

## Appendix 4 Study Characteristics of included records

<b>Study characteristics</b>	<b>N (%)</b>
<b><i>Evidence type (n=95 studies)</i></b>	
Peer-reviewed publication	79
Evaluation report	23
<b><i>Age group (n=97')</i></b>	
Under 18s	7
Young and Mid-age Adults (19-49)	31
Older adults (50+)	56
Full age range/life span	3
<b><i>Country (n=95 studies with unique data)</i></b>	
Australia & New Zealand	7
North America	34
Europe	48
Central and South America	1
Asia	5
<b><i>Control group (n=95 studies)</i></b>	
No	49
Yes	46
<b><i>Randomisation (n=95 studies)</i></b>	
Individual randomisation	23
No randomisation nor wait-list	54
Wait-list control group	14
Cluster randomisation	4
<b><i>Intervention theme (n=101 interventions)</i></b>	
Social support	46
Social interaction	23
Psychological intervention	23
Cross-cutting/Multiple themes	9
<b><i>Intervention subtheme - Social Support</i></b>	
Befriending/Mentoring/Peer-support	20
Social prescribing/Connector Service	6
Knowledge/Skills development	11
Other	9
<b><i>Intervention subtheme - Social interaction</i></b>	
Arts/Music/Culture	8
Multiple activities	7
Other	8
<b><i>Intervention subtheme - Psychological interventions</i></b>	
Therapy	14
Other	9
<b><i>Intervention subtheme - Multiple themes</i></b>	
Multiple components	6
Strategic/grant-level study	3
<b><i>Intervention format (n=101 interventions)</i></b>	
Individual	41
Group	40

Mixed	20
<b>Loneliness measure (n=104 studies)</b>	
Version of UCLA Scale	66
De Jong Gierveld Scale	23
Single-item measure	8
Other scale (4 scales)	7

<sup>1</sup> 2 additional samples from mentee-mentor interventions

<sup>2</sup> 9 studies used multiple loneliness scales

## Full Study details

Table 1. Characteristics of each intervention in the Social Support theme (n=46)

Authors	Country	Sample size <sup>a</sup> and description	Intervention description
<b>BEFRIENDING/MENTORING/PEER-SUPPORT (N= 20)</b>			
Bouwman et al., 2017	Netherlands	n= 75 older community-dwelling adults	Online Friendship Enrichment Program; 5 online lessons to encourage participants to become aware of their social needs/desires, analyse existing social network, reflect on friendship expectations and develop new friendships
Burchett et al., 2022	Wales	n= 26 older people living in supported housing and experiencing or at risk of experiencing social isolation and/or loneliness	2 peer support groups - weekly sessions lasting ~12 weeks
Hernández-Ascanio, et al., 2022	Spain	n= 94 older adults in primary care centres	4-month CARELINK programme; 6x face-to-face home sessions (30+ min) and 5 telephone calls (20+ min) to stimulate social integration and encourage renewed socialisation
Juris et al., 2022	USA	Mentees: n= 7 older community-dwelling adults Mentors: n= 18 university students	1-4 'reverse mentoring' sessions over a 3-month period, where student technology mentors offered solution via phone or video conferencing
Kahlon et al., 2021	USA	n= 226 adults that are clients of meals on wheels	4-weeks of receiving phone calls of <10 min (5x/week for 1st week, 2-5x/week for 3 weeks as decided by each participant); volunteers were trained in empathetic conversation techniques and told the goal was to learn something from each person they called
Kahlon et al., 2021	USA	n= 226 homebound, largely single, adults who require meals from a community-based provider	Empathy-oriented (empathetic listening) telephone call program lasting 4 weeks. Initially with daily calls then dependent on need/preference. Calls lasted 10 minutes max.
Lai et al., 2020	Canada	n= 60 older community-dwelling adults who have immigrated from China	8-week peer support intervention in which volunteers (2 per participant) provide emotional support, problem-

<b>Authors</b>	<b>Country</b>	<b>Sample size <sup>a</sup> and description</b>	<b>Intervention description</b>
			solving support, and community resource sharing through home visits and phone calls.
Larsen et al., 2019 (two intervention arms)	Norway	n= 1937 upper secondary school teenagers across two arms	<p>First intervention arm: single-tier. 8-month programme in which students are trained as peer mentors and work with teachers (in group meetings throughout year) to create and maintain good psychosocial class environment.</p> <p>Second intervention arm: multi-tier consisting of 1) 8-month programme in which students are trained as peer mentors and work with teachers (in group meetings throughout year) to create and maintain good psychosocial class environment and 2) a mental health support team consisting of counselors, school nurses and follow-up services staff which targets individual students with mental health problems or those at-risk of dropping out.</p>
Lorente-Martínez et al., 2021	Spain	n= 48 older women living alone	9x weekly 2.5hr psychosocial sessions in which volunteer university students are matched with a participant and visit them at home to talk (e.g. discuss social activities they used to enjoy or would like to try) and some sessions included visiting the local community centre together.
Lowthian et al., 2018	Australia	n= 34 older patients recently discharged from emergency departments	Weekly 30min peer support phone calls from hospital volunteers to patients (beginning within 72hrs of discharge for up to 3 months, including referral for ongoing community support after this period)
Moonen et al., 2022	Canada	n= 47 older community-dwelling adults living on their own	12-weeks of regular 15-30min phone calls between volunteer medical students employing empathetic listening, and older participants during Covid-19; call timing, regularity and content was flexible lead by participants

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Moore & Preston, 2015	UK	n= 1669 older people at risk of loneliness and/or social isolation	Helpline and Wellbeing and Friends service that matches older people to a volunteer friend calls them for an informal chat and to provide information, advice, referrals to other organisations and an informal chat. Survey administered to users of Wellbeing and Friends service who receive calls minimum once/week of varying lengths (time not specified)
Ramamonjarivo et al., 2022	USA	n= 22 older community-dwelling adults	6x 30-min weekly 1:1 virtual interaction (via phone, text, or video call) as part of an intergenerational virtual university led service-learning between undergraduate students and older adults
Renaisi, 2016	England	n= 35 older people and young people at the start of their professional lives - both groups at risk of loneliness and/or social isolation	Programmes run in North and South London to improve community networks of young professionals and older neighbours. Projects include creating 'Love Your Neighbour' 1:1 friendships, social clubs, 'Winter Wellbeing' outreach and community fundraising.
Roberts and Windle, 2019	Wales	n= 114 older community-dwelling adults	10-15x weekly meetings between volunteers paired with older to offer companionship, practical and psychological support, and to increase social networks, confidence and independence
Sandu et al., 2021	USA	n= 84 older community dwelling adults	1-year of ~10min weekly phone calls from a student volunteer to an older adult, following standardized call scripts
Simpson, 2014	England	n= 46 adults diagnosed with mental illness discharged from mental health ward	6-weeks of peer support beginning 2-3 weeks before discharge and continuing 4-weeks after
Stewart et al., 2011	Canada	n= 58 adult Somali and Sudanese refugees	6x biweekly 1-1.5hr in-person support groups (5-12 people), with 1:1 support given to new refugees with additional 1:1 support via the phone between sessions. Participants directed topics of discussion around

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			enhancing cultural understanding and social integration (e.g. promoting new skills, seeking employment, improving family dynamics, and overcoming discrimination). Peer facilitators were Sudanese and Somali people who had been settled in Canada for 10+ years
Theurer et al., 2021a	Canada	Mentees: n= 43 older adult care home residents Mentors: n=27 older adult care home residents	6-months of weekly 2hr activities at long-term care homes consisting of: i) team meetings with activities and short educational sessions for residents and mentors (26 modules learning communication skills and about topics such as “What if They Don’t Talk Much,” and “Supporting People Grieving.”); b) visits between mentors and mentees to provide empathetic support and encouragement for mentees to attend community events.
<b>EDUCATIONAL/SOCIAL SKILLS DEVELOPMENT (N= 6)</b>			
Bostick and Anderson, 2009	USA	n= 49 children with social skills deficits	Social Skills Group Intervention; 10 group sessions (duration nr) focusing on development of verbal and nonverbal communication, initiation, cooperation, compromise and negotiation skills
Coll-Planas et al., 2017	Spain	n= 26 older community-dwelling adults	15x 1.5hr weekly group-based sessions discussing loneliness, social participation, community assets and engaging in the community
Costello et al., 2022	USA	n= 438 recent first-year and transfer students at a public university	The Connection Project; 9x 60- to75-minute weekly sessions consisting of activities and discussions to teach and develop deep, supportive, and authentic relationships
Haslam et al., 2019	Australia	n= 99 adults with symptoms of depression	Groups 4 Health; 4x weekly 1-1.5hr group sessions working through activities and exercises to develop group connection (e.g., social awareness, social mapping, maximising, building and sustaining

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Lim et al., 2020	Australia	n= 10 young people with psychosis	relationships), followed by a final session 4 weeks later, 3-months of a gamified app (i.e., with points, challenges etc) aimed to develop positive interpersonal skills (e.g., showing kindness and reciprocity within relationships) through tasks delivered daily via videos and audio.
Mattanah et al., 2010	USA	n= 112 first-year university students	9x 1.5hr group social support discussions spread across school year; sessions were facilitated by two undergraduate clinical psychology students and semi-structured around topics such as maintaining old friendships, etc.
<b>SOCIAL PRESCRIBING/CONNECTOR SERVICE (N= 6)</b>			
Foster et al., 2020	England	n= 2250 adults experiencing loneliness	Social prescribing service with up to 12 weeks support from a link worker helping them connect with social groups, session duration unreported
Kellezi et al., 2019	England	n= 19 adults with chronic health conditions (not specified) and/or at-risk of loneliness	8x weekly support sessions, where health coaches/link worker provide patients with practical and emotional support and patients are supported to join third-sector groups (e.g., voluntary or social enterprise)
Llewellyn et al., 2020	Wales	n= 7 adults experiencing mild/moderate mental health problems and/or emotional wellbeing disorders	Link worker SP service with several clinical, third sector routes and self-referral to Mind link worker. Participants included in the trial only came from GP or another primary care worker within the practice; Initial needs assessment followed by co-creation of plan to access community services and support.
Massie & Ahmad, 2019	England	n= 51 people with non-clinical needs, referred to the social prescribing service by GPs, practice nurses, community nursing teams, care navigation staff, social workers, ambulance staff and A&E staff	3 x link workers placed across the city to help individuals access range of health and wellbeing services. Support commonly included exercise programmes, social activities, healthy eating, self-management of long-term conditions and support with welfare benefits and financial issues. Includes one face-to-face meeting then follow-up

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			meetings depending on progress.
McDaid et al., 2021	England	n= 121 older people experiencing or at risk of experiencing social isolation and/or loneliness	Personalised support delivered over 6-9 months. Volunteer matching or case worker develops personalised plan and then refers to appropriate emotional and practical support aimed at rebuilding confidence and support connections with people, places or activities in their community.
Red Cross & The Coop Foundation, 2019	UK	Individuals experiencing or at risk of experiencing social isolation and/or loneliness; half of support recipients undergoing life transitions (largely due to physical & mental health issues and mobility limitations)	Community Connector service providing person-centered support to re-connect people feeling lonely or socially isolated back to their communities. Signposting to local groups and activities, including for emotional and practical support. Typically involved 8 support sessions for up to 3 months.
<b>ICT training/ Equipment provision (N= 5)</b>			
Antunes et al., 2022	Brazil	n= 36 older adults enrolled in computer classes for beginners at an ageing care centre	2hr sessions twice a week for 4 weeks (8 computer science classes), followed by the same format programme but with 15 mins per class dedicated to digital games (16 classes total); participants arranged into six groups with maximum group size of 10
Fields J. et al., 2021	USA	n= 57 socially isolated older adults	8x weekly 1-to-1 in-home lessons delivered by a volunteer covering how to use an iPad, email, applications, online communities, online safety and online fun
Gadbois et al., 2022	USA	n= 18 homebound older adults	1.5-2hr 1-to-1 technology training sessions per week for 4 weeks then 30 mins phone assistance per week for 10 weeks
Mullins et al., 2020	USA	n= 11 older adults living in US Housing and Urban Development	3x computer classes (basic computer skills, internet safety/email/social media, computer Q&A) each offered at 8 different times for residents



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Quinn, 2021	USA	n= 36 older community-dwelling adults	4x 2hr weekly social media group training sessions held in a classroom (75% Facebook, 25% Twitter focusing on online security, online etiquette, messaging and photo sharing)
<b>OTHER (N= 9)</b>			
Broer et al., 2011	Netherlands	n= 186 intellectually disabled adults	29 teams of healthcare providers, each targeting a group of 20-30 intellectually disabled or psychiatric patients; teams and clients worked together to create individual plans to increase social networks
Jones et al., 2021	USA	n= 16 older community-dwelling adults living on their own	Participants used an Amazon Echo personal voice assistant for 4-weeks (min 5 interactions/ day), then as much as they liked for a further 4-weeks.
Kramer et al., 2022	Netherlands	n= 32 older community-dwelling adults living on their own	8-week access to an eHealth app which uses AI conversational agents to provide motivation for decreasing loneliness and improving eating behaviour
Larsson et al., 2016	Sweden	n= 28 older community-dwelling adults	4-month multi-tier intervention consisting of 1) 1.5hr biweekly educational group meetings and 2) 1.5hr weekly individual meetings with an occupational therapist. Aim of meetings was to assist participants with goal-orientated social internet-based activities and attain goals (e.g., make a new friend or learn to participate in debates)
Nguyen et al., 2022	USA	n= 124 adult caregivers of people with dementia	Participants were given a tablet with software designed for older adults to support cognitive, emotional, social, physical, and spiritual wellness (games, quizzes, tv shows, audiobooks, music, etc). Participants received an initial group 1hr online training session, met monthly in a 1hr online support group with other participants, and received digital delivery of a newsletter (weekly for first 6-months, monthly for the last

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Ohta et al., 2022	Japan	n= 77 community-dwelling adults	6-months) highlighting a different tablet feature and reminding participants about local support groups. 16x meetings (i.e. Osekkai conferences) held at care centres to discuss community problems and organise voluntary resolutions held across a one-year period; Osekkai is a traditional Japanese behaviour in which people do what they think is good for others, which can increase people's social participation.
Taube et al., 2018	Sweden	n= 108 older community-dwelling adults receiving care	Out-patient case management intervention involved each patient having two case managers (a nurse and a physiotherapist) which made monthly visits (sometimes together), or more as required, over 12-months. Case managers were available to call for assistance at any time, and shared information with participants about the consequences of ageing and local activities as well as individually tailored information regarding disease and recovery management.
The Mental Health Foundation, 2018	UK	n= 13 older people living in support housing	Self-management initiative with peer support groups. Weekly sessions for 6 months facilitate and provide peer support to people living in housing schemes. Included activities designed to increase meaningful participation and aid cognitive stimulation, focusing on the participants' identity and their passions
Traverse, 2018	UK	n= 14 home sharers - older people and others who need support to stay in their homes (e.g. divorcees, long-distance commuters); homeholders - young professionals	Homeshare scheme in eight pilot sites allowing two people to share a home for mutual benefit. More commonly brings together older people with young people who provide companionship and 10 hr per/week of low-level practical support in return for an affordable place to live.

<sup>a</sup> Sample size represents number of participants who responded to post intervention loneliness measures across intervention and control groups

Table 2. Characteristics of each intervention in the Social Interaction theme (n=23)

Authors	Country	Sample size <sup>a</sup> and description	Intervention description
<b>ARTS/MUSIC/CULTURE (N= 8)</b>			
Adey and Park, 2022	USA	n= 17 adults with schizophrenia-spectrum conditions	8x weekly 1hr group choral rehearsals
Apteligen, 2021	UK	n= 230 female carers experiencing or at risk of low wellbeing and loneliness and/or social isolation	9-week long group music-making activity aimed at female carers. Music creation projects included singing, song writing, learning an instrument, and digital music production.
Aydin and Kutlu, 2021	Turkey	n= 60 older community-dwelling adults living on their own	1.5hr clay sessions weekly for 6 weeks, participants arranged into 3 groups of 10
Brown et al., 2019	England	n= 18 older people experiencing or at risk of, experiencing social isolation and/or loneliness	A group of older people meet monthly (five-set sessions) for around 2 hours. Activities include: sharing cake, socialising, and a heritage presentation and sometimes other heritage activity (e.g., handling objects, and/or visiting an associated exhibition or installation)
Fields N et al., 2021	USA	n= 15 older adults in a residential care setting	3x 10-minute sessions with a social robot engaging older adults in participatory arts (e.g. Shakespearean text, etc.)
Hansen et al., 2021	Canada	n= 13 older community-dwelling adults	The Moving Connections Project; 4x 3.5hr choreography-based dance session held over 4 consecutive days
Richmond-Cullen, 2018	USA	n= 71 older community-dwelling adults	10x weekly or biweekly 2hr art sessions at 14 senior community centres as part of an artist in residence program; art type varied by artist (e.g., performing, visual or multidisciplinary arts)

Authors	Country	Sample size <sup>a</sup> and description	Intervention description
Starks, 2023	UK	n= 102 adult men at risk of/experiencing loneliness and/or social isolation - mostly retired, widowed or living alone.	Community spaces enabling men to connect, converse, make friends, and get creative with tools and machinery, and with support from others, learn new skills. Members pay small weekly fee and take part in activities such as woodworking, metalworking, repairing and restoring furniture or bicycles, building boxes.
<b>OTHER SINGLE ACTIVITIES (N=8)</b>			
Blevins, 2023	USA	Older community-dwelling adults (n not reported)	0.5hr virtual church sessions weekly for 12 weeks consisting of opening prayer, Bible verses, mindfulness exercise, teaching, gratitude and Bible memorization
Chan et al., 2017	Hong Kong	n= 45 socially isolated older adults	3-month program of 2x 60-minute sessions each week of tai chi qigong, encouraged by a paired socially active volunteer (in and out of classes)
DCMS, 2019 (two intervention arms)	England	n= 20 individuals from 3 test sites: community centre users (largely with learning difficulties); supported living facility (30-60yrs) and residential home residents (60+ and living with age-related illnesses).	Social gaming app that brings people together to take part in online quizzing, games and chat to combat social isolation. Uses video communication to allow users to meet and participate irrespective of location, allowing users to take part in a group situation, or from their own room. Requires 5g (high bandwidth to drive device-to-device video capability).
		n= 17 individuals with care responsibilities at home	Push to Talk device allows users to press a button, indicating that they want a chat, and be connected via their phone to another user who has also pushed their button. Users are grouped into 'communities' of people in similar situations.
Robinson et al., 2013	New Zealand	n= 34 older adult residents in the hospital or rest home care areas of a retirement home	12x 1hr weekly group sessions for participants to discuss and interact with Paro, an advanced interactive robot modelled after a baby seal and covered in white artificial fur.

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Thomas et al., 2016 (two intervention arms)	USA	n= 359 older community-dwelling adults living on their own across two intervention arms	First intervention arm: daily meal delivery (traditional) by Meals on Wheels Second intervention arm: weekly meal delivery (frozen) by Meals on Wheels
Tkatch et al., 2020	USA	n= 125 older community-dwelling adults without pets	2-months of having a weekly animatronic pet (choice of cat or dog), where participants were instructed to treat it as a pet; participants received automated weekly phone-calls reminding them to interact with their pet
<b>MULTIPLE ACTIVITIES (n=7)</b>			
Bartlett et al., 2012 (three intervention arms)	Australia	n= 56 older community-dwelling adults across three intervention arms	Rural town: a regular fitness programme and an arts programme was established; provisions were also made to build community capacity so participants could arrange their own activities and find funding for future development. Coastal centre: community forums, an action plan and a buddy system for older people fostered engagement in community social welfare. Metropolitan centre: volunteers were recruited and trained to deliver information and resources to seniors especially migrants (e.g., leisure activities and library services)
Basaran, 2016	Turkey	n= 23 female adult prisoners	1.5hr recreational sessions twice a week for 12 weeks (e.g., volleyball, karaoke, art, Zumba, orienteering)
Rodriguez-Romero et al., 2021	Spain	n= 55 older community-dwelling adults	18x group sessions across 6 months consisting of: i) education health promotion and disease prevention sessions (e.g., healthy eating, needs of ageing, memory, sleep hygiene), ii) activities to improve mental and emotional state (e.g., mindfulness, yoga, laughter therapy, songs) and iii) activities to improve social networks and use of community resources

Authors	Country	Sample size <sup>a</sup> and description	Intervention description
			(neighbourhood kitchen, cinema, green walk, cultural trip)
Roland et al., 2021	Canada	n= 99 older community-dwelling adults	6-months of weekday 2.5hr group-based telephone-based sessions; participants chose which and how many sessions to attend. Sessions included discussions, games, and presentations under the categories of: health (e.g. disease management, exercise), recreation (e.g. BINGO, book clubs, museum talks), and education (e.g. arts and culture talks, English practice).
Routasalo et al., 2008	Finland	n= 228 older community-dwelling adults	12x weekly group sessions aimed to empower older people and promote peer support and social integration; topics were directed by the group and included art (e.g., creating art and speaking with artists), exercise (e.g., group dancing, swimming), and therapeutic writing and group therapy (e.g., writing about their experiences of loneliness and then discussing as a group).

<sup>a</sup> Sample size represents number of participants who responded to post-intervention loneliness measures across intervention and control groups

Table 3. Characteristics of each intervention in the Psychological Interventions theme (n=23)

Authors	Country	Sample size <sup>a</sup> and description	Intervention description
<b>THERAPY (N=14)</b>			
Creswell et al., 2012	USA	n= 34 older community-dwelling adults	Mindfulness Based Stress Reduction Program; 8x 120-min group sessions weekly, a day-long retreat in the sixth or seventh week, and 30-min of daily home mindfulness practice

<b>Authors</b>	<b>Country</b>	<b>Sample size <sup>a</sup> and description</b>	<b>Intervention description</b>
Cruwys et al., 2022	Australia	n= 152 young people seeking mental healthcare	5x 75 min group-based psychotherapy sessions aiming to build group-based belonging, max group size 5
Gürkan, 2013	Turkey	n= 34 university students	11x 2hr weekly group psychological counselling sessions focusing on developing communication skills, social awareness and emotional awareness
Jang and Kim, 2012	South Korea	n= 11 migrant adult women in international marriages	10x 1.5hr weekly Kalfian sandplay therapy (Kalf, 2003/1980); participants created a scene in a sand tray in silence and told the group of the emotions, physical sensations, memories and ideas they felt while making the sand scene
Käll et al., 2020a	Sweden	n= 61 adults who are suffering/experiencing distress as a result of loneliness (as assessed by the participant)	8x weekly internet-based CBT online modules; each module revolved around themes of loneliness and involved a homework assignment for which participants received feedback from their paired therapist
Käll et al., 2021 (two intervention arms)	Sweden	n= 130 adults who are suffering/experiencing distress as a result of loneliness (as assessed by the participant) across two intervention arms	First intervention arm: internet-based CBT. This consisted of 9 modules that contained text, pictures, and interactive assignments related to the theme of loneliness and how to deal with it. Participants received weekly feedback on their work by their assigned therapist for 10-weeks intervention duration.  Second intervention arm: internet-based interpersonal psychotherapy. This consisted of 9 modules that contained text, pictures, and interactive assignments related to the theme of loneliness and how to deal with it. Participants received weekly feedback on their work by their assigned therapist for 10-weeks intervention duration.
Ozturk and Tekkas-Kerman,	Turkey	n= 61 nursing students	8x online group 45min laughter therapy sessions (2/week for 4 weeks) consisting of clapping/warm-up exercises,

<b>Authors</b>	<b>Country</b>	<b>Sample size <sup>a</sup> and description</b>	<b>Intervention description</b>
2022			deep breathing exercises, childlike playfulness and laughter exercises
Shapira et al., 2021	Israel	n= 64 older community dwelling adults living on their own	7x online sessions over 3.5 weeks consisting of guided online group discussions, mindfulness and CBT techniques
Stacey & Edwards, 2013	England	n= 5 adult men with a mild learning disability	8x 2hr narrative therapy group sessions examining loneliness, causes, solutions and developing personalised plans
Tatilioglu, 2013	Turkey	n= 28 university students	12x weekly online cognitive behavioural therapy via MSN messenger with weekly homework (material included explanations on loneliness, how to communicate better, and changing cognitive structures).
Theeke et al., 2016a	USA	n= 27 chronically ill older adults	5x weekly 2hr group CBT-based sessions aiming to facilitate change in cognitive perspective; topics included belonging, relationships, socialization in community, challenges of loneliness, and meaning of loneliness
Theeke et al., 2021	USA	n= 6 adult survivors of stroke	5x weekly 2hr group CBT-based sessions aiming to facilitate change in cognitive perspective; topics included belonging, relationships, socialization in community, challenges of loneliness, and meaning of loneliness
Yárnoz et al., 2008	Spain	n= 14 long-term divorced parents	8-months of weekly 2hr group sessions (attendance on voluntary basis) delivering an attachment-based intervention for separated or divorced parents; aim was to share narratives discuss the events, the self, and the relationship that contributed to adapting better to being divorced.
<b>OTHER (N=9)</b>			
Bruehlman-Senecal et al., 2020	USA	n= 209 recent first-year college students	4-weeks access to a smartphone app with cognitive and behavioural exercises when starting college, control group allowed access following a 4-week wait period.



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Caputi et al., 2021	Italy	n= 210 fourth and fifth graders	5 weekly class-based Theory of Mind training sessions, each lasting 50 minutes with two mentalistic stories (i.e. discrepancy in belief between characters focusing on persuasion, misunderstanding, white lie, irony/sarcasm, contrary emotions) and a group discussion and language exercises about the stories
Cohen-Mansfield et al., 2018	Israel	n= 63 older community-dwelling adults	iSOCIAL intervention which consisted of 1) identifying individual barriers, 2) up to ten individual meetings with an activities counsellor and 3) up to seven group sessions with participants to provide opportunities to practice social skills
Iyer et al., 2022	USA	n= 108 high-school students	28-day Self-Care programme; participants used guided tools to relax/meditate/affirm/breathe/rejuvenate/self-observe for 15 min/day and joined 4x weekly 30-min webinars that focused on managing stress, building a positive mind map, aligning with the daily circadian rhythm to improve sleep quality, and setting goals with self-observation
Mueller and Cogle, 2023	USA	n= 42 adults with social anxiety disorder	4x weekly online sessions psychoeducation expressive writing, social skills learning, exposure introduction and planning, exposure follow-up) with 2x additional online practice sessions each week; aimed at 'Building Closer Friendships' by reducing fear of intimacy
Stewart et al., 2014	USA	n= 50 university students	6x biweekly 2hr drop-in sessions with a therapy dog in student halls; informal group-based sessions involved petting the dog, hugging the dog, giving the dog treats, and brushing the dog's coat.
Thimmapuram et al., 2021	USA	n= 97 physicians and advance practice providers	4-weeks of daily heartfelt meditation practices in the morning and before going to bed (each practice consisted of a 6-minute audio guiding participants to

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			gradually relax their body and rest their attention in their heart space)
Travers and Bartlett, 2011	Australia	n= 113 older community-dwelling adults	3-months of daily listening to a 1hr radio programme specifically focused on the era from which older people grew up (1920s-1950s) broadcasting music, serials, and segments designed to address depression and loneliness in older adults
Vassilopoulos et al., 2018	Greece	n= 54 6th grade school students	5x weekly 1.5hr group sessions aimed to reduce fears/concerns about secondary school; session themes included social skills, cognitive restructuring, and conflict resolution

<sup>a</sup> Sample size represents number of participants who responded to post-intervention loneliness measures across intervention and control groups

Table 4. Characteristics of each intervention in 'Multiple themes' (n=9)

<b>Authors</b>	<b>Country</b>	<b>Sample size <sup>a</sup> and description</b>	<b>Intervention description</b>
Honigh-de Vlaming et al., 2013	Netherlands	n= 858 older community-dwelling adults	Five intervention components: a mass media campaign, information meetings for local elderly people, psychosocial group courses for persons with mental health problems or chronic diseases, social activation by the community-based Neighbours Connected intervention, and training of intermediaries (homecare nurses, municipal advisors, and volunteers)

Pynnönen et al., 2017	Finland	n= 222 older community-dwelling adults	6-month social intervention of choice (weekly group supervised exercise, weekly group social activity, or personal counseling every 3rd week) vs. self-directed control group (single counseling session).
Dayson et al., 2021	England	n= 608 older people at risk of loneliness and/or social isolation	Group-based and one-to-one therapeutic and befriending activities based on the 'Five Ways to Wellbeing'. Evaluation cohort attended activities that included practical advice and guidance, and social activities.
Leyland et al., 2022	England	n= 771 older people at risk of loneliness and/or social isolation	Part of BL Ageing Better programme (Citywide-Leeds). 19 projects included, all worked with local community, co-produced projects, recruited volunteers, and sometimes, linked with other organisations. Projects include: Community-based development approaches. Evaluation cohort activities include: meal-sharing activities; cultural appropriate group activities; Walking/outdoor interventions & arts/theatre/dance activities.
Moreton et al., 2019	England	n= 450 older people at risk of loneliness and/or social isolation	Part of wider Ageing Better programme - Voluntary sector-led partnerships in 14 areas across England aimed at promoting community action on ageing and isolation. City-wide programme composed of networks providing a range of group activities: including Exercise (42 Networks), Arts, Food-related, trips (27 Networks) and skills workshops (24 Networks).

Ecorys, 2021	England	n= 1498 older people experiencing or at risk of experiencing social isolation and/or loneliness	Ageing better. Strategic programme delivered by 14 VCSE sector-led partnerships. Develops/delivers plans to create new and enjoyable ways for people over 50 to be actively involved in their communities to combat social isolation and loneliness. Intervention types include: IT intervention Asset-based community development (ABCD) Creative activities, Social interventions, Culture change, Knowledge sharing/building, Social prescribing, Mental health, Physical health and Transport.
Jones et al., 2021	England	n= 897 older people experiencing or at risk of experiencing social isolation and/or loneliness	Part of wider Ageing Better programme - voluntary sector-led partnerships in 14 areas across England aimed at promoting community action on ageing and isolation. City-wide programme included projects providing 121 and group support: Intergenerational Activity, Creativity and Arts, Peer Support, Food and Nutrition and Talking therapies.
Rose et al., 2021	England	n= 0 individuals across the lifespan experiencing or at risk of experiencing social isolation and/or loneliness	Cross-govt fund that gave 126 VCSE sector orgs grants to deliver 121 & group service delivery, as well as system-level campaigning/change. Cohort of 23 grant holders whose activities largely focused on: Befriending/peer-to-peer support, advice, signposting & outreach, Group activities - arts and leisure, educational approaches, physical leisure activities and therapeutic support. Average engagement in cohort was 1-9 hours p/m for 3-12 months p/y.

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Martin et al., 2021	England	n= 2171 adults at risk of loneliness during covid-19 restrictions; multiple groups of vulnerable adults and their families (vulnerabilities include: physical & mental health-related, carer-status-related, financial difficulties, immigration-related ) new mothers; adults at risk of loneliness during covid-19 restrictions)	Fund aimed at supporting delivery of services aimed at addressing loneliness and to help organisations adapt services during Covid-19 restrictions. Evaluation cohort composed of 8 VCSE sector orgs delivering following primary types of activity: Befriending, technological support (eg. Using IT equipment)
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