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Epistemic Responsibility - Labored, Loosened, and Lost: Staging Alzheimer's Disease

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Abstract

Interlocutors hold one another accountable for knowing certain information about themselves (their roles, activities, and memories) and for keeping track of information in the current conversational exchange. When speakers have trouble with this expectation, they themselves work to repair the breach, often doing a memory search, or when unsuccessful they provide an account (e.g. “I don’t remember”). Memory searches (like word searches) are observable, interactional accomplishments. Speakers disengage with their interlocutors (look away), produce hesitation markers, take repeated pauses, engage in pre-positioned and post-positioned repairs, make epistemic assessments, and on finding an answer, re-engage with their interlocutors (look back). For their part, interlocutors comply with the search by not interrupting and continuing to yield the floor. At progressively severe stages of Alzheimer’s disease, individuals exhibit increasingly labored memory searches that often trail off into non-answers, until at the latest stages, they eschew the search and (almost smoothly) provide either grammatically appropriate but wrong and improbable answers *or* give answers to previous questions on now closed topics. With data from the clinical administration of a disease staging instrument (Clinical Dementia Rating) this article examines the inexorable loss of epistemic responsibility as a key discursive dynamic in the progression of the disease.

Keywords

epistemics; epistemic accountability; conversation analysis; memory search; Alzheimer’s disease; dementia

1. Introduction

Over the six to eight years of the disease, Alzheimer’s is marked by a relentless loss of memory, and crucially, the loss of reflexivity in memory. Being unable to remember, in early stages, is followed in later stages by being unable to remember being unable to remember.

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This article is about that progression. The focus is not on memory loss as a cognitive or neural event, but rather on remembering and forgetting as social actions that are interactionally occasioned, shaped, and accomplished during talk-in-interaction. In this case, the *talk* is institutional and derives from clinical, diagnostic interviews between a doctor and several patients at progressively severe stages of the disease.

The analytic lens for the article derives from research on *epistemics* in conversation analysis (e.g. Heritage, 2012; Heritage & Raymond, 2005; Stivers, Mondada, & Steensig, 2011a). Briefly, epistemics focuses on the ways in which conversation partners exhibit and track who knows what (epistemic access), confer and claim relative rights over knowledge (epistemic primacy), and hold themselves and others responsible for knowledge (epistemic responsibility; see Stivers, Mondada, & Steensig, 2011b). Epistemics in this sense is not about the contents of the mind or mental states (e.g. memories inside the head of the person with Alzheimer's), but rather about "attributions of knowledge, to self and others, in the public domain that is constituted through interaction" (Drew, 2018, p.165).

From this epistemic perspective, the article addresses two questions. The first is: how do persons with Alzheimer's "do remembering," or more precisely "do forgetting," in their interactions with the examining clinician? Not surprisingly, variations of *memory search* as a public, social action performed in the talk play a central role. A key pattern observed in the data is that patient searches become longer, and hesitation markers, tentative answers, and self-directed commentary become more frequent.

The second question is: how does "doing forgetting" morph over the progression of the disease: from interactionally troubled, but benign, in early stages to (something like) interactionally pathological in late stages? As it turns out, the notion of epistemic responsibility is key to understanding this shift. While epistemic responsibility is usually understood as how interlocutors hold one another responsible for knowing or keeping track of certain information, it is also the case that speakers work to display their *own* accountability for knowing certain information. It is this latter that is "labored, loosened and lost" as the disease progresses. Thus, at later stages, we see that the patients' quest for "right" answers seems to diminish and is replaced by either "wrong" (but relevant) answers or non-sensical answers. Indeed, this small sample study raises the possibility that these discursively observable phenomena—increasingly troubled search and loosening criteria for "right" answers—could be operationalized as diagnostic markers of the progression of the disease.

The article is organized as follows. The next paragraphs introduce the Clinical Dementia Rating (CDR) instrument and frame it as an interactional event. The next section reviews the epistemics of the patient interview, attending to the ecology of knowledge between doctor, informant, and patient, and to the centrality of memory search as an interactional practice by patient and clinician. The analytic core of the article examines interviews with patients at increasingly advanced stages to show how their memory search and epistemic accountability shift in character as the disease progresses, finding ultimately that late stages are marked by the loss of epistemic responsibility.

2. The Clinical Dementia Rating (CDR)

2.1 Format and scoring

The Clinical Dementia Rating (Hughes, Berg, Danziger, Coben, & Martin, 1982; Morris, 1993) is a non-invasive, neurocognitive clinical assessment used to diagnose and stage the severity of dementia, primarily of the Alzheimer's type. The assessment begins with an interview between the clinician and an informant (e.g. family member, caregiver, close friend of the patient) during which the clinician asks for reports about the patient's abilities, behaviors, and recent activities. This is followed by an interview with the patient which covers three domains that overlap with the informant interviews. These are: memory (10 items), orientation (8 items), and judgement and problem solving (9 items). Based on information from both informant and patient, the clinician assigns scores to each subtest and then, giving memory subtests the greatest weight, he or she calculates a global assessment: CDR 0 (healthy), CDR 0.5 (questionable), CDR 1.0 (mild), CDR 2.0 (moderate), and CDR 3.0 (severe).

2.2 Question-answer sequences

For all CDR questions, the clinician reads or paraphrases from the instrument itself. From an interactional perspective, these paraphrases are sometimes worded as syntactically recognizable interrogatives (e.g. "Were you busy?" "Do you remember whether it was before or after dinner?"), and sometimes they are grammatically worded as statements or phrases that are intended to elicit information or commentary (e.g. "There was no one to help"; "After dinner"). Hence, as empirical research shows, interrogative syntax is only one way of "doing questioning" (see Ehrlich & Freed, 2010), and although the CDR instrument almost universally prescribes interrogative formats, the clinician employs a variety of syntactic forms and contextualization cues to "do questioning." Patients' responses to these questions fall broadly into three categories:

- a. Interactionally preferred (i.e. no delay, hesitation, preface, or qualifier; see Raymond, 2003, p. 942; Boyd & Heritage, 2006, p. 161), grammatically appropriate (e.g. yes/no to polar question; phrasal response to wh-questions; see Couper-Kuhlen & Selting, 2018), and conformed to the topic-agenda of the question (Heritage, 2010),
- b. No knowledge/no memory (e.g. "I don't know" or the equivalent),
- c. Initiation of a memory or information search (see below).

Clinician third turns rarely, if ever, include assessments of patients' answers. Rather clinician third turns are of three basic types:

- a. Re-formulation of the question, often including additional information (i.e. a hint)
- b. Follow-up question(s), asking for more information about the same topic,
- c. New question and new line of enquiry.

These patterns of clinician-patient interaction are common across all questions in the CDR, but they are more elaborated in the multi-turn sequences associated with autobiographical memory for personal events versus personal facts. Hence, the excerpts in this article are taken primarily from the memory-for-personal-events items (i.e. items 2a,2b) within the ten-item memory subscale.

Interestingly, the exchanges between patient and clinician rarely include any indication from the clinician that an answer is ‘right’ or ‘wrong’ (e.g. a true vs. a false memory). From the outside (as analysts) we only know that a patient has given an incorrect answer by consulting the clinician’s interview with the informant from whom the clinician gathered information prior to the patient interview.

3. Epistemics in the patient interview

3.1 The epistemic ecology of the interviews

Given that memory loss is the hallmark of Alzheimer’s disease, conversation analysts and discourse analysts have employed an *epistemic* lens in analyzing talk by and with persons with the disease (see Hamilton, 2019; Hyden, 2018; Schrauf & Müller, 2014; Wray, 2020). This article extends such research in natural and naturalistic settings (Svennevig & Landmark, 2019; Williams et al, 2019) to the specific clinical-institutional setting of cognitive assessment.

A complex, epistemic asymmetry emerges over the course of the clinician’s interviews, first with the informant, then with the patient. On the one hand, given information from the informant, the clinician enjoys higher epistemic *status* vis-à-vis the patient than would be expected (i.e. he or she knows a great deal of the patient’s personal information). However, for drawing out the patient’s memories, the clinician strategically designs his or her questions along a range of interactional *stances*, from K– (assuming little or no knowledge) to relatively K+ (signaling some or even definitive knowledge; on epistemic status and stance, see Heritage, 2013). For example, as noted above, the clinician’s reformulations frequently include *hints* (K+), which have the twofold effect of assisting memory while simultaneously re-asserting the clinician’s epistemic access to the patient’s personal information. Interestingly in the data set on which this article is based, no patient ever directly challenges the clinician’s claim to this knowledge.

On the other hand, the patient *should* have higher epistemic status because he or she should have privileged access to, and clear rights to know about, his or her personal matters. Correspondingly, it is clear in the data below that patients hold themselves epistemically responsible for knowing the answers to the clinician’s questions, and we see expression of this responsibility most often in the breach – when patients cannot answer a memory question and execute a memory search.

Meanwhile, that the clinician asks questions for which he already has the answers is not exceptional. Two parallel institutional situations in which such asymmetries appear are teacher-student questioning in classrooms (for a seminal article, see Mehan, 1979) and staff-resident questioning in living facilities for persons with intellectual disabilities (“recipient-

side test questions; Antaki, 2013). Similarly, in many non-institutional conversations between persons with dementia and their non-impaired interlocutors, the latter often ask questions to which they already possess the answers (Williams, Webb, Dowling, & Gall, 2019). In such situations, question formats (whether syntactically interrogative or not) serve a different purpose than eliciting unknown information. However, empirical research on respondents' negotiation of their epistemic responsibility in these contexts has been limited, and this article takes up this issue specifically among persons with Alzheimer's disease during clinical assessment.

3.2 Memory search

As an observable interactional event, a memory search is analogous to a word search. Investigating word searches, Goodwin and Goodwin (1986) demonstrated that second speakers discerned a recognizable range of observable behaviors performed by a first speaker who could not produce a desired word or name. First speaker behaviors included: stalling the progressivity of the talk to initiate the search, exhibiting thinking face (withdrawal of gaze: looking away or down), sound stretches, hesitation markers (e.g. "uh"), cut-offs, intra-turn pauses, facial nonverbals (e.g. lip smacks, chewing lips), self-addressed questions, and a return of gaze to the interlocutor either to solicit help or to close the search (see also Couper-Kuhlen & Selting, 2018, pp. 118–119). Second speakers (interlocutors) oriented to the search activity by not interrupting (i.e. continuing to yield the floor) and maintaining direct engagement (i.e. directing their gaze toward the first speaker).

By extension, as we will see in the data below, CDR patients exhibit the same range of behaviors, not only in cases of word-finding (see Svennevig & Landmark, 2019), but in troubled remembering in general: that is, in the many instances when they cannot answer the clinician's memory questions. Similarly, as do interlocutors in word-search situations, the clinician in the CDR interview rarely interrupts and usually does not begin speaking again until the patient re-establishes eye contact. In essence, the clinician recognizes the patient's search behaviors as fundamentally compliant with the action agenda of the question.

Patients doing memory searches also frequently employ epistemic modals to downgrade their certainty about their candidate answers (e.g. "I think"), and they make explicit claims of insufficient knowledge (e.g. "I don't remember," "I forgot about that"). Generally, these latter go beyond *claims* of insufficient knowledge to actual *demonstrations* of insufficient knowledge (on claims and demonstrations in dementia, see Mikesell, 2014). That is, whereas "I don't know" in other institutional contexts (and in everyday conversation) may be deployed by speakers to accomplish a range of interactional effects (e.g. evade responsibility, disattend to another speaker's statements, avoid a request or invitation; see Beach & Metzger, 1997; Clayman, 2001; Keevallik, 2011), in the institutional context of the CDR, "I don't know" generally functions as a straightforward performance of not remembering and a sterling account for giving a non-answer (Stivers & Hayashi, 2010).¹

¹That is, "I don't know" justifies not answering a question. "An account is an attempt by one interlocutor to modify (e.g. change, explain, justify, clarify, interpret, rationalized, (re) characterize, etc.), either prospectively or retrospectively, other interlocutors' understandings or assessments of conduct-in-interaction in terms of its 'possible' breach of relevance rules (i.e. to the point of accountability)" (Robinson, 2016, pp. 15–16).

Also, by analogy with word searches, patients who are engaged in a memory search may be seen to orient, not only to a frustratingly elusive answer, but crucially *to the right answer*. There are clear echoes here of the Gricean super maxim of quality: “Try to make your contribution one that is true” and two associated specific maxims, “Do not say what you believe to be false,” and “Do not say that for which you lack evidence” (Grice, 1975, p. 46). In interactional terms: speakers hold themselves accountable, to the extent possible, for saying what they know to be the case.

4. Data and methods: Prototypical cases for training clinicians

The video-recorded data for this study come from a training program for clinicians and researchers on the proper administration and scoring of the CDR. Training for the CDR is supervised by the Knight Alzheimer’s Disease Research Center (Washington University in Saint Louis) and is based on gold-standard, video-recorded, live interviews between clinicians, informants, and patients, that were selected (using clinical-cognitive criteria) to portray prototypical clinical profiles of patients at each of the five stages of disease severity (Morris et al., 1997).² The Knight Center provided ten of these video-recorded cases, two for each for five CDR stages. Interviews with the informants ranged from approximately 17 to 24 minutes long, and with patients from 9 to 14 minutes. (The same male clinician interacts with all patients and informants in this set of videos). Transcriptions of the video files, using conversation analytic conventions (Jefferson, 2004) were uploaded into the qualitative data analysis software program Atlas.ti (Muhr, 2017) for analysis (see Paulus & Lester, 2016). Analyses focused on the 601 clinician-patient question-answer adjacency pairs, which were distributed roughly equally across stage severity (0.0 = 117; 0.5 = 133; 1.0 = 119; 2.0 = 124; 3.0 = 108). (Use of the video data was coordinated with Washington University and ethical review was conducted by the Pennsylvania State University).

There is a growing literature on the use of conversation analysis to study the diagnostic assessment of persons with dementia has been growing (e.g. Elsey et al., 2015; Jones et al., (2016); Majlesi & Plejert, 2018; Myrberg, Hydén, & Samuelsson, 2019; Plejert, Antelius, Yazdanpanah, & Nielsen, 2015; see also, Freed & Ehrlich, 2010; Schrauf & Amory, 2017), and this study seeks to contribute to that literature by addressing one of a number of ‘staging instruments’ used to diagnose the severity of the disease.³

5. Results: Excerpts from across the severity continuum

The excerpts below are drawn from CDR Items 2a,b about recent events in the patients’ lives and are presented along the continuum of memory subtest scores (0.0, 0.5, 1.0, 2.0, 3.0). The wording of the memory ratings given in the CDR scoring rubric is provided for each level.⁴ In general, at increasing levels of cognitive impairment, we see a pattern of lengthening

²“A standardized training and reliability protocol has been developed using videotaped assessments of patients with DAT representing each CDR stage (CDR 0 to 3) for the multicenter antidementia drug trials sponsored by the Alzheimer’s Disease Cooperative Study” (Morris et al. 1997, p. 174). Funding for the development of the training materials came from the US National Institutes of Health (AG P5005681).

³Olde Rikkert et al. (2011) reviewed twelve staging instruments for use with patients with Alzheimer’s disease and noted that the CDR was the “best evidenced scale” (abstract).

pauses, an increasing inability to take up clinician hints, and unsuccessful memory searches *until* an inflection point between moderate and severe memory loss.

5.1 No impairment (CDR Memory Score 0.0)

Alzheimer's disease is not distinguished from normal aging by the fact that persons with Alzheimer's have memory troubles. Many older adults have memory troubles. Rather, assessment must distinguish *normal* forgetting and *disease-related* forgetting. According to the scoring rubric, a patient with no impairment is characterized by "no memory loss or slight inconsistent forgetfulness." The following excerpt comes from a 76-year old man who has been asked by the clinician about a birthday lunch that he shared with a friend about one month ago. Excerpt 1 captures a moment when the patient cannot recall a specific detail about that lunch.

Excerpt 1: Garden Salad (T17)

1 DOC: Do you remember uh what you had
 2 or what she ↑had (.)
 3 what °what the meal ↑was°
 4 PAT: heh heh ((looks away)) Well let's see (1.0)
 5 She ↑had more than I had
 6 as matter of fact uh (1.5)
 7 I had uh we shared ((looks at clinician))
 8 =we shared a sandwich
 9 ((looks down)) and she had I think uh (.)
 10 a salad dish and that
 11 DOC: Do you know=°what was it a (.)
 12 garden salad or eh anything else
 13 (3.0) ((patient looks away))
 14 PAT: I:: don't recall
 15 I think it was a garden salad
 16 ((looks at clinician)) yeah

The patient engages in three successive memory searches as he responds to the clinician's questions (lines 4–7; 9–10; and 13–16). In each case, he withdraws his gaze from the clinician and looks away while he searches for answers (lines 4, 9, 13). When he answers the first and third questions (lines 8, 15), he terminates this "thinking face" and looks back at the clinician. (By exception, his second search is interrupted by the clinician; line 11). In the first search, his intra-utterance pauses (1.0 seconds in line 4 and 1.5 seconds in line 6) are just at the limit of normal pause lengths (in English, maximum $\approx$ one second; Jefferson, 1989), but in the second search his 3.0 second pause is just beyond the normal range.

⁴CDR global scores are calculated using box scores from the component subtests. The scoring algorithm places greatest weight on the memory subtest. Thus, the excerpts presented here reflect memory subtest scores and not global scores. In fact, however, the global scores for all patients were the same as their memory subtest scores, except for patient T11, whose memory subtest score was 1.0 but whose global score was 0.5.

Contrary to the patient's report that he and his friend shared a sandwich (line 8), the clinician knows that they did *not* share a sandwich and that the friend did indeed have a garden salad. In a follow-up query, the clinician uses this knowledge to offer a hint shaped up as faux list in line 12 ("a garden salad or eh anything else"). However, the patient's 3.0 second pause treats that hint as questionable, and he tentatively rejects the hint with the elongated "I:: don't recall" (line 14). Almost immediately he reverses course and expresses tentative agreement, confirming it with a final "yeah" (lines 15–16). These three micro-actions (the pause, the meta-memory commentary, and the reversal) show the patient actively engaging the question (instead of dismissing it outright; perhaps as an inconsequential detail), and in so doing, he holds himself accountable for the memory.

In sum, this *baseline* excerpt demonstrates the assemblage of behaviors associated with memory search and normal forgetting: slightly longer pauses (e.g. 1.5–3.0 seconds), thinking face, loss of minor details, admission of accountability for memory-information, and meta-memory commentary (e.g. "I don't remember"). We also see the clinician offering information (hints) about details of the event to stimulate further recall – information which he has gained from his interview with the informant. In short, this is what non-pathological forgetting looks like in the CDR.

5.2 Epistemic responsibility – “labored and loosened”

5.2.1 Questionable memory loss (CDR Memory Score 0.5)—Given this baseline, what does “questionable” forgetting look like? In the scoring rubric, memory ratings at this level are described as: “consistent slight forgetfulness; partial recollection of events; ‘benign forgetfulness.’” In Excerpt 2 the clinician has asked the patient about a trip that he and wife took to visit his son (Adam), wife (Chris), and grandchildren (Julie and Mark). Towards the end of this thread the clinician asks about their return from that trip.

Excerpt 2: Back to the Airport (T19)

- 1 DOC: An- (.) and who took you back to the airport.
- 2 (0.6)
- 3 PAT: uh (.) Adam did.
- 4 (0.4)
- 5 DOC: And anyone else or Adam alone.
- 6 (0.4)
- 7 PAT: No his wife came (.) went along.
- 8 (0.4)
- 9 DOC: And anybody else.
- 10 (1.4)
- 11 PAT: ↑Yeah (.) I think two kids were with them.
- 12 (0.4)
- 13 DOC: w- (.) What are their names.
- 14 (0.4)
- 15 PAT: U:hm (0.2) Julie and uh (4.0) (*looks down*)

16 tsch. oh er (3.4)
17 DOC: Was ↑there=
18 PAT: =°It's gone° (*looks up*)

The patient quickly recalls answers to three questions (lines 1–4, 5–7, 9–11) concerning minor details about who accompanied them back to the airport (son, wife, two kids). The clinician then asks for the names of the grandchildren, and although the patient easily produces one name (line 15), he stumbles on the second. He initiates a search for that name (lines 15–16) – looks down, pauses for 4.0 seconds, produces hesitation markers, pauses for another 3.4 seconds – and ends the search and his turn with a soft but definitive account, “It’s gone” and looks up (line 18). In these and other responses during the interview, his pattern differs only slightly from the healthy patient. He is confident and certain about many details, but his memory searches become more hesitant and more prolonged (a combined 7.6 seconds in lines 15–16).

5.2.2 Mild memory loss (CDR Memory Score 1.0)—The rating for memory loss at this stage reads: “more marked for recent events; defect interferes with everyday activities.” In Excerpt 3, we see an older woman struggling to recall that, on the day before the interview, she and her husband had attended a funeral, and that afterwards on that same day they had gone to a *second* funeral.

Excerpt 3: Another Funeral (T11)

1 DOC: >An then< whe:re did you go ↑after
2 (.7) ((*patient starts to look back and forth*))
3 DOC: uh going to Marilyn's (.) bro:ther's funeral.
4 (6.6) ((*patient looks down*))
5 PAT: I think we went home
6 (.7)
7 DOC: .hh
8 (.6)
9 PAT: >I'm wen- I'm [not< su:re
10 ((*looks at clinician*))
11 DOC: [>Your your< son told me
12 you mightuv gone (.) to ↑yet another funeral
13 (5.9) ((*patient looks away*))
14 PAT: °I don't remember [that°
15 ((*looks at clinician*))
16 DOC: [>Di- did< another neighbor
17 up the street pass away
18 (.2)
19 PAT: .hh ((*looks up suddenly*)) Oh:: Hoffman yeah:
20 (.5)
21 PAT: °Yeah:°=

22 DOC: =>Di- did< you go: to his funeral [yesterday
 23 PAT: [Yes yes=
 24 DOC: =mhmm
 26 (1.9)
 27 PAT: ((looks away)) °<I forgot about that>°
 28 DOC: .hh [Tell me]
 29 PAT: ((looks at clinician))
 30 PAT: [It was just down the street
 31 from where this funeral parlor was

We see here many of the same forgetting behaviors as in the case of the healthy patient (e.g. the clinician's hints, the patient's gaze away during memory searches, long pauses, epistemic modals, tentative answers, meta-memory comments, and ultimately correct recall). Nevertheless, several differences prove important.

First, her pauses during memory search were twice the length as the first patient (hers: 5.9 and 6.6 seconds vs. his: 3.0 seconds), and she struggles over memory information for very recent events (hers: yesterday vs. his: a month ago) that should be of greater salience (hers: two funerals on the same day vs. his: what was for lunch).

Second, the clinician's hints become more targeted. For instance, in the clinician's complex reformulation in lines 11–12, he begins by asserting derivative but well-sourced epistemic access ("your son told me"), downgraded to a mere possibility via a modal verb ("you mightuv gone"), and then offers a hint: the newsworthy second funeral ("to *yet* another funeral"). Although syntactically structured as a statement (and not an interrogative), this hint "does questioning" as a B-event. That is, although the patient (A) knows more about this personal event, the clinician (B) announces his knowledge of the event, and empirical research shows that interlocutors treat such statements as requests for confirmation (Labov, 1970).

Third, the patient struggles to take advantage of the reformulation. Her lengthy pause (5.9 seconds) and gaze away signal another memory search during which she softly denies any such memory (lines 13–14). Shifting her gaze back to the clinician, she terminates both her search and her turn and seems to invite his help. He orients to this request and again reformulates his question, now directly referencing the event, voiced as yes-no interrogative, "Did another neighbor pass away?" (lines 16–17). This time his offer is successful. She suddenly looks up at him and emits an oh-preface (line 19) expressing a dramatic change of epistemic state (she now knows). In fact, she not only *claims* knowledge of the event but *demonstrates* that knowledge by naming the person whose funeral they attended (line 19).

Fourth, she expresses accountability for the memory information in her meta-memory commentary (lines 27–31). Her soft-spoken, "I forgot about that," is a self-addressed admission of epistemic responsibility for what she should have known.

A second excerpt from a male patient with this same memory rating (1.0) comes from a man who has been asked about Thanksgiving dinner (one month ago). From his conversation

with the patient's wife, the clinician knows that the man's family (his wife, son, daughter-in-law, and two children) had Thanksgiving dinner in the Astoria Hotel restaurant.

Excerpt 4: Thanksgiving Dinner (T13)

1 DOC: Mm hmm tell me
 2 where you had Thanksgiving dinner.
 3 (5.0) ((*patient looks straight ahead*))
 4 PAT: Ah:: ((*looks down*))(2.0) We went to a hotel
 5 oh I can't think of the name of it
 6 ((*looks back and forth*)) could
 7 Broad Broadmoor I think ((*looks at clinician*))
 8 DOC: mm hmm
 9 (2.0)
 10 DOC: And who all went (.) to the hotel.
 11 (10.0) ((*patient looks straight ahead*))
 12 PAT: Uhm:: (7.0) (*shifts gaze down*) er
 13 My son and his wife
 14 and their two kids I guess
 15 I couldn't be sure ((*looks at clinician*))
 16 DOC: Okay what are their two kids names.
 17 PAT: ((*looks down*)) uh (4.0) uh: (4.0)
 18 DOC: Did Nancy join you for dinner. (4.0)

In this excerpt the patient engages in three memory searches in response to the clinician's questions about: *where* the family had Thanksgiving dinner (lines 1–7), *who* was there (lines 10–15), and *what* the grandchildren's names are (lines 16–17). The response pattern is the same across all three searches. After the questions, the patient pauses for lengthy periods (7.0 seconds, lines 3–4; 17.0 seconds, lines 11–12; 8.0 seconds, line 17). In each case, the patient shifts his gaze away from the clinician and breaks his pauses with a hesitation marker, while maintaining his thinking face. The clinician remains silent during these pauses, presumably honoring the memory search. In two cases, the patient signals the end of the search by looking at the clinician and offering tentative answers, qualifying these with doubtful epistemic assessments ("I can't think of the name," line 5; "I guess," line 14; "I couldn't be sure," line 15). The clinician offers minimal receipts of these answers ("mm hmm," line 8, "Okay," line 16). In the third memory search, it is the clinician who closes off the patient's unsuccessful search for the names of his grandchildren with a new question (line 18). Thus, in the shift in CDR rating from questionable to mild memory impairment, patients show longer pauses, frequent assessment of searches as questionable and uncertain, and sometimes the failure to recall significant memory-information.

5.2.3 Moderate memory loss (CDR Memory Rating 2.0)—The memory loss associated with CDR 2.0 is worded: "only highly learned material retained; new material rapidly lost." In the excerpt below, the clinician queries a female patient about going out to

eat with her husband and another couple two weeks ago. The patient remembers going out with these friends, but she cannot remember their names (Excerpt 5).

Excerpt 5: Their First Names (T12)

1 DOC: What (.) what are their first ↑names.
 2 (1)
 3 PAT: U:h (3.4) (*patient looks down*) tsch
 4 You gotta give me some ti- (.) time
 5 that's (1.8) °I can't tell ya.°
 6 (1.6) (*continues looking down*)
 7 PAT: °u:h° (4.7) °hm° (1.5) tsch
 8 °ohhh ss° (2.5) Mad- (0.8)
 9 °Was it Madeline° (1.6) °no° (1.4)
 10 DOC: Had you been anywhere else?

Interestingly, the clinician asks explicitly for *first* names (line 1), perhaps to ease the burden of her remembering. Her labored memory search (lines 2–9) lasts a combined 26.7 seconds and ultimately fails. There are two stages in her search.

First, after an initial hesitation marker (“uh”) and downward gaze (line 3), she engages a search during a 3.4 second pause, which she interrupts with a directive: “You gotta give me some time” (line 4). She returns to the search with a false start, which promises a forthcoming answer but terminates in a post-positioned repair – an account for not answering: “I can’t tell ya” (line 5). Second, although this latter phrase could signal the end of her turn, she does not look back to the clinician, and he does not step in. Rather, she again picks up the search with a hesitation marker, “uh” (line 7), and after a combined 8.7 seconds of pauses, including a lip smack (“tsch”) and softly uttered “gosh” (frustration?) she ultimately produces the first syllable of a candidate name (“Mad”) in line 9. In another post-positioned repair, she cuts off that name and recycles the first syllable in the self-addressed question, “Was it Madeline?” After a 1.6 second pause, she addresses herself again, negatively assessing her own answer (“no”). Finally, although she does not signal the termination of her search and/or the end of her turn, the clinician allows a brief pause and moves onto another question (line 10).

In mild and moderate stages of dementia, multi-stage, complex searches become more common but in fact more frequently unsuccessful. Interestingly, these long and laborious efforts also suggest that patients know that they should know. Their holding themselves accountable reflects a degree of epistemic responsibility.

5.3 Epistemic responsibility – “lost”

The following excerpts from patients with severe memory loss show a marked departure from the labored and increasingly unproductive memory searches that we saw with patients at mild and moderate stages. In short, we see patients confidently producing “wrong” answers (or false memories). The excerpts below show two variations on this theme. For the

first patient, memory searches all but disappear as he provides improbable answers to the clinician's questions. The second patient does engage in memory searches, but they are less tortured than those of earlier examples, and he terminates them with confidently asserted but irrelevant and wrong answers. Interestingly, both patients persevere from one question-answer sequence to the next.

5.3.1 Severe memory loss (CDR Memory Rating 3.0)—The rating criteria for memory loss at this level reads: “severe memory loss; only fragments remain.” Beginning with Excerpt 6, the clinician asks the patient (T15) about the last time he saw his sister. The clinician knows that two weeks before the interview, the patient's sister took him out of the residential memory clinic to go for ice cream. (Note that Excerpts 6–8 are successive portions of the same exchange).

Excerpt 6: I Spoke to Her (T15)

1 DOC: When was the last time
 2 you saw your sister (.) before today.
 3 PAT: Yesterday
 4 DOC: Tell me what you did when you saw her
 5 (.8)
 6 PAT: ((looks at clinician)) Uh I spoke to ↑her
 7 (.8)
 8 DOC: ↑Ye:s
 9 (1)
 10 PAT: A::nd I:: (.) I guess the right (prob-)
 11 the right word would be (.4)
 12 .hh I spoke with her (1) a:nd
 13 uh (.2) I talked to: her at the same time=
 14 DOC: =Yes
 15 (.6)

In stark contrast to the prior patients, this man exhibits almost none of the behaviors associated with memory search. His pauses are at or under one-second. The thinking face exhibited by other patients is largely absent, and he maintains eye contact with the clinician throughout the questioning. Further, although his answers are immediate, fluent, and grammatically correct, they are either insufficiently informative to foster the progressivity of the talk and/or they are nonsensical (as violations of social and cultural norms).

For example, asked by the clinician what he and his sister had done when they last saw one another (line 4), the patient replies “I spoke to her” (line 6) delivered with rising intonation on the last pronoun (“her”) suggesting both turn completion and the finality of his response. Not surprisingly, the clinician treats this uninformative response as incomplete, and with rising prosody on his elongated “ye:s,” he invites more information (line 8). Where we might expect a memory search, however, the patient does not look away but maintains direct engagement with the clinician. His response (lines 10–13), though labored, is ultimately a

paraphrase. That is, the pre-positioned repair (“a:nd I:”), false start (“I guess the right”), cut-off and second pre-positioned repair (“prob-”), the repair itself (“the right word would be”), recycling of the initial response (“I spoke with her”), and confirmation (“and I talked with her at the same time”): all ultimately work together to merely repeat his initial answer. That answer adds no additional information and fails to move the talk forward.

Again, the clinician treats it as incomplete (line 14) and sharpens the recipient design of his question by asking the patient directly about leaving the memory facility to go out with his sister for ice cream (Excerpt 7).

Excerpt 7: Bangkok, Thailand I (T15)

16 DOC: >n And <did you go on uh a little (.) excursion
 17 or little trip
 18 (.6)
 19 PAT: Yes
 20 DOC: Where did you go
 21 (.2)
 22 PAT: Bangkok Thailand
 23 (.6)
 24 DOC: Ba::ngkok Thailand=
 25 DOC: =Now that(.) must ha:ve be:en a long trip
 26 (.2)
 27 PAT: Yes

In lines 16–17 and line 20, the clinician constructs two questions to which the patient gives grammatically appropriate responses. However, both responses stymie the progressivity of the talk and add irrelevant (in fact, impossible) information. To the yes-no question in lines 16–17, the patient gives a type-conforming “yes,” but adds no actionable information (line 19). To the clinician’s follow-up wh-specifying question (“where did you go?”), the patient complies with a grammatically appropriate but wildly unlikely place name: “Bangkok, Thailand.”⁵

Four lines later, the clinician again attempts to elicit the information about going out for ice cream with a declarative interrogative, which the patient now confirms (Excerpt 8).

Excerpt 8: Bangkok Thailand II (T15)

32 DOC: >Right uh now< (.6) I thought
 33 I heard her mention you might have stopped
 34 uh (.) at a restaurant or a (.) uh (.4)

⁵Admittedly, there are some infelicities in the clinician’s question that might account for this answer. He asks about an “excursion or little trip” both of which could imply an activity more extensive than ‘going for a sundae,’ and the patient’s responses do indeed match this larger-scale agenda.

35 fast food place to get something to eat
 36 PAT: ((nods head))
 37 DOC: Wha- uh tell me about that
 38 (1)
 39 PAT: My sister and I lived in Bangkok Thailand
 40 for seven years

The non-verbal confirmation (line 36) is a claim of knowledge, and hence the clinician follows up with a wh-telling question to elicit a demonstration of that knowledge (line 37). The patient's grammatically appropriate, clausal response is, however, off-topic (lines 39–40). It is non-normative and stymies the progressivity of the talk.

In sum, in Patient T15 we see little evidence of the labored memory searches that we saw among patients at previous CDR stages: no pauses of inordinate length, no gaze away, and few expressions of epistemic uncertainty. The patient responds with grammatically appropriate but “wrong” answers.

In contrast, a second patient at this stage *does* engage in memory search behaviors, but he seems to get lost in the search and ends his turn unaware that he has not answered the clinician's question. Excerpt 9 captures this dynamic, as the clinician asks the patient about the recent birth of his first grandchild. (Again, Excerpts 8–10 are successive portions of the same exchange).

Excerpt 9: Father of the Grandchild (T33)

1 DOC: Wh- who is the grandchild?
 2 (1.3)
 3 PAT: ((looks at clinician)) uh
 4 (2.3)
 5 PAT: Let's see they ((looks away))
 6 (0.7)
 7 They were in here with (0.7) me (1.8)
 8 They had two (1.0) granddaughters (2.8)
 9 and (3.2)they had tih-two (1.0)
 10 four (1.8) kiddies now
 11 (3.6)((looks at clinician))
 12 DOC: Who's the father of the new granddaughter?
 13 (1.2)
 14 PAT: Me.
 15 (0.9)
 16 DOC: Congratulations
 17 PAT: °Thank you°
 18 (0.7)

The patient begins his search (lines 5–11) with the canonical gaze away and slight pause, and he talks about people who had accompanied him and his wife to the CDR interview. However, these people seem *not* to be the patient's son and daughter-in-law.⁶ Nor does the content of this search seem to concern his first and only grandchild. The clinician shows no uptake of that information and asks who the father of the granddaughter is (line 12). After a brief pause, during which the patient maintains eye contact with the clinician, he gives the impossible answer, "me."⁷ In sum, the patient concludes an unproductive and irrelevant search as if it had provided an appropriate answer.

Oddly, once the topic of the grandchild has been broached, the patient continues to answer other questions (on other topics) with irrelevant information about the grandchild. The next excerpt picks up where the last left off, with the clinician changing the topic to the patient's in-laws.

Excerpt 10: Her Name (T33)

19 DOC: Now I understand that um (0.5)
 20 your (.) inlaws (0.8)
 21 DOC: Claudia and Jerry (.) you saw them ↑recently?
 22 (2.5)
 23 PAT: ((looks away)) I think her name might've been
 24 (2.1)
 25 PAT: Mary Strawson (3.5) ↑well (gets up to leave)

In answer to the clinician's yes-no declarative (lines 21–22), the patient seems to initiate a memory search (long pause and gaze away; lines 22–23). Ultimately however, his answer ignores the clinician's change of agenda, and he gives a qualified assertion of the new grandchild's name in line 25 (but he gives the wrong name). Interestingly, his response is plausibly relevant to the clinician's *first* question at the beginning of this sequence (Excerpt 9, line 1): "Who is the grandchild?" If so, the patient's is orienting to a question 'on record' but already taken off the table by the clinician. From a cognitive perspective, it may be that slowed processing time explains this delay, and/or from an interactional perspective, it may represent the normative power of giving answers to questions. Interestingly, the exact same pattern recurs in Excerpt 9, but in this case the patient's off-topic answer is unquestionably irrelevant.

Excerpt 11: Probably Four Pounds (T33)

37 DOC: When was the la:st time you were dow:n
 38 to Lake Palmer?

⁶It is unknown who had accompanied the patient and his wife to the interview (or indeed whether anyone other than his wife was there with him). However, since the new baby is his first grandchild, and since he refers to these people as having four grandchildren, they cannot be any of his own adult children.

⁷One could argue that the clinician's question is unusually confusing for a patient with cognitive difficulties.

39 (2.0)
 40 PAT: ((looks down)) Probably (5.8) four pounds
 41 (0.8)(looks back to clinician)
 42 DOC: about four pounds?

In the intervening lines (not shown), the clinician had returned to his question about ‘seeing Claudia and Jerry’ and after finishing that topic he attempts to change his line of enquiry, asking a wh-question (i.e. “when”) about visiting Lake Palmer (lines 37–38). Again, as in Excerpt 10, the patient seems to initiate a memory search (i.e. takes a long pause and looks away). After a 2-second pause, he takes the floor with the adverb “probably” (line 40), an adverbial hedge which presages an appropriate answer. However, his inordinately long pause suggests that he cannot produce the required answer, and he utters the (situationally) nonsensical: “four pounds.” One obvious possibility is that this is the baby’s birthweight (though in fact she only weighed two pounds), and that the patient has again returned to a previously closed topic.

In sum, neither late stage patient is able to consistently produce “right” answers (“true” memories) in response to the clinician’s questions, yet their response patterns show little hesitation or doubt about the answers that they do produce. Further, both patients seem to persevere on one topic and, once the clinician has changed the topic, both patients continue to respond with material from a prior topic. Neither patient seems aware of this inappropriacy.

6. Discussion and conclusion

In the question-answer sequences of the CDR, the clinician treats patients as *epistemically responsible* for personal autobiographical facts, personal memories of past events, and the topical thread of a line of questioning during the interview. He asks personal questions that he knows they *should* be able to answer, and it is clear that patients hold themselves accountable for such memories. This article trains analytic attention on memory search as evidence of this accountability.

The analyses above show patients engaged in more and more laborious searches across questionable, mild, and moderate levels of impairment. Longer and longer pauses are a primary indication. As representative of the trends in the pause data from the entire dataset, the maximum, turn-total, memory search pauses in the excerpts above⁸ show a progression from 3.0 seconds for the non-impaired patient (Excerpt 1, lines 13–14), 8.0 seconds for the questionable patient (Excerpt 2, lines 14–16); 17.0 seconds for the “mild” patient (Excerpt 4, lines 11–15), and 26.7 seconds for the “moderate” patient (Excerpt 5, lines 2–9). During these lengthening pauses, other search phenomena are seen to multiply as well: hesitation markers, disfluencies, tentative answers, epistemic modals, and epistemic self-accounting (in versions of “I don’t know,” “I don’t remember,” and “It’s gone”). Sometimes patients do not close their unsuccessful searches with the classic look back to the clinician, but simply maintain a gaze-away until the clinician take up the next turn (Excerpt 4, lines 17–18,

⁸These include the pause immediately after the clinician’s question as part of the patient’s turn.

Excerpt 5: lines 3–9). At such points, patients do not re-engage, nor do they signal completion of their turns at talk. They remain moored, as it were, in an unproductive search. Such persistence strongly suggests that patients – across early and middle stages of the disease – hold themselves accountable for answering the clinician’s memory questions. The troubles are evidence that *they know they should know*.

Intriguingly, at the core of these tortured, and unsuccessful searches is an elusive “right” answer. A cognitivist might say that the patient is conducting an internal mental search for some memory trace – an unretrievable “true” memory – which would meet the search criterion and resolve the retrieval process. From an interactional perspective, and working from observable interactional data, we see and hear concatenated pauses, hesitation markers, false starts, post- and pre-positioned repairs, epistemic qualifiers, and epistemic assessments as palpable evidence that patients cannot successfully conclude their searches. Their epistemic responsibility for the personal knowledge to which they should have access is dramatically loosened.

But the picture changes dramatically in the late stages of the disease where patients either do not engage in such searches and substitute “wrong” answers (or “false” memories), *or* they do engage in searches but confidently conclude them with unlikely or false memories. Thus, on the one hand, Patient T11 never pauses for more than 0.8 seconds (well within the normal range), and when asked where he recently went to a restaurant with his sister, he unhesitatingly declares that they went to Bangkok, Thailand (Excerpt 7). On the other hand, Patient T33 *does* engage in memory searches (Excerpt 9, lines 3–11; Excerpt 10, lines 23–25; Excerpt 11, lines 40–42), but he closes the searches (looks back at the clinician) and in every case his answer is wrong or off topic. In short, at the later stages of the disease, patients no longer hold themselves accountable for “correct” autobiographical facts and personal memories for past events, but they answer anyway. Epistemic responsibility is ultimately lost.

What lessons might we draw from this discursive-interactional reading of the CDR? There are at least two broad implications: first, for the project of neuropsychological testing itself, and second, for ongoing research on epistemics.

Neuropsychological testing, much like discourse and conversation analysis, is focused on human performances: what people can *do* in testing, what people *do* in talking. “Neuropsychological tests are intrinsically performance-based. They are structured to require individuals to exercise their skills in the presence of an examiner/observer” (Harvey, 2013), p. 91). Accordingly, the CDR rubric focuses the clinician’s attention on what patients can remember: Stage 0.5: “partial recollection of events”; Stage 1.0, “more marked for recent (vs. distal) events”; Stage 2.0, “only highly material retained;” Stage 3.0, “only fragments remain.” Nevertheless, the analyses of this article suggest that the range of observable patient behaviors is wider than the actual memories they display. Memory search itself is the most obvious of these behaviors, and indeed we see identifiable shifts (lengthening pauses, increased disfluencies, self-initiated repairs, epistemic modals) along the continuum of disease severity. Moreover, as noted above, the most salient shift involves the near disappearance of these behaviors at late stages. Whether these discursive

phenomena are susceptible to the psychometric operationalization required by high-stakes cognitive testing, and whether the effort would improve the specificity and sensitivity of testing, would require additional studies of much larger data sets. Such a project would extend current work on interactional differences between non-impaired adults and those at very early stages of the disease (Jones, Drew, Elsey, Blackburn, Wakefield, Harkness, & Reuber, 2016).

Second, these analyses trigger deeper reflection on the notion of epistemic responsibility. This concept is bidimensional in that, from one side, it encompasses how interlocutors *hold each another accountable* for knowing information associated with the self, personal experience (memories), one's current activities and social roles (i.e. Type 1 knowledge; Pomerantz, 1980), plus the already-shared information in the present-tense, ongoing conversation. From the other side, speakers *hold themselves responsible* for knowing this same information, preferentially to advance the progressivity of interaction and to signal alignment and solidarity with other speakers (Clayman, 2002; Heritage, 1984; Stivers & Robinson, 2006).

In fact, the institutional setting and the peculiar epistemic ecology of the CDR interview seem to target precisely this self-accountability. From the beginning, patients are made aware that it is precisely their memory ability that is at issue because the clinician's first question is: Do you have any problems with your memory or thinking? Further, throughout the interview, he repeatedly and explicitly asks: "Do you remember...?" In addition, patients are frequently made aware that the clinician knows the answers to his questions because he takes K+ stances in designing them (e.g. gives hints) and often makes references back to his epistemic source (e.g. 'your husband mentioned that...').

Critically, however, in the case of the question-answer sequences of the CDR, self-responsibility extends to giving *right* answers (i.e. *true* memories). Although from a cognitive perspective, we might say that the late stage patient cannot remember and therefore (obviously) cannot produce an answer, it is also the case that early stage patients (and indeed healthy individuals) also forget. But they do not confidently substitute "wrong" answers. From an interactional perspective, it is this transformation of epistemic responsibility – labored, loosened, and lost – that is a defining discursive dynamic in the progression of the disease.

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Biography

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Highlights

- A memory search is an observable, interactional accomplishment in talk and may be used to display accountability for knowing certain information.
- In clinical assessment, Alzheimer's patients' memory searches become more disfluent, extended, and inconclusive, as they search for the "right answers" or "true memories," from earlier to later stages of the disease.
- At the latest stage, patients' epistemic accountability seems to dissipate as they relinquish labored search and generate "wrong answers" or "false memories."