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Digital communication support in interaction involving people with dementia

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Abstract

Background: People with dementia frequently suffer from communication disabilities, which usually influence their quality of life. The communication disabilities may affect a person’s possibility to participate in interaction as a result of reduced ability to initiate new topics and difficulties in contributing new information to maintain the conversational topic. Technical aids have been proved useful to facilitate communicative activities by supporting memory and stimulating communicative initiatives.

Methods: The study is carried out in a Swedish context, and three dyads of older women with dementia and professional carers participated in the study. The dyads interact in the home environments of the persons with dementia using tablet computers and two web-based applications with generic pictures, videos, and music files (Computer Interactive Reminiscence and Communication Aid, CIRCA) and personalised pictures and films (Computer Interactive Reminiscence and Communication Aid University of Sheffield, CIRCUS). The data include twenty-one video recorded activities.

Results and Conclusion: The applications appear to provide support for the dyads in finding things to talk about. The participants talk both about the material and memories associated with the material. The participants experience the use of communication aids as positive.

Introduction

All dementia diseases comprise some kind of communication problems regardless of underlying pathology [1]. This is partly due to the problems with working memory that people with dementia experience which makes it difficult to keep track of turns, and, consequently, to uphold conversations [2]. In addition, Searson et al. [3] have found that repetitions and lack of responses in interaction with people with dementia can give the interlocutor the impression that the person with dementia is not listening to what their conversation partner is saying. This may be frustrating and disempowering for people with dementia, and distressing for the family and care staff they communicate with [3]. In interaction with persons with dementia, the interlocutors have an important role in supporting interaction, and this may result in an increased responsibility for interactional partners of persons with dementia to both initiate and maintain conversations [1,4]. As the disease progresses, interactional partners gradually become more important for upholding conversational activities, and the asymmetrical distribution of communicative responsibility increases [1,4–7].

High or low technological communication support may serve as facilitators for access to cognitive abilities or as primes for lexical access for people with Alzheimer’s disease (AD) [8]. Support in terms of, pictures, communication books, and photo albums, have been shown useful to compensate for communication difficulties in dementia, but the use of digital communication support is a relatively new area in dementia care [1,8]. Persons with dementia often have problems with retaining information [1], something that might be compensated for by providing the person with dementia with multimodal input; by hearing the information, seeing it on a picture, and in writing, the information is available for a longer period of time. In a study by Alm et al. [7], it was demonstrated that participants with dementia were able to adapt rather quickly to the use of the digital communication support. It was also shown that the digital communication support made the persons with dementia talk about a wider range of topics. The use of the digital communication support did not demand any particular education of the participating members of staff, which was perceived as a positive feature. The communication support also contributed to decreased conversational labour for the members of staff, since the multimedia support turned the conversation into an interactive experience where the person with dementia and the conversational partner contributed in a symmetrical way [7].

In this study, conversational activities based on two web-based applications, CIRCA (Computer Interactive Reminiscence and Communication Aid) and CIRCUS...
Computer Interactive Reminiscence and Communication (Computer Interactive Reminiscence and Communication University of Sheffield), specifically designed to support interaction involving people with dementia, were analysed. While both applications are designed to stimulate communication by providing photos, videos and music that may function as an inspiration to find topics and to help participants with dementia stay on topic, the two applications differ in regard to what kind of material they are provided with. Whereas CIRCA is populated with generic material that could potentially be of interest to "anyone", CIRCUS is designed with an uploading function, and users will populate the application with their own materials (see Astell et al. [9] for further descriptions of the applications; also http://www.inlife-project.eu).

CIRCA is connected to a large database of pictures, videos, and music files belonging to six main categories of which three are randomly displayed in the beginning of a CIRCA session (Figure 1). The category system and the randomised selections of topics in CIRCA have been shown to be important in constraining the participants’ choice of category and make the topics more varied [6,10]. Conversational partners to people with dementia tend to come back to the same topics and ask the same questions every time [11]. Constraining the topics to choose from may reduce the risk of conversational partners limiting the possibilities of topical variation for persons with dementia. Moreover, persons with dementia tend to tell the same stories over and over again, something that is recurrently portrayed as a problem by conversational partners [12]. By providing a set of three randomly chosen categories this conversational behaviour is likely to diminish [6].

As previously mentioned, CIRCUS has personalised content with pictures and videos related to a specific individual’s or group’s past and current everyday life. Users can scan their (old) paper photos, use pictures from the tablet’s photo album, find materials on the Internet, etc (Figure 2). Conversations about old memories seem to engage persons

![Figure 1. Screenshot from CIRCA where the different categories are shown.](image1)

![Figure 2. Screenshot from CIRCUS showing different personal categories.](image2)
with dementia more than e.g. talk about what has happened today, and persons with dementia also tend to be more able to access memories from childhood and early adulthood than from the last decades [5]. CIRCUS is in many respects similar to a memory book, but in a digital form.

Given this background, there is a need for further studies on the applicability of digital communication support for persons with dementia. It is also of great interest to compare the function of different types of applications, and the present study contributes to expand the knowledge base within the field of technological communication support for persons with dementia.

Aim

The aim of the present study is to further understandings of how digital communication support may be used in interaction involving people with dementia. In the study, communication between persons with dementia and professional carers in conversations with and without the use of communication devices is examined. A further aim is to contribute information on how participants experienced communication with and without the use of communication aids.

Method and materials

The study is based on video recordings of interaction involving people with dementia and professional carers as well as semi-structured interviews regarding the participants’ experiences of conversational activities with and without the applications. Three Swedish speaking dyads of older women with dementia (R, E & M) and professional carers (A, S and L) participated in the study. No formal testing was conducted, neither to assess speech, language, and communication nor cognitive abilities.

Data consist of 29 recordings of dyads with and without (eight recordings) tablet computers and either CIRCA (twelve recordings) or CIRCUS (nine recordings) (see Table 1). All recordings were made at the residential homes where the women with dementia live.

The carers got basic instructions on how to use the tablet and the two different applications, but no specific instructions were given regarding how to use the applications in conversation. For the conversations without digital communication support, the carers were asked to sit down with the person with dementia and talk for a while in a way that they would normally do.

Analysis

The recorded material was watched repeatedly and transcribed according to the following conversation analytic conventions:
- yes stress
- really ↑ rise
- ye::a prolonged sounds
- cut off word
- = speech immediately latched on to the previous utterance
- “hm” word or utterance pronounced quietly or soft
- “yeah” laughter in voice
- .hh in-breath
- () Micro-pause (less than 0.2 sec.)
- (0.4) pause
- [yes]
- [mm] overlapping speech

The emic stance taken within conversation analysis [13] influenced how the recordings were analysed; conversation analysis informed the present study in terms of being driven by unmotivated looking. For each of the three conversational conditions, the following features were selected as representative illustrations: topic transitions, initiatives, and maintaining conversation. The semi structured interviews covered both communication in general and specific experiences of CIRCA and CIRCUS. The interviews were audio recorded, transcribed verbatim, and analysed regarding content.

Results

In this section, excerpts illustrating the above-mentioned phenomena from the three different conditions are presented followed by a presentation of results from the interviews.

Table 1. Length of recordings.

<table>
<thead>
<tr>
<th>Without digital support</th>
<th>With CIRCA</th>
<th>With CIRCUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of recording (min:sec)</td>
<td>Participants</td>
<td>Length of recording (min:sec)</td>
</tr>
<tr>
<td>1</td>
<td>14:19</td>
<td>R&amp;A</td>
</tr>
<tr>
<td>2</td>
<td>10:28</td>
<td>R&amp;A</td>
</tr>
<tr>
<td>3</td>
<td>10:14</td>
<td>R&amp;A</td>
</tr>
<tr>
<td>4</td>
<td>15:12</td>
<td>E&amp;I</td>
</tr>
<tr>
<td>5</td>
<td>20:42</td>
<td>E&amp;I</td>
</tr>
<tr>
<td>6</td>
<td>9:33</td>
<td>E&amp;I</td>
</tr>
<tr>
<td>7</td>
<td>7:11</td>
<td>M&amp;E</td>
</tr>
<tr>
<td>8</td>
<td>7:02</td>
<td>M&amp;E</td>
</tr>
<tr>
<td>9</td>
<td>12:54</td>
<td>E &amp; S</td>
</tr>
<tr>
<td>10</td>
<td>06:07</td>
<td>E &amp; S</td>
</tr>
<tr>
<td>12</td>
<td>21:16</td>
<td>M &amp; E</td>
</tr>
</tbody>
</table>
Topic transitions

Example 1 is taken from a conversation between the enrolled nurse S and the person with dementia E, without any digital communication support. The example illustrates how a topic is closed, and a new topic is introduced. The sequence starts with the closing of the topic flowers, and the initiation of a new topic, gymnastics.

Example 1.
E = person with dementia, S = enrolled nurse
01. S: vilka f- kommeru ihåg vare va för färgr på dom
which c- do you remember what colours they were
02. (0.4)
03. E: ja har ingen aning
I have no clue
04. S: om dom e r
if they are red or
05. E: ja vet int[+e] vet inte+
I don't kn[ow + I] don't know+
06. S: [rosa]
[pink]
07. (0.4)
08. S: .hnå
.hno
09.
0.4)
10. S: nå
no
11.
12. S: ((looks around the room))

13. S: jaha hh har du gjort några gymnastikrörelser
well have you done any gymnastic movements
14. idag rå
today then ((points to a drawing of movements on the wall))
15.
16. E: va sa du
what did you say
17. S: <har du gjort några gymnastikrörelser[ser]>
<have you done any gymnastic moveme[nts]>
18. E: [ja] trodde de va
[I] though it was
19. de du skulle göra med mej
that you should do with me

In the beginning of the sequence the previous topic is closed (line 01–10). No one takes the turn, which leads to a silence that lasts for over 2 seconds (line 11). The silence may be considered a topic transitions relevance place, TTRP, i.e. a place where the initiation of a new topic is possible and relevant [14]. The silence is followed by S looking around the room, and then asking a question (line 12–14). The question is topic specific and it regards gymnastic movements. The choice of topic is taken from the immediate environment, something that is typical of situations where there is a lack of topics, described as “local sensitivity” [15]. This sequence structure is common in the present material, i.e. new topics are initiated by the conversational partner of the person with dementia, and the topic is taken from the physical environment (cf. [16]). This pattern is possibly related to problems with topic initiation described for persons with dementia [17]. In the study by Mentis et al. [18], persons with dementia (specifically AD), were characterised by a reduced ability to change topics, difficulty in actively contributing to the propositional development of the topic, and a failure to consistently maintain topic in a clear and coherent manner. In Example 1, the person with dementia is dependent on the interlocutor to initiate a new topic, and she does not contribute to the development of the topic.

Example 2 illustrates a topic transition, and it is taken from the same dyad as Example 1, but in this example they use CIRCA (the application with generic, randomised topics). The enrolled nurse, S, and the person with dementia, E, have just started CIRCA, and discussed which category to choose. They chose vacation photographs.

Example 2.
E = person with dementia, S = enrolled nurse
01. S: nu valde jag lite dår ska vi se va de är
now I chose a little there we’ll see what it is
oups
02. ((changes picture)) [oj du
is that my puppy
03. E: e de min hundvalp
04. (0.2)
05. S: har du haft en ?sän?
have you had a ?such one?
06. E: *ja*
*yes*
07. (0.5)
08. E: [hon var sådär preci]s [samma]
[she was like that exactly][the same]
09. S: [jaha:] [va:
[okay:] [what
10. ( )
11. S: va hette den?
what was its name?

The sequence starts when S and E have just started CIRCA and S has chosen vacation photographs. A picture of a puppy turns up when S touches the tablet screen (line 01–02). This picture elicits a contribution on a related topic, a specific puppy, initiated by E followed by a short pause (line 03–04). S then picks up on the topic, and poses two follow-up questions (lines 05 & 11), “have you had a such one” and “what was its name”. E’s puppy becomes the next topic. E nominated the topic, and S contributes to its maintenance by topic related questions (lines 05 & 11) and back channellings (line 09). An important function in CIRCA is the randomisation, making new things appear on the screen that none of the participants is primary knower of, which leads to an equalised basis compared to conversations without the communication support [17]. CIRCA is designed to help people with dementia become more active in conversation and to reduce the burden on the conversational partner [6] compared to conversations without support, where it is often the conversational partner that initiates new
topics [18]. Compared to Example 1, this second example demonstrates how the person with dementia initiates a topic and also contributes to its upholding.

The next example is from a conversation where CIRCUS is used, and it illustrates a topic transition initiated by the person with dementia, R, in relation to a new picture turning up on the tablet showing herself and the ward’s dog.

**Example 3.**

R = person with dementia, A = enrolled nurse

01. A: du får be: Robert ta med dig på en biltur [å]
"you must ask Robert to take you on a car trip [and"
  åka å=
"go an="

02. R: [ja]

03. A: =titta där åt trakterna
"=look there in those areas"

04. R: ja: de skulle va roilt
"yes: that would be fun"

05. A: Ja:

06. R: .hja
".yes"

07. (2.8) ((A changes picture))

08. R: nämten ((laughs)) (0.5) ja: (0.9) jag har sällskap i 
"oh my"
alla fall [((skrattar)]) ja:
"any case [((laughs))] yes:

09. (0.5)yes: (0.9) I have company in 

10. A: [ja:]
"[yes:"

11. A: henke hund,
"henke the dog,

12. R: "hja"
".hjes"

13. A: "m."

14. (1.9)

15. R: ((reads)) han tar en tupplur i *sängen*[ ja]
"He takes a nap in *the bed* [yes]

16. A: [ja]
"[yes:"

17. R: ja tänk att djur de tycker om å ligga i närheten av 
"yes animals they like to lie close to

18. en människa
"a person

Initially, the previous topic about R’s home is closed (line 01–06). This is followed by a silence (line 07), and A changes the picture in CIRCUS, thus initiating a topic transition, and the specific topic is initiated by R (line 08–09), by commenting on her companion on the picture. R later expands on the topic and makes the conversation progress by saying that animals like to be close to humans (line 17–18). The topic shift of the sequence has a clear transition (line 07–08) and the person with dementia starts talking spontaneously when she sees the image of herself. By initiating a conversation about the new picture, the person with dementia gets the possibility to determine the direction of the conversation. This demonstrates that also personal content may enhance the possibility of active participation for persons with dementia.

**Initiatives**

An initiative in conversation means that an interlocutor tries to steer the conversation in a certain direction by directing an initiative towards the conversational partner [13]. Initiatives are often shaped as questions or requests for information. An initiative is usually followed by a response in the next turn. It has been shown that persons with dementia, in particular Alzheimer’s disease in advanced stages, take few or no conversational initiatives [19], and together with a tendency to perseverations of sequences this may be problematic in interaction. Example 4 is from a conversation between an enrolled nurse, V, and a person with dementia, M, without any digital communication support. The topic of conversation is personal traits of mainly M, but she also comments on the personality of V. M’s initiatives are mainly responded to by back channelling signals from V.

**Example 4.**

M = person with dementia, V = enrolled nurse

01. M: nä men jag tror att d- (0.6) de är väl någe så när 
"no but I think that i- (0.6) it is quite alright I can"
  jag kan ju

02. va [tyst] också [men de e v
"be [quiet] also [but isn’t it] quite [good] to be

03. M: (1.9)

04. M: =m[e]

05. V: [a]a:

06. M: å du de är väl ganska roligt å [ha elever]
"and hey isn’t it rather fun to [have students]

07. V: ["aa precis"]
"["ya exactly"]

08. M: [ja] tror att du passar ganska [bra] föret 
"[I] think that you are rather [suitable for it"
  du också=
"as well=

09. V: ["aa"]
"[.hjes]

10. M: =((laughter))

11. V: å ibland kan du ju va lite tyst å sitta här å fun-
"and sometimes you could be a little quiet and sit

12. (0.7)
initial topic about M being quiet (line 11) followed by a silence which is closing the sequence (line 12). The topics initiated here are often repeated by M during this conversation, and this might explain that V does not pick up on the initiatives with more expanded responses.

In the next example, the same participants, the enrolled nurse V, and the person with dementia, M, talk about one of the pictures in CIRCA.

**Example 5.**
M = person with dementia, V = enrolled nurse
01. V: kina slott i september (0.8) kina slott
   *china castle in september (0.8) china castle*
02. 01. V: kina slott i september (0.8) kina slott
03. M: de i kina eller e de (.) svenska [kina]
   *Is it in china or is it (.) swedish [china]*
04. V: [jaa](0.7) eller kan de va
   *[yes:] (0.7) or cand it be*
05. 01. 04. V: [jaa](0.7) eller kan de va
06. M: kinesisk- [chinee]-
07. V: [ä] jag tror de ä Sverige va de ser ut [i] I think it is sweden what it looks like
08. [ä va sven- swens]ka träd [*he*]
   *[and was swe- swedish] trees [*he*]*
09. M: [ja de ser ut som] [jaa] gröna [(granna)]
   *[yes it looks as] [yes] green [(beautiful)]*
10. V: [i fönstret]
   *[in the window]*
11. M: men dom har [no i] (0.4) s- träd på olika ställen i
   *but they have [some in] (0.4) p- trees in different places*
   *in [china]*
12. V: [aa]
   *[^.hao^]*

Example 5 starts with V reading out loud the title of the new picture that turned up in CIRCA (line 1). This is followed by a pause and a question from M about the picture (line 03). V tries to answer but does not seem to be sure, and the sequence turns into a collaborative discussion about where the picture is taken. In this example, none of the participants knows exactly where the picture is taken, making the discussion more symmetric than without the communication support, and the person with dementia becomes as knowledgeable as the enrolled nurse. This is also different from the previous example where the initiative from the person with dementia is not picked up by the carer.

In the next example, M and V are using the CIRCUS, and M is telling V about the personal pictures uploaded into the application. The picture they are looking at in the example shows M and her sisters wearing dresses that their mother has sewn.

**Example 6.**
M = person with dementia, V = enrolled nurse
01. M: a men ja kommer ihåg dom då mamma va duktig
   o sy va [så] hon=
   *oh but I remember those mother was a good sewer [so] she=
02. V: [mm]
03. M: har sytt dom där klänningarna [åt oss]
   *has sewn those dresses [for us]*
04. V: [ja:] [yes:]
05. M: är de va (.) dom va jättefina ja [kommer] ihåg dom
   *and they were (.) they were really [nice] I remember*
   *them still=
06. V: [mm]
07. M: =gula .h som bouclé utav nåt [slag va] jättefina
   =yellow .h as bouclé of some kind were) really [nice]
08. V: [aha] [hja] aa
09. (0.2)
10. M: å då va vi likadana vi va [v
   *and then we were alike we were [well]* dressed we
   *had] a mother who=
11. V: [aa]
12. M: =va lite designer*
   *was a bit of a designer*
13. (0.9)
14. V: a rosett i håret
   *and a bow in the hair*
15. M: ja-a (0.4) de va fint [de me] ((skratt))
   *yeah (0.4) that was nice [that too] ((laughter))*
16. V: [mm]
17. V: a ka- kalasbyxer ((skratt))
   *and lo- long stockings ((laughter))*
18. M: ja-a *de va varmt o skönt* (0.7) ja men ja gillar
   *that was warm and nice* (0.7) yes but I like
   *those things*

In Example 6, M initiates a topic about her mother being good at sewing (lines 01 & 03) emanating from the CIRCUS-picture that is shown on the tablet, which is developed through several turns. V responds with minimal backChanneling signals (lines 02, 04, 06, 08, 12), similar to Example 4. After a silence in line 14, however, V turns back to the picture and contributes to the topic by commenting on the picture (line 15 & 18). Example 6 demonstrates that M takes several initiatives, and V both responds minimally but also adds to the topic by providing comments. The minimal responses by V gives M the opportunity to expand on her original initiative during the sequence and by making descriptive comments on the pictures in CIRCUS, she also contributes to upholding and elaborating M’s conversational initiative.

**Maintaining conversation**

The following example illustrates different ways of maintaining a conversational topic in conversation without digital support. It is taken from a conversation between an enrolled nurse, A, and a person with dementia, R. The sequence
starts with the enrolled nurse looking in a newspaper and
starting to talk about the weather.

Example 7.
R = person with dementia, A = enrolled nurse
01. A: va ska vi få för väder i veckan då bliare nåt
which weather are we going to have this week will
02. vårväder ((looks in the paper))
there be spring
03. (1.8)
04. R: de är väl för tidigt än
isn't that too early
05. A: "ja" de är en listen liten sol där på:
"yes" there is a small sun there on:
06. ((shows R the paper))
07. R: [jaha]
[okay]
08. A: [lördag]
[saturday]
09. R: [jaha]
[okay]
10. A: ja: men de va inte mycke du
yes: but it wasn't much
11. R: [nä]
[no]
12. A: [.hnä]
[.hno]
(1.8)
It usually says such signs of spring here that
kommer [när] dom hittar snödroppar å sätt
come [when] they find snowdrops and such
within
15. R: [mj]
[my]
16. R: ja:
[yes]
17. A: dom hade ju sett ju sett snödroppar ute på
they had seen had seen snowdrops out in
landet
the countryside
18. R: [näe]
[no:] 19. A: (((laughs)))
20. R: du vet ju well you know

22. A: (0.5)
23. R: = [trakerna] = [surroundings]
24. R: [*näe*]
[*no*]
25. A: ja: "ja"
yes: "yes"
26. R: känner du till avesta nånting
do you know anything about avesta
27. A: ja a det gör ja
yes yes I do
28. R: de gör du?
you do?
29. A: mhm m
[uh huh]
30. (0.3)
31. R: har du nån: bekant där
do you have any acquaintance there
32. A: (0.5) vi brukar va: där uppe ibland
yes: (0.5) we use to be: up there sometimes
33. R: [jaha]
[okay]

Example 8.
R = person with dementia, A = enrolled nurse
01. A: näe (.) men märkte ni av kriget på nåt annat
noce (.) but did you notice the war in any other
places (.)
02. [sätt då]
[ways then]
03. R: [ja:] ja de e ju ransoneringen
[yes:] well it is the rationing
04. A: ja:
yes:
05. R: ja
yes
06. A: m:
07. (0.3)
08. R: de va ju de som (0.5) va de svåra
that was what was (0.5) was the difficulty
and hard I didn't notice that much of it
09. A: m:
(0.3)
11. R: å svårt ja märkte inte så mycke av et
and hard I didn't notice that much of it
12. 13. R: du vet vi va ju bara barn
you know I was only a child
14. A: m:
15. R: .hja
.hyes
16. (0.5)
17. A: det märktes inte så mycket [uppe] i avesta=

18. R: [näe]
[no:] 19. A: (((laughs)))
20. R: var ja kommer *ifrån*
where I come *from*
21. A: ja: "ja"
yes: "yes"
26. R: känner du till avesta nånting
do you know anything about avesta
27. A: ja a det gör ja
yes yes I do
28. R: de gör du?
you do?
29. A: mhm m
[uh huh]
30. (0.3)
31. R: har du nån: bekant där
do you have any acquaintance there
32. A: (0.5) vi brukar va: där uppe ibland
yes: (0.5) we use to be: up there sometimes
33. R: [jaha]
[okay]

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Example 8 starts with A posing a question about R’s personal experiences of the war (line 01 & 02). The question is answered by R (line 03), followed by confirmations from both participants (lines 04–06), and a pause (line 07). The example continues in the same way, with A relating the topic about the war to the place where R lived (line 17), also demonstrating that she is familiar with some of R’s personal history. A conversation may continue as long as there is something more to say about the topic ([14], p. 184). The material in CIRCA is used to initiate the topic about the war period, and A poses a personal question related to the topic, which makes R talk about her childhood during the war. People with dementia are often happy to return to childhood events. The conversational partner of people with dementia may facilitate conversation and narration by introducing conversational topics that they know have a personal relation to the individual [20]. In Example 8 above, R appears to be engaged and she maintains the conversation, which may be due to the fact that the conversation has a personal connection. Example 8 also demonstrates that CIRCA has the potential to elicit personal memories (cf. [2]).

In the next example, A and R talk about R’s childhood house, a topic initiated from a picture in CIRCUS.

Example 9.

R = person with dementia, A = enrolled nurse

01.A: ser det likadant ut som när du: va barn å bodde där
does it look the same as when you were a child and lived there

02.R: nåe
no

03. (0.5)

04.A: ni ha renoverat [genom åren] mycke
you have renovated [through the years] a lot

05.R: [m ja o ja]
[oh yes]

06.A: [m]

07.R: [m] du förstår att (0.3) ((points to the picture))
you know that (0.3)

08. ((clears throat)) de fanns ju inge (0.3) rödfärg på
there was no (0.3) red coulor on

09. huset eller (0.3) nätting eller elektriskt
the house or (0.3) anything electrical

10.A: nå nå
no no

11.R: nå ((clears throat)) så de ha ju tillkommitt (0.8)
på på
No so that has come (0.8) in in

12. senare år
later years

13.A: ja okej ja
well okay yes

14. (0.5)

15.R: de f- e ju en ((points to the picture)) (0.9)
lam- (0.5)
it f- is a (0.9) lam- (0.5)

16. elektrisk lampa där (0.6) över verandan
Electrical lamp there (0.6) over the porch

17.A: ja: de kanske det är ja (.) ja [ja]
Yes: it might be that yes (.) yes [yes]

18.R: [m:]

19. (0.6)

20.A: .hja
.yes

21 (2.3) ((A changes the picture))

22.R: men ja ha ju växt upp (1.0) i: (0.7) de här huset
but I have grown up in (0.1) in: (0.7) this house

23.A: ((switches back to the pictur of the childhood house))

24.A: m: (.) hur många rum var de
m: (.) how many rooms were there

25. (0.4)

26.R: ja de va inte mer än två
well there weren’t more than two

27.A: de va inte två (.) >inge mer än två<
there were not two (.) >no more than two<

28.R: nåe
No

The example, which is preceded by a long silence, starts with A posing a question to R (line 01), and R gives a minimal response to this question (line 02), followed by a pause (line 03). A continues by clarifying her question, and expanding R’s minimal response, which is confirmed by R (line 04 and 05). R continues to talk about the house (lines 07–09, 11, 12, 15, –16) supported by backchannellings from A, and a confirmation (line 10, 13, 17). After a pause, A changes the picture (line 23), but R then continues with a comment on her childhood home (line 22), and A switches back to the picture of the house (line 24), and asks another question about it (line 24) and they continue to talk about the house (lines 25–28). People with dementia may have difficulties taking the turn fast enough, which may explain why A changes the picture before R started her next utterance [21]. The picture shown in CIRCUS probably encourages R to continue to talk about the house. R maintains the conversation without the interlocutor facilitating with supportive follow-up questions. The reason for the continuous narrative may be that the topic is personally linked and continuously appearing on the tablet screen, which has been shown to be engaging for people with dementia [5].

Experiences of communication

The analytic findings described above were supported by the enrolled nurses and the persons with dementia in interviews concerning their conversations with and without the applications. The enrolled nurses participating in the study state that in interaction with persons with dementia in general and without any communication aid, being familiar with the background of the person facilitates conversation. To talk about the “here and now”, e.g. on things present in the room was also mentioned as conversation starters. One of the enrolled nurses claimed that “talk about weather and food always works”. However, participating staff found it challenging to keep up and maintain the conversation, since persons with dementia are often perceived as rather passive,
and the responsibility for initiating new topics mainly falls on the conversational partners.

The participating staff as well as the persons with dementia found the use of CIRCA amusing and educative. The enrolled nurses expressed that CIRCA provided new topics, compared to conversations without the communication support where they perceived that they very often talk about the same things over and over again. The staff also found that they could enjoy the conversation more when the tablet computer was used, since they felt that the conversation became less demanding for them. The persons with dementia were curious about the tablet and wanted to participate e.g. by touching the screen.

The persons with dementia found CIRCUS fun and engaging, and they liked watching their own photographs in the application. This view was confirmed by the enrolled nurses’ opinions, and they also said that remembering things from the past was easier for the persons with dementia than to talk about new things. For one of the enrolled nurses, CIRCUS contributed new knowledge about the history of the person with dementia that previously was not known to her. However, it was also stated that the old photographs provoked sad memories.

The main differences between CIRCA and CIRCUS, according to the staff’s opinions were that the topics varied more with CIRCA than with CIRCUS. However, the personal photographs in CIRCUS were found to be more engaging for the persons with dementia. All participants, both staff and persons with dementia wanted to continue using the applications after the end of the study.

**Discussion**

There were both similarities and differences between all three interactional conditions. The participating staff took great responsibility for the conversation in all three conditions. This may reflect the fact that persons with dementia have problems contributing new information to make the conversation proceed [16]. However, the need for support differed between the conditions and so did the (a)symmetrical structure of the conversations [22]. The conversations were less symmetrical in conversations without digital support where the participating carers took greater responsibility for making the conversations progress. In conversations using CIRCA, the conversations were more symmetrical, demonstrated by the fact that the persons with dementia took more initiatives, and also contributed to maintaining topics. CIRCA are argued to reduce working memory demands that seemed to facilitate conversation for persons with dementia. This conclusion is also supported in previous research [7]. The conversations where CIRCUS was used were most symmetrical, presumably due to the fact that CIRCUS has a personalised content, which previously has been shown to be beneficial for engaging persons with dementia in conversation [5].

Regarding topic transitions, there were similarities between CIRCA and CIRCUS in regard to topic shifts often aligning with the change of pictures. Often the person with dementia participated in the change of picture and thus also in the topic transitions. In conversations without the digital support, topic transitions were initiated by the participating staff, mainly by asking a new question after a silence. During conversations where CIRCA and CIRCUS were used, the persons with dementia were offered choices of multimedia function and topics, which enhances symmetry between participants [17]. In conversations with the digital supports, silences did not necessarily elicit a topic transition, rather, participants took their time to look at the pictures. This may contribute to the perception of silences in conversations using digital support as a natural part of the conversation, compared to conversations without the digital support where prolonged pauses seemed to elicit topic transitions and lack of progressivity on the conversation [14].

Both similarities and differences were noted as to which conversational topics occurred during the conversations with and without digital communication support. The conversations without support were mainly centred around the here and now, and well-known topics that participants returned to repeatedly. The participants also talked about personal memories as they looked in photo albums and at old pictures. During the conversations with CIRCA and CIRCUS, the participants discussed the material in the application. The material in CIRCA contributed to new conversational topics that also elicited associations to the participants’ past lives. The topics when using CIRCUS were almost exclusively about personal memories. In all three conditions, people with dementia recall memories of childhood, which was also demonstrated by Baker et al. [5]. In the present study, the length of topical sequence varied depending on conversational conditions. Sequences were particularly short in conversations without digital communication support when they talked about events in the near future, and also in conversations with CIRCA when the participants with dementia did not recognise the material. When the participants talked about personal memories, the conversation tended to be more long-lasting compared to other conversational topics.

Overall, people with dementia were more active when using CIRCA and CIRCUS than during conversations without digital support. Increased activity of people with dementia leads to more symmetric interaction between participants, indicating that the conversational partner does not need to take a large part of the responsibility in the conversation as without the digital support (cf. [7]). This view is also supported by the interviews made in this study, where conversational partners to people with dementia witness that both CIRCA and CIRCUS were useful for stimulating topics and that they felt less pressure to uphold the conversations. The current study supports previous results arguing that digital communication support positively affects conversations involving people with dementia by facilitating for people with dementia to both take conversational initiatives and contribute with conversational topics. In this sense, conversations become more symmetrical and the conversational responsibility becomes more evenly distributed,
something that is arguably beneficial for people with dementia and the conversational partners alike.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

**Notes on contributors**

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**References**


