

Thematic analysis, emotional valence and technical characteristics of freely written sentences done during cognitive testing

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Background

- Cognitive testing commonly includes a freely written sentence.
- Beyond a binary determination of sentence acceptability, characteristics and thematic content of sentences are not commonly considered.

Objective

To study sentence characteristics and themes in a sample of participants undergoing routine cognitive assessment in a memory clinic setting.

Methods

- Participants had attempted the sentence writing item during memory clinic assessment as part of the Free Cog study.
- Sentences were analysed according to correctness, length (word count) and handwriting legibility (using a validated Four Point Scale).
- Thematic analysis of sentences and assessment of their emotional valence (positive, neutral, negative) was undertaken by pairs of raters using a standardized code book.
- Participant characteristics (age, sex, and cognitive diagnosis) were examined in relation to themes using multivariate multinomial mixed modeling.
- Sentences were analysed qualitatively using thematic analysis.

Results

Table 1: Participant Characteristics

Characteristics	N=336
Age: mean ± SD [range]	75.5 ± 9.6 [44-97]
Sex: female N (%)	170 (51.1)
Education in years mean ± SD; [range]	14.5±4.2 [6-30]
Cognitive Diagnosis	N(%)
Normal cognition	41 (12.2)
CIND	82 (24.4)
Dementia	210 (62.5)
Missing	3 (0.9)

CIND = Cognitive Impairment, Not Dementia

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Results

Expressions of personhood

Reference to people, pets, things and values important to them, often with positive emotional valence:
e.g. I love my family so very much.; I love my cat.!
I was married once to a wonderful husband
I LIKE PAINTING; I AM HAPPY WITH MY LIFE

The here and now

Orientation statements, present tense focus:
e.g. Today is Tuesday and I'm at the Hospital
It is a sunny day!; I am in Halifax, Nova Scotia
ReaLLy Nice out; Today IT IS TUESdAy
The weather today is dreary

THEMES

About the assessment

Reference to test process/questions, expressions of anxiety about assessment, often negative emotional valence: e.g. I forgot one word.; I DON'T LIKE DRS OFFICES
I wish that I stayed home; I hate that I have to be here.
Can I get my drivers license Returned.
I am so worried that I have DEMENTIA.; You aiR A PAiN.

Generic or classic sentences

Many from early life/education, books, songs
e.g. The quick brown fox jumped over a lazy dog.
mary had a little lamb; The dog jumped over the cat.
A man of war.; The Brown Cow Jump Over The Moon
KNoW is the time To COME TO THE AID of The party.

KEY POINTS

Freely written sentences represent a uniquely individualized and personalized element of routine cognitive testing. Consideration of their thematic, emotional and complexity characteristics may have underutilized clinical value.

Characteristics	N (%)
Length: # words mean, SD range	5.5±2.3 (1-16)
Legibility:	
Excellent	206 (61.3)
Fair	27 (8.9)
Good	81 (24.1)
Poor	10 (3.0)
N/A	12 (3.6)
Emotional valence	
Positive	135(40.1)
Neutral	161 (47.9)
Negative	34(10.1)
Tense: Present	248 (73.8)
Future	24 (7.1)
Past	37 (11.0)
N/A	27 (8.9)

Table 2: Sentence Characteristics

- Total N=336 assessments
- Sentence length was shorter in participants living with dementia compared to cognitively normal participants (β : [-0.80]±0.41; p=0.049)
- Sentence legibility was not related to age, sex or cognitive diagnosis

Discussion, Limitations and Future Directions

- To our knowledge, this is the largest and most comprehensive study of freely written sentences.
- Consistent with usual testing practice, participants were not given any specific prompts and some people are not able to write a sentence, for reasons including physical, sensory, language, cognitive or limited educational opportunities.
- Sentences are thus unlikely to be missing at random.
- We plan more detailed investigation of Personhood using Kitwood's five psychological needs: Love, Comfort, Inclusion, Identity, Occupation.