
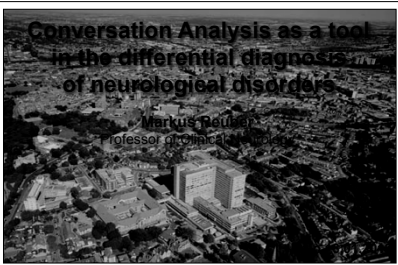


# Conversation Analysis as a tool in the differential diagnosis of neurological disorders

Markus Paulus  
 Professor of Clinical Neurology



**Academic Neurology Unit**  
 University of Sheffield  
 Royal Hallamshire Hospital



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# CA as a diagnostic method in neurology

## Overview

Some observations about history taking

Conversation analysis in patients with seizures

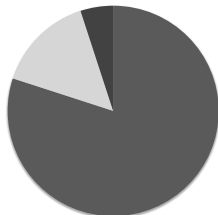
Conversation analysis in patients with memory complaints

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# CA as a diagnostic method in neurology

## Observations about history taking

The diagnostic process



History

Examination

Investigation

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# CA as a diagnostic method in neurology

## Observations about history taking

Examples of diagnostic challenges in medicine

- Seizures: epileptic versus nonepileptic (dissociative)
- Memory problems: progressive / neurodegenerative versus functional.
- Memory problems: Alzheimers vs. Frontotemporal vs. Subcortical dementia
- Headache / pain: structural / physiological versus functional
- Hallucinations: psychotic disorders / non-psychotic disorders

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# CA as a diagnostic method in neurology

## Observations about history taking

Studying interaction: Conversation Analysis

- Developed in the 1970s to examine how people achieve social actions (eg. greeting, complaining, recommending).
- Based on the analysis of video-/audio recordings and detailed transcripts.
- Typically used in "naturally occurring" interactions.
- Studies how people work together to construct conversation by looking at how they make sense of things the other person has said.

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# CA as a diagnostic method in neurology

## Observations about history taking

Studying interaction: Conversation Analysis

- Examples of sequential interactions (adjacency pairs):
  - greeting – greeting
  - question – answer
  - Proposal – acceptance / rejection
- Example from clinical practice (Phase 1, 015, Bethany):
 

Patient:

Neurol.:

Other:

Neurol.:

Patient:

Neurol.:

Hel[lo].

[Hi].

Hiya.

Hi:: is it (Patient na[me]).

[It is, yeah.

Hi.

(0.3)

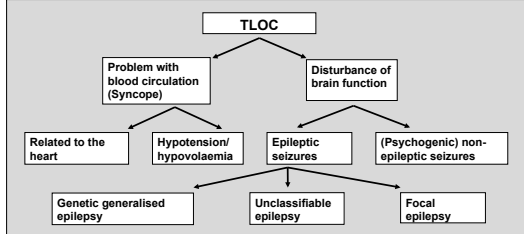
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# CA in patients with seizures

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## CA as a diagnostic method in neurology Patients with seizures

### Differential diagnosis of transient loss of consciousness



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## CA as a diagnostic method in neurology Patients with seizures

### History-taking: factual items

Limitation	Feature in the history suggestive of NES
Little differentiating value	No ictal injury, no seizures from (apparent) sleep, no incontinence, no tongue biting, pelvic thrusting
Differentiate but not noticed / described reliably	Long duration, closed eyes (tonic-clonic like attacks), closed mouth ( tonic phase), no cyanosis
Differentiate but not commonly reported	Pre-ictal anxiety symptoms, ictal crying, ictal weeping, vocalisation during tonic-clonic phase
Differentiate but require expert observation	Unusually rapid or slow recovery, variation in amplitude but not frequency of motor activity, ictal reactivity

☐ Depend on observations of a seizure witness

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## CA as a diagnostic method in neurology Patients with seizures

### Bielefeld: linguistic and interactional features

Feature	Epilepsy	NES
Focus on seizures	Easy, often volunteered	Preferential focus on situations / consequences ("focussing resistance")
Subjective seizure symptoms	Volunteered, detailed	Avoided, no detail ("detailing block")
Formulation work	Extensive	Practically absent
Gaps in consciousness	Exact description	Little description

Schwabe M, Reuber M, Schöndienst M, Gülich E. Listening to people with seizures: How can Conversation Analysis help in the differential diagnosis of seizure disorders. Communication and Medicine, 2006;5:59-72.

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## CA as a diagnostic method in neurology Patients with seizures

### Prospective diagnostic value of interactional / linguistic features

- Question:**
- Can we prove that CA can help in the differential diagnosis of seizure disorders?
- Method:**
- Prospective study, consecutive patients
  - Only patients referred for video-EEG by consultant neurologists because of diagnostic uncertainty
  - Only patients with video-EEG "proven" diagnosis
  - Independent rating by 2 'blinded' linguists
  - Interview schedule based on German guidelines

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## CA as a diagnostic method in neurology Patients with seizures

### Diagnostic Scoring Aid: Interactional observations

Item	Description	Observation	Score
1	General focus on seizure experience (rather than seizure situations or consequences)	Introduced by the P Introduced by the U, followed by P Introduced by I, lost by P	
2	Description of subjective seizure symptoms	Volunteered Offered only when prompted Prompting unanswered	
3	Description of seizure suppression attempts	Volunteered Not described only on prompting Prompting unanswered	
4	Description of "gaps" (phases of reduced self-control or recollection)	Volunteered Offered when prompted Prompting unanswered "holistic" statements only	
5	Response to challenge of statements about "gaps"	Elaboration or reformulation of previous description Repeat or minimal elaboration No prior description to elaborate	
6	Description of individual seizure episodes (possible "focussing resistance": interactional resistance to focus on particular seizures)	Volunteered Not offered / episodes explicitly not distinguishable Not offered, no explicit denial of ability to distinguish episodes	

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## CA as a diagnostic method in neurology Patients with seizures

### Diagnostic Scoring Aid: Topical observations

Item	Description	Observation	Score
7	Subjective seizure symptoms	Described in great detail Little or some detail (Listed but) not described in detail	
8	Relative importance of subjective seizure symptoms	United in central to description More or equal attention to circumstantial details	
9	Relative importance of 'gaps' (phases of reduced self-control or recollection)	Not described beyond brief statements One of several elements of seizure episodes Prominent element of seizure episodes	
10	Contouring of 'gaps' in seizure trajectory (eg. detailing of last memory before / first after seizure)	Defining element of seizures Clear attempt to contour 'gaps' No contouring of gaps / no clear seizure trajectory	
11	Reconstruction of 'gaps' (eg. filling own memory gaps with own recollections / witness accounts)	Clear attempts to fill 'gaps' with own recollections Some attempts to reconstruct 'gaps' with own recollections No attempts to reconstruct gaps using own recollections	

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## CA as a diagnostic method in neurology Patients with seizures

### Diagnostic Scoring Aid: Linguistic observations

Item	Description	Observation	Score
12	'Formulation effort' associated with description of subjective seizure symptoms ('formulation effort' includes re-story, reformulation, reorganization)	With marked formulation effort With some / little formulation effort No description beyond brief statements	
13	'Negation in descriptions of seizure experience (subtle: 'I don't remember anything, contextualized: 'I remember it but not I')	Contextualized negations only With some absolute negations With pervasive absolute negations	
14	'Formulation effort' associated with description of 'gaps'	With marked formulation effort With some little formulation effort No description beyond 'blatant' statements	
15	Metaphoric seizure conceptualization	Consistent across seizures With variations across seizures No coherent conceptualization	
16	External / internal conceptualization of seizures	Consistent seizure conceptualization in external Seizures sometimes conceptualized as external Seizures not conceptualized as external	
17	Conceptualization of seizures as a fight / struggle	Seizures regularly conceptualized as a fight / struggle Seizures sometimes conceptualized as a fight / struggle Seizures not conceptualized as a fight / struggle	

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## CA as a diagnostic method in neurology Patients with seizures

### Results: Prospective multirater study

- Qualitative assessment: both raters correctly classified 17/20 patients (85%)
- Quantitative assessment: Mean DSA score higher in epilepsy than DS (rater 1: 8.5 vs. -0.35,  $p=0.017$ ; rater 2: 7.6 vs. 1,  $p=0.047$ ).
- Diagnostic prediction using DSA: sensitivity 85.7% (71.4%), specificity 84.6% (92.3%).
- Interrater agreement: Full in 229/340 (67.4%); partial in 109/340 (32%); frank disagreement in 12/340 (3.5%) of ratings (Kappa 0.59).

Reuber M et al. Using interactional and linguistic analysis to distinguish between epileptic and psychogenic non-epileptic seizures: a prospective blinded multi-rater study. *Epilepsy and Behavior*, 2009; 16:139-144.

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## CA as a diagnostic method in neurology Patients with seizures

### Replication in Chinese patients

会话分析在鉴别诊断痫性发作与心因性非痫性发作中的作用

姚远 马文 Markus Reuber 卢强 黄强 周祥华  
张万强 关立文 姚雪丽 刘略 袁一茗 余丽君

【摘要】目的 明确会话分析能否用于区分患者中痫性发作与心因性非痫性发作的鉴别诊断。方法 对2014—2016年就诊于北京协和医院12例日常使用视频记录并确诊为心因性非痫性发作患者，采用结构化会话分析进行记录。由语言学和心理学的内科医生使用其各自、各自患者中记录的17项会话、话题和语言学特征评分表，分别对患者作出诊断，并与最终临床诊断进行对比。结果 语言学和心理内科医生仅根据会话特征，均有10/12患者诊断正确。痫性发作患者的会话特征平均得分为8.00分(语言学)和6.75分(心理学)，心因性非痫性发作患者平均得分分别为4.75分(语言学)和7.25分(心理学)。2名研究非癫痫科医生(一为性医科、一为理)分别以81.80% (10/12)和75.00% (9/12)的准确率诊断了1例心因性非痫性发作患者。【关键词】癫痫；发作；心因性非痫性发作；会话分析

Yuan Y et al. Conversation Analysis in differential diagnosis of epileptic seizure and psychogenic nonepileptic seizure. *Chinese Journal of Neurology*. 2017;50(4):266-70.

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## CA as a diagnostic method in neurology Patients with seizures

### Translation into routine practice: challenges

- CA research findings were based on unusually open interviews, mostly in non generalisable research or psychotherapeutic settings.
- Routine neurology appointments are much more time-limited.
- In routine appointments doctors have to ask specific questions for medical and legal reasons (eg. past medical & family history, driving, work)
- The previous findings were based on the post-hoc analysis of video- (audio-) recordings and transcripts.
- Interactional handling of third parties (companions)

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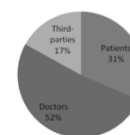
## CA as a diagnostic method in neurology Patients with seizures

### Effect of the presence of third parties on discourse space

Unaccompanied visits



Accompanied visits



C Robson, P Drew, M Reuber. Duration and structure of unaccompanied (dyadic) and accompanied (triadic) outpatient consultations in a specialist clinic. *Epilepsy and Behavior* 2013 (27) 449-454.

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## CA as a diagnostic method in neurology Patients with seizures

### Exemple 1: Dr H.

D: ((3.5 seconds)) You're the patient, hi, hi.  
P: Good afternoon.  
D: I'm ((doctor's name)) nice to meet you.  
P: Nice to meet you.  
D: ((0.5 seconds)) Good, and I work with ((doctor's name)) and we've had a letter from ((doctor's name)).  
P: Yeah.  
D: At ((hospital name)).  
P: Mm hm.  
D: ((1 second)) And it says you had a blackout in August.  
P: Yeah.  
D: How old are you now?  
P: Er, I'm twenty.  
D: And what do you do for a living?  
P: Um ((0.5 seconds)) well I'm a student but I work at ((company name)) at ((city name)).  
D: So what are you a student of?  
P: Er, English.  
D: ((3 seconds)) So is that at, er ((university name)) or ((university name))?  
P: I'm at ((university name)).

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## CA as a diagnostic method in neurology Patients with seizures

### Exemple 1: Dr H.

D: ((2 seconds)) And you work a, what in a supermarket as well?  
P: Yeah.  
D: ((3 seconds)) Are you right or left-handed?  
P: I'm right-handed.  
D: ((1.5 seconds)) Any medication at all?  
P: Er, I'm asthmatic.  
D: So you have inhalers?  
P: Yeah.  
D: ((3 seconds)) Er, er and you're on Microgynon?  
P: Yeah.  
D: ((2.5 seconds)) So the asthma's the only medical problem now.  
P: Yeah.  
D: Or in the past?  
P: Um ((0.5 seconds)) it's not like an ongoing thing, I only like re, I only really suffer with it when I've got a cold or anything.  
D: It's well-controlled?  
P: Yeah.  
D: Yeah, er, it's not, um, there're no other medical problems?  
P: No.

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## CA as a diagnostic method in neurology Patients with seizures

### Translation into routine practice: Intervention study

- Identification of 10 neurology registrars in Leeds and Sheffield willing to participate.
- Recording of routine interaction practice in first seizure clinic appointments (target: 5 consultations per participant).
- Participation of all neurology registrar in a one day communication training workshop (focus: interview style / diagnostic features).
- Recording of interaction practice following workshop participation, completion of post-appointment diagnostic scoring aid (target: 5 consultations per participant).

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## CA as a diagnostic method in neurology Patients with seizures

### One day workshop

Title	Description	Time
What does CA tell us about medical interactions (LJ)	Presentation on foundational aspects of talk and application in medical interaction	30 mins
Openings (LJ)	Data session examining consultation openings to get familiar with CA transcripts	30 mins
Using CA in the differential diagnosis of epilepsy and NES (MR)	Presenting findings of diagnostically relevant linguistic features from previous research	1 hour
Finding differential diagnostic markers (MR & LJ)	Data session analysing video recordings and transcripts to identify linguistic features	1 hour
History-taking styles (LJ)	Exploring how question design shapes a patient's response	1 hour
Final workshop (MR & LJ)	1. Data session: Examining doctors' styles in preintervention consultations 2. Considering a new question design	2 hours

Jenkins, L.; Reuber, M. A Conversation Analytic Intervention to Help Neurologists Identify Diagnostically Relevant Linguistic Features in Seizure Patients' Talk. *Research on Language and Social Interaction*. 2014;47(3),286-79.

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## CA as a diagnostic method in neurology Patients with seizures

### Workshop-associated changes in communication style

Phase	Preintervention	Postintervention	
Opening (greetings and introductions)	30 (79%)	44 (81%)	
Reason for visit (mentioning referral letter)	35 (92%)	28 (52%)	$\chi^2 = 26.77, df = 1, p < .001$
Preliminary questions about age and occupation	24 (63%)	8 (15%)	$\chi^2 = 23.60, df = 1, p < .001$
Predescription seizure questions (e.g. "When was your first seizure?")	9 (24%)	4 (7%)	$\chi^2 = 7.21, df = 2, p < .05$
Request to speak to patient first and accompanying persons later	2 (5%)	16 (32%)	$\chi^2 = 14.07, df = 2, p < .01$
History taking (e.g. structured question about medical history, medications) prior to seizure description	4 (11%)	2 (4%)	
Problem presentation solicited	2 (5%)	29 (54%)	$\chi^2 = 33.52, df = 1, p < .001$
Asks about problem expectation	29 (76%)	21 (39%)	
Requests seizure description	3 (8%)	2 (4%)	
Closed seizure question	1 (3%)	0	
Selects third party	3 (8%)	2 (4%)	
Missing	2 (5%)	3 (6%)	
Patient's opportunity to present their problem (rated from 1 to 5)	2.42 (SD: 1.15)	3.48 (SD: 1.06)	$\chi^2 = 21.28, df = 4, p < .001$
First seizure question	8 (21%)	34 (63%)	$\chi^2 = 15.86, df = 2, p < .001$
Worst seizure question	1 (3%)	24 (44%)	$\chi^2 = 19.80, df = 2, p < .001$
Last seizure question	7 (18%)	24 (44%)	$\chi^2 = 6.86, df = 2, p < .05$
Typical seizure question	15 (39%)	16 (30%)	

(Pre-intervention n=35, post-intervention n=50)

Jenkins, L., Cosgrove, J., Ekberg, K., Kheder, A., Sokhi, D.: Reuber, M. A brief conversation analytic communication intervention can change history-taking in the seizure clinic. *Epilepsy and Behavior*. 2015;52:62-67.

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## CA as a diagnostic method in neurology Patients with seizures

### Postconsultation rating of conversational diagnostic features

	EPILEPSY median score <sup>a</sup> (n=20)	PNES median score (mean rank) (n=13)	Mann-Whitney U
The patient readily volunteers descriptions of seizure symptoms (including last thing they remember and the next thing they remember and seizure suppression attempts).	6	3	94.5*
In response to enquiries the patient readily provides more detailed seizure descriptions	6	3	77.0**
The patient provides detailed seizure descriptions	5.5	3	82.5*
The patient focuses more on the symptoms of the seizures rather than the consequences of seizures or the situations in which they occurred.	6	2	64.5**
The patient's seizure descriptions are characterised by formulation effort (reformulation, hesitations, pauses).	4.5	2	77.0**
The interview was challenging for me.	1	4	98.0*

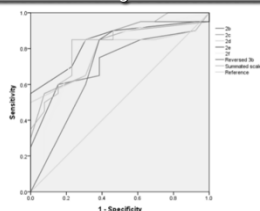
<sup>a</sup> scores ranging from 1: "not at all" to 7 "very much so"; \*, Significant p<0.05; \*\*, Significant p<0.01

Jenkins, L. et al. Neurologists can identify diagnostic linguistic features during routine seizure clinic interactions. Manuscript in preparation. *Epilepsy and Behavior* 2016;64:257-61.

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## CA as a diagnostic method in neurology Patients with seizures

### Postconsultation rating of conversational diagnostic features



Summated scale:

Sensitivity: 77%

Specificity: 85%

Jenkins, L et al. Neurologists can identify diagnostic linguistic features during routine seizure clinic interactions. Manuscript in preparation, *Epilepsy & Behavior* 2016;64:237-61.

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## CA as a diagnostic method in neurology Patients with seizures



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## CA in patients with memory complaints

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## CA as a diagnostic method in neurology Patients with memory complaints

### The challenge

- "Dementia gap" : \*50,000 people with dementia in the UK but only 48% diagnosed. (<http://www.alzheimers.org.uk>)
- Prime Minister's Challenge: Dementia clinic in every town.
- Four fold increase in patients assessed in memory clinics since 2010/11. ([www.rcpsych.ac.uk/memoryclinicsaudit](http://www.rcpsych.ac.uk/memoryclinicsaudit))
- "Dementia gap" persists.

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## CA as a diagnostic method in neurology Patients with memory complaints

### The challenge



The Times, 15 March 2015

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## CA as a diagnostic method in neurology Patients with memory complaints

### Differential diagnosis of patients with memory complaints

Non-progressive disorders	Progressive disorders
<ul style="list-style-type: none"> <li>- Functional Memory Disorder (FMD)</li> <li>- Depression-related cognitive symptoms ("depressive pseudodementia")</li> <li>- Cognitive symptoms related to brain injuries</li> <li>- Cognitive symptoms of systemic disorders</li> </ul>	<ul style="list-style-type: none"> <li>- Alzheimer's Disease (AD)</li> <li>- Cerebrovascular dementia</li> <li>- Frontotemporal dementia</li> <li>- Lewy Body dementia</li> <li>- Dementia of Parkinson's Disease</li> </ul>

Blackburn, D. J., et al. Memory difficulties are not always a sign of incipient dementia: a review of the possible causes of loss of memory efficiency. *Brit med bulletin* 2014;112:71-81.

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## Using Conversation Analysis in the memory clinic

- **Aim:**
  - To identify features in patients' talk which could help distinguish between neurodegenerative and functional memory disorders.
- **Method:**
  - Audio- / video recording of new appointments in the memory clinic (n=105).
  - Medical "gold standard diagnoses"
  - Description of conversational profiles of NDD (n=15) and FMD (n=15).
  - Blinded multirater prospective testing of diagnostic potential conversational profiles (n=10).

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## Interview structure

Structure:

- Open phase: How can I help? / What were your expectations?
- Who is most concerned about your memory?
- Specific example: Tell me about the last time your memory let you down?

Rules:

- If patient accompanied, encourage the patient to talk, ask the companion to contribute later.
- If patient stops talking, tolerate silence, use continuers, pick up one something patient has said.
- Avoid additional questions other than for clarification.
- Do not introduce new topics into the conversation.

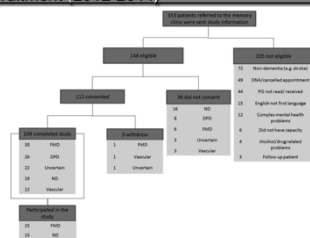
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**Focus of analytic attention**

- Configuration of interaction (accompanied / unaccompanied)
- Responding to neurologists' specific questions about memory problems
- Memory-in-interaction
- How patients respond to questions
- Triadic features (if accompanying person (AP) present)

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### Recruitment (2012-2014)



+5 FMD / 5ND for prospective testing

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### Findings of differential diagnostic interest

*Aging & Mental Health*, 2015  
<http://dx.doi.org/10.1080/13607863.2015.1052729>



Conversational assessment in memory clinic encounters: interactional profiling for differentiating dementia from functional memory disorders

David E Jones<sup>1</sup>, Paul Drew<sup>2</sup>, Christopher Elvey<sup>3</sup>, Daniel Blackburn<sup>4</sup>, Sarah Wakefield<sup>5</sup>, Kirsty Harkness<sup>6</sup> and Markus Roesler<sup>7</sup>



Contents lists available at ScienceDirect



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Towards diagnostic conversational profiles of patients presenting with dementia or functional memory disorders to memory clinics

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## Development of diagnostic scoring aid

	More Suggestive of Delusional Score = 1	More Suggestive of Functional Memory Problems Score = 1 (# if 1 or later)
<b>Diagnostic Feature</b>		
Who attends the memory clinic?	1 is the patient accompanied?	1, 0, or -1
Responding to narrative elicitation?	Yes (AP include family or friends)	No
2. "What is most concerned about the memory problems?"	Responds to question "What is most concerned about the memory problems?" or AP states that they are most concerned about the memory problems	The patient
3. "Can you give an example of the last time your memory let you down?"	Responds to question "Can you give an example of the last time your memory let you down?" or offers a routine common problem (e.g., "I forgot my keys")	Provides detailed specific example
Working and episodic memory exhibited within the present consultation	Not demonstrated	Repetitions marked by phrases such as "What I said" or "I said that"
4. Ability to recall in real time episodic memory during interaction	Not demonstrated	
5. Responding to compound questions	Unable to attend to different parts of compound questions	Can attend to different parts of compound questions
History questions regarding to narrative elicitation		
6. Prevalence of verbal fluency "know" questions	Frequent	Infrequent, referral to new issues not previously considered
7. Patients' elaborations and length of answers at talk	Short, literal answers	Long responses, sharing of additional unrelated details
8. Repetition	More frequent repetition of own and others' statements	Less frequent, marked with repetitions
9. Production of talk	Struggle to reply to question, circumvent question difficulties	Able to reply when questioned

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## CA as a diagnostic method in neurology Patients with memory complaints

### Additional DSA features if patient accompanied

Diagnostic Feature	More Suggestive of Dementia Score: +1	More Suggestive of Functional Memory Problem Score: -1 (# if Uncertain)	Score
Features to rate if patient accompanied	AP acts as patient's representative or spokesperson	AP role limited to confirming information as accurate and offering second opinions	---
10. What is the main role of the AP?	AP's role is to confirm and offer second opinions	Can answer most questions by themselves	---
11. Presence of head-turning sign (subtended "I don't know")	When struggling to answer question patient turns to AP and defers the answer to them	Can answer most questions by themselves	---
12. Disagreements	AP's attempt to disconfirm and correct the accuracy of the patient's responses.	Limited evidence of explicit disagreements between patient and AP	---
13. Word searches	Frequent. Display "word search" difficulties during consultation. AP provide "missing" information.	Report "word search" difficulties in the past	---
14. Responding to personal questions	Evidence of difficulties answering these questions, requiring help from AP to fill in blanks	Can answer these questions relatively easily and with little hesitation	---
Total score	---	---	---

For each interactional feature scores range between 1 and -1 (1 in favor of ND; 0 undecided or unable to rate; -1 in favor of FMD). There are 9/14 (unaccompanied/accompanied) items to score, as the maximum score is 9/14 (unaccompanied/accompanied) and minimum score -9/-14 (unaccompanied/accompanied). A high score corresponds to a neurological ND description; a low score to a neurological FMD description.

AP indicates accompanying person; DSA, diagnostic scoring aid; FMD, functional memory disorder; ND, neurological disorder.

Reuber, M. et al. An interactional profile to assist the differential diagnosis of neurodegenerative and functional memory disorders. *Alzheimer Dis Assoc Disord* 2018;32:197-206.

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## CA as a diagnostic method in neurology Patients with memory complaints

### Scoring of the DSA

For each interactional feature:

If it matches the dementia profile (+1)

If it matches the FMD profile (-1)

Calculate overall scores across 9 (or 14) features

Generate additional qualitative judgement

Reuber, M. et al. An interactional profile to assist the differential diagnosis of neurodegenerative and functional memory disorders. *Alzheimer Dis Assoc Disord* 2018;32:197-206.

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## CA as a diagnostic method in neurology Patients with memory complaints

### Findings of differential diagnostic interest

1. Who attends the memory clinic
2. "Who is most concerned about the memory problems?"
3. "Can you give me an example of the last time your memory let you down?"

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## CA as a diagnostic method in neurology Patients with memory complaints

### Who is most concerned about your memory?



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## CA as a diagnostic method in neurology Patients with memory complaints

### Who is most concerned about your memory?



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## CA as a diagnostic method in neurology Patients with memory complaints

### Tell me about the last time your memory let you down.



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## CA as a diagnostic method in neurology Patients with memory complaints

Tell me about the last time your memory let you down.



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## CA as a diagnostic method in neurology Patients with memory complaints

Findings of differential diagnostic interest

4. Displays of memory across the interaction  
(eg. use of 'like I said' or 'as I say').
5. Responding to compound questions

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## CA as a diagnostic method in neurology Patients with memory complaints

Response to compound questions

Heu: Um, as I'm (or name) I'm a registrar in neurology.   
 What are your expectations or what expectations you have about the clinic?  
 Pat: Well one of the reasons was because as I have a partner and he was sort of   
 something about time past, like holidays and things we've had, and I thought   
 I can't remember that, and I can't remember that happening. And there's, there's   
 other things where, one I work in a public house, I'll be downstairs working and   
 somebody will say, Oh, as a private example was on the Friday (though when I remember   
 to upstairs for something and I don't go, and we're not a telephone on the   
 staircase going upstairs, and just as I was upstairs the phone rang, I knew only   
 somebody said, oh would you mind doing a quick survey? So I did this quick survey   
 then I went to the top of the stairs and I thought what have I come up here for,   
 I just could not think what I had come upstairs for, and that happens quite a lot,   
 and then I went back downstairs and I said "What have I come up here, what did I   
 upstairs for?" And then it just clicked, I thought oh I went upstairs to get (I don't   
 tell some eyes, and I've just silly things like that. Quite often if I go upstairs   
 like another thing, we, we have deliveries and as we usually like to pay cash   
 delivery for invoices, and as I've, I've actually now started taking the invoices   
 upstairs because by the, I'll read, read it out and unless I write it out on my   
 and or take the invoice with me, I'll try and memorise the figure whether   
 we pay, for example £129.65, and by the time I've gone upstairs, covered the money   
 and come back downstairs I'll have got £129.75, I've got all my numbers mixed up   
 now to stop, to save me messing about I either take the invoice with me or I write   
 it on my hand, and I can guarantee by the time I've gone upstairs, counted the money and   
 been distracted by something, the figures will have just gone out of my head. I don't   
 know if that's a common thing or not, just me and

Heu: Yeah.  
 Pat: I don't know, and that's about it really. Expectations? I don't know, I don't   
 know what to, to expect one I've never been in this situation before.

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## CA as a diagnostic method in neurology Patients with memory complaints

Findings of differential diagnostic interest

6. Patients' repeated use of "I don't know" (excluding 'head-turning sign')
7. Elaborations and length of turns at talk.
8. Repetition (not marked as such).
9. Production of talk (hesitation, long pauses, incomplete sentences)

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## CA as a diagnostic method in neurology Patients with memory complaints

Unsolicited elaborations of replies



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## CA as a diagnostic method in neurology Patients with memory complaints

Findings of differential diagnostic interest (when 3<sup>rd</sup> parties present)

10. What is the role of the accompanying persons (AP)?  
(e.g. 'confirmation checks', proving a second opinion when asked)
11. Presence of "head-turning sign"
12. Disagreement between patient and AP
13. Word searches by patient aided by AP
14. Responding to personal questions

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## CA as a diagnostic method in neurology Patients with memory complaints

### 'Head turning sign'



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## CA as a diagnostic method in neurology Patients with memory complaints

### Disagreements



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### Disagreements



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## CA as a diagnostic method in neurology Patients with memory complaints

### Quantitative DSA findings (15 FMD vs 15 ND patients)

Item	Description	A: Typical of ND	B: Typical of FMD	No. ND Cases Categorized A/B (n = 15)	No. FMD Cases Categorized A/B (n = 15)	Difference ND vs. FMD (P)
1	Is the patient accompanied?	Yes	No	14/1	6/9	0.003
2	Who is most concerned?	Others	Patient themselves	6/1	0/9	0.0008
3	Specific example of memory failure	No or partial/incomplete answer or offers a general/routine problem	Described and specific response about a recent occurrence	1/10	1/11	<0.0001
4	Ability to recall recent episode	Patient unable to recall earlier talk	Patient able to recall earlier talk	1/13	0/8	0.001
5	Memory during interaction	Unable to attend to different parts of compound questions	Can attend to different parts of compound questions	7/1	3/7	0.02
6	Prevalence of "I don't know" verbal responses	Indicates multi-based problems	Response to unexpected questions	1/11	1/14	<0.0001
7	Patient's elaboration and length of turn	Short, "literal" answers	Long responses, that provide extra detail	9/6	0/11	0.002
8	Repetition	More frequent	Less frequent	10/3	1/11	0.001
9	Production of talk	Struggle to reply to questions, communication difficulties	Able to provide answers when asked	7/2	1/13	0.001

Reuber, M. et al. An interactional profile to assist the differential diagnosis of neurodegenerative and functional memory disorders. *Alzheimer Dis Assoc Disord* 2018;32:197–208.

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## CA as a diagnostic method in neurology Patients with memory complaints

### Quantitative DSA findings: Accompanied (6 FMD vs 14 ND patients)

Item	Description	A: Typical of ND	B: Typical of FMD	No. ND Cases Categorized A/B (n = 14)	No. FMD Cases Categorized A/B (n = 6)	Difference ND vs. FMD (P)
10	Main interactional contribution/role of the AP	AP acts as patient's representative or spokesperson	AP's role limited to confirmation checks and second opinions	9/1	1/5 (n = 6)	0.008
11	Presence of head-turning sign (including verbal "I don't know" replies)	Patient defers answering to AP by turning to them	AP's role limited to confirmation checks and second opinions	10/4	3/3	NS
12	Disagreements between patient and AP	Present	Not present	1/11	2/4	NS
13	Word searches	Displays "word search" difficulties during consultation, AP provides "missing" information	Report "word search" difficulties in the past but does not display "word search"	3/1	3/3	NS
14	Responding to personal questions	Evidence of difficulties answering these questions	Can answer these questions relatively easily	6/5	0/6	NS

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## CA as a diagnostic method in neurology Patients with memory complaints

### Findings of differential diagnostic interest

- 15+5 patients with neurodegenerative memory disorder, 15+5 patients with functional memory disorder
- Phase 1: Evaluation of Diagnostic Scoring Aid (15+15)
- Phase 2: Prospective pilot trial of DSA (5+5 patients, 2 raters)
- Phase 1: Median DSA score NMD +5, FMD -5 ( $p < 0.001$ ), optimal diagnostic cutoff: +1, sensitivity 86.7%, specificity 100%, interrater agreement: Kappa 0.8.
- Phase 2: Rater 1: correct 10/10, rater 2: 9/10

Reuber, M. et al. An interactional profile to assist the differential diagnosis of neurodegenerative and functional memory disorders. *Alzheimer Dis Assoc Disord* 2018;32:197–208.

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## CA as a diagnostic method in neurology

### Summary

It's worth listening to how people describe their problems



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## CA as a diagnostic method in neurology

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## CA as a diagnostic method in neurology

### The End

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