Abstract
With media organisations placing increasing emphasis on online news delivery, many have argued the potential for online media to enhance democracy, by enabling increased access to the public debate and a greater ability for citizens to influence the public agenda. Within this complex paradigm of a changing media landscape, Australia’s population is ageing. As a result, understanding the needs of older Australians in the presentation and distribution of digital news is vital if we are to ensure intergenerational equity in access to public debate. However, very little work has examined how older Australians engage with news online. Drawing on a survey of Australians aged 41-84, this exploratory study examines the preferences of participants in news engagement, the role of presentation and distribution of online news in engagement and perceived barriers to accessing news online and on mobile devices.

Introduction
The prevalence and impact of digital media platforms have resulted in one of the greatest changes to journalism in
history. With media organisations placing increasing emphasis on online news delivery, many have argued the potential for online media to enhance democracy, by enabling increased access to the public debate and a greater ability for citizens to influence the public agenda (Gillmor 2004 [5]; Rosen 2006 [6]; Bruns 2011 [7]; Robinson & DeShano 2011 [8]). Others have argued that the assumption that digital technology will enhance deliberative democracy does not take into account issues of media agency and power (O’Donnell 2009 [9]) or the institutionalised barriers to enhanced user participation in news production, which favour professional journalism norms and traditions (Singer et al 2011 [10]). As Singer et al (2011 [10]) noted, audience participation remains largely limited to those avenues that provided the least challenge to a journalist’s agency and authority, such as interpretation of the story, or the leaving of comments. However, others have argued that comments have an effect on the process and structure of public communication as they reach the same audience as mass media (because they are presented beneath journalistically produced articles) and create conditions for deliberative interactions (Springer et al 2015 [11]). Further, studies suggest that user comments are frequently read and the online news audience placed a high value on audience members? comments (Barnes 2014 [12]; Robinson 2010 [13]).

Within this complex paradigm of a changing media landscape, Australia's population is ageing. The Australian Bureau of Statistics predicts that the median age of Australians is expected to increase from 36.8 years to 45.2 by 2056. The proportion of Australians aged over 65 years could increase from 13% to 25% of the population during the same time period (ABS 2008 [14]). As a result, understanding the needs of older Australians in the presentation and distribution of digital news is vital if we are to ensure intergenerational equity in access to public debate. This article reports on an exploratory study of older Australians. Specifically it seeks to address questions of how older Australians engage with news online and whether there are any perceived barriers for older adults accessing news online and on mobile devices.

Online news engagement and barriers for older people

Research has linked engagement with news across all platforms to temporal, situational and motivational factors. In a longitudinal study of news usage as an activity, Costera Meijer and Groot Kormelink (2014) [15] identify 16 practices of news use: reading, watching, listening, viewing, checking, snacking, monitoring, scanning, searching, clicking, linking, sharing, liking, recommending, commenting and voting. These practices, the authors argue, relate to how individuals undertake the news activity and how it is anchored to other activities within their day. For example, the practices of reading and watching were associated with in depth or intense concentration, while viewing or listening were more about wallpapering? the day; a practice undertaken while completing other activities such as preparing dinner or driving. Overall, the study suggests that the audience's news use encompasses a complex spectrum of activities influenced by motivational and situational factors. This approach is similar to other studies that have examined how news usage orders and even anchors other social and cultural practices (Schr?der 2014 [16]; Domingo et al 2015 [17]). Therefore it could be argued that demographic factors, including age, will impact upon engagement with and use of news, as age will influence the social activities that are anchored to news consumption.

Specifically when considering online news media use, users can engage with online news as a ?convenience? via information distributed through platforms they are engaged with for other purposes, such as Facebook and Ninemsn (Flew et al 2011 [18]). Others seek to increasingly build their own personal repertoires of media channels to follow and access the news (Picone et al 2014 [19]; Flew et al 2011 [18]). A study of Canadian internet users found that a significant number of social media users value their personal network as a way to filter the news, rather than relying solely on the professional judgement of a news organisation or journalist (Hermida et al 2012 [20]: 816). However, audiences expect online content to be free, which has made it difficult for any media producer to charge for content (Sirkkunen & Cook 2012 [21]; ACMA 2009 [22]). In terms of participation on online news websites, the majority of readers of online news sites do not leave comments or other forms of user-generated content (Barnes 2014 [12]; van Dijjk 2009 [23]).

When considering age in relation to news, older adults (those aged 50 plus) tend to consume more news (Kohut 2013 [24]), but still prefer traditional media platforms such as newspapers, television and radio (Pew Research
Center for the People and the Press 2012 [25]. However, older adults are increasingly accessing social media (Madden 2010 [26]). While these studies show that older adults lag behind the younger generation in terms of online news consumption, no study has focused on how older people engage with news online and what specifically prevents those who do not from doing so.

There is substantial scholarship on the equity issues related to a lack of access to digital technology. Terms such as "digital divide? and "digital exclusion? emphasise that existing gaps of digital technology use should be bridged, aiming for social inclusion and equal distribution of resources and life chances (Friemel 2014 [27]; van Dijk & Hacker 2003 [28]). Studies focused on this "digital divide? tend to focus on general Internet use, with Internet access and use strongly correlated with various socio-demographic dimensions such as income, education, gender and age (Helsper 2010 [29]; Korupp & Szydlik 2005 [30]; Zickuhr & Smith 2012 [31]). Specifically researchers have noted a ?Grey Divide?, which is defined as a lack of access and literacy online of the oldest members of society in comparison with their younger successors (Friemel 2014 [27]; Morris et al 2007 [32]).

Numerous studies have investigated the benefits for older people in using computers and accessing online information. Benefits can include less anxiety, higher self-efficacy, higher life satisfaction (Karavidas et al 2005 [33]) and reduced loneliness (McCausland & Falk 2012 [34]; Morris et al 2007 [32]). Specifically the Internet can enhance the lives of older people, by giving them the possibility to connect with relatives and retrieve information they are interested in (Morris et al 2007 [32]).

Studies have also focused on barriers to older adults in accessing computers and the Internet. Specifically, older people face barriers in accessing computers due to a perceived lack of benefit, lack of knowledge, fear of hardware being quickly outdated and a lack of interest or motivation (Wagner et al 2010 [35]; Selwyn 2004 [36]). Hakkarainen (2012 [37]) has described the lack of interest as a social construction of technology as the barrier, where older adults view computers as a tool that represents a danger to their lifestyle because of the time required and security issues. Barriers to Internet use reflect these broader technology and computer barriers. Peacock and Knemund (2007 [38]) found that the key reasons for not using the Internet were a lack of device, motivational indifference and deficient knowledge. However Millward (2003 [39]) argues that the fear of using the Internet is actually the fear of humiliation of not being able to. This suggests that the lack of interest is a self-made barrier, concealing a more stigmatising lack of skills (Millward 2003 [39]).

Specific design and usability issues have also been highlighted as potential barriers for older adults in accessing the Internet. Kurniawan et al (2006 [40]) found that older adult web browsers prefer personalisation instruments that most preserve the original layout (overriding the cascading style sheet with a readily available one using a standard browser). Ensuring older adults were able to access relevant information online can also be facilitated by increasing font sizes and reducing vertical page length (Becker 2004 [41]).

This project aims to further develop scholarly understanding of the "Grey Divide?, by investigating how older Australians engage with news online and the perceived barriers to accessing news online and on mobile devices. Drawing from previous studies it is apparent that older adults have specific considerations for accessing technology and the Internet. However, no study has specifically investigated how older adults engage with news online and on mobile devices. This study aims to address this gap by undertaking an exploratory study of older Australians. Specifically it will seek to address the following research questions:

RQ1: How are older Australians engaging with online news?
RQ2: Are there any perceived barriers for older Australians in engaging with online news?

Methodology

This exploratory study focussed on the Sunshine Coast region of Queensland. This region presented an ideal case for the study of older Australians and online news delivery, with a median age higher than the Australian average (ABS) and a range of Internet quality and accessibility represented in the region. Areas in the north of the region were among the first to receive higher speed Internet access through the Government's National Broadband Network, while areas in the west and south have lower access, with many only able to access equivalent speeds
Data for the study was collected through a survey made available online and in hard copy in January and February 2014. The survey consisted of 17 questions that relied on a mix of open-ended, rank-ordered and closed responses to ascertain online news and information uses, preferences and perceived barriers, and demographic information about respondents. Questions probed preferences for the medium of news delivery as well as specific indications of levels of access to online news and time spent on online news websites. Interaction through comments was also canvassed, along with any perceived barriers to accessing online news sources. Demographic details such as age, sex, postcode and political persuasion were also collected.

To address RQ1, participants were asked questions around their preferred medium for news delivery (rank ordered), how they accessed online news (closed), how often they visited online news websites (seven point Likert-type scale: 1=never, 7= several times a day) and whether they interacted with news websites through commenting features (using a five point Likert-type scale: 1=never, 5= regularly, which was defined as at least each week).

To address RQ2, responses to the open-ended question: “Please outline any barriers you feel prevent you from accessing news or more news online?”, were organised according to recurring themes ([Strauss and Corbin 1998](#)). Responses to the question: “If you never or rarely access news online why is that?? (only those who responded ‘never’ or ‘rarely’ to the question of how often they accessed news online were directed to this question) were analysed in the same way.

Perceived barriers to making comments on websites were also explored through the closed question, “If you never or rarely make a comment, why is that?? Drawing on a qualitative study examining the motivations of those who leave comments on online news websites ([Barnes 2014](#)) the following responses were provided:

1. don’t have the time or inclination,
2. intimidated by other commenters,
3. don’t have the technical expertise and
4. other.

Analysis of these three questions was used to address RQ2.

Participants were recruited via the Sunshine Coast University of Third Age (U3A) email list and promotional materials placed in U3A’s classrooms. The study was also publicised through stories in local newspapers and radio stations.

The survey received 248 responses (234 online and 14 hard copy) with an 89.9% completion rate. The most-represented age groups were: 61-70 years (48.4%, n= 107) and 71 years or above (36.7%, n=81). Females were over-represented with 59.7% (n= 132) of responses and males at 40.3% (n= 89). As a self-selecting sample, the participants are non-representative and therefore the results are limited in their generalisability. Another key limit of the survey is an over-representation of online survey completions which has the potential to skew results to favour online sources. However, as an exploratory study, the analysis provides scope to inform further study into this understudied field.

## Results

### RQ1: How are older Australians engaging with news online?

Overall, the majority of participants expressed a preference for television news. This is in line with previous studies which have found that “traditional” media platforms of print and television are preferred by those aged over 36 years of age ([Pew Research Center for the People and the Press 2012](#)). When asked specifically about accessing news online, responses were heavily weighted at either end of the spectrum (see TABLE 1), with 35.8% (n= 88) visiting news websites several times a day and 21.1%(n= 52) visiting once a day, while 9.3% (n= 23) never visited online news websites and 19.5% (n=48) rarely (defined as 1-3 times a month) visited an online news website.
TABLE 1

How often do you access news online?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>9.3%</td>
<td>23</td>
</tr>
<tr>
<td>Rarely</td>
<td>19.5%</td>
<td>48</td>
</tr>
<tr>
<td>Once a fortnight</td>
<td>2.8%</td>
<td>7</td>
</tr>
<tr>
<td>Once a week</td>
<td>3.7%</td>
<td>9</td>
</tr>
<tr>
<td>Several times a week</td>
<td>7.7%</td>
<td>19</td>
</tr>
<tr>
<td>Once a day</td>
<td>21.1%</td>
<td>52</td>
</tr>
<tr>
<td>Several times a day</td>
<td>35.8%</td>
<td>88</td>
</tr>
</tbody>
</table>

Answered question 246
Skipped question 2

When the data was further parsed via gender, it found that females are more likely never or rarely to visit online news websites, with 30% (n=40) of females responding 'never' or 'rarely' and 20% (n=18) of males represented in the 'never' or 'rarely' response category (See TABLE 2). This is consistent with other studies that investigated older people and overall Internet access where females aged 55 plus were found to be less likely to go online (Friemel 2014 [27]). Of those females who never or rarely visit online news websites, their preferred medium for news and information delivery was commercial television and ABC radio.

TABLE 2

How often do you access news online?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Male Response Percent</th>
<th>Male Response Count</th>
<th>Female Response Percent</th>
<th>Female Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>8.0%</td>
<td>7</td>
<td>9.8%</td>
<td>13</td>
</tr>
<tr>
<td>Rarely</td>
<td>12.5%</td>
<td>11</td>
<td>20.5%</td>
<td>27</td>
</tr>
<tr>
<td>Once a fortnight</td>
<td>1.1%</td>
<td>1</td>
<td>3.8%</td>
<td>5</td>
</tr>
<tr>
<td>Once a week</td>
<td>2.3%</td>
<td>2</td>
<td>4.5%</td>
<td>6</td>
</tr>
<tr>
<td>Several times a week</td>
<td>9.1%</td>
<td>8</td>
<td>7.6%</td>
<td>10</td>
</tr>
<tr>
<td>Once a day</td>
<td>23.9%</td>
<td>21</td>
<td>20.5%</td>
<td>27</td>
</tr>
<tr>
<td>Several times a day</td>
<td>43.2%</td>
<td>38</td>
<td>33.3%</td>
<td>44</td>
</tr>
</tbody>
</table>

Total: 88
Total: 132

Answered question 220
Skipped question 26

When the data was analysed in relation to age group, those aged 71 and above were the most likely to never or rarely access news online 37% (n= 30), while only 15% (n=4) of those aged 51-60 never or rarely accessed online news. Those aged 41-50 years were the most likely to access news online with 83% (n=5) accessing several times a day. Of those in the 51-60 age group, 67% (n=18) accessed once a day or several times a day (see TABLE 3).

TABLE 3

How often do you access news online?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>41-50 years Response Percent</th>
<th>41-50 years Response Count</th>
<th>51-60 years Response Percent</th>
<th>51-60 years Response Count</th>
<th>71 years or above Response Percent</th>
<th>71 years or above Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
<td>7.4%</td>
<td>2</td>
<td>13.6%</td>
<td>11</td>
</tr>
<tr>
<td>Rarely</td>
<td>0.0%</td>
<td>0</td>
<td>7.4%</td>
<td>2</td>
<td>23.5%</td>
<td>19</td>
</tr>
<tr>
<td>Once a fortnight</td>
<td>0.0%</td>
<td>0</td>
<td>3.7%</td>
<td>1</td>
<td>1.2%</td>
<td>1</td>
</tr>
<tr>
<td>Once a week</td>
<td>0.0%</td>
<td>0</td>
<td>7.4%</td>
<td>2</td>
<td>3.7%</td>
<td>3</td>
</tr>
</tbody>
</table>
For those who were accessing online websites, the majority were doing so via a home desktop computer (65.5%, n=135). The next category was a tablet computer (27.7%, n=57), while only 5.3% (n=11) were accessing news websites via a mobile phone (see TABLE 4). When online, the majority of respondents found news stories through a news website homepage (63.3%, n= 131). Only 7.7% (n=16) used social media to source news stories.

TABLE 3
How do you most often access news websites?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>On your home desktop computer</td>
<td>65.5%</td>
<td>135</td>
</tr>
<tr>
<td>At desktop computer that is not your own (library, friend etc.)</td>
<td>0.5%</td>
<td>1</td>
</tr>
<tr>
<td>On your mobile phone</td>
<td>5.3%</td>
<td>11</td>
</tr>
<tr>
<td>On a tablet device</td>
<td>27.7%</td>
<td>57</td>
</tr>
<tr>
<td>Other</td>
<td>1.0%</td>
<td>2</td>
</tr>
</tbody>
</table>

Answered question 206
Skipped question 36

Finally, given that interactivity is a feature of online journalism, respondents were asked how often they made comments on news stories online (see TABLE 5). The majority of respondents never made a comment (45.1%, n= 93), while only 12.1% (n= 25) often or regularly made a comment. This reflects other studies which suggest only a small portion of the overall audience makes active contributions (Barnes 2014 [12]; Van Dijck 2009 [23]). Of those who never made a comment the majority were in the 61-70 years age bracket (56.2%, n=50) and 71 and above (36%, n=32). Female respondents were also far more likely to never leave a comment (70.8%, n= 63).

TABLE 5
How often do you make comments on stories on news websites?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>45.1%</td>
<td>93</td>
</tr>
<tr>
<td>Rarely (1-3 times)</td>
<td>27.7%</td>
<td>57</td>
</tr>
<tr>
<td>Sometimes (3-10 times)</td>
<td>15.0%</td>
<td>31</td>
</tr>
<tr>
<td>Often (10-30 times)</td>
<td>3.9%</td>
<td>8</td>
</tr>
<tr>
<td>Regularly (at least each week)</td>
<td>8.3%</td>
<td>17</td>
</tr>
<tr>
<td>answered question</td>
<td>206</td>
<td></td>
</tr>
<tr>
<td>skipped question</td>
<td>42</td>
<td></td>
</tr>
</tbody>
</table>

*Note respondents who never visited news sites were directed away from this question.

RQ 2: Are there any perceived barriers for older Australians in engaging with online news?

Analysis of the open responses that related to perceived barriers identified the following six themes:

1. The importance of tradition and routine and convenience
2. Intimidated by or an inability to use the technology
3. Perceived quality of online news
4. Usability and design issues
Respondents identified routine, tradition and convenience as factors that prevented them accessing news online. For example:

*I guess old habits die hard but we do not like using the computer during the day (95)*

*I do not enjoy sitting in front of a computer. I find it more relaxing to sit in my recliner lounge chair (235)*

*Easier to be doing other things while listening to news (7)*

Here respondents are suggesting the importance of temporal and locational factors in the engagement with news, which reflects other studies that have examined how news usage anchors other social and cultural practices (Schröder 2014 [16]; Domingo et al 2015 [17]). What these responses suggest is that for some older Australians news consumption is associated with particular traditions or activities such as reading in the recliner lounge chair. These routines or traditions therefore serve as a barrier to engaging with online news.

For other respondents, intimidation by or the inability to use the technology needed to access online news was the barrier. As one respondent simply noted to the question, *?If you never access news online why is that??, ?How?? (28).*

Or for other respondents to the question on what barriers they thought prevented them from accessing news online:

*I do not have a computer and cannot use one (240)*

*I wouldn?t know where to start. I don?t use a computer (245)*

These results reflect those studies that show a general lack of online literacy for those over 55 compared with their younger counterparts (Friemel 2014 [27]). The perceived lack of quality of online news sources was seen by respondents as another reason for not accessing news online. As these respondents noted:

*Biased reporting. Not staying with the facts but putting ideological slants on stories? (62)*

*Strong bias and sensationalist focus? (50)*

This differs from a national survey of Australians that found the Internet was the most trusted source news and information, ahead of television, newspapers and radio (ACMA 2009 [22]). However, it was not just the content of news websites which provided a barrier to engagement with news online for respondents to the survey, but also how it was presented. Specifically for many respondents the design of news webpages and usability issues were identified as barriers. For example:

*Complicated, confusing pages with multitudes of choices and non-relevant links? (88)*

*It just annoys me to have to keep scrolling to read an article (150)*

*It can be overwhelming, I just don?t know where to start [when first arriving at a news homepage] (32)*

This reflects studies which investigated health services online and found that older adults had more success in using systems that had made specific adjustments to design (Becker 2004 [41]).

Cost was also a barrier noted by respondents. For example, respondents to the question: Please outline any barriers you feel prevent you from accessing news or more news online, noted:

*Requests for payment to access. As a pensioner this is not an option (22)*

*The need to subscribe and pay (35)*

These responses reflect other studies, which have shown that users are reluctant to pay for online news (ACMA 2009 [22]; Sirkkunen & Cook 2012 [21]). However, respondents also noted that the cost of Internet access also played
a role as a barrier to online news consumption. As this respondent noted:

[I] don't want to have the service cost me money because it pushes lots of irrelevant imagery at me consuming my bandwidth budget (89)

Cost was often coupled with poor Internet access or speeds. As the above respondent further noted:

It is impossible to get affordable and reliable Internet in my area (89)

Or as respondent 49 noted:

Terrible internet speeds where I live [Nambour], due to serious network overloading, which stops me access news while it is still current (49)

The survey also addressed barriers to making comments online. Respondents who answered "rarely" to the question: "How often do you make comments on stories on news websites?" were directed to a question that asked why they never or rarely made a comment. From these responses 83.2% (n= 94) responded that they didn't have the time or the inclination, while 8% (n= 9) were intimidated by other commenters and 8.8% (n=10) didn't know how to.

Discussion and conclusion

The results of this study suggest that older Australians are still relying on traditional media for their news and informational needs. The reasons for this include a lack of digital literacy as identified by authors concerned by a ?Grey Divide?, as well as other exclusion issues such as access and cost. However barriers for engagement may be broader than that, with indications that the design and usability of news websites ensure these are perceived as not relevant or not applicable for older Australians. This suggests that further research is needed into the preferences and requirements of older Australians in the design of news websites. This field of research is particularly relevant considering other results of this study, which suggests that the majority of older Australians are accessing news through a desktop computer, not through mobile or smartphones. Access to news websites through mobile phones has been highlighted as the largest growth market in Australia, with mainstream news organisations investing heavily in this space (ACMA 2009 [22]). This study also suggests that older adults are finding news through news website homepages. This differs from other studies (Hermida et al 2012 [20]; Picone et al 2014 [19]) which show the increasing importance of social media in accessing the news audience online. Therefore homepage design and usability will have an impact on ensuring older adults are engaging with public debate through online news delivery. The social and cultural practices and the temporal considerations of older Australians also need to be included in any investigation of design and usability, as these are factors that influence the ways in which participants engaged with news.

This study has limitations that must be considered. As an exploratory study it focused on a case study of the Sunshine Coast region. To provide a complete picture of older Australians requires a national representative sample. However, the study does provide a useful direction for further work in this field.

Overall, the study shows a need to further investigate the needs of older Australians in the presentation and delivery of news online. This study suggests that older Australians have specific needs that in some cases are not being met by online news providers, and that this has the potential to stymie intergenerational participation in the public debate into the future.

Acknowledgements

This study was funded by an auDA Foundation grant.

References


Hakkarainen, P. 2012. ?No good for shovelling snow and carrying firewood?: social representations of computers and the Internet by elderly Finnish non-users?. New Media & Society, 14(7), 1198-1215.


McCausland, L; Falk, N. L. 2012. ?From dinner table to digital tablet: technology’s potential for reducing loneliness


Picone, I; Courtois, C; Paulussen, S. 2014. “When News is Everywhere?.” Journalism Practice, (Ahead of print) DOI: 10.1080/17512786.2014.928464


Selwyn, N; Gorard, S; Furlong, J; Madden, L. 2003. “Older adults’ use of information and communications technology in everyday life?.. Ageing & Society, 23(05), 561-582.

Singer, J.B; Hermida, A; Domingo, D; Heinonen, A; Paulussen, S; Quandt, T; Reich, Z; Vujnovic, M. (eds) 2011. Participatory journalism: guarding open gates at online newspapers, West Sussex, UK, Wiley-Blackwell.


Copyright notice:

Copyright is held by the Authors subject to the Journal Copyright notice.

Cite this article as:

http://doi.org/10.18080/ajtde.v3n3.16. Published by Telecommunications Association Inc. ABN 34 732 327 053.
https://telsoc.org

Source URL: https://telsoc.org/journal/ajtde-v3-n3/a16

Links
[4] https://telsoc.org/printpdf/1069?rate=zWz3J8ggGUIWuzfJqNb4tX5A2DqAlcuBUJm-kq0QfQ
[18] https://telsoc.org/journal/ajtde-v3-n3/a16#Flew_etal_2011
[22] https://telsoc.org/journal/ajtde-v3-n3/a16#ACMA_2009
[23] https://telsoc.org/journal/ajtde-v3-n3/a16#van_Dijck_2009
[26] https://telsoc.org/journal/ajtde-v3-n3/a16#Madden_2010
[27] https://telsoc.org/journal/ajtde-v3-n3/a16#Friemel_2014
[29] https://telsoc.org/journal/ajtde-v3-n3/a16#Helsper_2010
[31] https://telsoc.org/journal/ajtde-v3-n3/a16#Zickuhr_Smith_2012