Emotions and Dementia : a study on (automatic) recognition of emotion expressions in dementia

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The primary goal of this study is to gain a better understanding of how dementia affects the multimodal expression of emotions in face, gestures, verbal and non-verbal expressions when discussing emotional laden autobiographical memories. Therefore…

Ethical review	Approved WMO
Status	Will not start
Health condition type	Other condition
Study type	Observational non invasive

Summary

ID

NL-OMON49531

Source
ToetsingOnline

Brief title
Emotions and Dementia

Condition

- Other condition

Synonym
emotional expressions in face, speech and gestures

Health condition

dementie, emotie uitdrukkingen

Research involving
Human

Sponsors and support

Primary sponsor: Universiteit Twente
Source(s) of monetary or material Support: Netherlands eScience Center Amsterdam

Intervention

Keyword: affective computing, automatic emotion recognition, early dementia, emotions

Outcome measures

Primary outcome

The main study parameter is the multimodal expression of emotions. We are not only interested in differences in the intensity of the expressed emotions, but also in their composition in terms of the fusion of different modalities. By comparing persons with dementia to healthy controls in a comparative study and assessing changes in multimodal emotion expression in persons with dementia in the longitudinal study, the effect of dementia on emotions can be studied.

Secondary outcome

With the data collected in this study, a corpus will be built for automatic extraction of facial and speech expressions regarding automatic recognition of emotions. The automatic recognition model of emotions can be established through machine learning. The corpus will be made available to other researchers who are interested in further work on automated emotion recognition.

Study description

Background summary

Dementia is a group of neurodegenerative diseases that affect cognitive

processing. Nowadays, more than 270.000 persons have dementia in the Netherlands, a figure that will double over the next 25 years. Besides problems in cognitive functioning, 80-90% of the patients also suffer from problems in emotional functioning. It is important to gain more insight in the emotional functioning of persons with dementia as it is highly important to maintain quality of life in person-centered care. Current research uses observational instruments to assess emotional functioning in persons with dementia. However, they do not provide the fine-grained insights that are necessary to understand the factors influencing emotional responses and expressions of persons with dementia. Emotional expression is a continuous process that involves many features of behavioural, facial, vocal, and verbal modalities. Given this complexity, few psychological studies have addressed emotion recognition in an everyday context of persons with dementia.
Recent technological innovations in the field of affective computing aim to take the complexities of emotional expression into account. Automatic emotion detection makes it possible to study latent features that are difficult to observe and track by human beings between different modalities. It also allows us to investigate larger sets of video data in a smaller amount of time and for unobtrusive analysis and monitoring of everyday emotions. However, little is known about how these lab-based technologies generalize to real world problems. Rather than a one-size-fits-all-solution, existing tools need to be adapted to specific user groups in more natural settings. They also need to take large individual differences into account.

Study objective

The primary goal of this study is to gain a better understanding of how dementia affects the multimodal expression of emotions in face, gestures, verbal and non-verbal expressions when discussing emotional laden autobiographical memories. Therefore, we carry out an observational comparative study between patients with dementia and matched healthy older adults, as well as a longitudinal study on the development of emotion expression in patients with early dementia across time to gain insight how dementia affects emotions versus normal aging as well as the effect is when the disease progressed over time.
The secondary goal of this project is to advance technologies that allow for (automatic) recognition of emotions in persons with dementia. We therefore explore machine learning techniques to advance technologies for multimodal emotion recognition. Furthermore, we intend to create a corpus of the processed video, audio and qualitative data for other researchers to use.

Study design

This is an observational study that consists of 1) a comparative study between people with early dementia and healthy elderly; and 2) a longitudinal study within people with early dementia. The comparative study consists of two

sessions. In the Session 1, participants have to fill in questionnaires, and assess emotional laden memories with a word association task. In Session 2, they discuss these memories in detail via a life story book based on the first session and react to affective pictures. For the comparison study, the data of healthy elderly was already collected in a previous study with ethical approval of the committee at the University of Twente. The longitudinal study has 1 follow-up measurement point: after 8 months (Session 3).

Study burden and risks

The person with dementia will have in total 1 introduction meeting (60 minutes) and 3 sessions of about 120 minutes each, so a total time investment of 7 hours over a period of 8 months. Participants are free to collaborate in the study. They may quit without reason and without consequences. There are no known negative effects of reminiscence. Possible side effect might be the recollection of negative memories. The principal investigator has experience with dealing with negative memories and privacy issues. Furthermore, persons with psychotrauma are excluded. Mentally competence of the participant with Dementia will be monitored via themselves, caregiver or general practitioner/specialist that is being informed of the participation in the study of the participant with Dementia. If mentally competence becomes an issue during the 8 months of the study, the participant, care giver or general practitioner/specialist can indicate that it would be wise to cancel the participation of the participant in the study. Last, participants are free to decide whether and under which conditions their data may be included in the corpus.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

1. early-mild dementia of the Alzheimer type (diagnosed by specialist in dementia)
2. Being mentally competent to provide informed consent
3. Corrected vision and/or hearing
4. Good proficiency of the Dutch language (hearing and reading)
5. Participant has to be 65 years or older

Exclusion criteria

Past psychotrauma (module PTSS in Mini International Neuropsyciatric Interview)
more severe stage of dementia than early-mild dementia (based on the S-MMSE score)

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active

Primary purpose:	Other

Recruitment

NL

Recruitment status:	Will not start
Enrollment:	30
Type:	Anticipated

Ethics review

Approved WMO Date:	23-05-2019
Application type:	First submission
Review commission:	MEC-U: Medical Research Ethics Committees United (Nieuwegein)

Approved WMO Date:	26-02-2020
Application type:	Amendment
Review commission:	MEC-U: Medical Research Ethics Committees United (Nieuwegein)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL68936.044.19

Register	ID
Other	Trialregister: NL7659