Using Applied Conversation Analysis in Patient Education

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Abstract

The conversation strategies patients and clinicians use are important in determining patient satisfaction and adherence, and health outcomes following patient education—yet most studies are rife with surveys and interviews which often fail to account for real-time interaction. Conversation analysis (CA) is a powerful but underused sociological and linguistic technique aimed at understanding how interaction is accomplished in real-time. In the current manuscript, we provide a primer to CA in an effort to make the technique accessible to patient education researchers including; The history of CA, identifying and collecting data, transcription conventions, data analysis, and presenting the findings. Ultimately, this article provides an easily digestible demonstration of this analytic technique.

Introduction

Research examining patient education has proliferated alongside the emergence of patient-centered care over the last half-century (Gerteis et al., 1993; Mead & Bower, 2000). These studies primarily leverage interviews with patients following consults (Bracher et al., 2020; Rodin et al., 2009; Roter & Hall, 2006). As a result, most (75%–90%) studies on patient education do not account for real-time talk (Georgopoulou et al., 2018; Peterson et al., 2016) and few (1%) involve family members or caregivers (Troy et al., 2019). Interviews also may be inadequate as they rely on participants' recollections of events which may be misremembered and are also described in relation to particular interviewers and contexts (Whitaker & Atkinson, 2019).

A small subset of patient education studies have relied on conversation analysis (CA) to examine audio or video recordings of actual interactions (Heritage & Maynard, 2006; Riviere et al., 2019). CA involves close review of utterances, including pauses, overlapping speech, and turn-taking as they unfold in sequence (Heritage & Clayman, 2011). CA asks *Why* this particular word, utterance, phrase, or language is being expressed? and Why this particular word, utterance, phrase, or language being expressed *now*? (Clift, 2016). Though few researchers in patient education have used the method, the literature using CA has been applied across a broad array of medical contexts such as perioperative assessments (Benwell & Rhys, 2018) and chronic disease self-management (Larsen, 2017).

CA has been applied to improve the communication techniques clinicians use across a variety of settings. For example, researchers applied CA to audio and video of staff conversations with patients with aphasia (Finlay et al., 2011). Analysis revealed patients had a difficult time responding when asked multiple questions in quick succession. As a result of staff's reflecting on these findings, they purposively adjusted their communication strategies to provide fewer options in a format conducive to patients' processing abilities. In another example, Heritage and Robinson (2011) combined CA and surveys to address the concern of patients failing to disclose secondary complaints during patient education. The researchers arranged a study using positively ("SOME") and negatively ("ANY") charged words. In their study they randomly assigned patients into one of two experimental groups; one with the physician stating, "Is there something else you want to address in the visit today?" ("SOME" condition) and the

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other which ended visits with "Is there anything else you want to address in the visit today?" ("ANY" condition). A post-survey showed that participants randomized into the "SOME" condition mentioned their secondary complaints 90% of the time—while the "ANY" group brought them up 53% of the time, which was statistically no more likely to divulge secondary complaints than a control group. Doctors were concerned that raising secondary complaints would lengthen the visit, but contrarily participants in the "SOME" group not only raised secondary complaints more often, they remained relatively the same (they were shorter visits by 0.01 of a second), while the "ANY" group visits lengthened by 55 seconds. Ultimately, both examples above illustrate practical application of CA, with results that would remain unrealized using other methods.

Although an effective means for examining patient education, CA is rarely used compared to other research methods and its use has not increased over time (Riviere et al., 2019). For example, Jones (2003) wrote an article lauding CA in patient-nurse communication research. Two systematic reviews of patient-nurse communication in the succeeding years showed that interviews followed by surveys remained the most common means of research in this area (Fleischer et al., 2009; Riviere et al., 2019). Another review of patient-nurse communication studies, focusing on CA and ethnomethodology, searched three databases for all literature through 2016 and found only 40 articles (Mayor & Bietti, 2017). Patient education researchers exhibit similar patterns, with very few studies using CA (Albury et al., 2019; Murad et al., 2014; Stortenbeker et al., 2020).

There are several reasons why researchers might not select CA in studies examining patient education. In particular, CA can be complex, and some researchers may be unaware of its applicability in a clinical setting (Heritage & Maynard, 2006). Confusion surrounding CA may be owed to the technique's roots in studying "mundane talk," or everyday conversations, rather than in patient education (Drew & Heritage, 1992). Further, CA is time-, labor-, and resource-intensive, requiring painstaking transcription and iterative analysis, often assembling large data sets to include multiple sequences of phenomena (Goodwin & Heritage, 1990). Yet, CA offers a systematic method for exploring and improving patient education outcomes. To address concerns over applying CA, we provide a brief overview of the fundamental principles of CA, followed by a step-by-step demonstration of analysis in patient education. We do not intend to offer an exhaustive overview of CA, but rather a primer aimed at making this underutilized technique more accessible to researchers in patient education.

Conversation Analysis Fundamentals

The Origins of CA

Conversation analysis (CA) emerged in the 1960s during a time when sociologists shifted focus away from viewing interactions as a means for expressing aspects of the social world, and toward observed social and cultural constructs (Goodwin & Heritage, 1990, p. 283). With roots in Ethnomethodology (Garfinkel, 1967) and Interaction Order (Goffman, 1983), the late Harvey Sacks, and his collaborators Emanuel A. Schegloff and Gail Jefferson, focused CA on sequences of action through language use (Sacks, 1995). CA accomplishes this by viewing each utterance as the speaker orienting to and building from the previous utterance(s). Goodwin and Heritage (1990, p. 284) wrote that CA defines "social interaction as a dynamic interface between individual and social cognition on the one hand, and culture and social reproduction on the other." The resulting framework allows for close scrutiny of how speakers use strategies to produce social action, or how interactions take place.

A Brief Overview of the History of CA

The origins of CA can be traced back to a study of suicide hotline data by Sacks, along with collaborator and founder of Ethnomethodology, Harold Garfinkel (Sacks, 1995, pp. xvi–xvii). Importantly, Sacks was more interested in the structure of conversation and how social interaction was accomplished rather than the specific context, in this case a crisis support hotline. A key finding from this early work included the subtle techniques some callers used to avoid giving their name, such as in the following sequence:

A: This is Mr. Smith, may I help you.

B: I can't hear you.

A: This is Mr. S̲m̲i̲t̲h̲.

B: S̲m̲i̲t̲h̲

(Sacks, 1995, p. xvi)

Notice how the call taker, *A*, answers the call by stating his name, which in turn implicitly calls for *B*, the caller, to reciprocate and provide their name in response. At the second utterance we do not know yet that the caller is feigning a hearing problem. However, at line four, one could interpret that something is awry, since the call taker has spoken his name again, this time more loudly at utterance two, due to orienting to line two as a hearing problem. However, this *repair* (defined below) by the call taker, fails to elicit the caller's name. Instead, the caller simply repeats the call taker's name, "Smith," rather than providing their own name. Sacks examined a large cadre of sequences to develop a set of fundamental CA principles of turn-taking, sequences-organization, and other phenomena involving talk-in-interaction.

Although the pioneering work of CA took place in an institutional setting, as work developed Sacks and colleagues focused their attention on non-institutional talk, termed pure

CA, which they valued due to the lack of pre-assigned roles. They considered non-institutional talk to include everyday contexts, such as mundane conversations between friends and family members. Alternately, institutional talk involves a formal setting with pre-assigned roles. Gradually, applied researchers adopted CA in institutional settings including patient education, work given the moniker of applied CA, in hopes of applying and expanding on the fundamental concepts of CA (Heritage, 2013). Given this background, it would serve aspiring CA researchers well to have a base understanding of these fundamental CA principles. As such, the following section provides a brief introduction to these fundamental principles including adjacency pairs, turn-taking, recipient design, and repair (Lester & O'Reilly, 2018).

Adjacency Pairs

All conversations are composed of talk between two or more speakers, who contribute utterances which reflect and build on previous utterances. A fundamental conversational resource in multi-party talk the *adjacency pair*, refers to sequences of utterances which are spoken by different speakers and naturally follow each other (Heritage, 2005). Adjacency pairs are seen in everyday conversation including in greetings and farewells, in which the initiating speaker expects the recipient to give a reciprocal hello or goodbye response, respectively. Once the first part of the adjacency pair is uttered, this puts in place the expectation for a response from the other person involved in the conversation. Yet, this give and take could, at times, be interrupted by an *insertion sequence*, or a speaker adding additional related or unrelated information. If the second part of the pair is absent, it is an accountable absence. The speaker may account for the absence by initiating a *repair* (defined below); although they could also fail to complete the sequence. An example of an adjacency pair which fails to orient toward the previous action is represented in the above sequence, where a suicide hotline call taker stated his name with the expectation that the caller would then provide their own name. As may be seen, this does not occur. Instead, the caller repeats the call-taker's utterance.

Turn-Taking

All interactions involving two or more speakers require that contributors take turns. In daily life, the role of turn-taking is rarely pre-determined; however, in an institutional setting, constraints may exist determining who has power to initiate turn-taking. For example, in medical consultations, the clinician often takes the role of educator and initiates conversations, with patients waiting for their turn to speak. Institutional turn-taking was reflected in the introduction to this paper when considering the study aimed at increasing conversations around "secondary complaints" (Heritage & Robinson, 2011). In this study, the researchers prompted physicians to elicit other health concerns that they may wish to discuss after the patients initial concern was addressed.

Recipient Design

Tightly tied to *adjacency pairs* and *turn-taking* is the fundamental CA principle of *recipient design*, which is how speakers shape their speech to match both prior utterances and how they anticipate the conversation will continue to take shape. As such, it is important to consider not just what language was used, but also when the language was used in relation to ongoing conversation. In addition, *recipient design* accounts for who the talk is directed toward in a group setting. For example, in a medical consultation, a clinician educator may direct their gaze at a caregiver, rather than at the patient, when they hope for the caregiver to provide a response (Tiitinen & Ruusuvuori, 2014).

Repair

When misunderstandings occur, speakers must try to correct, or *repair*, statements to get the conversation back on track. Misalignment in understanding can occur due to a person misspeaking as well as a listener misunderstanding. When this happens, the error is usually attended to before proceeding with the conversation. Errors in what a speaker says or in the interpretation of speech occur spontaneously in conversation. After errors are identified in speech, the speaker or the recipient seeks to *repair*, or correct the error. There are several forms of *repair* identified in CA work; we will review two commonly used types.

> *Self-initiated self-repair*—where a person recognizes a mistake they made in speaking and then issues a correction utterance (Schegloff et al., 1977). For example, I might ask, "Can you hand me that cat?", then immediately correct myself by saying, "Sorry, I meant hat. Can you hand me that hat?".

> *Other-initiated other-repair*—where another person recognizes your mistake and corrects you— "Sorry, did you mean hat?".

A considerable amount of work has been done to expand on the above-mentioned CA fundamentals, much of which are oriented toward CA taking place in non-institutional settings, sometimes called pure CA (Schegloff, 1982). Nevertheless, the above overview provides a preliminary foundation for CA research in an institutional setting.

Demonstration of CA

The purpose of this section will be to provide a step-by-step illustration of using CA with a sample of institutional talk. Following a brief description of the data used for this demonstration, we walk through the CA process, specifically how data should be prepared for analysis, and an actual analysis of one short excerpt of audio recording.

Table 1. Example of Standard Transcription.

N:	Uh in terms of collecting the stem cells um that that's our next step that we're gonna start you know Thursday the twelfth using the medications and and I saw that um or I heard you say that you've seen the videos
PT:	emhm
N:	In terms of the videos you know um how do you feel about injections doing those at home
PT:	Well uh my uh daughter in law is an RN and I was gonna have her do them until I found out that they have to be twelve hours apart and she's still she has a twelve hour shift
N:	right
PT:	so
N:	so the good news for you um and I can't say this for anybody taller or heavier than you but the good news for you is your dose could actually be given all at once so you
PT:	yyyyeeehhhhhhhhhhhh

Description of Data Used in Example

The first author obtained the audio recordings as part of a quality improvement study of patient education (Halpin & Konomos, 2020; Halpin et al., 2021). The study used educational videos created by the first and second authors to supplement in-person education visits for patients diagnosed with multiple myeloma who are preparing to undergo autologous stem cell transplant. In-person education visits typically last 90 minutes, and are comprised of a nurse coordinator, patient, and spouse/informal caregiver. Visits cover a range of topics to prepare patients and their caregivers for the transplant process. Previous ethnographic observations and interviews by Halpin and Konomos revealed that patients were overwhelmed by and unable to retain critical information from in-person education visits. To address this, we developed videos to provide patients a general overview of what to expect from autologous stem cell transplant and stimulate meaningful conversation at the in-person education visit around any concerns the patient might have. We shared the videos with the patients and their caregiver for review prior to the in-person education visit with a nurse coordinator. The data excerpt used for this demonstration comes from audio recordings of in-person education visits after implementation of the supplemental educational videos, which exemplifies talk that routinely occurs in patient education in this context (Table 1). Given the sensitive nature of the topic, video was not permitted. The study received IRB approval from and was deemed a quality improvement project by Emory University and University of Georgia.

Identifying and Collecting Data

The aim of CA in patient education is to identify how interactions take place (i.e., social-actions) and how they are accomplished in talk within medical settings (Heritage, 2005). In a patient education context, this could include archival data such as videos of clinical consultations or audio or video files collected purposefully by a researcher.

The use of archival data can be attractive as it may be less expensive—however, the quality of recordings along with a lack of context, and the need for informed consent, must be considered. Alternately, primary data collection could include varying levels of researcher involvement. For example, the researcher could ask a clinician, who is already present, to collect audio recordings of a consultation—followed by a debriefing with the clinician about the encounter. The advantage of a clinician's collecting audio recordings is that it decreases the likelihood of a researcher's presence impacting the normal flow of the consultation (Landsberger, 1958). Yet, it may be advantageous for a researcher to observe consultations. Not only does this allow the researcher to document detailed field notes, which can contribute to the contextual understanding of the recorded data, but also the researcher can attend to the recording, thereby relieving the clinician of the additional responsibility. The presence of a researcher can also help develop an emic, or insider's perspective, within a sequential environment (Seedhouse, 2005). An emic perspective can be particularly useful for researchers studying patient education on topics for which they are not experts. For example, in the study used as an example below, in-person observation helped Halpin gain additional context regarding medication transactions from specialty pharmacies, especially given that Halpin was able to complete brief ethnographic interviews with patients, spouses/informal caregivers, and clinicians immediately following each in-person education visit.

There are no binding rules about the appropriate sample size for CA research (Ten Have, 2007). Indeed, CA has been applied in as small a sample as a single case (Schegloff, 1987)—while Sacks often collected large bodies of data to examine multiple conversational occurrences. As such, it is important to align the sample size based on the research question meant to be pursued, and the chosen sampling method. While an initial CA study may be guided by an overarching question (e.g., how educational videos viewed by patients before a consultation impact how nurses deliver in-person education to patients), CA researchers are encouraged to remain open to unanticipated findings within

the data. Sacks (1984) wrote about this type of "unmotivated looking":

> Treating some actual conversation in an unmotivated way. . .can have strong payoffs. . .thus, there can be some real gains in trying to fit what we can hope to do to anything that happens to come up. I mean not merely that if we pick any data, without bringing any problems to it, we will find something. And how interesting what we may come up with will be something we cannot in the first instance say. (p. 27)

CA researchers may be inclined toward iterative analysis along with purposive or maximum variation sampling techniques. As new findings emerge it can be useful to attempt to locate additional examples of phenomena identified in analysis. Importantly, the aim of sampling in CA is not to continue collection until no new findings arise, known as saturation. Rather, CA researchers aim to achieve a sample which provides multiple examples of the phenomena for analysis.

Transcription Conventions

CA researchers commonly work with audio recordings, and more recently, video recordings (Heath et al., 2010; Heritage & Clayman, 2011). Special consideration is given to not only the language used, but also when it occurs during conversation. As such, CA requires a transcription system which accounts for pauses in speaking, overlapping talk, and intonation. Gail Jefferson is credited with creating the most widely used transcription system for CA, often termed Jeffersonian transcription (Jefferson, 2004). The Jeffersonian transcription system is particularly concerned with creating a transcript from the audio recordings which matches the conversation that occurred as closely as possible. It goes beyond verbatim transcription and attempts to recreate the audio recording using representative symbols (Table 2). As an example, the same communication is displayed using verbatim transcription and using Jeffersonian transcription in Tables 1 and 3, respectively.

In addition to Jeffersonian transcription symbols, specific transcription conventions include a proportional font, line numbering, purposeful selection of what text is presented, capitalization and punctuation, and ethical considerations.

Proportional Font: In keeping with a concern over the display of time, Jeffersonian transcription calls for purposeful use of font. Most fonts include letters of varying sizes, which creates challenges when trying to align overlapping talk/text. As such, selecting an option for proportional letter sizing, such as `Courier New`, helps create a more faithful rendition of the audio.

Line Numbering: Each line of the transcript is numbered in succession. The numbers usually begin at the start of the audio

Table 2. Extract of Jeffersonian Transcription Symbols Adapted from Iverson et al. (2017).

[	Onset of overlap
]	The point at which two overlapping utterances end
=	Latching, no break or gap
(0.0)	Elapsed time of pauses in tenths of seconds between utterances
(.)	Micropause
word	Stress via pitch and/or amplitude
:	Prolongation of the immediate prior sound
↑↓	Shifts into especially high or low pitch
,?.	Indicates the usual intonation
°word°	Softer sound
wo-	Cut-off
>word<	The bracketed sounds are sped up
.hhh	In-breath
hhh.	Out-breath
wo(h)rd	Laughter particles in word
((word))	The transcriber's comments

Table 3. Example of Jeffersonion Transcription.

```
224  N:   uh in terms of collecting the stem cells
225       (1.0) um: that (.) thats our next step
226       that we're gonna start you know (.)
227       thursday the twelfth using the
228       medications (1.0) and (1.0) and
229  →    I saw that um: or I heard you say
230       that youve seen the videos
231  PT:  [emhm]
232  N:   [in t]erms of the videos (.) you know
233       um (.) how do you feel about (.)
234       injections doing those at home (1.0)
235  PT:  well uh my uh daughter in law is an rn
236       and I was gonna have her do them until
237       I found out that they have to be twelve
238       hours apart (0.7) and shes still (1.0)
239       she has a twelve hour shift
240  N:   right
241  PT:  so:
242  N:   so the good news for yo↑u: um:
243       and I cant say this for anybody (1.0) taller
244       or heavier than you (.) but the good news
245       for you is your dose could actually
246       be given all at once (.) so you=
247  PT:  °[yyyyeeehhhhhhhhhhhh]°
```

transcription allowing for easy identification of sequences of interest.

Text Presentation: Jeffersonian transcription can be organized into tables with finite space for each line of text. As such, transcribers must select which text belongs on each line. Rather than simply filling each line with as many words as possible, it may be preferable to keep sequential text together when possible. For example, in line 229 of Table 4 there is a thick line

Table 4. Example of Jeffersonian Transcription Analysis Template Layout.

```
224   N:    uh in terms of collecting the stem cells
225         (1.0) um: that (.) thats our next step
226         that we're gonna start you know (.)          Information future
227         thursday the twelfth using the
228         medications (1.0) and (1.0) and
229   →     I saw that um: or I heard you say            Recognizing that pt saw
230         that youve seen the videos                    video
231   PT:   [emhm]
232   N:    [in t]erms of the videos (.) you know        Eliciting patient's
233         um (.) how do you feel about (.)             comfort based on video
234         injections doing those at home (1.0)
235   PT:   well uh my uh daughter in law is an rn       Does not answer question about
236         and I was gonna have her do them until        comfort based on video
237         I found out that they have to be twelve
238         hours apart (0.7) and shes still (1.0)
239         she has a twelve hour shift
240   N:    right
241   PT:   so:
242   N:    so the good news for yo↑u: um: and           Understands the problem
243         I cant say this for anybody (1.0) taller     Insertion sequence
244         or heavier than you (.) but the good news
245         for you is your dose could actually
246         be given all at once (.) so you=
247   PT:   °[yyyyeeehhhhhhhhhhhh]°
Memo: In this sequence the nurse (I:) initiates talk around the video in order to recognize
 the patient already has some knowledge about the visit and also gather the patient's level
 of comfort with giving self-injections. The patient does not answer about comfort, but
 instead states they were hoping a daughter in law, rn nurse, would be able to give the
 injections. The patient was worried that the rn could not help now that she understands the
 injections must be given 12 hours apart and this overlaps with the daughter in laws work
 shift. The nurse then interrupts the patient, anticipating what she is going to say, and
 explains that due to her size she could in fact get all of the doses at the once a day,
 thereby indirectly stating that the daughter in law can help.
```

demarcating a sequence of text. While line 228 has space for the words "I saw", it is was preferable to move these words to the next line, ensuring this sequence was kept intact. Importantly, the identification of these sequences is an ongoing process during analysis, and as such, the format of transcription may change as analysis proceeds.

Capitalization: In keeping with the aim of presenting text as closely to how it was spoken, capitalization is kept to a minimum in Jeffersonian transcription. For example, each line of text begins with a lower-case letter, as they are incomplete sentences. Capitalization should be reserved for proper nouns only

Ethical Considerations: Special considerations should be made where necessary for researchers to protect the identity of their participants. Given the focus on how text is presented within a transcript (as outlined above), researchers will want to be purposeful when considering pseudonyms. In particular, names of similar length should be used to ensure the integrity of overlapping text. For example, the name Sean could be replaced by Jake, since the two names take up a comparable amount of space. Alternately, names could be replaced altogether with letters that do not denote

any information about the participant's sex. This former option, of using letters to name individuals, may help focus the analysis on the content of the talk rather than the possibility of the analyst becoming distracted based on background information assigned to names (Billig & Schegloff, 1999).

These detailed conventions provide the basis for any subsequent analyses. Current technology allows for the possibility of automated transcription, however, this method often results in inaccurate transcription, particularly with overlapping text, and removes the advantages researchers may experience with transcribing their own data (Bolden, 2015). Thus, it may be beneficial for the researcher who will perform the analysis to perform the transcription as well, as this initial transcription allows for the researcher to intimately learn the data. The researcher may opt to first transcribe all of the data in a traditional manner such as in Table 1, followed by Jeffersonian transcription as in Table 3, allowing for multiple detailed reviews of the audio and transcription.

As mentioned above, the total hours of audio recording used for each study is highly variable. The example study

used in the current manuscript included over 43 hours of audio recordings from 29 patient education visits. A rough estimation for verbatim transcription is 4 hours transcription time for every hour of audio recording (Hepburn & Bolden, 2017, p. 14). Jeffersonian transcription should be considered as an initial step in data analysis, with the researcher attending to characteristics which might be useful as the analysis proceeds. A conservative estimate for Jeffersonian transcription could result in ten times the amount of time for transcription as compared to verbatim transcription of audio recording, though likely more time will be devoted than this, making the total transcription time over 1720 hours, or about 71 days of non-stop work, not including writing initial memos or bathroom breaks. As such, it may be beneficial to narrow the focus to a subset of conversation data you are interested in examining. For example, the aim of the study from which data for this demonstration is drawn is to examine how educational videos viewed by patients prior to a consultation impact how nurses deliver in-person education to patients. As such, we selected only text occurring around points when the educational videos came up in conversation for Jeffersonian transcription. This technique resulted in about seven excerpts per visit transcribed, with excerpts ranging from 1 to 8 minutes in length, essentially decreasing the total transcription time from 258 to 86 hours.

Steps of CA Data Analysis

Data analysis using CA is not necessarily step-wise, and the researcher may wish to revisit previous 'steps' as new interests emerge during analysis. Still, it is helpful to consider the components of CA analysis that should be attended to. The following includes a modified version of CA steps as presented by Drew (2008, pp. 133–159). For purposes of this overview we will reflect on Table 4, which includes a sample of an excerpt.

1. *Familiarize Oneself with the Data and Identify a Focus*: As mentioned above, it can be valuable for the data analyst to transcribe the data being used. While CA-based transcription is slow, the process does allow for detailed utterance-by-utterance examination of the data along with the audio recordings. Transcription should be approached in an active way, with the researcher attending to each utterance. While familiarizing oneself with the data, the researcher should consider making informal notes and memos as they see fit. For example, Table 4, demonstrates how the transcriber may add a column to the right and one row at the bottom of the transcript, for short notes and an overall memo respectively. These initial notes can serve to sensitize the researcher to potential areas of focus and organize initial insights.

In the example used for this article, we decided to focus on excerpts of text that included talk surrounding the video. We defined this as any time that any person present in the room mentioned the video. So the *Action* of interest is located in lines 229 to 230 in Table 4. When "I:" (the nurse) states, "I saw that um: or I heard you say that youve seen the videos." Other studies may be interested in how education visits began or ended, or perhaps on some other phenomena of interest that was located during unmotivated looking.

2. *Consider the Sequences Leading Up to an Action, to See How that Activity May have Arisen*: The second step involves considering the language leading up the action the researcher is focusing on in a sequence. Here the researcher wants to consider how the action being analyzed was initiated. For example, the nurse initiates this sequence from lines 224 to 228 in Table 4, by stating; "uh in terms of collecting the stem cells (1.0) um: that (.) thats our next step that we're gonna start you know (.) thursday the twelfth using the medications (1.0) and (1.0) and."

3. *Examine, in Detail, the Specific Words and Phrases Used Turn-by-Turn*: Here the researcher will examine closely the word choice in sequence through the *Action*. In the beginning of this sequence the nurse explains what will happen starting on Thursday the twelfth. This helps build context around *Action* of interest, which we can now define as an *Insertion Sequence*, which we defined above as a speaker adding additional related or unrelated information. Again, in the *Action* of interest, the nurse orients to the video, stating, "I saw that um: or I heard you say that youve seen the videos." In lines 232 to 234, the nurse continues, "[in t]erms of the videos (.) you know um (.) how do you feel about (.) injections doing those at home (1.0).". Essentially, she is recognizing that the patient may already know some of this information—including the fact that the patient will need to give themself injections at home. By attending to this, she is designing the utterance specifically for the patient, recognizing what they may already know and showing that she does not intend to waste their time. This is an example of recipient design, in which the nurse attends to the assumed knowledge of the patient when formulating her question.

4. *Explore How the Recipient Responds*: The patient responds to line 229 to 230 by giving an audible affirmation in line 231, "emhm." This affirmation overlaps with the nurse's continued speaking on line 232. After the nurse recognizes that the patient saw the video, the nurse then elicits the patient's comfort level with giving injections at home in lines 232 to 233. In lines 235 to 239, the patient responds, "well uh my uh daughter in law is an rn and I was gonna have her do them until I found out that they have to be twelve hours apart (0.7) and shes still (1.0) she has a twelve hour shift." At this point, the researcher may circle back to step

three to examine lines 242 to 246 where the nurse informs the participant that she, in fact, can receive all of her injections at the same time. This reply implicitly confirms that the patient can in-fact have her daughter-in-law, the RN, help with the injections.

5. *Identify the Shared Features of Language*: In this fifth step of analysis, the researcher should seek out larger functional features of language that orient speakers toward their roles. For example, early in the sequence, in line 226, the nurse uses the word "we're" to refer to herself as part of the larger medical team that is "gonna start you know (.) thursday the twelfth using the medications. . ." The orientation toward the larger medical team is a single occurrence in this transcript, but it should sensitize the researcher toward it possibly occurring while reviewing other transcripts.

6. *Collect Several Cases of the Phenomenon*: In the sixth step, the interviewer would examine a larger cadre of data, seeking out other instances where the videos were discussed. Special attention would be paid to how talk was structured when the nurse brought up the video, along with similarities and differences to the current excerpt.

7. *Provide an Account of the Pattern*: In the final step, we give some explanation for how the pattern of talk identified in the previous steps came to be. After collecting several cases of the phenomenon (in step six), we can now say that nurses sometimes initiate conversation about the patient having already watched the video to assess their comfort in giving self-injections.

Presenting Findings

The aim of CA work in patient education is to apply findings toward improved patient education. To meet this aim, researchers should be intentional about how they choose to present their findings. As with all research, when selecting a dissemination outlet, researchers should consider what audience they hope will benefit from their study. This becomes increasingly important when considering the multi-layered landscape of CA research. For example, the outlets catering to pure CA will be especially interested in the linguistic characteristics of everyday talk. Alternately, outlets aimed at applied work may be better suited for research on patient education. Here we discuss two of the most common methods for presenting findings, academic journal publications and conference presentations.

Academic Journals

A variety of academic journals have published CA research related to medical education. As a first step in selecting a journal, it would be wise to review the journals occurring in other literature you cited in your literature review. These already published manuscripts not only provide a sense of whether your research topic would be a good fit for that journal, but also provide a useful example of the appropriate, journal-specific structure and formatting for presenting your findings. Journals that publish generous amounts of CA-oriented research will require a less detailed introduction to CA, while other journals may require additional explanation. Additionally, review each journal's aims and scope to ensure your manuscript meets the inclusion criteria.

Conference Presentations

Given that the cadence of speech is so critical to this mode of analysis, the ability to use audio along with quotes makes conference presentations a potentially powerful venue for presenting CA research. Importantly, if researchers are considering this option they should plan for it before collecting data, including receiving the appropriate institutional review board approvals along with approvals from all study participants. As with academic journals, researchers should consider their audiences' familiarity with CA research. While there are several CA-focused conferences, researchers aiming to disseminate CA research on patient education may be interested in a broader audience of clinicians, clinical researchers, and policy researchers.

Conclusions

CA offers a systematic, but underutilized, method for exploring patient education. Yet historically CA has focused on identifying the seen-but-unnoticed rules of communication taking place in mundane interaction as opposed to applied CA, such as work taking place in a medical setting. The divide between pure and applied CA likely creates confusion about the applicability of this approach. In an attempt to address this concern, the current manuscript offers a primer to CA in patient education. This article does not pretend to be an all-encompassing reference for conducting CA, but rather we aimed to provide an introductory overview to make CA more approachable to patient education researchers. For an in-depth, but accessible introductory text, researchers may want to read *Applied Conversation Analysis: Social Interaction in Institutional Settings* (Lester & O'Reilly, 2018) or *Doing Conversation Analysis* (Ten Have, 2007). Alternately, a thorough review examining conversations across various languages can be found in the book *Between Turn and Sequence: Turn-initial Particles Across Languages* (Heritage & Sorjonen, 2018). Finally, *The Handbook of Conversation Analysis* provides overviews of the core topics examined in CA, along with how CA has been applied in different institutional contexts (Sidnell & Stivers, 2013).

Most studies of patient education rely on post-consultation interviews, which require the patient to recall and articulate how their interactions proceeded previously (Bracher et al., 2020; Rodin et al., 2009; Roter & Hall, 2006). Indeed, a patient's recollection of events is valuable in-so-much as

those memories shade how well they recount an event—but they are only a piece of the puzzle—and lack perfect recall of the actual experience. A now-famous study, Redelmeier et al. (2003), helps illustrate the difference between the events as remembered and actual events as lived through; in their study, the researchers randomly assigned patients receiving a painful colonoscopy to standard treatment or standard treatment but with the addition of a short interval at the end of the procedure where the colonoscope remained in the rectum. Pain was measured on a 10-point scale during the procedure, and then later participants were asked to recall the amount of pain they experienced. Participants randomized to the extended procedure reported the same level of pain during the standard portion of the procedure but less pain in the final extended moments of the procedure, recalled the procedure as less invasive, and were more likely to have a follow-up colonoscopy about 5 years later. Thus, without the real-time data it would be impossible to know that both groups experienced the same level of pain during the standard portion of the procedure.

CA is a method for helping gain a better understanding of the actual experience, rather than a memory of the experience. As highlighted in Heritage and Robinson's (2011) study, a single word change from "some" to "any" can have a profound impact on what information patients share during a consultation, specifics that would be very unlikely to be identified in post-consultation interviews. Likewise, in their study of staff conversations with aphasia patients, Finlay et al. (2011) identified conversation strategies that complicated the ability for patients to respond—again, specifics that would be a challenge to identify without analyzing data collected in real-time. Ultimately, CA offers a systematic method for analyzing talk as it occurs in real-time, thereby providing a fuller picture of what happens in patient education.

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