and access, summarize, and integrate information from a variety of digital sources (Educational Testing Service, 2014).

The measurement of digital and media literacy has revealed important gaps between self-assessment (measured by self-report) and actual performance (measured by competency tasks). For example, when implementing the iSkills test with undergraduate students, researchers found a significant gap between the skills students believe they possess and their actual competencies. Before taking the iSkills test, a sample of Purdue University freshmen ($N=262$) were asked to self-assess their information and communication skills; 90% rated themselves highly skilled users of information technologies. However, 52% of these students performed scored lower on the iSkills test than 50% of the population who took the test. Thus, more than half of these students believed they were competent at information and communication skills yet unable to demonstrate the skills when asked to perform them (Somerville et al., 2008).

Although the iSkills test seemed a promising approach to the measurement of digital and media literacy, in 2016, ETS decided to discontinue because it did not sell well in the education market. They were, perhaps, ahead of their time. The company had designed the test for students in the last 2 years of high school and the first 2 years of college. Given the rapidly changing nature of information technology, it is also likely that, over time, the interface for completing the performance tasks was perceived by users as clunky and unattractive. However, it is also true that as technology changes, the practice and nature of digital and media literacy competencies also change. ETS admitted that without a large enough sample of users, the

test simply lost both its psychometric and its economic viability. Indeed, performance-based measures of digital and media literacy are expensive to develop, score, and maintain over time. Thus, many researchers rely on self-report measures to provide an inexpensive approximation of the competencies that embody some aspects of media literacy.

SELF-REPORT MEASURES OF MEDIA LITERACY

The use of self-report to measure media literacy has a long history as researchers have recognized the value of finding ways to identify how people make critical judgments about media (Brown, 1991). In the 1980s, researchers used *perceived realism* as a proxy for media literacy, examining how learners evaluated the realism of television programs, asking them to explain why they perceived particular programs as realistic and others as unrealistic. In general, audiences are thought to perceive media content as realistic if they judge it to be like real life in some meaningful way or if they respond to it as though it were real (Hall, 2009). Perceptions of realism differ among individuals as people use different criteria to make realism judgments, including factual realism, social realism, and narrative coherence. Such judgments may occur at different stages of the interpretation process: some people begin interpreting a specific media text based on the format or genre, while others evaluate as they read or view, and still others evaluate realism retrospectively (Busselle & Greenberg, 2000).

Many scholars have examined how media literacy may support healthy lifestyles among children and teens (Domine, 2015). In evaluating the impact of media literacy program, Austin and her colleagues incorporated perceived realism into the development of the Message Interpretation Process (MIP) model (Austin & Knaus, 2000) to trace factors that may lead to increased cognitive involvement with media messages through both reasoning and affective pathways of decision making. The model builds on social cognitive theory and expectancy theory and extends dual-process theories of persuasion. Levels commonly analyzed using the MIP framework include desirability; perceived realism, norms, and perceived similarity; identification; expectancies; and behavior.

In one study that used this model, Pinkleton, Austin, Cohen, Chen, and Fitzgerald (2008) explored how a teen-led media literacy curriculum focusing on sexual portrayals in the media might increase adolescents' awareness of media myths concerning sex, decrease the allure of sexualized portrayals, and decrease positive expectancies for sexual activity.

A posttest-only quasi-experiment with control groups was conducted with 522 middle-school students at 22 school and community sites in Washington. Significant differences were found in the knowledge gained by those in the media literacy program as compared to control-group participants. Students in the media literacy group were less likely to overestimate sexual activity among teens, more likely to think that they could delay sexual activity, less likely to expect social benefits from sexual activity, more aware of myths about sex, and less likely to consider sexual media imagery desirable. Thus, as part of a sex education program, media literacy instruction may provide adolescents with a cognitive framework necessary to understand and resist the influence of media on their decision-making concerning sex.

In addition to asking people to self-assess their competencies, data on media use behaviors and knowledge of media industries, institutions, or economics have also been considered as important variables in the development of media literacy competencies (Potter, 2010). Some of this research has resulted from government mandate. For example, in Britain, the media regulator OFCOM has taken responsibility for measuring the media literacy competencies of British children and adults. Although the government agency generally focuses on gathering data about people's media use (the frequency of media activities involving laptops, cell phones, radio, and television), they also include a mix of self-report behaviors and knowledge measures as a dimension of media literacy competencies.

In 2015, a random survey of 500 children aged 8–15 who used the Internet at home or elsewhere were surveyed about their critical understanding, a concept used in England to describe the skills and knowledge children needed to understand, question, and manage their media environment. OFCOM did not find evidence that these skills and knowledge were increasing among British children. In 2015, when asked to judge the truthfulness of content, British children were more likely than in 2014 to think that various kinds of online information were "always true." Surprisingly, 23% of children aged 8–11 and 14% of children aged 12–15 answered that all the information on news and information sites was true. One in five teenage users of search engines believed that if a search engine listed information it must be true. Only one-third of 12- to 15-year-old viewers of television gave the correct response when asked how the BBC was funded (OFCOM, 2016).

Self-report measures of media literacy have also been used by public health and communication researchers to examine how media literacy education may help modify attitudes and knowledge that contribute to

behavior change (Austin & Johnson, 1997; Domine, 2015). As an example, Primack et al. (2006) developed and validated the Smoking Media Literacy (SML) scale, a self-report Likert scale with items representing the three theoretical frames of AA, MM, and RR mentioned earlier. Items include: "To make money, tobacco companies would do anything they could get away with," "Cigarette ads try to link smoking to things that people want like love, beauty and adventure," and "Cigarette ads show scenes with a healthy feel to make people forget about the health risks." These measures have been found reliable with both high-school and middle-school students and have been used in evaluating web-based programs for media literacy (Shensa, Phelps-Tschang, Miller, & Primack, 2016).

Other self-report measures of media literacy ask users to reflect on their critical thinking about both media sources and message content. Austin, Muldrow, and Austin (2016) evaluated critical thinking about the source of the media message on a seven-point Likert scale, where users respond to statements like "I think about the purpose behind alcohol advertisements I see," "I think about what the creator of alcohol advertisements wants me to believe," "I think about who created the alcohol advertisements I see," and "I think about the truthfulness of alcohol advertisements before I accept them as believable." Participants respond to items that invite them to reflect on their evaluation of the content of the message, responding to statements like "I think about what the creator of a message wants me to think," "I look for more information before I believe something I see in messages," and "It is important to think twice about what messages say." The authors found that critical analysis of sources was a precursor to critical thinking about media content and that both skills were associated with personality factors, including the need for cognition and the need for affect.

Many studies have used scaled self-report measures of the media literacy competencies of learners to examine what Scharrer (2002) has called the implicit assumptions about the benefits of media literacy education. In an important meta-analysis of 51 quantitative studies of media literacy interventions involving learners ranging from elementary school to college students, Jeong, Cho, and Huang (2012) found a moderate overall effect size ($d = 0.37$), indicating a positive role of media literacy in shaping these outcomes. Interventions that were longer resulted in larger effect sizes and those interventions with more instructional components (including, for example both analysis and creative media production activities) resulted in smaller effect sizes. A closer review of this study suggests that differences between academic research and program evaluation may partly explain these findings. In

well-controlled researcher-centric programs, simple experimental manipulations target short-term attitude, knowledge or behavior change, and researchers are more successful measuring a limited number of learning outcomes with precision (Grafe & Breitner, 2014). For those who design, implement, and assess more complex and real-world oriented media literacy programs in the field, which often include multiple goals and outcomes as per the needs of diverse stakeholders including educators, parents, and researchers, measurement challenges may result from differential program completion rates and other challenges associated with field-based research. In field-based collaborations between schools and university research partners, there is substantial negotiation inherent in the process of collaboration (Hobbs & Moore, 2013).

MEDIA KNOWLEDGE AND MEDIA LITERACY

How important is knowledge of media industries, media theories, and media effects in the development of media literacy competencies? Potter's (2004) theory of media literacy posits that knowledge about media content, industries, and effects is key to identifying people's level of media literacy. In particular, he claims that people with more knowledge of how media institutions operate will be more media literate than those with less knowledge. Potter also distinguishes between low-level information such as knowing the lyrics to television show theme songs and knowledge gained from personal experience, noting that "people who have played sports will be able to appreciate the athletic accomplishments they see on television to a greater depth than those who have not physically tested themselves on those challenges" (p. 34).

In exploring the relationship between knowledge of the news media and usage or consumption of news, Ashley, Maksl, and Craft (2013) developed an index to assess media knowledge as a dimension of news media literacy. They used multiple-choice questions to test college students' knowledge of the structure of the US media system, focused on knowledge of business, ownership and regulatory systems, media effects, and content frames. Items included knowing that: CNN.com employs reporters whereas Google News does not; journalists are not required to be individually licensed in the United States; FOX News is generally thought to have a politically conservative bias; and only about five companies own the majority of major media outlets today compared to 50 companies in the early 1980s. Other knowledge items included knowing that people who watch a lot of television news tend to think the world is more violent and dangerous than it really is.

Some researchers doubt the relative value of media knowledge as a dimension of media literacy. In framing media literacy as a set of critical competencies, Hobbs and Moore claim that intellectual curiosity and the ability to ask "how" and "why" questions are far more important than either having digital technology usage skills or possessing knowledge about the media industry. They argue that when instructors are over-focused on transmitting knowledge in a media literacy program, the instructional strategies used may not advance critical thinking competencies. Still, they acknowledge that contextual information about media industries, economics, and effects may shape people's interpretation and inquiry processes (Hobbs & Moore, 2013).

Scholars who have measured the impact of media literacy curricula on young people's civic engagement have found that exposure to a media literacy presentation can mitigate perceptions of bias (Vraga, Tully, & Rojas, 2009) and that learning about the economic and political structure of the US media system can increase skepticism as measured by credibility ratings of news stories (Ashley, Poepsel, & Willis, 2010). McDevitt and Kiousis (2006) observed how effects of a grade 5–12 civics curriculum passed from students to their families. Using a primary-group model, the family was conceptualized "as mitigating the influence of social structural institutions such as schools and mass media" (p. 261). The civics curriculum stimulated increased political knowledge and information seeking from news media among students, who in turn, stimulated increased political knowledge and information seeking from news media among their parents. The impact was greater for low-income families, thus narrowing the knowledge gap related to political issues.

Democracy depends on people caring about the accuracy of information used to make political decisions. For this reason, researchers have examined the relationship between political knowledge, critical analysis of media, and exposure to media literacy education. Because people's judgment of truth is shaped more by their preexisting beliefs rather than the evidence itself, researchers have long examined how confirmation bias may intersect with reasoning processes (Johnson, Hashtroudi, & Lindsay, 1993). Concern about "fake news" has made this topic especially timely to American citizens. Recently, Kahne and Bowyer (2017) conducted a field experiment to determine how directional motivation and accuracy motivation affect young people's judgments of truth claims. They embedded an experiment inside a survey of a large, nationally representative sample of 2101 young people aged 15–27. Some participants were randomly assigned to view one of six posts (political cartoon or graph) on the topics of income inequality and tax policy. These posts were manipulated in two ways: (1) type of evidence: some verbal content was

emotive (subjective with no evidence presented), some was evidence-based, and some included misinformation; and (2) political ideology: liberal (referencing "the rich") and conservative (referencing "successful Americans"). Participants were asked to rate the accuracy of the post on a four-point scale and as part of the survey, they were also identified as liberal or conservative by asking their opinions on whether government should be involved in reducing income inequality. Also, a three-question survey that was deemed a reliable indicator of political knowledge was used.

To measure exposure to media literacy education, participants were asked two questions: how often they had discussed in school how to tell if the information found online was trustworthy and how often they discussed the importance of evaluating the evidence that backs up people's opinions. Not surprisingly, the researchers found that participants' judgment of accuracy was associated with their preexisting political beliefs. Further, 67% of participants who saw a post that aligned with their preexisting views rated it as accurate as compared with only 39% of people who saw a post that did not align with their political views, demonstrating that directional motivation affects judgments of accuracy. Political knowledge did not improve judgment: those with more political knowledge were, in fact, were more likely to judge posts that they agreed with as accurate despite the presence of misinformation. However, subjects who reported high levels of media literacy education showed no differences in directional motivation and ostensibly made a clear distinction between a post with misinformation and one with accurate evidence, even when it agreed with their preexisting political beliefs (Kahne & Bowyer, 2017).

Media literacy education may disrupt other forms of bias. Babad, Peer, and Hobbs (2012) examined teens' nonverbal processing of political news, building upon previous research which has shown that viewers judge a TV interviewee more favorably when the interviewer's nonverbal behavior toward the interviewee is friendly rather than hostile. High-school students who participated in a media literacy course were compared to a control group within the same school to determine susceptibility to this particular form of media bias. Participants were randomly assigned to view a brief interview in which the interviewer's nonverbal behavior was either friendly or hostile toward the interviewed politician. Results showed that the control group showed a nonverbal media bias effect and judged the interviewee more favorably when the interviewer was friendlier, whereas this effect disappeared among media literacy students. It is possible that increased awareness of the constructed nature of media representations is the underlying factor at work here.

Theoretical arguments position media literacy competencies as situated within the development of more general reasoning and cognitive development. For younger children, the ability to use reasoning to justify one's media preferences has been identified as a precursor skill supporting future development of critical analysis skills. This trajectory was supported in work by Hobbs and RobbGrieco (2012), who examined differences in 156 African-American children, ages 9–11, comparing a group of high-achieving students to those enrolled in a regular education program. The construct of "active reasoning" was defined as the process of engaging in inference-making, reasoning, or metacognitive thinking about media texts, tools, and technologies in response to a prompt asking children to identify their favorite media and give reasons to explain why they liked it. High-achieving children were more likely than regular education students to engage in active reasoning when asked to offer an explanation for why a particular TV show, video game, or music was one's favorite by identifying the genre, describing compositional elements, making a link between elements, identifying the purpose or meaning of a message, or identifying the social purpose of a media message. Clearly, children's emotional responses to media may provide opportunities to help them reflect on the formal elements of the content and the characteristic features of the media they enjoy (Nichols, 2006; Nyboe & Drotner, 2008). However, researchers are just beginning to explore how media literacy competencies may develop in relation to the affective domain.

MEDIA LITERACY AND THE AFFECTIVE DOMAIN

In his comprehensive review of the literature, Martens notes that affective mechanisms are likely to interact with cognitive and behavioral dimensions of media literacy, "raising many additional methodological challenges" (Martens, 2010, p. 15). Fortunately, academic researchers have begun to examine affective dimensions of media literacy competencies (Ranieri, 2016). For example, Scharrer and Wortman Raring (2012) examined children's journal entries in response to a media literacy intervention exploring media violence. In a program where undergraduate students provided media literacy education to elementary school students, the researchers found that a protectionist orientation to media literacy, which focused on negative media effects, could be introduced in ways that "encourage complexity and nuance" (p. 4). Analysis of children's written homework revealed that media literacy activities helped them reflect on moral and ethical values regarding the depiction of media violence. In another study, Friesem (2015) examined how

affect was incorporated within video production lessons designed to engage elementary school-age learners and promote their collaboration in the context of a year-long technology integration initiative. Findings showed that when students were involved in media making, teachers became more sensitive to the individual needs of learners, recognizing the unique contributions of children who may not have strong academic backgrounds but thrive when presented with collaborative media production learning opportunities.

Affective dimensions of media literacy have also been measured in relation to teacher motivations for the use of media and technology in school. In reflecting on the results of a 3-year university-school partnership in media literacy implemented in an urban elementary school, Hobbs and Moore (2013) described the kind of "messy engagement" that occurred when children were empowered to create and analyze popular culture and digital media in ways that connected the classroom to the local neighborhood and community. They posited that teacher motivations for digital and media literacy might differentially shape instructional practices, as some teachers brought more student-centered orientations into their approach to media literacy while others were more attentive to the content or the form of various media genres, the expressive dimensions or the political economic context in which media messages circulate. Building on this research, a 48-item measure of teacher motivations for digital and media literacy was tested and validated among a large sample of 2800 teachers in Turkey (Hobbs & Tuzel, 2017). This measure showed substantive differences in motivation between language arts, social studies, and technology teachers. For example, teachers who self-identified as *activists* (those who see media literacy as helping contribute to making society more just and equitable) showed a different attitudinal profile than those who identified as *demystifiers* (those who emphasize asking critical questions about media) or *spirit guides* (those who value talk about media as a means to enhance children's socioemotional development). Future research is needed to examine how differences in teacher motivations regarding digital and media literacy may shape instructional choices in the classroom, and how these instructional choices then may affect students' media literacy learning outcomes.

IMPLICATIONS FOR THE FUTURE

As American children spend time with entertainment media each day, they engage in widely varying patterns of media use including those who can be classified as light media users, readers, mobile gamers, heavy viewers, video gamers, and social networkers (Common Sense Media, 2015). Children's immersion in digital and media culture continues to rise and discourses of

empowerment and protection will continue to attract attention from parents, teachers, and others with interests in the developmental needs of children and teens (Tyner, 1998). The measurement of media literacy competencies by educators, academic, and professional stakeholders is conceptualizing the new competencies, skills, and habits of mind that are necessary for full participation in a media-saturated and technologically intensive world.

Because media content is ever-changing and the devices we use are transforming continually, the measurement of media literacy competencies is a fast-moving target. The use of both self-report and performance-based measures arises from the increasing variety of disciplinary perspectives, including human development, public health, media studies, cultural studies, information science, and media psychology. This reflects the growing hyper-specialization of the field of children, media, and education. The changes occurring in the media sector, with new apps, games, platforms, and genres rapidly emerging, have contributed to the instability of meaning of the concept of media literacy and added to the measurement challenges (Wallis & Buckingham, 2013). Which specific competencies are worth measuring and how are these practices contextualized in relation to at-home and in-school uses of media and technology? At the present time, I believe that new theory is needed to support the development of new measures to better understand the development of children's reasoning, critical thinking and reflective competencies over the span of childhood and adolescence. We also need to learn more about how measurement challenges are exacerbated when considering media literacy competencies in relation to the developmental trajectories of children and youth.

Protectionist paradigms offer important insight into the ways in which media and technology reflect and shape cultural values, including attitudes about aggression, sexuality, race, gender, and commodity culture. Media literacy education offers the potential to reveal how media reproduce inequalities. Critical inquiry practices help learners gain distance from their everyday and often unquestioned media use, seeing their own behavior in a new way. Such forms of learning may potentially contribute to renewing active citizenship for participation in democratic societies (Mihailidis, 2014). By strengthening the competencies of reflection and social action, protectionist paradigms enable people of all ages to build importance metacognitive and social communication skills.

Empowerment perspectives, including the paradigms of digital media and learning, visual literacy, information literacy, and new literacies, all focus on competencies that enable people to access, analyze, and create media,

using an iterative learning process where learning-how-to-learn predominates. Media literacy educators bring a deep appreciation of the dynamic relationship between reading and writing, speaking and listening, and media analysis and media production; this long-standing feature of the discourse community should contribute more to the development of both new theoretical formulations of media literacy and of innovative practices for measuring media literacy competencies (Garcia & Morrell, 2013; RobbGrieco, 2012; Rogow, 2013).

In this brief review of approaches to measuring digital and media literacy competencies, it is clear that researchers and practitioners differ in how they prioritize learning outcomes. Because of the challenge of designing valid and reliable measures, this chapter has shown that both performance, or competency-based, measures of media literacy and self-report measurement tools can be useful. The research community must continue to explore other variables, including media knowledge, habits of mind like intellectual curiosity, and the impact of teacher motivations. As yet, researchers are just beginning to explore how media literacy may support development in the affective domain, particularly the development of empathy and socioemotional development. Future research is needed to conceptualize and measure the intersectionality of these important concepts.

Because they are responsible for integrating digital and media literacy competencies into existing curriculum, elementary and secondary educators have an orientation to the identification of learning outcomes that is different from approaches used by academic researchers. For another Kuhnian paradigm shift to occur in this field, close examination of how teachers themselves aim to capture the full range of digital and media literacy competencies may be useful. It is possible that teacher creativity and reflexive practice have much insight to offer to academic researchers who advance new knowledge in the field.

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