Perspectives of Deaf and Hard of Hearing Viewers of Captions

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Educational rights and other rights enumerated in federal law support deaf and hard of hearing (DHH) viewers' access to captions in visual electronic media, yet uncaptioned and inadequately captioned media still exist. To determine what is satisfactory in captioned media and what could be improved to ensure access, data were gathered from focus group discussions with 20 DHH students who shared their perspectives on captions. The focus group analysis indicates that major topics of concern for DHH viewers include advocacy for captions and caption formatting preferences; the need for direct access to real-time videos, online videos, and other media; how captions influence and benefit DHH and hearing viewers; and captions' importance in public, educational, and other social/cultural spaces. The author concludes that DHH viewers' perspectives can help educators and advocates strengthen access to captions in education and society.

Keywords: access, captions, media, technology

In 2015, the U.S. Department of Justice filed lawsuits on behalf of the National Association of the Deaf (NAD) against Harvard University and the Massachusetts Institute of Technology for violating Title III of the Americans With Disabilities Act and Section 504 of the Rehabilitation Act. The respective Statement of Interest of the United States for each case asserted that these institutions had failed to caption their online courses and lectures, thereby denying equal access and effective communication to deaf and hard of hearing (DHH) individuals (U.S. Department of Justice, 2016). These cases, as well as the Justice Department's findings against the University of California, Berkeley, in 2016, shined a spotlight on DHH individuals' right of access to captioned educational opportunities and services. While a growing number of educational videos, television shows, movies, and online programs include captions, the lawsuits on behalf of NAD serve as a reminder that DHH individuals need to continually advocate for equal access to captioned media.

DHH individuals rely on captions to access educational content, real-time information in television programs, digital content on YouTube and social media videos, and communications in public spaces. Since the 1990s, the enactment of the Telecommunications Act of 1996 and other federal legislation has strengthened access to captioned media on televisions (NAD, 2018c), online (NAD, 2018b), and in movie theaters (Waldo, 2011). Yet the growing availability of captioned media is undermined by the continued limitations posed by uncaptioned or imperfectly captioned media. The advantages and setbacks of contemporary media with and without captions become clear through the experiences of DHH viewers. With the purpose of understanding DHH individuals' perspectives on captions in a variety of con-

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temporary situations, I conducted three focus group discussions with 20 DHH viewers of captions who shared their satisfaction and dissatisfaction with the current state of captions.

The framing of captions in the present study refers to various forms of captions, or text that is placed on screen to linguistically represent audio messages. The 20 participants discussed closed captions that can be turned on and off and are generally available on televisions, open captions that are visibly embedded on screen, and subtitles for the deaf and hard of hearing that are generally available on DVDs (Edelberg, 2017). The participants discussed pop-on captions, which appear and disappear on screen in pre-recorded material, and roll-up captions that scroll up the screen, such as roll-up closed captions for live programs (Bond, 2014). With closed captions historically serving as the primary form of captions, a wealth of research has been completed on closed captions and deaf viewers. Extensive research on closed captioning by Jensema and his colleagues explored how deaf viewers process closed-captioned television programs (Jensema, 1998; Jensema, Danturhi, & Burch, 2000; Jensema, McCann, & Ramsey, 1996; Jensema, Sharkawy, Danturhi, Burch, & Hsu, 2000). Closed-captioning scholarship elucidates how DHH viewers rely on captions to access video content.

Studies of captions and DHH viewers unpack the complex relationship between deaf viewers' reading skills and comprehension of captions on television (Burnham et al., 2008; Cambra, Silvestre, & Leal, 2009) and on videos used in the classroom (Beal-Alvarez & Cannon, 2014; Stinson & Stevenson, 2013; Strassman & O'Dell, 2012; Yoon & Kim, 2011). In particular, Jelinek Lewis and Jackson (2001) observed that the "accessibility of captioned television presents unique comprehension problems

because of the dependency on reading proficiency," and suggested the strategic use of captioned television in the classroom to develop DHH students' English literacy skills (p. 51). Similarly, Ward, Wang, Paul, and Loeterman (2007) called for more research on understanding the effects of captions and "the comprehension ability of students" (p. 27). These investigations demonstrate that the benefits of captions depend on DHH students' abilities to read and comprehend these captions, and that captions can improve DHH students' reading skills.

Publications on DHH viewers' comprehension of captions support the need to enhance access to captioned media. The benefits of captions are evident in a review by Gernsbacher (2015) of studies that document the benefits of captions for learners, DHH viewers, and even "highly literate, hearing adults" (p. 198). Gernsbacher's review makes evident that captions are vital tools for both DHH and hearing audiences; this message is captured in a University of Washington (2014) video titled *Captions: Improving Access to Postsecondary Education,* which argues for "the importance and benefits of captioning videos in higher education." The instructors and students in this captioned video repeat the message that captions improve access to learning material for a variety of students. This video motivates those in education to attend to accessible technologies, a message that is reiterated by scholars across the fields of Deaf studies and disability studies (Kafer & Burch, 2010; Meloncon, 2013; Wilson & Lewiecki-Wilson, 2001; Yergeau et al., 2013). Zdenek (2015) examined the representation of sound in closed-captioned films and television shows in *Reading Sounds: Closed-Captioned Media and Popular Culture*, a book in which he conveyed the value of captions to scholars in accessibility and media studies. While

the educational advantages of captions are made evident in the literature, ensuring captioned access to social and public spaces is just as indispensable.

Access to captioned media in a variety of social and public contexts is fundamental if DHH individuals are to obtain knowledge and contribute to society. In an ongoing exploration of how digital media is made accessible to users, Ellcessor (2012, 2016, 2018) has shined a light on the relative lack of online captioning, the activist role of Deaf actress Marlee Matlin in the fight for captions, and collaborative efforts to ensure that all users can access and participate in media environments. Ellcessor's scholarship has established that an immense number of videos are uncaptioned and that more work needs to be done to increase the percentage of captioned videos online. In addition, viewers *and* creators need to collaborate to ensure continual access to aural content in videos across all contexts and platforms.

Educational rights and other rights enumerated in federal law support DHH viewers' access to captions in physical and digital spaces, yet challenges to full access still exist in the form of uncaptioned and inadequately captioned media. To identify what is satisfactory in captioned media and what could still be improved to ensure access, the present article presents findings from focus group discussions with DHH students. The participants, college students ages 18–25 years, provided insights into the specific perspectives of young adults who were born after the Americans With Disabilities Act of 1990 was enacted. Some were not yet born, and even the oldest participant was just a toddler, when the Telecommunications Act of 1996 set the groundwork for widespread captioning of television programs (NAD, 2018a). These students' experiences growing up in an environment in which captions were gen-

erally available on television differentiate them from previous generations of deaf children and youth who did not experience as much access to captions. Although these participants might have been relatively accustomed to seeing captions on television, they faced barriers to access in the early days of uncaptioned online videos— until, when they were teenagers, the Twenty-First Century Communications and Video Accessibility Act of 2010 (CVAA) was passed. This legislation gave the force of federal law to requirements governing the captioning of online video content (NAD, 2018d). While the CVAA required previously televised programs to be captioned when shown online and mandated improved access to television shows and movies, videos that were posted online by users remained exempt from the law's requirements and could remain inaccessible. The study participants experienced these progressive steps firsthand while growing up, and could discuss their satisfaction and dissatisfaction with captions in a variety of contexts.

I designed the present research project with the purpose of understanding DHH people's experiences with, perspectives on, and suggestions for captions in order to identify strategies for supporting captions and access.

Method

Participants

For a study of DHH people's perspectives on captions, 20 DHH college students were recruited to participate in focus groups. Focus group discussions covered a range of topics related to captions in different contexts. The three focus groups also viewed three clips of captioned media and discussed the visual design of captions and the balance between viewing words and

action on screen. (The data related to the visual design of captions will be reviewed in a separate article.) As detailed in the following sections, the present article thoroughly unpacks data related to DHH individuals' perspectives on advocacy and improving access to media, education, and other spaces in order to advance recognition of the significance of captions.

In keeping with the goal of learning from a variety of perspectives, students from a variety of backgrounds were selected for the present study. Prior to the focus group discussions, participants completed a demographic questionnaire. Their backgrounds varied, as Table 1 shows.

The participants represented a mix of genders, racial and ethnical identities, hearing status, and language skills that could provide a variety of perspectives on captions. An important experience they had in common was their reliance on captions: 19 out of 20 reported that they had grown up watching television, movies, and videos (media) with captions, and all 20 reported that they needed captions to understand media. The only participant who reported that he did not grow up watching captions also identified as hard of hearing and felt most comfortable using spoken English, so his oral and aural communication skills may have influenced his childhood viewing experiences. Even so, he reported needing captions in order to understand media; this need calls attention to captions as a requisite form of access for a range of DHH individuals who communicate through spoken and/or signed language.

Procedure

Participants were sorted into three focus groups; each face-to-face focus group was composed of six or seven participants in addition to the primary investigator (the present author) and a moderator, Deirdre Schlehofer. The moderator and I, both college professors, identify as White Deaf women who are highly proficient in written English and American Sign Language (ASL) and who are most comfortable signing. I designed the questions and presented each question to each group for later analysis. The moderator's role was to facilitate these three focus groups, particularly by monitoring the time and pace of the conversations and topics. For instance, when the moderator observed that participants had not yet responded to a particular question, she asked them if they would like to share their experiences, and when the moderator noticed that participants wanted to add a comment but did not find a window in the conversation, she turned the conversation back to the original point so that they received a chance to share their thoughts. Her presence supported my collection of data during the focus groups.

With the moderator, I conducted the three focus groups in ASL, and all individuals were seated around the same large table. Each focus group lasted up to 1.5 hours and was video-recorded for my later transcription and analysis. The members of each focus group were asked six questions that were designed to answer the overarching research question about DHH viewers' perspectives on captions:

1. Are you satisfied with captions? What do you like about captions?
2. How do you balance your time between reading the captions and watching the action that is happening on screen?
3. Do you feel that you can watch the visual screen at an equal level of access as a hearing person who is not reading the captions?
4. How would you improve captions? What suggestions do you have for improving captions?

Table 1. Participants' Demographic Characteristics (*N* = 20)

Age (years)							
18	19	20	21	22	23	24	25
1	3	3	3	4	4	1	1

Self-identified gender	
Male	Female
11	9

Self-identified race					
White	Black or African American	Asian	American Indian	Mexican	Black or African American and White
9	5	3	1	1	1

Self-identified ethnicity	
Not Hispanic or Latino	Hispanic or Latino
17	3

Self-identified audiological status		
d/Deaf	Hard of hearing	Both hard of hearing and d/Deaf
15	4	1

Cochlear implant use	
Did nor use cochlear implant(s)	Used cochlear implant(s)
15	5

Response to question "What language do you feel most comfortable communicating in face-to-face?"			
Sign language	Spoken English	Sign language and spoken English equally	Other
11	2	7	0

Response to question "How would you describe your English proficiency (your skills and ability to read and write in English)?"				
Very high	High	Moderate	Low	Very low
8	8	4	0	0

Response to question "How would you describe your sign language proficiency (your skills or ability to communicate through sign language)?"				
Very high	High	Moderate	Low	Very low
8	9	2	1	0

Note. A limitation of the present study is that participants were not asked to report their exact degree of hearing loss or acuity; rather, participants were asked to self-identify as d/Deaf or hard of hearing. This line of inquiry was intentional because the degree of hearing loss can be multifaceted, and two individuals with similar levels of hearing loss/acuity could self-identify differently (one as d/Deaf and the other as hard of hearing) depending on hearing aid use and other factors. Likewise, participants were asked about their use of "sign language" in order to encompass American Sign Language, Signed English, and other signed approaches. The study aimed to explore viewers' perspectives, and, to that end, participants were asked to describe their own identity.

5. I just showed you three 30-second clips of three videos with three types of captions. Now, what is your reaction to how these captions are designed?

6. What suggestions do you have for improving captions in different situations and contexts?

These six questions structured the focus group discussions. The study was approved by the university's institutional review board; all participants are identified by pseudonyms.

Data Analysis

The goal of the present study was to understand participants' perspectives on captions, and participants were encouraged to mention topics that were important to them. Accordingly, I collected the focus group responses and developed a coding scheme for analysis that emerged from the data instead of forcing data into "preconceived categories" (Charmaz, 2006, p. 32). My analysis reflected the significant topics of discussion.

Using the video recordings of each focus group, I carefully transcribed each participant's signs and statements into written English and made conscious choices about how to transliterate or translate Signed English, ASL, and other signs used by participants. While I transcribed the focus groups one by one, I wrote down notes and observations in the process of developing preliminary codes and categories that were based on participants' statements and topics. My initial coding cycle was influenced by the desire to understand "the phenomenon of interest from the participants' perspectives, not the researcher's" (Merriam & Tisdell, 2016, p. 16) and "to include as many different perspectives on an issue or topic as feasible" (Corbin & Strauss, 2008, p. 273). I reviewed the transcripts for the most significant initial codes and constantly compared each code and category. I developed focused codes and sorted each code into categories.

As the principal investigator, I was actively aware that my Deaf identity and passion for captions fueled my interest in the topic. I intentionally designed the present study in order to attend to other DHH individuals' distinct stories and to learn from their preferences and needs. While I shared their appreciation for captions, my qualitative analysis of the data foregrounds participants' own perspectives about the state of captions.

As I specified codes for participants' statements about captions, I remained conscious of each "code's *qualities*" in order to capture the value of the participants' perspectives (Saldaña, 2013, p. 155, emphasis in original). DHH participants discussed the importance of advocating for themselves, the limitations of captions in different media, making hearing individuals understand their experiences, the benefits of captions, and the need to improve the presence of captions. The resulting codes and categories are reflective of the overriding research question (What are DHH viewers' perspectives on captions?) and are presented in Table 2.

The categories of codes present the participants' perspectives on captions in a variety of contexts, while the overriding theme of advocacy and making needs apparent threads throughout the discussion. In the spirit of advocacy, the present article promotes awareness of what DHH caption viewers need in order to obtain access to education and society.

Findings

The categories indicate that major topics of concern for DHH viewers include advocacy for captions and preferences; the need for

Table 2. Coding Scheme

Category	Codes
1. Advocacy and preferences	Satisfaction with the availability of captions Advocacy and promoting awareness Customization of caption preferences
2. Real-time videos and direct access	Need for direct access Live captioning Sports captioning Online videos
3. Perspectives of hearing people, sound, and communication	Comparison of hearing and deaf viewing experiences [including sound in captions] Hearing people's perspectives on captions Communicative benefits of captions
4. Public, educational, and social/cultural spaces	Movie theaters Other public spaces Educational spaces

direct access to real-time videos, online videos, and other media; how captions influence and benefit viewers; and the importance of captions in public, educational, and other social/cultural spaces. Each major topic is discussed in the following sections, with elaboration on the subtopics that make up each unit of concern. These comprehensive units advocate for the needs and preferences of contemporary DHH viewers.

Category 1: Advocacy and Preferences

Perhaps motivated by the fact that the major research question addressed DHH viewers' perspectives on captions, an overarching theme in the responses was the participants' advocacy for captions and their preferences for captions. Their advocacy and preferences are presented first, in order to contextualize their specific judgments about captioning in different contexts later in the present article.

Satisfaction With the Availability of Captions

With the goal of understanding what participants appreciated about captions, the first question to the three groups asked "Are you satisfied with captions? What do you like about captions?" The groups expressed difficulty focusing on the positive aspects of captions, and some participants veered quickly into commenting on the negative aspects of captions. Some participants responded solely with negative aspects, while others responded with a mix of positive and negative aspects. The first five participants in one group successively responded to the first question with negative critiques of captions, leading the sixth participant, Tucker, to interrupt with "I thought we were discussing satisfaction? Or negative, which?" Members of the group laughed, and then Tucker provided his response and talked about the positive and negative aspects of captions, leading the other members to laugh about the difficulty of focusing solely on the positive aspects of captions. While the same group was still responding to the satisfaction question, Mercedes remarked, "I have a lot of negative," and Damon commented, "Negative: guaranteed to have a lot." The difficulty of focusing on satisfaction with captions suggested the participants' desire to improve the state of captions.

Despite the tendency toward commenting on negative aspects of captions, participants' statements about their satisfaction with captions revealed that they appreciated their availability. Members of one focus group commented that they were glad that Netflix shows and movies were now guaranteed to be captioned after NAD sued Netflix for not providing captioned access to its online streaming library. In another focus group, Katelyn remarked that she liked "being able to access captions anywhere," and Becky noted that some countries in Europe do not have captions, adding that "I realized, whoa, we're lucky we're almost guaranteed to have captions for everything [in America]." Raja explained that before moving to America 4 years ago, he had lived in a country in South Asia where he "watched movies and TV shows but there were no captions," and he did not understand media there. These comments show that the group members were generally satisfied that captions existed and that their availability represented an improvement over the past, when uncaptioned videos were the standard—a situation that they recognized continued to exist in other countries.

In summary, these DHH viewers appreciated the existence of captions, but also were aware that captions are not always available at all times in all contexts, as their other comments make clear. The need for improvements in access connects to their comments about advocacy.

Advocacy and Promoting Awareness

While no question explicitly asked participants about advocacy, the theme emerged in their discussions of how they advocated for their need for captions. Damon observed, "Deaf people need to understand what the movie is about, so that means hearing people need to be patient, take patience with deaf people . . . take

respect to deaf people." Similarly, Jazmine commented, "In order to improve captions, in order to improve access to everything, people themselves have to want to. Have to have [hearing] people's support." Damon, Jazmine, and the others showed awareness that improving access to captions is a collaborative effort between DHH and hearing people.

The participants made comments about how they needed to advocate for themselves, including times when they did not feel comfortable doing so. Cole remarked, "I feel nervous about asking people, hearing friends, if they could turn on the captions. They're like 'Really? Can't we just turn the sound up?'" Cody stated, "Most of my friends back home are hearing, but when I go to their houses to watch movies, I force them to turn on the captions. It's not fair for me to not [see], [to] miss." Their narratives revealed that they needed to remind others that they required captions in order to access videos and other programs.

While advocating for captions with friends can be awkward but necessary, advocacy is just as important with strangers. Whitney commented that it is important for hearing people to have "exposure, exposure again and again," to the importance of captions. Joel added the following reflection:

> Continually advocating for yourself. Not just be like, "Okay, fine, I guess I'll do it your way," you know. Like, advocate, say, "I must have captions." Educate hearing people because most of the time hearing people never met a deaf person before. Or they don't understand why we need [captions]. Need to explain [so that] they will understand. If you just say it in a mean way, "Turn on the captions!" they will jump back and say, "No!" You know. But if you explain, they will understand, "Oh." That.

They will be fine; then they will spread that out to everyone out there; then it will become better.

These DHH individuals recognized that they had to articulate their needs in cooperation with hearing people. Advocacy, then, is a sometimes uncomfortable but always necessary process of working with hearing people to ensure access to captioned media. The focus groups served a space for advocating their preferences. As Cole observed at the end of his group's discussion, "Thank you. Get it all out, finally. I'm not the only one." The preferences and needs expressed by the participants are detailed in the following sections.

Customization of Caption Preferences

A goal of the present study was to understand what DHH viewers want from captions. One preference expressed by the participants was for customization, or the ability to change the size, font, color, and other aspects of captions for various media. They disagreed about the specific designs of captions they preferred (for instance, no consensus was reached about which color font was best), but articulated the wish to have options in caption design. Hillary remarked that she would like to be able to modify the color and font of captions because certain colors were hard for her and others to see. In her words, being able to change the color would be "better than all the way white or yellow or whatever, especially for color-blind people who struggle to read [certain fonts and colors]." She appreciated television sets that let her change the caption size so that she could read better. Similarly, Diego commented that it is important for people to "have options" and "choose which they want and set up their preferences" instead of requiring all captions to be the same.

These statements by Hillary and Diego showed awareness of the different needs of viewers. Hannah appreciated being able to change the color, font, size, and background of the captions when watching The CW network shows online. She wished that customization would be an option for all other media providers so that users could possess the "authority to make changes" that were "self-controlled." In addition to changing the font and color, Jason added, "I wish they would invent something that lets us customers control captions and where to place the captions." He mentioned the importance of being able to control the font, "especially for people who have sensitive vision." These expressions of preference for customization of the look of captions underscored the importance of access so that viewers could choose the best style of captions for themselves.

Opportunities to customize captions vary across media platforms, but customization possibilities are expanding with the introduction of new technologies, and the benefits to DHH viewers are potentially immense. Having options and control over caption choices in all platforms would support viewers' abilities to access media.

Category 2: Real-Time Videos and Direct Access

In regard to captions, an appreciation of availability, advocacy, and customization are all fundamental to understanding DHH viewers' evaluations of how they access, or struggle to access, real-time videos and uncaptioned videos.

Need for Direct Access

In addition to criticizing specific contexts, the study participants made comments about the need for direct access through captions; they also said it was necessary that captions be accurate and well timed.

They criticized captions for being mistimed (appearing either before or after a speaker said something), for sometimes being absent from DVDs and other media, and, in the case of automatic and human-generated captions, for introducing transcription errors. Their comments underscored the need to access information in real time at the same time that information is provided. They pinpointed the relative lack of captioning in commercials and movie trailers. As Tucker summarized, "Trailers, commercials, short films, short clips tend to not have captions." In addition to insisting on captioned commercials and trailers, they wished for full access to media through accuracy and the elimination of delays. When discussing what he wanted from captions, Tucker stated, "100% accurate. 100% accurate. Not miss, miss, miss, or delayed, nothing. [For people to be confused and ask] 'Delay exists?' I want that." Jason imagined possible changes in saying that "the old generation, I'm amazed when they say, 'There were no captions [in the past].' Now, 40 years from now, I will say, 'You know in the past captions used to be delayed,' and [they'll be] amazed. That means 40 years later, [captions] will be exact, 100%."

The participants' stories and wishes make apparent that the existence of captions is not sufficient in itself, and that viewers need direct access to real-time content, including commercials and short clips, through accurate and temporally synchronous captions. Promoting awareness of these needs would support DHH individuals in society.

Live Captioning

When expressing their dissatisfaction with captions, the participants brought up delays in live captioning for news, weather, and other live programs. Captions are not added ahead of time to live programs, so delays

can frequently occur as captioners attempt to put captions on screen as soon as possible after words are spoken. Hillary made clear that captions for live programs are important because "we must know what's happening today, or if something terrible happens, we must know." At the same time, she acknowledged that captions can be a little delayed when programs are live: "I don't blame that, they're trying." DHH viewers' access to live captioning is imperative considering the risks of waiting until a later time for captioned versions of emergency broadcasts. One focus group commented about the recurrence of "fake interpreters" for recent emergencies on live television and how DHH viewers could not always rely on these interpreters, which makes accurate live captions even more crucial.

In addition to criticizing the timing of captions, the participants criticized the physical placement of captions that blocked important visual or textual content on news programs. Jing and Hillary shared their childhood experiences of watching local news programs during snowstorms and being unable to read the complete school names in the list of school closings in the crawl at the bottom of the screen because the closed captions were placed right on top of the crawl.

The desire for captions to be synched with spoken content led Boone to suggest the use of both humans and artificial intelligence to create captions and correct mistyped words in live television. His suggestion complemented the study participants' interest in strategizing changes that would improve the speed, placement, and accuracy of live captioning.

Sports Captioning

Participants added to their discussion of live captioning with specific discussions of captions for televised sports events. Like other forms of live captioning, captions for

sports are delayed and may be placed on screen in areas where they block significant information or moments.

Several participants who described themselves as sports viewers explained that they would turn off the captions during televised sports events, including football, basketball, and hockey games. As Cole stated, "It's hard to know where the ball is because the captions are in the way. Where is it? It's better to watch sports with the captions off." Cole, who identified as hard of hearing, explained his dislike of sports captioning: "I hear [the commentators] talking and I'm wondering what they say and the captions are far behind; I'm waiting, oh, now I understand, because the word has to catch up. Oh, I get it, but now I'm behind because I'm reading too." Instead of watching the captions, he would choose to focus on the game. Similarly, Barake explained that he would always watch the pregame coverage with captions in order to learn the facts and commentary, then turn off the captions during the game.

While those who described themselves as sports viewers generally commented that they turned off captions, Jason said that he kept the captions on in order to "know what the commentators are saying, facts about each player. . . . I learn something new. . . . That benefits me a lot." Inadequate live captions make apparent that more attention needs to be paid to placing captions temporally and spatially on screen so that viewers can access linguistic information and action. While customization would enable viewers to move the placement of captions for sports according to personal preferences, general improvements in the placement and synchronization of captions could prevent viewers from turning off the captions. After all, if DHH viewers are the target audiences for captions, they should be the ones who want

to keep the captions on. Temporal and spatial improvements could strengthen DHH *and* hearing viewers' appreciation of captions and thereby expand the presence of captions across a variety of screens.

Online Videos

Increasing the number of adequately captioned videos would support access to online communities. Participants both criticized and praised captioning in online contexts, including YouTube and social media videos. They criticized the errors in YouTube's automatically generated captions and insisted that YouTube needs to improve. At the same time, some pointed to recent advances. Seth, who identified as hard of hearing, stated, "When I watch YouTube videos, the automatic captions seem much better than what they were before. There is improvement." Participants insisted not only that YouTube improve even more, but also that video creators are responsible for captions. Cody asserted, "The creators who make their videos, right, they need to do it themselves. Yes, [YouTube videos] have captions, but most of the time it doesn't match what [the speakers] say. So, it's the creators who need to put in the captions." Seth commented that people should use online sites to caption videos for other people.

Participants pointed to the lack of uncaptioned live videos on social media and their inability to access live conversations. Mercedes explained, "On Facebook and Instagram they tend to have live videos with no captions, nothing. It goes past my head; I don't understand." Jason added, "Also, Instagram tends to interview players after the game. They speak, I don't know what they say. Some [users] comment about the video, 'Whoa, they said that!' I'm like, 'What did they say!'" Despite the frequency of uncaptioned social media vid-

eos, a few participants mentioned some social media users and pages that reliably provided captioned videos, which made them more accessible for DHH viewers.

While uncaptioned social media videos and imperfectly automatically generated captions still exist, improvements have occurred over the last few years. To nurture the continual growth of captioning in live and social media contexts, yet more awareness is needed so that video creators include captions in videos they put online. DHH viewers' message is clear: Social media and online videos should be captioned. Social media provides the opportunity to make advocacy for captions apparent, since users can directly interact with other users and videos online. Their interactions with other users on social media can be informed by their perspectives of hearing people, sound, and communication through captions, as discussed next.

Category 3: Perspectives of Hearing People, Sound, and Communication

One of the focus group questions asked participants if they felt that they could watch the screen at an equal level of access as a hearing person who was not reading the captions. One of the follow-up questions asked if they had ever had a friend or family member turn off the captions while they were watching television or movies. These questions prompted participants to discuss how the viewing experience is different or similar for hearing and deaf viewers, including how sound is represented or processed through captions, and to discuss hearing people's perspectives on captions. The participants also made comments about the benefits of captions for deaf viewers and for hearing viewers. These points conveyed their perspectives on hearing and reading captioned media.

Comparison of Hearing and Deaf Viewing Experiences [Including Sound in Captions]

When comparing the viewing experiences of deaf viewers and hearing viewers, participants described how deaf viewers rely on their eyes to catch everything on screen while hearing viewers can hear sounds, which creates two different experiences. Becky explained, "I'm deaf; I must watch with my eyes on the screen, if I look away, I miss. I don't want that. Hearing people can wash the dishes, or whatever, mingle around and hear, then look back at the screen right away when something exciting happens." The participants' statements suggest that the need to see the screen can lead deaf people to attend to what is on screen more than hearing people might.

Diego captured the cultural differences between deaf people and hearing people in processing social meaning when he explained that "facial expressions are required to understand and communicate" in Deaf culture, but that hearing people use inflections with relatively neutral faces. Participants described the benefits of captions that describe sound in brackets so that they can understand emotional inflections conveyed by speakers, background sounds (such as eerie tones in horror movies), and other sounds that are essential to the context of a show or movie. Captions with descriptive language make sound accessible.

While the experiences of viewing sound and hearing sound may be different, Jazmine provided an example of when she would have the same experience as the hearing members of her family. After explaining that she generally did not get the same information as her family, she added,

But if it's a Black movie or Black culture, I already know, get it, know what to do because

. . . it's fine, doesn't matter the conversation, but I understand the body language, action, everything. The captions, I laugh, we all can laugh, we all know what that means already. So, it really depends on the culture. So, if we watch the same in our family and culture, we understand.

Jazmine's story conveyed the cultural value of collectively participating in viewing media and appreciating a shared message.

Participants' comparison of hearing and viewing captioned media constitutes an appeal for captions that make aural content accessible to DHH viewers. Access to sound strengthens viewers' ability to understand inflections, environmental noises, and significant messages that might not be readily discernible from looking at hearing actors' faces.

Hearing People's Perspectives on Captions

The differences between viewing and hearing media support DHH viewers' advocacy for captions as indispensable. One prompting question asked participants about their experiences with hearing people turning off the captions. Participants told stories about their hearing friends and family members that showed a variety of experiences: Some friends and family members still disliked captions, some accepted captions from the beginning, and some learned to accept captions but preferred not to have them on. Katelyn shared her narrative:

> My family supports me no matter what; I need, for my access, to watch captions, yes, but I do understand they quote-unquote psychologically are distracted. So, sometimes they feel comfortable to turn them off when I'm not there. If I'm there they will leave it alone, leave it, let me watch too.

Similarly, Hillary remarked that when she was home from college over winter break, her family turned off the captions when she was not in the room but would forget to turn them back on for her, leading her to state to the group, "Why can't they leave it on, you know? Just, I think it just bothers them to look, it's distracting, the captions. They prefer to listen, you know." In a similar vein, Damon explained how the members of his immediate family "got used to watching the captions" but "prefer to hear" rather than depend on the captions; however, the rest of his extended family "can't deal with the captions being on. That's just one line [of captions on screen] and they make a huge deal." Cole described how his grandparents once told him, when he was younger, "It's getting in the way, do you mind turning it off?" But then Cole's grandparents realized that he needed captions, even though they preferred to keep the captions off. These participants' narratives disclosed their collective sense that hearing people might not always fully like having captions on.

While some hearing people might not want to keep captions on, Damon and Whitney noted the tendency of hearing people who are acquainted with deaf people or Deaf culture to be more aware of the need for captions. Damon explained, "Depends on hearing people; those who are involved with deaf people will tend to read the captions, or if they don't feel involved with deaf people, turn off the captions. So, it depends on people who are hearing." Whitney stated, "Sometimes it depends on the person who says, 'Yes, I understand you need captions, you rely on them, fine, ready, I'll set it up'. . . . So, it depends on that person and who knows about deaf [people]." Hearing people who are aware of deafness could be more likely to understand the need for captions, which indicates that promoting awareness of deafness and access could enhance general acceptance of captions.

Communicative Benefits of Captions

Throughout the focus group discussions, participants brought up the benefits of captions for DHH and hearing viewers, particularly how viewers can improve their reading and language skills through captions or how viewers can better understand the communicative content of a video through captions. Participants mentioned how they used captions to improve their English skills. Raja, who lived in South Asia before moving to America, said,

> That time my English was bad. Worse. I moved here, started watching Netflix, looking for captions. I found [them], I watched again and again, every day. Now my English improved. That helped. I still watch every, every day. I can't live without watching captions. I can't. I really need that.

Raja, a multilingual speaker and signer, exemplified the benefits of constant exposure to language through reading captions.

Other participants echoed Raja's statement when describing how exposure to captions supported their English skills. Becky explained how she used captions to improve her vocabulary, Mercedes described captions as a "benefit" to deaf people's reading skills, and Jing stated that following along with captions helped her understand how to write and speak in English. Diego described how he would watch captions and not always know all the words in a movie, but would watch the movie again and try to use those words correctly in order to improve his English-reading skills.

Participants articulated how captions enhanced their English-language skills; also, Barake shared a narrative about how captions benefited his hearing brother:

> The funny thing is my brother was not good at spelling. He's not good. And now often he looks at the captions and he's good at spelling. I applaud him. It helps him, that, really. . . . Like the word, one word, long word: "incredible." My brother couldn't spell it. The sound and rhythm, he missed the *I* and *E*. I told him, no, you have to spell with *I* and *E*, and he said no, no. We saw the captions with the word in full and he was like, oh, oh, "incredible." Because the sound, sometimes he missed vowels and [did] not spell the word in full. That you need to spell the full word right. Oh, oh, he got it. The process led—so he knows how to spell the right word.

Barake's story reiterated the role of captions as an accessible tool for improving English-language skills. Increasing the awareness of captions in media could support a range of viewers, including multilingual learners, DHH viewers, and hearing individuals.

Supplementing their discussion of how captions benefit their language skills, participants observed that captions benefit deaf and hearing viewers' ability to understand the communicative content of a video. Gracia, who used a cochlear implant, commented that captions were helpful when speakers in videos had accents, while Boone described how reading captions helped his friends and parents when they missed moments in movies, leading them to say, "'Oh, I see, I understand what's happening because of the captions.'" Captions can support communication in videos and a variety of spaces, as is discussed in the next section.

Category 4: Public, Educational, and Social/Cultural Spaces

While discussing their perspectives on captions, the study participants gave input on captions in public, educational, and social/cultural spaces, particularly movie theaters and classrooms. These contexts accentuate the vital necessity of captions as a form of

access to learning and community spaces for DHH individuals.

Movie Theaters

The topic of movie theater captioning emerged in each focus group as participants discussed movie theater captioning technologies, including the display unit that rises from the seat cup holder, glasses with captions, and open captions. They expressed frustration with the display unit because it would fall over or not stay upright, and because they need to sit in specific areas of the movie theater in order to read the display unit. When they used display units and glasses, sometimes the captions would not appear at all or disappear randomly, or there would not be enough devices for all members of a group of DHH friends who wanted to patronize the same movie theater. They articulated their preference for open captions that are always available on screen.

The participants criticized movie theater glasses for being heavy and difficult to wear, especially for those who already wear glasses and those with limited vision. Gracia supported the others in her focus group in expressing her dislike of movie theater glasses: "I agree with open captions because it's better that way and I hate the glasses, they're annoying and heavy. Sometimes they don't work, frustrating, so it's better to have open captions." Barake commented, "Glasses, I can't see because the captions are low [on the glasses] and I need them higher. I prefer captions on the screen, not the glasses and not on the display." Jing explained that it was hard for her eyes to "focus on the captions in the glasses then back up and see the movie screen." While they criticized the inaccessibility and physical design of glasses, Hannah said she appreciated that the captions on glasses can be customized to change the size, brightness, and other aspects.

The participants' overriding preference for open captions stands in contrast with the limited number of movie theaters that provide open captions. Observing that the focus group members were lucky to live in a deaf community, Diego insisted, "I want to improve [it] so that all movie theaters have open captioning. I want to improve [it] so that all. Not one that leads it and sets up in some places only in some places, my place. No. All." Gracia was equally adamant: "I feel like we should let people know that we need better captions in movie theaters, TV shows, all. Like, for example," she said, pointing to Diego, "I know you were talking about that only here [in their college town] they have open captions. I feel like we need to let people know that there are deaf people out there that need captions."

Open captions would enable viewers to watch captions directly on a movie screen rather than be obliged to use a separate device. The access to cultural knowledge that is facilitated by movies can promote social engagement in community spaces.

Other Public Spaces

The passion that participants expressed for open captions in movie theaters complemented their concern for access to captions in public spaces, particularly airports and airplanes. They expressed dissatisfaction with the lack of captions for movies on planes and for public announcements in airports and on planes. Joel summarized his point:

> I'm sick of like, airports, train stations [that] . . . announce delays and whatever; I can't hear anything, I'm looking around. Looking at the app on my phone on my own, but hearing people can just hear, oh, it's delayed two hours, perfect, relax. Me, I freak out, what did they say? Checking my phone trying to figure out what's going on. It's better

to have captions ready to tell us what's going on, delays, what, that kind of thing.

Joel captured the urgency of accessing real-time information in public spaces, especially when navigating high-stakes situations in airports with specific arrival and departure times and locations.

The high-stakes situations extend to airplanes, and Raja justified the need for captions on planes: "Because on the plane, if it flies, in the middle of the flight, they say something, hearing people can hear, but deaf people don't understand what they're talking about. Something bad happens, you don't know what happens." The lack of awareness in high-stakes situations could be dangerous in the worst of circumstances and uncomfortable in the best of circumstances. Seth agreed with his focus group's discussion of captions on planes, stating that "when you're flying, we need more support for that." Accessing urgent information is a vital component of maintaining self-sufficiency in navigating public spaces, as well as educational spaces.

Educational Spaces

For many DHH viewers, captions are indispensable in course videos and other educational visual media. In order to unpack students' experiences with captioned videos in the classroom, each focus group was asked the following as a follow up to a general question about what they would like from captions: "What about classroom videos or educational videos?" While this question did not ask about uncaptioned or inadequately captioned videos, members shared specific experiences of watching uncaptioned videos or YouTube videos with imperfect automatic captions in high school and college courses.

Accurately captioned educational videos are a prerequisite for receiving equal and direct access to learning material and the

learning community of a classroom. Jing explained how the professor in her online class the previous semester had included captions in video lectures: "That's very important, putting the captions in for spoken lectures." While her story encapsulates the positive work of instructors who attend to accessibility, the study participants' other stories reveal barriers to access that prevent students from fully participating in the classroom community when uncaptioned or inadequately captioned videos are used as educational tools. Becky described automatic captions as the worst in the classroom, since "the captions are totally off," leading her to wonder why "everyone is laughing," until she realizes that everyone is "laughing at how off the captions are." Inadequately captioned videos detract from the pedagogical purpose of a classroom video and can impede effective learning.

Uncaptioned videos in the classroom can lead to moments of frustration for both students and instructors. Hannah described how, in a class the week before her focus group discussion, she felt "the whole burden on me . . . pressure and embarrassed," when her instructor struggled to make the captions work in a video and "it was dragging on":

> And I felt like the whole thing was on me again, and I didn't like that. I felt like I didn't want to be in their way, but at the same time I have the right to have full access to teaching, yes, education. But sometimes it feels like too much pressure. . . . I want teachers . . . [to] check videos to make sure videos have captions; if not, then switch to a different video.

Hannah's story showed that her instructor was attempting to ensure equal access in the classroom. To make the process more successful, instructors should preview videos

before showing them in the classroom in order to ensure that captions are available and accurate.

Mercedes agreed that instructors should "research" videos in advance and echoed Hannah's story when discussing how, the day before the focus group discussion, Mercedes's class watched TED Talks and some videos had captions but others did not. Joel likewise had to watch uncaptioned material in class the same day as his focus group and missed the proper procedure and some vocabulary words in the video, which led him to remark, "So I have to later tonight or tomorrow look it up myself, find the video again, and read about it. I have to."

These stories about uncaptioned course videos do not necessarily imply that most of the study participants' classroom videos were uncaptioned. Rather, these narratives suggest that the uncaptioned moments were salient in their memories and that they could readily recall these instances of barriers to access. The barriers recalled in these salient moments need to be overcome, as discussed in the next section.

Discussion

My analysis of the statements of the DHH individuals who participated in the focus groups for the present study indicates the importance of advocating for captions and access to social, educational, and other public spaces. DHH individuals appreciate the availability of captions, the need to ensure access to captioned media, and the possibility of having choices for captions. They insist that direct access to real-time content, live captioning, and online videos be improved. They recognize hearing people's perspectives on captions and that captions benefit hearing and DHH viewers. They still experience obstacles to access

that must be overcome if they are to learn and to participate in society.

DHH students' experiences with uncaptioned and imperfectly captioned videos in the classroom show that access is a continual process (Dolmage, 2008; Yergeau, 2014; Yergeau et al., 2013) and that, with the sky-rocketing number of videos available online, viewers cannot always trust that a video is adequately captioned. Moments, then, occur in which an imperfectly captioned video creates a barrier to kairotic spaces, or high-stakes academic spaces in which "real-time unfolding of events" occurs, "knowledge is produced," and those who are present participate in communication (Price, in Yergeau et al. 2013). A classroom is a kairotic space in which students are expected to contribute to the real-time discussion; however, if students cannot access the topic of discussion—such as a video that is not captioned—then they cannot be present in the exchange of knowledge. Access to video-based learning occurs more effectively through captioned videos, so students and instructors should collaborate on improving access to captioned videos. Instructors and classmates should ensure that videos are adequately captioned before sharing videos for group projects, class presentations, and lectures.

Educational access benefits both DHH and hearing individuals, as the participants pointed out. The improvement of language and communication skills through captions is a substantial advantage for viewers since captions enable access to the learning of English. Incorporating captioned media into the classroom and other educational spaces can be a step toward universal design for learning by making material accessible to individuals with and without disabilities, including DHH and hearing students (Burgstahler, 2015; Dolmage, 2008; Hamraie, 2016; Lewiecki-Wilson &

Brueggemann, 2008; Rose & Meyer, 2002). By spreading awareness of the benefits of captions for a wider population, DHH individuals and educators can persuade hearing viewers to turn on captions.

Captions support viewers' understanding of media, and the proliferation of that message could persuade media creators and viewers to improve the availability and quality of captions. The participants observed how hearing people who are aware of deafness can be more likely to appreciate captions, which suggests that advocates can inform hearing audiences to recognize the need for adequate captions. Those who work with DHH individuals can support their advocacy in calling for an increase in captioned media.

Advocacy can succeed within and across communities. The focus group participants were college students who lived in an area with a relatively large deaf population, so they experienced the benefits of living in a community with awareness of accessibility. As an example, members of the focus groups mentioned the same local cinema when discussing movie theater captions. This theater could cater to a large deaf community by providing captions; however, those who may be the only DHH individual in their school or community might not have access to a movie theater with captions. Advocates must ensure that DHH individuals in different regions receive and maintain access to captions.

Promoting awareness across communities requires skill in cooperating with others, especially considering how participants' stories reflected advocacy as a continual process of ensuring access to captions. Through education, within and outside the classroom, advocates can work together to improve direct access to real-time and high-stakes situations.

Limitations of the Study and Directions for Future Research

Because my objective was to understand a specific population's perspectives, the present focus group study was intentionally limited in its scope and degree of investigation. The primary limitation of the study is that the participants were students from the same college. While their sense of shared community could have supported their ability to discuss experiences with each other, their membership in the same community may have influenced the results. Additional studies could include interviews with DHH individuals in different regions, including individuals who may be the only DHH student at a school.

With all participants in the present study being between the ages of 18 and 25 years, the findings might not represent the experiences of younger students who grew up with digital technologies or older adults who grew up without captions. Other studies could explore the needs of DHH individuals of a variety of ages. Nonetheless, the 20 participants represent the current generation of higher-education students that is beginning to actively contribute as adults in politics, culture, and social justice. Their perspectives are highly valuable.

Another limitation of the study is the variety in how often and how long each participant contributed input. While some participants elaborated with extensive stories and others were succinct, it was my objective in the present article to present at least two statements from every participant in order to harvest the full group's collective message. Follow-up studies could enhance an understanding of how individuals from different regions with different hearing levels and backgrounds access captioned media. To enhance the accessibility of captions, DHH individuals, educators,

and scholars can continue to call for improvements in the availability and accuracy of captions, captioning technologies, and awareness of the benefits of captions.

The wealth of stories that participants shared reveal the progress captions have made in the last few decades since captioning became widespread on television screens. DHH individuals benefit from the ability to access a variety of captioned media and a growing number of online videos; yet, the lingering inadequacy of captions propels DHH individuals to strategize improvements. The classroom can be a primary space in which advocates collaborate to widen the prevalence of captions in online, educational, and other settings.

Note on Funding

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