

Technology and Social Connectedness Literature Review Supplementary Information: Details of included studies

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
Angelini et al. (2016). Testing the tangible interactive window with older adults: Toward an accessible video-communication system to fight social isolation	Other research design	Older adults with little or no experience of new technologies. <i>Eight care home residents (3M, 5F) aged 69 to 100 (mean 86.5 years) with different health conditions, randomly selected by caregivers of a nursing home in Switzerland. All were able to consent, had primary level education, and reported rarely using new technologies.</i>	Single use of a Tangible Interactive Window with a synchronous video communication system to have a 5-minute conversation with a person a former caregiver at the home sited elsewhere and using similar equipment following introduction and explanation of goals and how to use by researchers.	Feasibility of system in terms of: a) Usability of system (success in using system independently, recognising and communicating with remote partner; b) interactional quality provided by system (proximity to Window during use, observed non-verbal behaviours and emotional response); c) participant experience of use (global appreciation of experience, willingness to use in future).
Baharin et al. (2015). SonicAIR: Supporting independent living with reciprocal ambient audio awareness.	Other research design	Older people and their family/friends. <i>Five people, representing three dyads, i.e. the homes of: a pair of friends (2F, aged 67 and 79); a pair of friends (2F, aged 67 and 60), and a mother and daughter (2F, aged 30-40 and 70).</i>	Deployment of the SonicAIR system in the home of each participant for five to six weeks (SonicAIR system comprised of a Mac Mini with a 3G broadband modem, Arduino board, and reed sensors and magnets attached to kitchen activity sites (appliance doors, drawers, or cabinets).	Participant experiences of learning to use generated signals as 'resources for social understandings'.
Ballantyne et al. (2010). 'I feel less lonely': what older people say about	Qualitative research	Older people. <i>Six recipients of a community aged care programme conducted by the partner organisation in south</i>	Three-month intervention. Participants provided with computers and internet connections, received weekly	Reduction in experiences of loneliness (specifically temporal loneliness).

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
participating in a social networking website.		<i>Australia (2 withdrew). Four participants 3M 1F, aged 69-85 completed the programme. All spoke English as first language, two lived alone and two with spouses, two had experience of internet use; none had experience of internet-based social network (ISNW) use.</i>	in-home training on use of computer/internet use of 'About My Age', Australian-based ISNW specifically for people of 50 years and over. IT support available to participants via the telephone during business hours.	
Banbury et al. (2017). Can videoconferencing affect older people's engagement and perception of their social support in long-term conditions management: A social network analysis from the Telehealth Literacy Project.	Controlled Before and After / Before and After study	Older people with long term conditions. <i>Fifty-two adults aged 50 years and over with at least one LTC and the cognitive ability and the physical ability to use the videoconference equipment, living in a town in New South Wales and taking part in the 'My Health Clinic at Home (MHCAH)' project. Forty-five participants (25F 20M, mean age = 73 years SD 7.2 years, mean 4 chronic conditions) completed the pre-test and/or post-test social network tool (24 participants completed both, 12M, 12F).</i>	Five videoconference meetings (weekly, 45-90 minutes), facilitated by health promotion professional with IT support, plus one week for feedback and evaluation. Meetings included introductions, reminders of protocol, provision of health information and encouragement to share anecdotes and experiences with others. Participants loaned equipment and provided with internet access for study, connected from home to a 'virtual room' where they could see and hear other participants and the facilitator.	Changes in social support networks following participation in weekly videoconference groups; engagement and perception of social support networks for health.
Barbosa Neves et al. (2019). Can digital technology enhance social connectedness among older adults? A feasibility study	Other research design	Frail older people in a care home setting. <i>Twelve residents of a Canadian retirement home with ability to consent to participation deemed by</i>	Three-month deployment period. Pre-deployment individual training session showing participants how to use tablet and app. After training	Social interaction and satisfaction, measured using the Abbreviated Duke Social Support Index, comprising the social interaction and satisfaction subscales.

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
		<p><i>staff to be at risk of social isolation and loneliness. Participants were: 4M 8F; mean 82.5 years, range 74-95); English speaking with diverse ethnic backgrounds. Each participant identified a family member or close friend who agreed to support use of app and complete post-intervention interview.</i></p>	<p>sessions, participants received printed manual and tablet with app to use as they chose for 3 months. Study partners attended training session. Throughout deployment, participants visited weekly by research team.</p>	<p>Perceived loneliness, measured using the Short Revised UCLA Loneliness Scale. Changes in social networks, frequency of contact with those networks, social participation, and experiences with digital technology, with data captured via semistructured interviews. Communications app usability and accessibility, tested via tasks to perform with the app and open and rating questions on app interface and functionality.</p>
<p>Blažun et al (2012). Impact of computer training courses on reduction of loneliness of older people in Finland and Slovenia.</p>	<p>Other research design</p>	<p>Older people in Finland and Slovenia. <i>Fifty-eight respondents to baseline survey, 45 of whom completed 3-week training course and second survey. Finland: 27 participants (13M 14F, mean age 66.4 years) at baseline, 17 at follow-up, living in the community, recruited by Kuopio Community College. Slovenia: 31 participants (11M 20F, mean age 77.7 years) at baseline, 28 at follow-up, recruited within PRIMER-ICT European project, resident in two care homes in Maribor, selected by caregivers according to health status. ALL Participant inclusion criteria: minimum age 57</i></p>	<p>3-week computer training courses with plenary sessions and possibilities for discussion. Differences in delivery and content in each country. Finland: courses guided by a facilitator, responsible for a group of 10–15 participants; direct instruction by facilitator using a task-based teaching approach supporting an effective lifelong learning process; once a week for 4 h (lesson with one or two breaks). Slovenia: courses guided by 'multipliers', responsible for 1–2 older participant/s within a group of 5–8 older people;</p>	<p>Self-reported levels of loneliness, ICT use, use of electronic communications (evaluated through questions included on pre-and post-intervention questionnaires developed specifically for the study including on computer and internet use, number of existing friends, possibilities for making new friendships via online communications (email, Skype), frequency of Internet use, frequency of sending emails).</p>

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
		<i>years; able to give consent; had little or no ICT knowledge; healthy; able to read, write and speak; able to spend time practising computer skills in own time and at own pace.</i>	individualised, inquiry-based teaching approach via eLearning using Moodle learning environment; weekly for 3 h (lesson with one break).	
Borrelli et al. (2015). <i>OMNIAROBOCARE: A Robotic System to Ease Loneliness and Foster Socialization.</i>	Qualitative research	Older or frail people. <i>A single focus group of approximately 20 older people, 'of both genders and aged between 55 and over-85' living in a small town in Tuscany, Italy and recruited through a housing cooperative operating in that territory. Three volunteers from this group (no additional information provided) participated in the reported user testing.</i>	Use of the OMNIAROBOCARE system (theoretical for focus group and actual but lab-based user testing for 3 participants).	Usability of the system in a range of typical use scenarios developed in conjunction with the focus group.
Botner, E. (2018). Impact of a virtual learning program on social isolation for older adults.	Other research design	Older people. <i>One hundred and sixteen older adult participants in the virtual learning program (VLP): 72F 44M; average age 76, range 51-92;; living in Quebec; English as primary language; own computer equipment and internet access, incl. speakers/headphones, webcam and microphone or telephone; informally assessed as likely to experience difficulties getting to the Cummings Centre.</i>	Access to the Virtual Learning Program between Jan 2015 and Apr 2017. Programming included: 65 live webcasts with facilitated online Q&A, available on demand afterwards via a video library; live monthly online discussion groups facilitated by volunteers. Activities supported by older adult and student volunteers in various roles.	Satisfaction with and impact of program, captured via online surveys sent to participants who watched a webcast either live or on demand and via two focus groups (n=8). Included items measured: comfort with session format; clarity of instructions; clarity of sound/images; satisfaction with assistance provided; perceived increase in engagement/reduction in isolation; perceived sense of support.

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
Boyd et al. (2015). EasiSocial: An innovative way of increasing adoption of social media in older people.	Other research design	Older people. <i>Nine participants; all female; mean 76.5 years, range 69-80); recruited through existing group in Belfast; who self-identified as not previously having used social media or a tablet device; with mean self-rated computer literacy of 1.33 on a scale of 1 (novice) to 7 (expert).</i>	10-week intervention. Introductory questionnaire; 4 weeks training on how to use tablets and online social networks; two weeks Facebook use at home; introduction to EasiSocial; two weeks use of EasiSocial at home. Evaluation questionnaires administered at the end of each week of social network use at home.	Usefulness, ease of use, ease of learning and satisfaction with social networks, measured by composite scores on a 30-item questionnaire using 7-point Likert scales administered at the end of each week of use of a social network. Number of interactions on social networks (defined as status update, comment, share, or like), counted.
Buhr et al. (2017). AphasiaWeb: development and evaluation of an aphasia-friendly social networking application.	Other research design	People with aphasia. <i>Seven people with aphasia; 2M 5F; age range 34-75; 3 married, 4 single and living alone; all with prior phone, computer and iPad experience; all with email and Facebook experience; varying types of aphasia with mild to moderate severities; all attendees of a regular aphasia advocacy event in Wisconsin, USA.</i>	Two-month trial use of AphasiaWeb, an iPad-based mobile application providing an aphasia-friendly platform for social exchange. Participants provided with iPad2 device and charger and received basic training in using the iPad and AphasiaWeb application, followed by hands-on practice. Participants took device home to use app as desired for 30 days, with telephone support available if needed and a mid-trial troubleshooting meeting.	Frequency of use of app (through counts of initiating and response posts); usability of app (through qualitative interviews and group discussion); accessibility of app, barriers and facilitators to access (through qualitative interviews and group discussion); perceived value of elements of AphasiaWeb (through qualitative interviews; user perceptions of app (through qualitative interviews and group discussion).
Burmeister et al. (2016). Enhancing connectedness through peer training for community-dwelling older	Qualitative research	Older people, particularly in rural or regional settings. <i>Six participants, 3M 3F, age range 60-85, recruited from members of a Senior Citizens' Club in rural</i>	Four-month programme of weekly ICT training sessions of up to 2 hours at Senior Citizens' Club, delivered to participants and other Club attendees in	Familiarity with and use of ICT; perceptions of value of ICT; social connectedness; communication strategy preferences (all captured

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
people: A person centred approach.		<i>Australia. (1M dropped out following a stroke, 1F was unable to attend most group sessions due to pre-existing health conditions).</i>	groups of up to 15 in the Club's computer room (2 fixed computers, 6 iPads purchased for study, max. 6 devices connected to the internet).	through weekly diaries and qualitative interviews).
Cattan et al. (2011). The use of telephone befriending in low level support for socially isolated older people - an evaluation.	Qualitative research	Older people referred to or self-referring to befriending services. <i>Forty participants in befriending services provided as part of the 'Call in Time Programme' who had taken part in a 'before and after' quality of life telephone survey in the first stage of the Programme evaluation study three months earlier; 27 service recipients, 6 volunteer befrienders, 7 recipients who subsequently become volunteers; age range from mid-50s to early 90s; gender split not given.</i>	Participation in telephone befriending services provided as part of the 'Call in Time Programme' as a service recipient and/or volunteer befriender.	Perceptions of the befriending process; perceived value of befriending for older people; perceived needs of older people in relation to the befriending service; self-reported physical and emotional health; levels of social interaction; self-defined general well-being (all collected via single semi-structured qualitative interview lasting 60-90 minutes).
Coelho et al. (2015). Prototyping TV and tablet Facebook interfaces for older adults	Qualitative research	General older adult population. <i>Thirty-one interviewees (11M 20F; aged between 60 and 64 (19.35 %), 65 and 70 (23.6 %), 71 and 75 (35.5 %), 76 and 80 (19.4 %) and more than 80 years (3.2 %); 93% with visual impairments, 36% with hearing disabilities and 33% with self-identified memory issues) took part in single 60-minute semi-structured interviews. 17 focus</i>	Not applicable. (Interviewees had 60-minute semi-structured interviews on aspects of technology interaction using different interfaces and modalities. Focus groups (2 discussing TV prototype, 1 discussing tablet prototype) explored importance of different functionalities and	Characterisation of older SNS users/non-users; perceptions of and intentions to use TV-based and Tablet-based SNS applications; preferences for and usability of different modalities for interacting with TV-based and Tablet-based apps; preferences for adaptation and personalization of SNS apps.

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
		<i>group participants (3M, 14F, no other information provided).</i>	changing details of potential user interfaces.)	
Cortellessa et al. (2018). ROBIN, a telepresence robot to support older users monitoring and social inclusion: Development and evaluation.	Other research design	Older persons living alone with health conditions that require / would benefit from monitoring. <i>Twenty-five participants (12F, 13M; mean age 37.4 +/-14.9 years; absence of any lifetime history of cardiac complications, major disease, or treatment with any medication that could affect activity of the autonomic nervous system; prepared to refrain from smoking or drinking alcohol or coffee for 1 hour before test).</i>	Laboratory-based experimental procedure. Initial training session to ensure familiarity with multimodal interactions (voice and gesture) for ROBIN, followed by session in which participant was asked to perform a set of tasks with ROBIN reproducing a scenario requiring use of both multimodal interaction and communication services. Cardiac Holter worn to record cardiac activity throughout training and task performance.	Cardiac activity (using one-channel surface ECG cardiac Holter); Overall satisfaction score, system usefulness, information quality, and interface quality (using IBM computer usability satisfaction questionnaire); interaction modality usability (using system usability scale for gesture and speech); cognitive workload (using NASA Task Load Index (NASA-TLX), index based on weighted subscales of Mental Demands, Physical Demands, Temporal Demands, Own Performance, Effort, and Frustration); Task Ease, System Understanding, User expertise, Expected Behavior, Interaction Pace, System Responsiveness, System Efficiency, System Usefulness, and Future Use (using questionnaires developed during project); positive and negative affect (using Positive and Negative Affect Schedule (PANAS)).
Delello & McWhorter (2017). Reducing the digital	Controlled Before and After /	Older people. <i>Nineteen older people living in an American retirement community</i>	Bi-weekly, 90-minute small group technology training sessions for a period of 6 weeks	Participants' use of technology tools/types, access to information, social media use, training requests

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
divide: Connecting older adults to iPad technology	Before and After study	<i>(from a total of 135 residents): 16F 3M; all white / Caucasian; 13 widowed, 1 single, 5 married; 1 aged under 67, 16 aged approx. 67-87, two aged 90+; all with at least 9th grade education, 11 with bachelor's degree or higher.</i>	delivered to participants at the retirement community's Internet-ready technology centre by two researchers using visual aids and verbal directions and providing training materials, with homework assigned after each session. iPads provided to participants. Training on basic technology use plus a range of specific uses. Support and assistance provided to participants.	for the iPad course (collected via pre-experience survey with 13 items); iPad proficiency and use; interest in further training; perceptions/experiences of iPad training and use (collected via post-experience survey); external perception of effects of training/use of iPad (collected via centre director's written summative evaluation).
Garattini et al. (2012). Linking the lonely: an exploration of a communication technology designed to support social interaction among older adults.	Other research design	Older adults living in the community. <i>Nineteen participants living in or near Dublin, recruited via the Technology Research for Independent Living research clinic at St James' Hospital in Dublin, Republic of Ireland; 7M 12F; aged 65-84; living alone (47%) or with a spouse (53%); 68% did not own a computer; 6 participants were classified as 'socially lonely' and 5 as 'emotionally lonely' according to the DeJong Loneliness Scale.</i>	Building Bridges system deployed in participants' homes for 10 weeks, with 17 friend / family member 'secondary participants' nominated by the participants using a PC-based client version. (System incorporates 12-inch touch screen computer in custom-made stand, phone handset with functioning cradle and speakers, software using VoIP, customised Flash-based interface allowing user interaction with four main features: broadcast and chat; calls; messaging; and 'Tea Room' audio chat room).	Use of system features (frequency and duration of use); usability and acceptability of system; experiences of system use.

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
Haritou et al. (2016). A context-aware social networking platform built around the needs of elderly users: The Go-myLife experience	Other research design	Older people. <i>Thirty-six older people across 3 pilot sites, 2 in UK and 1 in Poland, no gender split or ages provided.</i>	Pilot testing and evaluation of user experience of Go-myLife platform with evaluation of utility, usability, aesthetics and value of the system.	Quality and depth of participants' relationships with friends and family, especially in the local community; perceived ability of platform to support older users in getting out of their houses; user perceived self-confidence and feeling of security.
Hasan and Linger (2016). Enhancing the wellbeing of the elderly: Social use of digital technologies in aged care.	Other research design	Older people. <i>Residents of two aged-care facilities in regional Australia: 9 of 23 residents in a privately-owned facility, and 21 residents in a public facility; 3 participants aged 50-70, 18 aged 70+, oldest 98. Participants had a range of physical and cognitive challenges.</i>	Scheduled weekly ICT classes / supported learning periods over a 2-year period, run by the researchers and suitable others, with topics agreed between participants and research team, delivered in 'computer kiosks' with second-hand laptops and iPads set up in the corner of a leisure room in each facility and Wi-Fi hubs funded by the research project.	Wellbeing resulting from the use of ICT; elements of wellbeing, namely connection, self-worth / esteem and personal development, productivity, occupation, self-sufficiency, being in control, and enjoyment.
Hausknecht et al (2015). Older adults digital gameplay: A Follow-up study of social benefits	Other research design	Older people. <i>Seventy-three participants in a Wii Bowling tournament; 21M 52F; all aged 65+ with 37% aged 75-84, 34% aged 85+; 51 (70%) living alone; 51% in independent or assisted living housing), recruited via 14 different seniors' centres in Greater Vancouver, Canada, and arranged into 20 Wii bowling teams of 3-4 people. All</i>	Formation of Wii Bowling teams and participation in a Wii Bowling tournament with cash prizes held over a 2-month period.	Levels of pre- and post-tournament loneliness and social isolation (using scales adapted from the UCLA Loneliness Scale and the Overall Social Connectedness Dimensions); Attitudes towards video games; Perceptions of game experience during tournament (using semi-structured interviews); perceived continuation of benefits, social

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
		<i>participants provided pre-and post-tournament quantitative information, 17 took part in in-depth post-tournament interviews, and 46 (at least 1 from each team) took part in focus groups 3 months post-tournament.</i>		experiences 3 months post-tournament, sustainability of Will Bowling game post-tournament (via short focus groups).
Jobling (2014). To boldly go online: empowering elders to connect socially with technology.	Service description	Older adults and people with disabilities. <i>No information provided.</i>	Provision of training on ICT and internet use (approx. 6,000 participant hours of training in English, Spanish, and Cantonese in the 12 months to date of publication).	Ability of those receiving training to use ICT and access internet (discussed but not measured).
Judges et al. (2017). 'InTouch' with seniors: Exploring adoption of a simplified interface for social communication and related socioemotional outcomes.	Other research design	Older people. <i>Ten participants living in the community in the Greater Toronto Area (GTA) in Southern Ontario, Canada; 3M 7F; mean age 80.6, range 68-92; receiving services with the community agency; fluent in English; able to provide written informed consent. Plus 10 volunteer supporters; 6M 4F; mean age 55.5, range 26-80 years; fluent in written and oral English.</i>	12-week deployment of iPad with InTouch installed. Each participant was matched with a volunteer trainer who had received a single 2-hour training session and a training manual and committed to having contact with paired older person at least weekly.	Use of InTouch digital communication tool (type, frequency and number of messages sent using data logging); perceived usefulness, perceived ease of use, subjective norms, facilitating conditions, subjective outcomes from using InTouch (through semi-structured interviews and observational data).
Loi et al. (2016). Can a short internet training program improve social isolation and self-esteem in older adults with psychiatric conditions?	Controlled Before and After / Before and After study	Older people with psychiatric disorders living in residential care facilities. <i>Five residents of a specialist unit providing low-level support in an aged care facility in Melbourne</i>	A structured six week, twice-weekly, program of 45-minute sessions based on a local program used for older adults (Internet for Seniors) and facilitated by unit staff. iPads	Participant self-esteem (Rosenberg self-esteem scale (Rosenberg, 1965)). Friendship and social isolation (Hawthorne Friendship scale (Hawthorne, 2006)). Familiarity of technology

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
		<i>who were physically stable, able to attend to a task for at least 15 minutes with assistance, able speak and write English, and able to provide informed consent; 3M 2F; mean age 69.9 years; diagnosed with bipolar affective disorder (3 participants), depression and anxiety (1) and schizophrenia (1).</i>	were used as the touchscreen technology, and program content included: use of the iPad; how to use search engines and basic software applications; emailing; using search engines to look up topics of interest to participants and which generated conversation; participants presenting to group on a topic of their choice.	use and attitudes towards the internet (specifically designed Internet/TT questionnaire using statements and 5-point Likert scale responses).
McLaughlin et al. (2012). A videosharing social networking intervention for young adult cancer survivors.	Controlled Before and After / Before and After study	Young adult survivors of cancer. <i>Fourteen participants aged 18-29 at enrolment, recruited from LA Children's between 1/1/1980 and 12/31/2003 Hospital cancer registry, diagnosed with any type of cancer not involving cognitive impairment, off treatment for a minimum of 2 years and disease free for a minimum of 5 years, and able to read and write at an 8th grade level in English. Participants were: 9M 5F; 12 Hispanic or Latino, 1 Asian, 1 native American.</i>	6-month mobile-based social networking program using LIFECommunity, a private mobile social networking site (SNS) offering similar range of functionalities to well-known SNS such as Facebook. Initial face-to-face orientation to the program and then all other activities via LIFECommunity. Online activities conducted via provided smartphones or via computer.	Social support (from Social Support for Adolescents Scale (Cauce, Felner & Primavera, 1982)); Bridging social capital (scale adapted from Williams (2006)); Bonding social capital (also adapted from Williams (2006)); Depression (Center for Epidemiologic Studies (CES-D) depression scale (Radloff, 1977)); Survivor self-efficacy (adapted and extended Jerusalem and Schwarzer's (1992) 16-item scale); Family interaction (three items adapted from Wilkin, Katz, and Ball-Rokeach's (2009) family interaction scale); Quality of life (SF-12 (Ware, Kosinski, & Keller, 1996)).

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
Peter et al. (2013). AGNES: Connecting people in a multimodal way.	Controlled Before and After / Before and After study	Older people living independently in their own homes, separated geographically from caring family members. <i>Forty-seven older adult participants from Spain, Sweden and Greece, divided randomly into two groups. Experimental group (users), N = 29, mean age = 74 years, range 65–80. Control group, N = 18, mean age = 75 years, range 68–91.</i>	Participants assigned to user group provided with basic AGNES platform (computer and web-based social network Modernfamilies) and individual training, with freedom to use for a period of approximately 12 months.	Psychological and social functioning: cognitive status (Mini Mental State Exam MMSE); depression (Geriatric Depression Scale, GDS); activities of daily living (Barthel ADL Index); dimensions of wellbeing (SPF-IL Scale). Social habits, current technology use users, expectations of technology (33-item semi-structured interview).
Savolainen et al. (2008). An internet-based videoconferencing system for supporting frail elderly people and their carers.	Other research design	Frail older people and their home-based family carers in Sweden. <i>Eight family users who had had ACTION videophone equipment in their home for at least 2 months and had used it at least 6 times; 1M 7F; mean age 73, range 66-85; 4 with no prior computer experience. 4 professional carers; 3M 1F; age range 35-45; all with basic computer skills prior to deployment of ACTION system.</i>	Deployment for a minimum of 2 months of ACTION computer system (Windows PC with internet access, video codec, PC application with integrated web-based single interface multimedia and video communication systems, online ACTION resources database, videoconferencing device).	Use of ACTION system (measured via data logging); User perceptions of feasibility, acceptability, usability and utility of ACTION system (via semi-structured videoconference-based interviews)
Sehrawat et al. (2017). Digital storytelling: A tool for social connectedness.	Other research design	College students and older adults. <i>Four Californian University students (from 10 who expressed interest), selected on the basis of their comfort with technology and strong writing skills; 3F 1M; age range 18-41; at various points in undergraduate (3 participants) or</i>	Six-week intervention. 4 partnered pairs meeting weekly in public spaces to work together to create a digital story, including participating in a whole-day workshop including a story circle (informally sharing story with others and seeking	Students' and older adults' experience with process of intervention, reflections on learning and challenges encountered (via open-ended questionnaire); social connectedness and perceived social isolation (selected

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
		<i>post-graduate studies. Four older participants recruited via local Area Agency on Aging (AAA); 3F 1M; age range 73-82; all with self-reported excellent mental and physical health; 3 with 1-2 chronic conditions; 3 with 3+ friends and 1 reporting sometimes lacking companionship.</i>	feedback), script writing and recording, using WeVideo.com (cloud-based software) to assemble digital images/video and voice recording to create the digital story, and a celebration to view the digital stories created.	components of the Social Disconnected and Perceived Isolation Scale (Cornwell & Waite 2009), older participants only); depression (Geriatric Depression Scale, older participants only).
Siniscarco et al. (2017). Video conferencing: An intervention for emotional loneliness in long-term care.	Controlled Before and After / Before and After study	Residents of long-term care facilities. <i>Eight 'dyads', each consisting of a resident for more than 3 months of a US multi-level long-term care facility with MMSE score of > or =24 and a close family member or friend, both with access to high speed internet and ability to use the videoconference equipment provided with minimal accommodation. Participating residents were: 4F 2M; all white, non-Hispanic; median age 85.5; median education 14.5 years; 5 married; 4 eligible for Medicaid; 6 living in nursing home and 2 in assisted living.</i>	Portable videoconferencing hardware (Asus AiGuru SVIT and Skype), adapted for accessibility where necessary and pre-programmed with the number of the other person, was provided to each member of each dyad. Each participant was given training on how to use the equipment and a set of written materials. Family members were asked to call residents at least once a week for approx. 2 months, although participants were free to initiate calls more frequently if desired.	Emotional loneliness (de Jong-Gierveld & van Tilburg, 1999); social isolation (PROMIS, 2008–2014); opportunities for nurturance (Cutrona & Russell, 1987); emotional support (PROMIS, 2008–2014); informational support (PROMIS, 2008–2014); geriatric depression (Brink et al., 1982), and videoconferencing use.
Tsai et al. (2010). Videoconference program enhances social support, loneliness, and depressive	Controlled Before and After /	Older people living in residential accommodation. <i>Fifty-seven residents of 14 participating Taiwanese care</i>	Intervention consisted of videoconferencing once a week (the in-person visiting frequency for majority of families) over	Depressive status, measured by the Geriatric Depression Scale (GDS; Yesavage et al., 1983). Loneliness, measured by the

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
status of elderly nursing home residents.	Before and After study	<i>homes who were aged 60+ years old, had MMSE score > or = 16 for participants with no formal education or > or = to 20 for those with at least primary school education, and living in a facility with internet access on their floor. Participants were divided into intervention group (24, recruited from 12 care homes) and control (33, recruited from 2 care homes separate to intervention group). Intervention group: mean 74.42 years old (SD =10.18) at baseline; 58.3% female; 75.0% widowed; 33.3% with no formal education; mean MMSE and Barthel Index scores at baseline 22.88 (SD =3.95) and 62.71 (SD =23.86), indicating good cognitive status and above-average performance of ADLs; had mean 3.38 +/-1.61 children; 50.0% were visited by a family member at least once a week and 16.7% seldom had a family member visit them; mean length of residency was 24.00 (SD =26.51) months.</i>	three months. Residents helped to use the videoconference technology by trained research assistant, who spent at least five minutes per week with participating residents at appointment time. The contact family member was resident's spouse, child, or grandchild. The software at the facilities was either MSN or Skype, accessed via a 2M / 256 K wireless modem using a large (15.6 cm) laptop.	revised University of California at Los Angeles (UCLA) Loneliness Scale (Russell, Peplau, & Cutrona, 1980). Social support, measured by a social support scale with three subscales: social support network, quantity of social support, and satisfaction with social support (Hsiung, 1999). Social support network measured by the number of family members or friends who might contact the residents and the quantity of contacts (either by phone or in person) during the previous week. The quantity of social support, measured by asking participants to rate each social support behaviour (emotional, informational, instrumental, and appraisal support) offered by different providers (spouse, children, relatives, neighbours, and friends) using a five-point Likert scale, with higher scores indicating more of each social resource.
Tsai et al. (2012). Sharetouch: A system to enrich social network experiences for the elderly.	Other research design	Older adults who are inexperienced technology users. <i>Fifty-two residents of a senior housing community in Taiwan</i>	10-minute interaction with Community Pond, Waterball, and Multimedia subsystems of Sharetouch after short	Technology acceptance, i.e. intention to adopt Sharetouch; Intention to Use; Perceived Usefulness; Perceived Ease of Use;

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
		<i>(approx. one eighth of the total number of residents); 17M and 35F aged 64-91 years (mean 79), all with no previous experience of multi-touch and tangible technologies.</i>	demonstration by researchers, followed by administration of a TAM questionnaire.	Enjoyment; Output Quality; and Result Demonstrability. Variables are composites of scores for agreement on 7-point Likert scale from 'strongly disagree' to 'strongly agree' with two or more of 18 TAM-based statements.
Wildeveer & van Dijk (2011). Scottie: design for social connectedness in healthcare.	Qualitative research	People who are disconnected from their social circle of family and friends. <i>Four families with sick children and their family and/or friends. Two families with an older family member with dementia and their social circle (one male with dementia in care home, wife at home and son 200km distant; one couple at home (wife with dementia), daughter and granddaughter living separately).</i>	'Families' of 3 Scotties were provided for periods of five weeks to each family of participants to use as they wished.	Perception of usability; frequency of use; perceptions of social connectedness resulting from use.
Zamir et al. (2018). Video-calls to reduce loneliness and social isolation within care environments for older people: an implementation study using collaborative action research.	Qualitative research	Older people in care environments (care homes or hospitals) whose families are unable to visit in person. <i>Range of participants recruited from eight test sites: one community hospital and seven care homes all based in Devon or Cornwall and all having internet access. 11 NHS staff and 21 care home staff across the care homes</i>	Each site given Skype on Wheels (SoW) equipment to freely use over a period of approximately 6 months. (SoW equipment = iPad, telephone handset, and SoW device (upright pole attached to five-legged wheeled base similar to office chairs, with horizontal arm incorporating attachments for	Feasibility and acceptability of using SoW among older people in care environments; usability of SoW and of video-calls for different groups of older people; perceived benefits of using video-call technology.

Included study (Author, publication year and title)	Study	Population of interest <i>Sample population</i>	Intervention	Outcomes of interest
		<i>as 'collaborators'. 18 older people (8 care home residents and 10 patients admitted to hospital from care home/own home), all aged 65 or over and all Caucasian. 9 family members.</i>	holding handset and iPad, extendable to reach over bed).	