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Mind-body and creative arts therapies for people with aphasia: a mixed-method systematic review

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ABSTRACT

Background: In the context of aphasia rehabilitation, there is a perceived need for interventions with a reduced linguistic demand targeting well-being. Mind-body and creative arts approaches are holistic and person-centred approaches, primarily relying on means other than verbal exchanges and promoting self-regulation strategies.

Aims: This mixed-method systematic review aimed to evaluate the availability, feasibility and effectiveness of mind-body and creative arts therapies in promoting well-being for people with aphasia. Eight databases were searched using subject headings and keywords. Full-text screening, critical appraisal and data extraction were conducted independently by two reviewers. A segregated synthesis approach was used (i.e., Revised Effect Direction Plot technique and Thematic Synthesis approach). Findings are presented in a narrative and visual form.

Main Contribution: Twenty-two studies were included (Mind-body : n = 11; Creative arts: n = 11). Heterogeneity of study design and quality, intervention type, procedures and dosage, outcomes, and level of offered communication support were identified. Improvements were noted across a wide range of well-being outcomes with more consistent positive results for anxiety and communication. One hundred and twenty-eight findings were extracted and synthesised in three broad themes: positive impact on self, empowering multifaceted experience, and relevance of needs-centred adjustments.

Conclusion: Provisional findings about the benefits of mind-body and creative arts interventions on aspects of well-being for some individuals with aphasia were identified. However, findings are complex and need to be interpreted cautiously. Facilitators and barriers to these therapies are highlighted with related recommendations for practice. This review poses a demand for further research in the field, implementing rigorous methodology and aphasia-specific support to facilitate inclusion and engagement.

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Aphasia; well-being; mind-body therapies; creative arts interventions; systematic review

Introduction

At least 250,000 people in the UK live with aphasia. Aphasia frequently has a severe impact on the everyday life of the individuals affected and their families. People with aphasia (pwa) often become reliant on others to communicate, with related changes in interpersonal relationships, social roles and participation to work and leisure activities (Manning et al., 2019). The loss of autonomy and the increased cognitive demand on everyday tasks can lead pwa to develop negative feelings, such as low mood, irritation, distress, alienation, low self-esteem and vulnerability (Shiggins et al., 2020). Aphasia appears to be a significant risk factor for both post-stroke depression, reported for 70% of pwa in the first three months post-stroke, and anxiety, observed in 20–25% of people with a left hemisphere stroke after the first six months (De Wit et al., 2008; Barker-Collo et al., 2007). Post-stroke depression has been associated with poor rehabilitation and quality of life (QoL) outcomes with correlated difficulties in clinical recovery, therapy engagement and return to life (Robinson, 2006). Depression and anxiety might also affect both cognitive processing (Eysenck et al., 2007) with negative consequences on the already impaired language output (Knapp et al., 2017) and social relationships (Code et al., 1999) with an exacerbation of social isolation and negative feelings. This enhances the importance of therapy programmes for pwa addressing emotional difficulties (Cruice et al., 2011).

Contemporary psychotherapy largely relies on verbal exchanges (*Yeates, 2019). Aphasia might prevent the affected individuals from expressing their emotions, receiving accurate diagnoses of mood disorders (*Dickinson et al., 2017), and being offered accessible mental health services (Simmons-Mackie & Damico, 2007) with negative effects on the amount and quality of psychological support pwa can access. There is, therefore, an urgent demand for person-centred approaches that rely less on communication and can promote well-being (*Yeates, 2019). Well-being therapies are by nature less reliant on communication as these usually implement a holistic approach targeting not a specific need or skill but the individual as a whole (Simmons-Mackie & Damico, 2007). As highlighted by the Living with Aphasia: Framework for Outcome Measurement, A-FROM (Kagan et al., 2008), an individual's QoL is indeed not determined by a single factor (e.g., aphasia severity) but by the continuous interaction of several life domains (i.e., aphasia severity, life participation, linguistic environment, and personal factors). Holistic approaches encompass self-regulation strategies and value person-centred care and might represent a tool to empower pwa to become independent in dealing with their emotional conditions in everyday life (De Silva, 2011).

In regard to this, mind-body and creational arts approaches can be considered holistic and person-centred approaches, primarily relying on other means than the verbal medium and focusing on behavioural exercises or on art-based activities to promote mind-body connection and well-being. These usually group-based approaches impart self-regulation strategies and might empower individuals to play an active role in managing their mental health (Kapitan, 2012). They are potentially cost-effective, non-invasive, and straightforward to implement in clinical practice and in the home setting therapies (Wahbeh et al., 2008) and have been shown to have some positive effects in promoting social participation and alleviating mood disorders amongst stroke patients (Ali et al., 2014). However, for results to be considered reliable and applicable, single study findings

need to be replicated across several participants and contexts (Petticrew & Roberts, 2008). To explore the evidence and improve understanding of mind-body and creative arts therapies in promoting well-being for pwa, a comprehensive, rigorous, and transparent investigation of the literature was conducted.

Aim

Grounded in the FAME (Feasibility, Appropriateness, Meaningfulness, and Effectiveness) framework (Pearson et al., 2015), this systematic review aims to evaluate the availability, feasibility, and effectiveness of mind-body and creative arts therapies to promote well-being for pwa. The objectives are

- To identify interventions that use mind-body and/or creative arts;
- To explore feasibility, in terms of accessibility, appropriateness, and meaningfulness of the identified interventions for pwa;
- To determine effectiveness of the identified interventions in improving global well-being and/or aspects of well-being for pwa.

Methods

The review was conducted as described in a protocol registered in PROSPERO (International prospective register of systematic reviews; CRD42020197876), and it is reported according to PRISMA guidelines (Page et al., 2021b). The review was conducted in five stages: literature search, study selection, data extraction, quality assessment, and data analysis.

Design

To address the review objectives, a mixed-method systematic review methodology was implemented. Mixed-methods promoted the collection of a broad data set, a comprehensive understanding of the intervention effects from different perspectives, and the validation of findings by comparing and contrasting quantitative and qualitative data through triangulation techniques (Creswell & Creswell, 2017; Hong et al., 2017).

Selection criteria

The SPIO (Study design, Population, Interventions, and Outcomes) framework, targeting the key components of the research study, was used to determine the selection criteria (Table 1).

SPIO is an adaptation of the Population, Interventions, Comparison, and Outcomes framework (Bettany-Saltikov, 2012) that has already been applied to define systematic review selection criteria in stroke research (e.g., Lawrence et al., 2013).

Population: adults (≥ 18 years old) with acquired aphasia or mixed populations where the aphasia-only data can be extracted. Interventions: a mind-body or a creative arts intervention. In the context of this review, “mind-body therapies” were intended as approaches implementing different types of behavioural exercises to

Table 1. SPIO inclusion/exclusion criteria

| | Inclusion criteria | Exclusion criteria |
|--------------|--|--|
| Study design | Any, except those in exclusion criteria. | Systematic review, literature review, and case report. |
| Population | Adults (18 ⁺) with a diagnosis of aphasia following stroke, traumatic brain injury, and Primary Progressive Aphasia. | Presence of neurological diseases (e.g., Parkinson's Disease and Motor Neurone Disease). Presence of significant neurological co-morbidities |
| Intervention | Mind-body therapies: approaches implementing different types of behavioural exercises to promote the connection between mind and body. Any mind-body intervention intended as approach except those in exclusion criteria Creative arts intervention; therapeutic approaches using art-based activities to facilitate self-expression through the creative arts intervention – except those in exclusion criteria | Mind-body intervention involving manipulation, mobilisation, body sensors, movement, and posture re-education (e.g., acupuncture, chiropractic, and osteopathic manipulation, biofeedback, etc.) Hypnotherapy Melodic-Intonation Therapy or SLT-based interventions Movement therapy other than a form of dance therapy |
| Outcomes | Any outcome related to global well-being and/or aspects of well-being (e.g., mood disorders, confidence, social participation, quality of the life, cognition, communication, fatigue, etc.) | |

promote the connection between mind and body with the aim of enhancing health and well-being (Love et al., 2019). Creative arts interventions were defined as therapeutic approaches using art-based activities and the creative process to facilitate self-expression (Puig et al., 2006). Any intervention procedures, duration, and intensity were included, as far as data about the review-relevant intervention could be extracted.

This review excluded the following: interventions not developed as holistic mind-body and/or creative arts therapies and interventions with review with different primary target outcomes such as interventions including selected elements derived from mind-body and/or creative arts therapies used to target outcomes that deviate from the primary scope of this review. To take an example, Melodic Intonation Therapy interventions use musical elements specifically to improve speech function and therefore do not align with the review purpose. Study design: all study designs have been included (quantitative, qualitative, and mixed-method). Outcomes: any outcome measuring global well-being and/or aspects of well-being (e.g., well-being, mood, confidence, social participation, Quality of Life (QoL), communication, cognition, and fatigue).

Search methods

Scoping searches were conducted in a systematic review repository (i.e., *PROSPERO*) to identify systematic reviews in the field and in two bibliographic databases to refine the search terms (i.e., *MEDLINE* and *PsycInfo*). Search strings were developed combining subject headings and keywords targeting the Population and Intervention parameters of the SPIO framework through Booleans operators (Box 1). The pool of keywords was expanded by identifying concepts and synonyms through a mind map process. A filter (i.e., tTitle and abstract only) was applied to the search in databases where an excessive number of irrelevant sources were retrieved (e.g., *PsycArticles*).

Box 1. Example of search string using boolean operators

(Aphasia OR dysphasia OR aphasic OR

dysphasic OR primary progressive aphasia OR PPA OR word finding difficulties OR agrammatism OR agrammatic) AND ((mind-body therapies OR meditation OR Mindfulness OR mindfulness-based stress reduction OR mindfulness-based cognitive therapy OR mindfulness-based interventions OR MBSR OR MBCT OR MBI OR Yoga OR Tai Ji OR Tai Chi OR relaxation OR relaxation therapy OR breathing exercises) OR ((creative arts therapies OR expressive arts therapies OR art therapy OR music therapy OR music intervention OR psychodrama OR dance therapy OR movement therapy))

No delimiters were applied to the search. Selecting a starting date for the search could have led to the exclusion of relevant studies as mind-body therapies derived from traditions originated from oriental healing practices. Language restriction was not applied for this search as the main reviewer had access to speakers of a wide range of languages who could assist with translation.

In April 2020, the finalised search was run in seven databases, i.e., *Allied and Complementary Medicine Database*, *Cumulative Index to Nursing and Allied Health Literature*, *MEDLINE*, *PsycInfo*, *PsycArticles*, *Linguistics and Language Behavior abstract*, and *PubMed Central*. To identify any additional published and/or unpublished studies, *ProQuest Dissertations & Theses Database*, *Science Citation Index*, *International Clinical Trials Registry Platform*, *Applied Social Sciences Index*, and *Abstracts* were searched; aphasia and mind-body/creative arts research studies were contacted through professional organisation websites, and reference lists of relevant systematic reviews and identified papers were screened. The authors were contacted if the full paper could not be fully accessed online and/or when additional information was necessary to determine eligibility (e.g., extracted data).

Study selection

Titles and abstracts of all identified studies were screened by two reviewers (MP and HF). Studies were coded as follows: “included”, “excluded”, and “undecided”. Where inclusion was uncertain, the reviewer erred on the side of inclusion. Full text of “included” and “undecided” papers was independently reviewed by two of the authors (MP and HF) to identify eligible studies. Any potential disagreement was resolved through discussion with a third reviewer (ML), when necessary. As part of the selection process, it was decided to exclude observational studies as they often did not apply scientifically rigorous procedures, as well as unpublished studies, which did not report information systematically.

Data extraction

To ensure rigour and systematicity, data in terms of population, study design and methods, interventions, and outcomes were extracted using a bespoke tool based on the domains of the *Template for Intervention Description and Replication (TIDieR)* checklist (Hoffmann et al., 2014). The second reviewer (HF) independently extracted data for 50% of the included studies.

Quality appraisal

Standardised design-specific quality appraisal checklists were used to categorise each study and assess its quality. The following tools were used: the *Single-Case Experimental Design-SCED Scale* (Tate et al., 2008) for studies up to 10 participants (Graham et al., 2012), the *Joanna Briggs Institute Critical Appraisal Checklist for Quasi-Experimental Studies* (Tufanaru et al., 2017), the *Critical Appraisal Skills Programme (CASP) Randomised Controlled Trial Checklist*, and the *CASP Qualitative Checklist* (CASP Checklists, 2020). Single-case studies using qualitative methods were appraised using the CASP Qualitative Checklist as questions seemed more appropriate than those of the SCED Scale. The reviewer then classified the studies as follows: “poor” studies with a score <5; “medium” studies with a score between 5 and 8, and “high” studies with scores ≥8. The second reviewer independently assessed the quality of 50% of the included studies.

Synthesis of results

A segregated synthesis was conducted where quantitative and qualitative studies were analysed in two distinct syntheses (Sandelowski et al., 2006). To analyse quantitative studies, a revised Effect Direction Plot was used. This technique enables exploring the effectiveness of interventions based on evidence about outcome improvement, deterioration, or no change (Boon & Thomson, 2021). Effect Direction Plots have been shown to be appropriate to synthesise effect measures for systematic reviews including non-randomized studies and several sources of evidence, where meta-analysis cannot be performed and effect sizes are not available for all the studies (Boon & Thomson, 2021, please refer to this paper for the full procedure). Data were visually represented in a table (Figure 2). The non-parametric sign test was used to provide statistical evidence for the effect direction synthesis.

Qualitative findings from the included studies were synthesised using thematic synthesis. Specifically, a three-stage process was used to analyse and combine secondary qualitative data: line-by-line coding of findings of primary studies, the organisation of codes into “descriptive themes”, and the development of “analytical themes”. This approach enables reviewers to preserve the findings from the primary studies and integrate these by transparently generating novel constructs within a specific research context (Thomas & Harden, 2008).

Results

Search outcomes

Out of 8,726 unique bibliographic records, 113 studies were selected for full-text screening, and of these, 22 studies were found to be eligible for the review (Figure 1). Reasons for the remaining 91 records are reported in the chart. Two records were irretrievable as these were only available as paper copies at the British Library, which was closed due to Covid-19 restrictions at the time of full-text screening (July 2020).

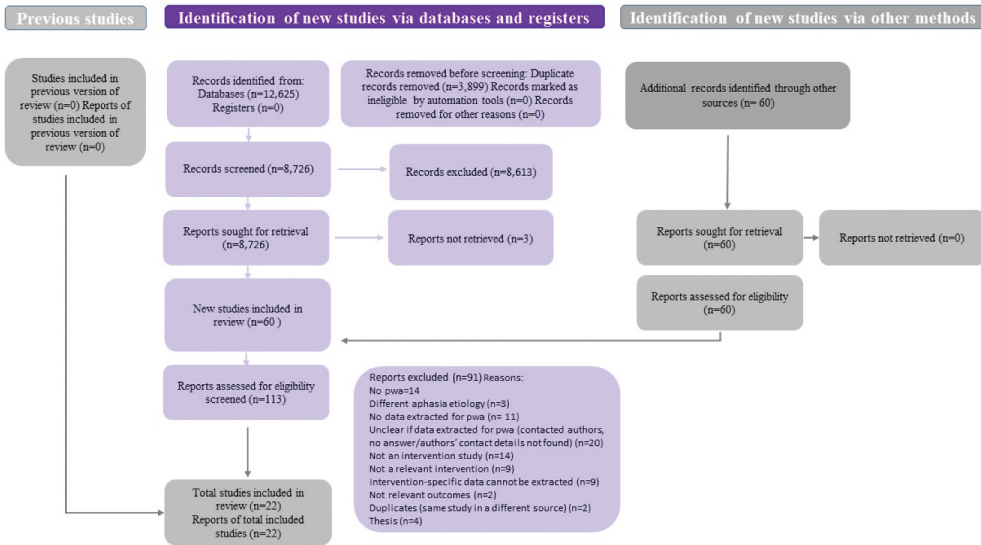


Figure 1. Flowchart showing the review data selection process adapted from the PRISMA 2020 flow diagram template for systematic reviews (adapted from Page et al., 2021a).

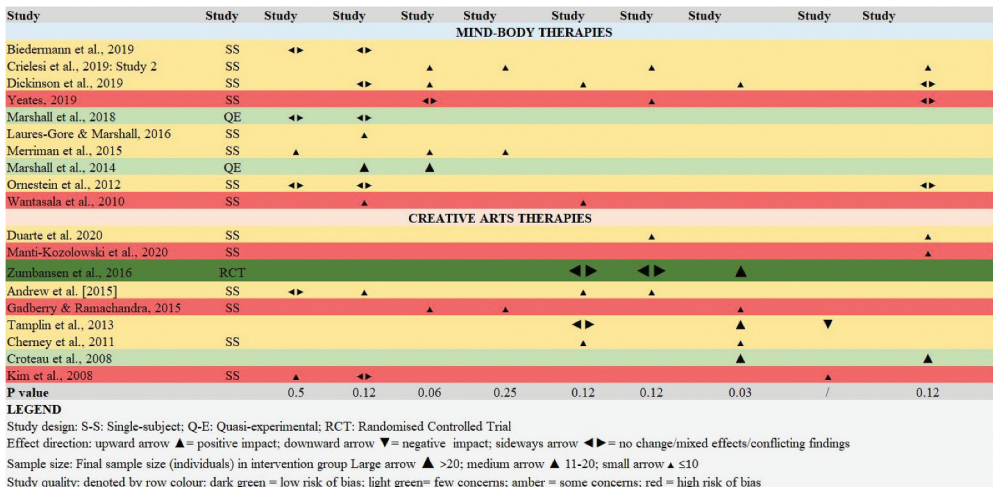


Figure 2. Revised effect direction plot for quantitative studies including sign test p-values for well-being outcomes, study design, and quality (adapted from Boon & Thomson, 2021).

Study characteristics

Publication years of the included studies range from 2008 to 2020. Seven studies were conducted in the USA, five studies in the UK, three in Australia, two in Canada, one in Brazil, one in Italy, one in Korea, and one in New Zealand. The study location for one study is not specified (Table 4).

Study designs

In relation to the methods used, thirteen studies used mixed methods (*Duarte et al., 2020; *Mantie-Kozlowski et al., 2020; *Biedermann et al., 2019; *Crielesi et al., 2019: Study 2; *Dickinson et al., 2017; *Yeates, 2019; *Andrew (2015); *Gadberry and Ramachandra (2015); *Merriman et al. (2015); *Tamplin et al. (2013); *Orenstein et al. (2012); *Cherney et al. (2011); *Croteau et al. (2008)), six quantitative (*Kim et al., 2008; *Laures-Gore & Marshall, 2016; *Marshall et al., 2014, 2018; *Wantsala et al., 2010; *Zumbansen et al., 2017), and three qualitative studies (*Castka et al., 2009; *Mantie-Kozlowski et al., 2018; *Panda et al., 2020).

Participant characteristics

Across the twenty-two studies, 134 participants were included: 119 people with aphasia, 9 stroke survivors with no aphasia, and 17 significant others. Participants with aphasia presented with a range of aphasia types and severities, where the information was specified, type of aphasia included fluent ($n = 36$), to nonfluent ($n = 30$) and mixed ($n = 30$). Based on the information provided, stroke was the most common cause of aphasia ($n = 17$), followed by unspecified left-hemisphere brain damage ($n = 3$), gunshot ($n = 1$), brain tumour ($n = 1$), surgical removal of neoplasm ($n = 1$), and Primary Progressive Aphasia (PPA) ($n = 1$). The age of participants with aphasia ranged between 19 years and 82 years. Sixty-four participants were male (47.7%), and 39 were female (29.1%); gender of 31 was not reported (23.1%). Poor reporting of some population characteristics (i.e., ethnicity, educational level, marital status, living status, and aphasia severity) was found across several studies.

Intervention characteristics

Eleven studies were classified as mind-body interventions, and eleven studies were classified as creative arts interventions (Table 2). All the interventions were delivered face-to-face: Fifteen were delivered in groups and seven in one-to-one sessions. Regarding session duration and frequency, a high degree of variation was found across the studies (Table 2).

Outcomes

Twenty outcomes related to well-being were identified. Attention, language, and mood were the most common outcomes measured in relation to mind-body interventions for pwa, whereas the most common outcomes measured in relation to creative arts therapies for pwa were QoL, mood, language, communication, social participation, and cognition. Participants were tested before and immediately after the intervention; however, most studies ($n = 18$) did not report any long-term follow-up measures. Sixty-two different outcome measures related to well-being aspects were used across the studies (Table 3); researchers' observations were also used.

Table 2. Characteristics of included interventions.

| Author/s (year) | Intervention type | Dosage and intensity | Setting | Communication support | Comparative intervention | Follow-up |
|----------------------------------|--|--|--------------------|---|--------------------------|-------------------------------|
| *Biedermann et al. (2019) | Meditation | 1-hour sessions twice weekly for over 9 weeks | Group Face-to-face | Some visually guided practices | No | Weeks 1–2-3 post-intervention |
| *Crielesi et al. (2019-Study 2) | Adapted Mindfulness-based Cognitive Therapy | 2-hour sessions once weekly for over 8 weeks | Group Face-to-face | Some variations to MBCT protocol; use of supported conversation strategies; materials with simplified language and font size adjustments. Changes made by the practitioner | No | No |
| *Dickinson et al. (2017) | Mindfulness-Based Stress Reduction | 1.5–/2-hour sessions, once weekly for over 4 weeks | 1:1 Face-to-face | Reduced length of the course (from 8 to 4 weeks), changes from group to 1:1 setting, individualised programme, supported conversation strategies (adaptations made by the clinical psychologist trained by an SLT) | No | 3-week follow-up |
| *Laures-Gore and Marshall (2016) | Mindfulness meditation (modelled after Kabat-Zinn, 1982, Zeidan et al., 2010, and Wenk-Sormaz, 2005) | Up to 30 min once daily over 4 consecutive days + independent 30-min practice on the 5 th day | 1:1 Face-to-face | Reduced course length and speech rate; questions to verify participants' instruction comprehension | No | 1-week follow-up |
| *Marshall et al. (2018) | Aphasia Mindfulness Meditation (MM) | Up to 30 min once daily over 4 consecutive days + independent 30-min practice on the 5 th day | Group Face-to-face | Aphasia-specific programme developed by an SLT; reduced session duration (30 min), reduced programme content (breath and present moment awareness), language simplifications, pictorial instruction sheet, and nonverbal strategies to support communication (gestures and visual cues) | Yes | 1-week follow-up |

(Continued)

Table 2. (Continued).

| | | | | Not reported | Yes | No |
|--------------------------|-------------------------------------|--|--------------------|--|-----|--|
| *Marshall et al. (2014) | Unilateral Nostril Breathing (UNB) | 10-week program 1 h of guided instruction once weekly + up to 40 min of daily practice + 6 weeks of individual UNB | Group Face-to-face | Not reported | | Measures repeated at week 4 (end of first intervention period) and week 10 (end of second intervention period) |
| *Merriman et al. (2015) | Mindfulness-based Cognitive Therapy | Not specified | Group Face-to-face | Hand-outs with audio version; stickers for object as reminder of mindful activity; modified movement exercises to allow participants to remain seated and focus on the upper body; reduced exercise duration | No | No |
| *Orenstein et al. (2012) | Mindfulness Meditation | Phase B: The session duration gradually increased from 5 up to 30 min over a minimum of four sessions Phase A2: 5 sessions, 30 min each, no guided practice | 1:1 Face-to-face | Not reported | No | No |
| *Panda et al. (2020) | Informal lunch meditation | 2-hour sessions once weekly for over 6 weeks | Group Face-to-face | Reduced course duration; structured sessions; Trainer = expert aphasiologist; some aphasia-friendly documentation (aphasia-friendly consent form and info sheet) | No | No |
| *Wantsala et al. (2010) | Mindfulness-based Stress Reduction | 1-hour sessions once weekly for over 8 weeks | 1:1 Face-to-face | Not reported | No | No |

(Continued)

Table 2. (Continued).

| | | | | | | | |
|--|--|---|-------------------------------|---|----|----|--|
| *Yeates (2019) | Taiji | Not specified Over 6 months | Group Face- to- face | Visual and kinaesthetic teaching; Tactile feedback, short instruction, and use of keywords | No | No | Measures repeated every 4 weeks over 6 months during intervention delivery |
| *Andrew, 2015 | Observational drawing | 2-hour sessions once weekly over 8 consecutive weeks | Group Face- to- face | Information was delivered in an aphasia-friendly format with illustrated handouts | No | No | |
| *Castka et al. (2009) | Musical production/ performance | 2-hour sessions once weekly for 12 weeks + final + performance | Group Face- to- face | Aphasia-friendly scripts; adapted musical score, and choreography created by SLTs | No | No | |
| *Cherney et al. (2011) | Drama class | 90 minutes once weekly for over 18 weeks + 3 rehearsals + 1 dress rehearsal | Group Face- to- face | Supported conversation strategies to facilitate communication among the participants | No | No | |
| *Croteau et al. (2008) | Theatre workshop | Duration not specified once weekly over a year | Group Face- to- face | SLT-led workshops together with a theatre professional | No | No | |
| *Duarte et al. (2020) | Clowning | 3-hour sessions once weekly over 6 months | Group Face- to- face | Facilitator provided instruction according to participants' needs and initiatives | No | No | |
| *Gadberry and Ramachandra (2015) | Music Therapy (based on Tomaino's protocol) | 45 min each 17 sessions | 1:1 Face- to- face | Not reported | No | No | |
| Kim et al. (2008) | Art therapy | 40 min twice weekly over 75 days | 1:1 Face- to- face | Not reported | No | No | |

(Continued)

Table 2. (Continued).

| | | | | | | |
|---------------------------------|-------------------------|--|--------------------|---|-----|----|
| *Mantie-Kozlowski et al. (2020) | Therapeutic songwriting | 13 sessions of 55 min each twice weekly for over 8 weeks | 1:1 Face-to-face | Therapy delivered by a language pathology graduate student. One of the songwriting techniques was modified (pt to select phrases for lyrics from materials) | No | No |
| *Mantie-Kozlowski et al. (2018) | Sing-along group | 10 sessions of 90-min sessions each twice monthly | Group Face-to-face | Conversational repair strategies used during the sessions Large font size, song text contained to one page (whenever possible), attempts made to include participants' preferences and musical needs | No | No |
| *Tamplin et al. (2013) | Community choir singing | 2-hour sessions once weekly for over 20 weeks | Group Face-to-face | Vocal warm-ups, song lyrics, and musical arrangements adapted by a music therapist | No | No |
| *Zumbansen et al. (2017) | Choir sessions | 2-hour sessions once weekly for over 6 months | Group Face-to-face | | Yes | No |

Table 3. Summary of measures used for each well-being-related outcome identified.

| Outcome | Measurement tool | n = studies that have used this tool (study reference/s) |
|-----------|--|---|
| Attention | Connor’s Continuous Performance Task-II (CPT-II), Conners, 2004 | 2 (Marshall, 2018; *Laures-Gore & Marshall, 2016) |
| | Centre for Research on Safe Driving-Attention Network Test (CRSD-ANT, Weaver et al., 2013) | 2 (Marshall, 2018; *Laures-Gore & Marshall, 2016) |
| | Subtests of Test of Everyday Attention (Robertson et al., 1994) | 2 (*Biedermann et al., 2019; *Andrew, 2015) |
| | Psycholinguistic Assessments of Language Processing in Aphasia (PALPA, Kay et al., 1996) 8 and 13 subtests | 1 |
| | Rating Scale for Attentional Problems (RSAP; Ponsford & Kinsella, 1991) | 1 (*Merriman et al., 2015) |
| | Test of Attention Matrices (TAM; Spinnler & Tognoni, 1987) | 1 (*Crielesi et al., 2019) |
| Language | Revised Token Test (RTT, McNeil & Prescott, 1978) | 3 (*Marshall et al., 2018; *Laures-Gore & Marshall, 2016; Marshall et al., 2014) |
| | Comprehensive Aphasia Test (CAT, Swinburn et al., 2004) subtests | 3 (*Dickinson et al., 2017; Andrew, 2015) |
| | Western Aphasia Battery-R (WAB-R, Kertesz, 2006) | 2 (*Marshall et al., 2018; *Laures-Gore & Marshall, 2016) |
| | Narrative Story Cards (Helm-Estabrooks, 2001, 2003) | 2 (*Marshall et al., 2018; Laures-Gore & Marshall, 2016) |
| Language | Boston Naming Test (BNT, Kaplan et al., 2001) | 2 (Manti-Kozolowski et al. 2020; Wantasala et al., 2010) |
| | 1–3 Syll. Test (as cited in *Biedermann et al., 2019); | 1 (*Biedermann et al., 2019) |
| | Battery for Assessment of Plural Processing in Aphasia (BAPPA), for frequency (Biedermann et al., 2014a) and regularity (Biedermann et al., 2014b) | 1 (*Biedermann et al., 2019) |
| | Object and Action Naming Battery (OANB, Druks & Masterson, 2000)-selected verb and noun picture naming subtest | 1 (*Dickinson et al., 2017) |
| | Aphasia Diagnostic Profiles (ADP, Helm-Estabrooks, 1992) subtests | 1 (*Marshall et al., 2018; *Laures-Gore & Marshall, 2016) |
| | Non-linguistic dual-task modelled after Erickson et al. (1996) | 1 (Ornestein et al., 2012) |
| | Cognitive Linguistic Quick Test (CLQT, Helm-Estabrooks, 2001)-word Generation subtest | 1 (Wantasala et al., 2010) |
| | Benton Controlled Oral Word Association Test (COWAT, Benton, 1967) | 1 (*Marshall et al., 2014) |
| | Korean-Western Aphasia Battery (K-WAB, *Kim et al., 2004) | 1 (*Kim et al., 2008) |
| | Adjective Check List (ACL, Gough & Heilbrun, 1983) | 1 (*Croteau et al., 2008) |
| Mood | Montréal-Toulouse Aphasia Battery (MT86, Nespoulous et al., 1992)-automatised series, auditory comprehension, repetition, and naming subtests | 1 (*Zumbansen et al., 2017) |
| | Boston Diagnostic Aphasia Examination (BDAE, Goodglass et al., 2001) subtests | 1 (Ornesein et al., 2012) |
| | Informal language measures: description task, connected speech, and correct information units-CIU analysis | 1 (Ornestein et al., 2012) |
| | Visual Analog Mood Scale (VAMS, Stern, 1997) | 3 (*Crielesi et al., 2019; Study 2; *Zumbansen et al., 2017; *Tamplin et al., 2013) |
| | Hospital Anxiety and Depression Scale (HADS, Zigmond & Snaith, 1983) | 2 (*Yeates, 2019; *Merriman et al., 2015) |
| | Beck Depression Inventory Revised (BDI-II, Beck et al., 1996) | 2 (*Crielesi et al., 2019; Marhsall et al., 2014) |
| | Stroke Aphasia Depression Questionnaire-10 items (SADQ-10; Sutcliffe & Lincoln, 1998) | 1 (*Crielesi et al., 2019) |
| | State-Trait Anxiety Inventory (STAIX, Spielberger, 1983) | 1 (*Crielesi et al., 2019) |
| | Mood state (Stern, 1999) | 1 (Wantasala et al., 2010) |
| | Profile of Mood States (POMS, McNair et al., 1971) | 1 (*Gadberry & Ramachandra, 2015) |
| Mood | Beck’s Anxiety Measure (Beck et al., 1988) | 1 (*Dickinson et al., 2017) |
| | Beck Anxiety Inventory (BAI, Beck & Steer, 1993) | 1 (*Marshall et al., 2018) |

(Continued)

Table 3. (Continued).

| Outcome | Measurement tool | n = studies that have used this tool (study reference/s) |
|--------------------------|---|---|
| Communication | Communication Confidence Rating Scale for Aphasia (CCRSA; Babbitt & Cherney, 2010)-subtests | 1 (*Cherney et al., 2011) |
| | Communicative Effectiveness Index (CETI, Lomas et al., 1989) | 1 (*Croteau et al., 2008) |
| | Stroke Impact Scale-3 (SIS-3, Duncan et al., 1999)—communication subscale | 1 (*Tamplin et al., 2013) |
| | Test Lillois de Communication (Rousseaux et al., 2001) | 1 (*Zumbansen et al., 2017) |
| | Assessment of Life Habits (LIFE-H, Fougeyrollas & Noreau, 1998) | 1 (*Croteau et al., 2008) |
| Cognition | Cognitive Linguistic Quick Test-Plus (CLQT+, Helm-Estabrooks, 2001) | 2 (Manti-Kozwolowski et al., 2020) |
| | Korean-Mini Mental Status Examination (K-MMSE, as cited in *Kim et al., 2008) | 1 (*Kim et al., 2008) |
| | Korean-Wechsler Adult Intelligence Scale (K-WAIS, as cited in *Kim et al., 2008) | 1 (*Kim et al., 2008) |
| | Stroke Impact Scale-3 (SIS-3, Duncan et al., 1999)—cognition subscales | 1 (*Tamplin et al., 2013) |
| Other well-being aspects | Global well-being | |
| | Subjective Well-being Scale (SWBS, Albuquerque & Tróccoli, 2004) | 1 (*Duarte et al., 2020) |
| | Burden of Stroke Scale (BOSS, Doyle et al., 2003) subtests | 1 (*Cherney et al., 2011) |
| | QoL | |
| | Stroke and Aphasia Quality of Life Measure-39 (SAQOL-39; Hilari et al., 2003) | 2 (*Duarte et al., 2020; Wantasala et al., 2010) |
| Other well-being aspects | WHO Quality of Life – Bref (WHO QoL-Bref, The Whoqol Group, 1998) | 1 (*Merriman et al., 2015) |
| | Quality of Life after Brain Injury (QOLiBRI, Von Steinbüchel et al., 2010) | 1 (*Yeates, 2019) |
| | ASHA Quality of Communication Life (ASHA QCL; Paul et al., 2004) | 1 (Manti-Kozolowski et al., 2020) |
| | Stroke Impact Scale-3 (SIS-3, Duncan et al., 1999)—Global Impact Subscale | 1 (*Tamplin et al., 2013) |
| Psychological outcomes | General Health Questionnaire-12 (GHQ-12) | 1 (*Tamplin et al., 2013) |
| | Sickness Impact Profile (SIP, Bénaim et al., 2003) | 1 (*Zumbansen et al., 2017) |

Feasibility

Although originally healthcare evidence-based practice sought to investigate findings in relation to intervention effectiveness, there is now a growing attention on simultaneously exploring end users' needs and perceptions (Pearson et al., 2015). Complex interventions embody multiple interrelated components (Craig et al., 2008), and it is, therefore, of paramount importance not to focus solely on effectiveness but to take these aspects into account while evaluating an intervention.

Specifically, one feasibility study was identified (*Mantie-Kozlowski et al., 2018); six mind-body interventions and three creative-arts interventions explored some components of intervention feasibility. Nineteen out of twenty-two mind-body interventions implemented strategies to support pwa's engagement with the interventions. In *Marshall et al. (2018), an SLT developed an aphasic-specific mindfulness programme. Seven studies applied some modifications to the course programme and/or materials, e.g., reduced duration and content (*Panda et al., 2020; *Crielesi et al., 2019: Study 2; *Marshall et al., 2018; *Laures-Gore & Marshall, 2016); same structure pattern for each session (*Panda et al., 2020); aphasia-specific changes to musical score and choreography

(*Castka et al., 2009); modifications to song writing technique (*Mantie-Kozlowski et al., 2020), adjustments to warm-up exercises, lyrics, and music (*Tamplin et al., 2013); enlarged font size; and single-page materials (*Mantie-Kozlowski et al., 2018). Eight studies reported using simplified language and communication strategies to facilitate pwa's communication (*Mantie-Kozlowski et al., 2020; *Yeates, 2019; *Crielesi et al., 2019: Study 2; *Dickinson et al., 2017; *Marshall et al., 2018; *Laures-Gore & Marshall, 2016; *Gadberry & Ramachandra, 2015; *Cherney et al., 2011). Four studies provided aphasia-friendly visual support (*Panda et al., 2020; *Marshall et al., 2018; *Andrew (2015); *Castka et al., 2009) or visual and kinaesthetic teaching (*Yeates, 2019) to facilitate engagement with practices. In seven studies, a speech therapist or aphasiologist facilitated the session (*Andrew (2015); *Cherney et al. (2011, 2020, 2020, 2020); *Castka et al. (2009); *Croteau et al. (2008)) or provided training to the practitioner who delivered the session (*Dickinson et al., 2017). For the remaining six studies, aphasia-specific support was not reported (*Kim et al., 2008; *Marshall et al., 2014; *Orenstein et al., 2012; *Wantsala et al., 2010; *Yeates, 2019; *Zumbansen et al., 2017). Poor reporting of adjustments and strategies to promote inclusion of individuals with communication difficulties has been highlighted (Lawrence et al., 2016) and represents an issue for subsequent research and practice, as it prevents understanding of how meaningfully pwa were involved. Concerning meaningfulness, several participants described these therapies as a positive and enjoyable experience bringing enjoyment and satisfaction (e.g., *Biedermann et al., 2019; *Duarte et al., 2020). In terms of practicality, all interventions were community-based and activities were conducted in locations external to the home. Positive feedback was expressed regarding location accessibility and duration of one intervention (*Mantie-Kozlowski et al., 2018). Cost was not explored in any of the included studies.

Quality

Methodological quality was mixed, but most commonly of medium quality. Specifically, $n = 3$ studies were rated as being of high quality, $n = 3$ studies were rated as medium-high quality, $n = 10$ studies were of medium quality, and $n = 6$ studies were classified of being of poor quality. Common methodological weaknesses included small sample size, lack of control groups, lack or limited use of inter-rater reliability measures, and lack of follow-up. Nevertheless, as this review was exploratory in nature, no studies were excluded for having methodological limitations.

Effectiveness

A narrative summary of studies demonstrating the positive effect direction is reported, and results from the Revised Effect Direction Plot used to explore effectiveness are presented in [Figure 2](#).

As shown in [Figure 2](#), regarding mind-body therapies, a positive effect direction was found for language and anxiety outcomes in a study involving pwa in Unilateral Nostril Breathing sessions (*Marshall et al., 2014). However, no differences were found with the control group of stroke survivors with no aphasia, who also achieved higher scores on language tasks.

Regarding medium-quality studies, the single-subject study from *Crielesi et al. (2019) showed a positive effect direction for anxiety, depression, QoL, and some well-being aspects (e.g., social participation, interpersonal relationships, and emotion management) for a small group of pwa involved in a Mindfulness-based course. A significantly reduced anxiety ($p < .001$) maintained at a 3-weeks follow-up was also observed along with positive changes in emotional state and improved communication for a person with aphasia engaging with a Mindfulness-based intervention (*Dickinson et al., 2017). Similarly, a reduction of anxiety and depression and some attention gains were found for a person with aphasia involved in a group Mindfulness-based programme (*Merriman et al., 2015) and small language output improvements recorded for an individual with aphasia engaging with a Mindfulness-based training (*Laures-Gore & Marshall, 2016). Improvements in language and mood were also reported for a person with aphasia involved in a Mindfulness-based programme (*Wantsala et al., 2010), and a positive effect direction for QoL was found for an individual with aphasia involved in Taiji classes (*Yeates, 2019), although these last two studies were found to have methodological weaknesses.

Regarding creative arts therapies, *Zumbansen et al.'s (2016) RCT showed positive effect directions for communication for pwa involved in choir sessions and compared to groups of pwa either engaging with a drama course or receiving no intervention. Although statistically significant functional communication improvements ($p = 0.04$) were found for pwa engaging with a choral singing intervention, no difference was shown compared to the control group involved in drama classes. Significant gains in communication ($p = 0.01$) and significant others' perceptions of pwa's improved ability to engage in group conversations ($p = 0.04$) were also observed for pwa involved in a theatre intervention in comparison to the control group (*Croteau et al., 2008). Positive effect directions were also found in relation to some well-being aspects (e.g., social participation, interpersonal relationships, and personality). In the quasi-experimental study from *Tamplin et al. (2013), increased confidence and small gains in communication were reported for pwa involved in a community choir. An increase in communication confidence was also observed for pwa involved in drama classes (*Cherney et al., 2011) with medium effect sizes found for some mood measures (i.e., mood-positive outcomes, $d = 0.61$). Positive effect directions for QoL and well-being aspects (i.e., improved confidence) were found for a single-subject study involving a person with aphasia in a clowning group (*Duarte et al., 2020). Gains in QoL, mood, and semantic information gathering were observed for pwa involved in an observational drawing course (*Andrew, 2015).

Although the following studies were rated of being of poor quality and might be subjected to bias, positive effect directions for anxiety and depression and communication were noticed for pwa after engagement with music therapy (*Gadberry & Ramachandra, 2015). Increased confidence was observed in a person with aphasia involved in a song writing activity (*Mantie-Kozlowski et al., 2020). Gains in attention and other cognitive skills (e.g., memory and drawing) were reported for one person with aphasia involved in an art therapy intervention (*Kim et al., 2008).

Themes

This section illustrates the qualitative data extracted from the included studies.

As shown in [Figures 3](#), 128 findings were extracted from the seventeen primary mixed-method and qualitative studies; findings were initially coded into four codes. Initial codes were reviewed for similarities and differences; novel codes were developed. The final set of codes were aggregated into 12 initial descriptive themes, which were then aggregated into 3 main themes in line with the key points of the review questions, i.e., effectiveness, relevance, and feasibility ([Figure 4](#); [Table 4](#)). Each synthesised theme is illustrated below with verbatim quotes from the primary studies. There is a high incidence of citations from *Panda et al. (2020) and *Tamplin et al. (2013) as these studies reported several participants' quotes covering a wide range of topics that allow an accurate representation of the qualitative findings from the included studies.

Positive impact on self

Engaging with mind-body or creative arts therapies was frequently described by participants as a beneficial experience that had a positive impact on self (e.g., *Crielesi et al., 2019: Study 2). Participants reported enjoying the course (e.g., *Mantie-Kozlowski et al., 2018), feeling relaxed, being calmer, and having fun (*Duarte et al., 2020).

When the meditation was introduced, I found that it did give me a calmness ... Definitely very calm, yeah, yeah. It sets me up for the day (*Panda et al., 2020, p. 19)

I felt more at ease. Calmer, more at ease, I felt at ease (*Duarte et al., 2020, p. 10)

I had a lot of fun, I really liked it! (*Duarte et al., 2020, p. 10)

[Singing] makes me feel good. But more importantly it makes me feel good on behalf of the guys who can't speak properly. I get more enjoyment seeing them succeed more than anything, but I do enjoy singing with them (*Tamplin et al., 2013, p. 937)

These activities were also reported as needed and useful.

I like to do this, I feel good. When I don't come, I miss it (*Duarte et al., 2020, p. 9)

Boredom basically, erm, brilliant (gestures thumbs up). Going to this Tai Ji group. I like yoga, very similar, both I think great (*Yeates, 2019, p. 19)

[...] this is helping me bring the best out of me ... I was in my own little shell. That shell has broken open now. It's made me more confident, and I must admit I'm freer to talk to people (*Tamplin et al., 2013, p. 936)

Some authors stated that participants also reported the feeling of having learnt something new and useful (*Biedermann et al., 2019) and described these activities as meaningful and rewarding (*Duarte et al., 2020; *Mantie-Kozlowski et al., 2020). In addition to this, as previously reported, participants perceived improvements across several areas from communication, to mood, motivation, confidence, self-acceptance, sense of self, self-control, emotion management, and resilience.

Because I know I feel different now. Before I started this whole thing now I used to be angry, now it's all ssssssss [nullified] (*Panda et al., 2020, p. 18)

Well [the choir] has given me more courage to step out, its building my self esteem back ... I tackle things better in that respect (*Tamplin et al., 2013, p. 936)

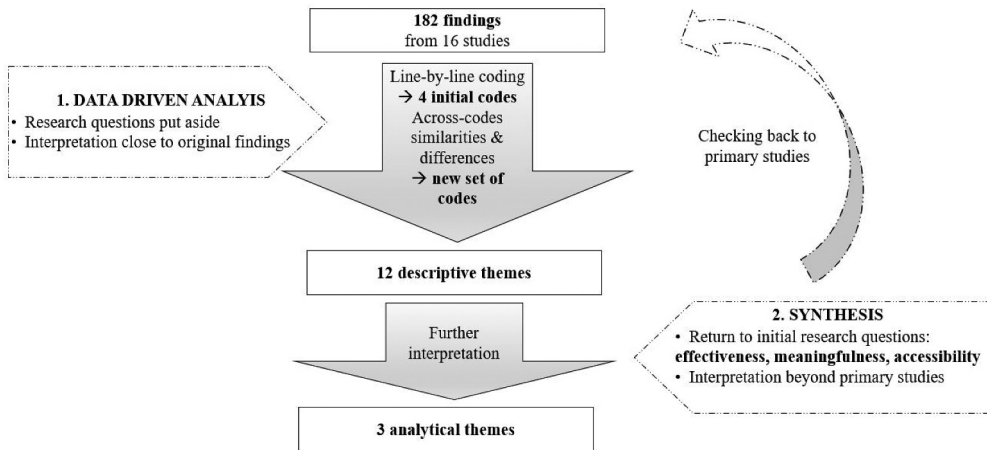


Figure 3. Thematic synthesis process adapted from Suškevičs et al. 2019.

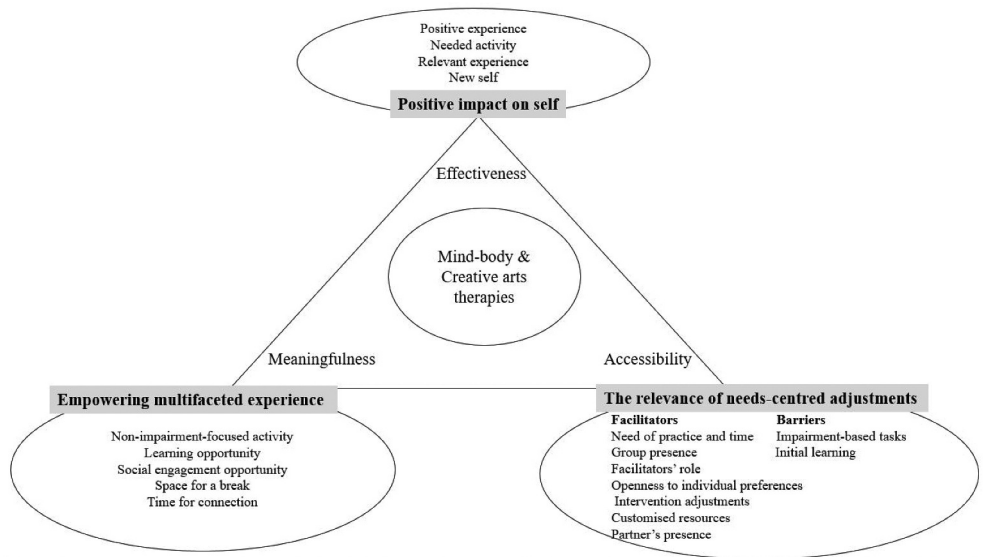


Figure 4. Review analytical themes.

*For me, it was quite definite. For me, when I had the stroke, my greatest fear was having another stroke and I'm on my own. So I didn't know if I had stroke what I would do. But the meditation made me definitely, I know that, get over my fear. It was amazing. I just don't think of it anymore (*Panda et al., 2020, p. 19)*

*I'm sure I've got bad thoughts somewhere, but they ain't there now. It really is good. The whole day is new, it's different, I know I'm not getting a lot from the day because of what's going on, but for me it's giving that grounding and then you can go off through the day (*Panda et al., 2020, p. 19)*

*I feel like someone else (*Duarte et al., 2020, p. 10)*

Empowering multifaceted experience

Participants recognised multiple meanings to these therapies. Of great importance, participants appreciated being involved in an activity that is not impairment-focused or related to stroke and/or aphasia, but that promotes a strength-based skill (*Biedermann et al., 2019). Taking part in a meditation group session was viewed by participants as not determined by their linguistic competence and not requiring verbal output (*Panda et al., 2020; *Yeates, 2019).

Moreover, by engaging with a non-stroke-related activity, a shift from stroke symptoms is promoted.

Well the thing is that each day I'm- I know I'm going like that [moves hands upwards], I'm constantly going up. So you're doing stroke and you're only looking at stroke not the other things (*Panda et al., 2020, p. 18)

Some individuals perceived that they were facilitated to acknowledge the progresses they were making in their recovery journey.

... I did some meditation last night ... it's great. And you know, that meant a lot to me, here's somebody that's sane- well- better and taking meditation and it's working and I feel great (*Panda et al., 2020, p. 12).

Pwa also recognised these activities as an opportunity to learn a new skill and discover a talent (*Biedermann et al., 2019). Some individuals involved in meditation also reported starting to develop acceptance and resilience.

By accepting a situation, it gives you, I feel, the step up to "well here I am, where do I go from here", that's what meditation, I feel, can do for a person (*Panda et al., 2020, p. 18).

At the same time, as will be presented in more detail below, the group environment created an opportunity for social engagement (*Panda et al., 2020; *Yeates, 2019).

Engaging in these activities also offered individuals a break from everyday life and from negative thoughts.

I think it's important, instead of racing around – I tend to be racing around because there's a few things I need to know- to study- um that you get caught up in the hurlyburly. So it's really nice just to be there and relax, yeah (*Panda et al., 2020, p. 13)

It makes me forget many things ... many things ... (*Duarte et al., 2020, p. 10)

[this activity is] giving yourself some breathing room (*Panda et al., 2020, p. 13)

For some participants, this protected time represented a time to establish a connection with nature or an act of spirituality similar to a prayer (*Panda et al., 2020).

The relevance of needs-centred adjustments

This theme encompasses the perceived facilitators and barriers participants experienced in relation to accessibility, an essential intervention component representing the first step for inclusion (Pearl & Cruice, 2017).

The group presence was reported as a very valuable component to the experience. Participants recognised the importance and benefits of sharing similar journey with other attenders and therefore a shared understanding of their experiences and interest in exploring coping strategies for negative feelings (*Crielesi et al., 2019: Study 2; *Merriman et al., 2015).

With helping each other, well- we're all in the same- had strokes, um some more fortunate or blessed than others, but we understand each other (*Panda et al., 2020, p. 16)

The group was a useful source of sense of belonging, mutual support, and boosted motivation (*Castka et al., 2009; *Tamplin et al., 2013)

I'm quite a social person, I enjoy that aspect of doing it as a group. And also, hearing about the experiences of how the others were relating to the meditation (*Panda et al., 2020, p. 16)

We have a laugh [...] you know the whole row is laughing because they've picked up on it and that's the beauty of the choir ... they're close knit and understand one another and accept one another (*Tamplin et al., 2013, p. 936)

Some of the guys there with aphasia that I'm very close to, I feel that I need to help them get through it, you know ... and it's helping myself at the same time ... it's helping me share with the guys in the choir who have aphasia to help them lift their voices up too (*Tamplin et al., 2013, p. 936)

Initially he wasn't all that keen to participate, he was doing a lot of listening but now he is really joining in and his voice is a lot stronger too. And I guess he is projecting a little more and feeling more comfortable about it, and he looks forward to going (*Tamplin et al., 2013, p. 937).

The group also represented an opportunity for social engagement and bonding, particularly important for people with aphasia who frequently experience isolation after their stroke (Nyström, 2006).

I feel really pleased when I see them and that's the only thing, I've got these other projects- I miss not seeing them you know. I always think of them (*Panda et al., 2020, p. 15)

They socialize out of choir as well. They get together at each other's houses maybe once a month and call it "blokes with strokes" ... They just have a few drinks and chat and bbq (*Tamplin et al., 2013, p. 936)

The group was also identified as a reason for continuing attendance.

Cause we get going because it's the group and everybody ... then we can sit down and experience. It's really the group that keeps me here, you know (*Panda et al., 2020, p. 16)

Importance was also given to the meditation facilitator who can offer support and guidance promoting learning and active involvement.

I use the breath and I'm always thinking about you [referring to meditation facilitator] at home - it's a purpose. So, either she's here or she's not, but she's putting me in the zone (*Panda et al., 2020, p. 11)

Some stroke survivors reported that including a partner might improve the experience and boost motivation for home practice (*Merriman et al., 2015); a slight preference for caregiver involvement was also found in *Mantie-Kozlowski et al.'s (2018) but the authors hypothesised that this was related to desire to be in a larger group.

Two main aspects of successful learning of a new activity were identified: practice and time. Another important identified factor was that individuals have unique preferences for type and length of practices, and therefore, it would be important to consider this while planning the intervention in order to give participants flexibility to pick their favourite activity as this might have an influence on continued attendance and practice.

Concerning the barriers, some difficulties were reported in relation to some language tasks. The activity of filling in a diary to record positive activities proved to be challenging for four stroke survivors, who expressed a preference for audio-recording their thoughts or sharing these with the group (*Merriman et al., 2015). Another reported challenge was

in relation to the activity of generating a lyric, and the participant expressed frustration due to her word-finding difficulties (*Mantie-Kozlowski et al., 2020). Moreover, three stroke survivors with hemiplegic arms reported finding engaging with a body scan exercise difficult as the practice was guided, referring to both arms simultaneously, and participants experienced different sensations in each arm (*Merriman et al., 2015). Moreover, long Mindfulness practices proved to be challenging for some participants due to attentional difficulties and fatigue. One participant also reported reduced motivation to practice at home (*Merriman et al., 2015). In addition to this, it was reported that starting a new activity can cause some distress (*Yeates, 2019) and that learning a new skill can be challenging.

I was very, very nervous. People I don't know. It's helped me, it's a lot . . . I liked it and I still like it now (*Yeates, 2019, p. 19)

Specifically, the process of learning meditation was described by some participants as initially challenging (*Panda et al., 2020).

Really it was hard because early on, I did a lot of- I went to bed [makes snoring sound] (*Panda et al., 2020, p. 10)

[my mind] keeps wandering off, with football or cricket or anything, anything except what I'm supposed to be doing' (*Panda et al., 2020, p. 10)

As previously mentioned, time and practice were considered essential to develop meditation skills (*Panda et al., 2020).

It took me easily six months (*Panda et al., 2020, p. 10) *I mean now it's good, but it's taken two years* (*Panda et al., 2020, p. 10)

For me? Oh it was gradual (*Panda et al., 2020, p. 11)

The thing is the repetition going in and eventually it just clicks (*Panda et al., 2020, p. 11)

Interestingly, some participants showed some resistance to the Mindfulness notions of "acceptance" and "non-striving". They perceived these concepts as contrasting to the attitude they had to adopt through their recovery journey; not accepting their post-stroke abilities led them to develop the necessary motivation to progress in their rehabilitation process (*Merriman et al., 2015).

Discussion

This mixed-methods review aimed to identify interventions delivering mind-body or creative arts therapies for pwa and to explore their effectiveness in improving aspects of well-being, as well as their feasibility and meaningfulness. As a result, a wide range of intervention types, procedures, outcomes measured, as well as an inconsistent pattern of findings have been found. Specifically, twenty-two mind-body and creative arts therapies have been identified, delivering different types of intervention (Mindfulness-based (n = 8), meditation (n = 1), Taiji (n = 1), Unilateral Nostril Breathing (n = 1), art therapy (n = 1), drawing (n = 1), clowning (n = 1), drama (n = 1), theatre workshop (n = 1), musical (n = 1), music therapy (n = 1), choir-based groups (n = 3), and therapeutic song writing (n = 1)).

Improvements were noted across a wide range of well-being outcomes; anxiety and communication were the outcomes with more consistently positive results. These positive findings are consistent with the benefits in a wide range of well-being-related outcomes

(e.g., stress, anxiety, depression, and QoL) identified in systematic reviews exploring the impact of Mindfulness-based interventions for stroke survivors (Lawrence et al., 2013), people with multiple sclerosis (Simpson et al., 2021), and individuals affected by long-term conditions and their caregivers (Parkinson et al., 2019).

However, similar to what has been reported in the previously mentioned reviews, improvements reported in this review were generally small, rarely statistically significant, and not always experienced by every participant. In the context of this review, the variability of participants' responses within and across studies might be related to the inclusion of pwa with a heterogeneous language profile. Although this is often the case for studies involving pwa (Otal et al., 2015), people with different language abilities might experience a different level of engagement with the interventions that might consequently affect therapy response. Moreover, most of the included studies presented with methodological limitations. A majority of studies did not implement any control to mitigate bias or treatment fidelity measures to assess the reliability and replicability of the interventions. Most studies lacked long-term data collection, which impacts ability to assess intervention effects in the long term.

The heterogeneity of the methods used and the lack of methodological rigour and long-term data collection affect the insight into the reliability of findings.

Although no evidence of significant harm was found, some adverse effects were reported such as distress to being involved in a new activity and learning new skills (*Yeates, 2019), frustration with impairment-focused tasks (e.g., keeping a diary and body scan; *Merriman et al., 2015), and attentional difficulties and fatigue following the high cognitive demand of some lengthy activities (*Merriman et al., 2015; Lo et al., 2019). As highlighted by Baer et al. (2019) in a review exploring mindfulness-based programmes, in these types of therapies, participants engage with several exercises entailing a complex interaction of cognition functions, emotions, and sensations and therefore, they might experience some challenges and discomfort. Although evidence of harm is usually low for these therapies, the occurrence of silent harm is not excluded, and this might be actually exacerbated for pwa as they might experience difficulties in expressing their distress or masking their issues.

This review shows that language, cognitive, and physical impairments can raise a barrier to participation in some activities and cause some distress. Acknowledging participants' difficulties and/or concerns is essential to offer person-centred support and prevent negative experiences. Baer et al. (2019) state that facilitators need to be aware of the intervention theoretical and empirical backgrounds, as well as of the potential challenges and related strategies to tackle these; participants' suitability for a specific intervention needs to be carefully assessed; the key programme elements and related techniques and rationale have to be shared with the participants to promote the learning of new skills; participants need to be systematically monitored and any adverse event reported. This also highlights the importance of adjusting the interventions to the needs and preferences of the involved individuals (e.g., reduced session length) to promote their active engagement and prevent distress.

With regard to feasibility, this review shows that mind-body and creative arts interventions are easily implemented on a daily basis. Required resources were a safe, accessible, and quiet venue, an activity facilitator offering communication support and aphasia-friendly resources. However, it has to be acknowledged that time needs to be dedicated

to plan in advanced session structure and devise aphasia-specific adjustments. These therapies appeared to be well-accepted by pwa who described the activities they were involved in as meaningful, valuable, rewarding, stimulating and empowering (e.g., *Mantie-Kozłowski et al., 2020).

Importantly, participants appreciated that these interventions were not impairment-focused but linked to social and leisure activities they might normally have engaged with prior to their stroke. Although stroke survivors stress the importance of having their needs recognised, they also express the desire to be involved in pre-stroke life activities (e.g., O'Sullivan & Chard, 2010). In the study by Lawrence et al. (2013), family members of young stroke survivors reported stroke survivors' goal to return to a certain level of pre-stroke life normality.

Additionally, these therapies were perceived as having multiple meanings and applications. These interventions offered an opportunity to learn something new (e.g., *Biedermann et al., 2019) and to acquire a self-management tool (*Panda et al., 2020). This confirms findings from a previous review showing that yoga and Mindfulness might be valuable post-stroke self-management practices (Lazaridou et al., 2013). Research shows that Mindfulness-based interventions are beneficial to facilitate self-management of anxiety and depression for individuals affected by different clinical disorders such as stroke, diabetes, epilepsy, cancer, multiple sclerosis, and other conditions (e.g., Lawrence et al., 2020; Simpson et al., 2021; Zimmermann et al., 2018). Research from Kapitan (2012) also shows that individuals involved in art therapy can play an active role in managing their mental health.

These therapies were also viewed as a social engagement opportunity (e.g., *Panda et al., 2020). A qualitative systematic review showed that creative arts therapies promote social engagement for stroke survivors (Lo et al., 2019), and this was also found in the feasibility study of a stroke-adapted Mindfulness course (Lawrence et al., 2020). Furthermore, these therapies were seen as offering a protected time where to rest from daily life and negative thoughts (*Duarte et al., 2020). Some participants associated a spiritual meaning with Mindfulness-based practice (*Panda et al., 2020), and this spiritual experience connotation was also identified in a systematic review of stroke survivors involved in art activities (Lo et al., 2019).

Regarding accessibility, all interventions were community-based; this can be a cause of accessibility issues, as reported in a systematic review, which showed that stroke survivors and family members with mobility and transport issues were excluded *a priori* from stroke secondary prevention interventions (Lawrence et al., 2016). However, research shows that mind-body interventions can be implemented and practiced in a home environment (e.g., *Orenstein et al., 2012) and online (Lawrence et al., 2021; Simpson et al., 2021), which is increasingly relevant in light of COVID-19 restrictions. Additionally, from other studies, we acknowledge that the expected cost to deliver these therapies is minimal (Sobel, 2000; Wolsko et al., 2004).

Regarding activity engagement, a key element in promoting pwa's engagement with therapy and the group was the facilitator presence. The behaviour of facilitators has a direct influence on attenders' participation (Lee & Azios, 2020); facilitators can support participants by providing adjusted exercises and tailored resources and promoting the use of multimodal communication techniques and conversational turns. Another essential component was the group and the fact that this was formed by people sharing

a similar experience and goals, which is in line with previous research into mindfulness for stroke survivors (Jani et al., 2018; Lawrence et al., 2020). The importance of the group presence is also highlighted by the review by Lawrence et al. (2016) where it is highlighted that stroke survivors associate the group experience with improved mood and self-esteem. The review by Lo et al. (2019) also showed that peer support and social interaction were key aspects of group involvement for participants with stroke taking part in creative arts interventions.

To either receive an additional motivation boost especially for home practice or to feel part of a big group, pwa were generally willing for partners to be included in the intervention (e.g., *Merriman et al., 2015). Lawrence et al. (2016) also highlighted that family members motivated and supported stroke survivors to make positive changes to lifestyle behaviours. This was also found by Jani et al. (2018) where stroke survivors reported that engagement of some stroke survivors might have depended on the support offered by their carers. The systematic review by Parkinson et al. (2019) also showed that a person affected by a long-term condition attending a Mindfulness-based intervention in a partnership with their caregiver might be facilitated, in terms of engagement, practice, and copying, by their partner. With all this considered, the inclusion of family members in these therapies might be a beneficial factor further enhancing the quality of the experience. Key aspects of a successful experience were also reported as time and practice (*Panda et al., 2020). Gaining familiarity with the facilitator and group through an introduction session and structured course was also considered an important component that facilitates engagement with a new activity (Jani et al., 2018).

In relation to study participants, the frequently found lack of data for some population characteristics (e.g., ethnicity, education, living status, and aphasia severity) prevents us from understanding the extent of the representative nature of the aphasic population. A variety of aphasia types and severities have been found. Although the majority of pwa involved had mild-moderate aphasia, people with severe communication impairments were included in some studies. This raises the importance of ensuring communication inclusion. Surprisingly, this review shows that strategies and adjustments to accommodate pwa's needs were not always implemented or reported preventing evaluation of the effective engagement of pwa with the interventions. Three studies did not report any strategy or facilitation, and other studies merely implemented a limited amount of support. Although communication guidelines are available (e.g., Stroke Association, 2012), the types of supportive communication strategies varied across studies; when implemented, these were always determined by the research team without taking into account the needs and views of pwa. It is widely recognised that pwa have complex communication needs. There is, therefore, an urgent demand for studies involving pwa to effectively implement supportive conversation strategies, aphasia-friendly documentation, and materials and apply other aphasia-specific modifications that can promote active participation for pwa.

Strengths and limitations

Every stage of the review was meticulously planned and presented in a written protocol registered on PROSPERO to ensure implementation of rigorous, transparent, and reproducible procedures (Petticrew & Roberts, 2008). One main change was applied. The

originally planned aggregative synthesis (Pearson et al., 2015) did not appear to be appropriate in the context of the review findings, and hence, a segregated synthesis was conducted (Sandelowski et al., 2006).

This study adopted an inclusive approach incorporating quantitative, qualitative, and mixed-methods studies. The reviewer has combined subject searching with keyword searching to run an extensive search. However, in some databases, subject headings were not always available, and the reviewer frequently relied on extensive keyword searching. Synonyms and descriptors of the search parameters were used (e.g., “word finding difficulties” in relation to aphasia). This might have led to retrieval of less specific, broader, and sometimes irrelevant results. Moreover, the high number of duplicates might be related to the fact that the truncation technique was not implemented. All these factors might have affected the time-effectiveness of the search process.

To ensure rigour and systematicity, a second reviewer (HF) was involved in the process of screening (100%), and data extraction and quality appraisal (50%). A broad and comprehensive search strategy was implemented and extended to the grey literature to identify all the relevant studies. Synthesising findings from quantitative, qualitative, and mixed-methods studies was found to be challenging due to the disparate nature of the quantitative and qualitative data sets in terms of heterogeneity of study design and quality, intervention type and dosage, and measured outcomes. Following this consideration, a separate synthesis was conducted to respect the methodological identity and intrinsic value of all types of primary-level studies (Heyvaert et al., 2013).

The Revised Effect Direction Plot technique used to identify intervention effectiveness has some intrinsic limitations; Boon and Thomson (2021) acknowledge that when the number of studies is small, the utility of the sign test might be limited, resulting in unrepresentative synthesis if studies with an unclear direction of effect are not included. This might be the case for this review, where many outcomes had conflicting results and could not be included in the effect-direction plot calculation. Regarding narrative syntheses, a challenge was represented by some findings, which could be included in more than one category. It was decided to include in the first theme all the reported positive effects of the therapies and in the second theme all the “meanings”/“functions” that study participants associated with these therapies. This choice is justified by the interpretive nature of qualitative research that encourages reviewers to apply their unique perspective to interpret rigorously extracted and reported data (Galdas, 2017). Furthermore, poor reporting of some population characteristics, collection of follow-up data, and strategies to support pwa’s engagement and methodological weaknesses resulted in a reduction of the review understanding of the mode and context of intervention delivery and thoroughness.

Conclusions

This is the first review exploring the effectiveness, feasibility, and inclusiveness of mind-body and creative arts interventions targeted at pwa. Due to the heterogeneity of design, interventions, and outcomes, it is challenging to state the effectiveness of these interventions in improving global well-being of pwa. Gains were observed in some outcomes (e.g., communication, anxiety, mood, communication confidence, and perception of self). However, findings are provisional and characterised by heterogeneity across participants and studies. Further studies implementing rigorous design, methods, and reporting are

needed. Nevertheless, pwa perceive mind-body and creative arts interventions as positive, meaningful, and accessible recreational activities, promoting empowerment, confidence, peer support, and well-being (e.g., *Tamplin et al., 2013). These therapies were found to be easy to implement, and other studies showed that these interventions have usually minimal cost and could be effectively delivered online (Lawrence et al., 2021; Simpson et al., 2021). By highlighting pwa's perceptions on engagement facilitators and barriers, this review also aims to provide information about the essential features and needed adjustments to promote therapy accessibility for pwa. This study provides emerging evidence on the benefits of mind-body and creative arts interventions for pwa. By offering self-management strategies and opportunities to learn a strength-based skill, socialise, and have a break from negative thoughts, these holistic, person-centred, and highly acceptable programmes might empower pwa to take an active role in their well-being management.

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Appendices

Appendix 1.

Table 4. Theoretical framework: pwa's perspective on mind-body and creative arts interventions

| Synthesised findings | Descriptive themes | Original findings |
|--|--|--|
| Positive impact on self | Positive experience Needed activity Relevant experience New self | Enjoying the course (Andrew [2015], Duarte et al., 2020; Tamplin et al., 2013), feeling good (Duarte et al., 2020), feeling that they have learnt something useful (Andrew [2015]), having a lot of fun (Duarte et al., 2020), and experience perceived as positive (Crielesi et al., 2019: Study 2) 'Described his need for an activity like Taiji in his life' (Yeates, 2019), making forget many [negative things] (Duarte et al., 2020) Opportunity to (. . .) return to a valued, meaningful, and rewarding experience (Duarte et al., 2020, Mantie-Kozlowski et al., 2018), Felling like someone else (Duarte et al., 2020), perceived improvements in communication (Cherney et al., 2011, Dickinson et al., 2019, Gadberry & Ramachandra, Tamplin et al., 2013), mood (Panda et al., 2020; Biedermann et al., 2019; Dickinson et al., 2017; Tamplin et al., 2013; Orenstein et al., 2012; Cherney et al., 2011), motivation (Tamplin et al., 2013), confidence (Mantie-Kozlowski et al., 2020; Tamplin et al., 2013), self-acceptance (Biedermann et al., 2019; Panda et al., 2020), self-control (Panda et al., 2020; Croteau et al., 2008;), sense of self (Duarte et al., 2020; Tamplin et al., 2013), emotion management (Panda et al., 2020), and resilience (Panda et al., 2020) |
| Empowering multifaceted experience | A non-impairment-focused activity A learning opportunity A social engagement opportunity A space for a break A time for connection Ease of implementation | Not stroke-related (Panda et al., 2020); not aphasia-focused; strength-based skills (Panda et al., 2020; Biedermann et al., 2019), [activity] which do not require verbal output; [activity] to shift away from stroke symptoms (Panda et al., 2020); inclusion in a group activity not defined by language expression competence (Yeates, 2019) Opportunity to discover a talent, to learn a new skill (Catska et al., 2008); enjoyment in learning a new skill (Biedermann et al., 2019) Social, leisure, and activity opportunity not dependent on verbal communication (Yeates, 2019); group as opportunity for social engagement (Panda et al., 2020) A break, a way to escape hectic quotidian (Panda et al., 2020); deeply immersive experience (Panda et al., 2020) Meditation as a prayer (Panda et al., 2020); meditation interrelated with nature (Panda et al., 2020) 'Easy to learn' and 'easy to carry out on a daily basis' (Orenstein et al., 2012) |
| The relevance of needs-centred adjustments | Facilitators Need of practice and time Group presence Facilitators' role Openness to individual preferences Intervention adjustments | Gradual, practiced process; importance of practice (Panda et al., 2020) Group useful to share experiences and explore ways of coping with negative feelings (Crielesi et al., 2019: Study 2; Merriman et al., 2015); collaborate, coach, and support each other (Panda et al., 2020; Tamplin et al., 2013; Catska et al., 2008). Group associated with pleasure and hope resulting from observing peers' successes (Tamplin et al., 2013; Catska et al., 2008); group seen as resource for comparison and for bonds (Panda et al., 2020; Crielesi et al., 2019; Tamplin et al., 2013); source of sense of belonging (Tamplin et al., 2013)—importance of having a shared context (Panda et al., 2020); positive and important component—importance of the group for engagement with activity and practice (Panda et al., 2020); reason for continuing attendance (Panda et al., 2020; Tamplin et al., 2013) Role of the facilitator was crucial to support learning journey (Panda et al., 2020) Individually unique preferences increased [participants'] ease of entering the meditative state (Panda et al., 2020) Adaptations to mindfulness exercises are necessary (Merriman et al., 2015): shorter meditation may improve participants' engagement with practising; adapting the body scan to focus on individual harms might improve its accessibility for stroke survivors; need to modify the pace of the intervention and the exercise duration |

(Continued)

Table 4. (Continued).

| Synthesised findings | Descriptive themes | Original findings |
|--|---|---|
| The relevance of needs-centred adjustments continued | Customised resources Partner's presence Barriers Language tasks Cognitive difficulties Physical impairment Initial learning phase | <p>Prepared scripts allowed for repetitive linguistic practice (Catska et al., 2008); the ease of revisiting the content through the audio and visual handouts enhanced their understanding and memory of the practice (Merriman et al., 2015)</p> <p>Participants reported that the group experience might have been improved by including partners (Merriman et al., 2015) as partners could benefit from it and also promote practice</p> <p>Difficulties with generating own lyrics due to word finding difficulties (Manti-Kozlowski); difficulties with written tasks, e.g., diary (Merriman et al., 2015)</p> <p>Longer meditation difficulty due to attentional difficulties or fatigue (Merriman et al., 2015)</p> <p>Body scan challenging for participants with hemiplegic arms because it was on both arms simultaneously, and participants experienced hugely variations between both arms (Merriman et al., 2015)</p> <p>The process of learning meditation was reported to be initially difficult (Panda et al., 2020), initially difficult to learn Tai Ji movements (Yeates, 2019), and worry about the first session (Yeates, 2019)</p> |



Appendix 2.

Table 5. Summary of findings for included studies

| MIND-BODY INTERVENTIONS | | Intervention type, setting, duration, and aphasia-friendly modifications | | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|----------------------------------|-----------|--|--|--|---|--------------------------------|
| Author/s (year) | Country | Participant details | Intervention: | Mixed-methods | Feasibility: Enjoyment in learning a new skill | |
| Biedermann et al. (2019; poster) | Australia | Number: 7 Age: 62 years (mean) Gender: M=6; F=1 Ethnicity: n/r Aphasia type: Broca n = 4; Anomic n = 3 Aphasia severity: n/r Aphasia aetiology: n/r Time post-onset: > 1 year Educational level: n/r Marital status: n/r Living status: n/r | Meditation Setting: group, face-to-face Duration: twice, for 1 hour sessions over 9 weeks Aphasia-friendly modifications: some practices were visually guided, maximum practice length = 30 min | Data collection methods: pretest-post-test (2 baselines, 2 post-tests), semi-structured interviews+ weekly and exit questionnaire(s) Outcomes: attention, language (spoken word finding), communication and social participation, and meditation impact | Effectiveness Attention: 3/7 pwa improved in switching visual attention; 1/7 pwa improved in selective auditory attention; 1/7 pwa improved in sustained auditory attention Language: no significant gains in spoken word production; 2/7 showed improvement on running language measures; Meditation impact: 1/7 showed a positive impact on everyday life communication and social participation. Themes relaxed & calm, positive sense of self, self-accepting, and enjoyment in learning a new skill that is strength-based | Medium 7/11 (SCED Scale) |

(Continued)

Table 5. (Continued).

| MIND-BODY INTERVENTIONS | | | | |
|--|---|---|--|---|
| Single-subject studies | | | | |
| Author/s (year) Country | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
| <p>Key ax: assessment; F: female; M: male; MBCT: Mindfulness-based Cognitive Therapy; MBSR: Mindfulness-based Stress Reduction; n/r: not reported; QoL: Quality of Life</p> | | | | |
| Crielesi et al., 2019; Study 2 Italy | <p>Number: 4 Age: 47–78 years (range) Gender: M = 2; F = 2 Ethnicity: n/r Aphasia type: homogenous production Aphasia severity: medium-light production deficit; (impaired comp excluded) Aphasia aetiology: stroke Time post-onset: at least 6 months Educational level: n.d., 4, 11, and 15 years Marital status: married n = 2; n/r n = 2 Living status: living alone n = 2; with spouse n = 2</p> | <p>Cognitive Therapy; MBCT; Mindfulness-based Stress Reduction; n/r: not reported; QoL: Quality of Life</p> <p>Mixed-methods Data collection methods: pre-test-post-test (baseline, 4-week post-intervention), session video-recordings, and debriefing session 4-week post-intervention Outcomes: psychological well-being and attention-related cognitive functions</p> | <p>Feasibility: experience perceived as positive (n = 4) Effectiveness improvements in QoL, decrease of anxiety and depression, and improvements in cognitive measures Participant-reported improvements for: participation (n = 4), interpersonal relationships (n = 4), QoL (n = 3), being in the present moment (n = 3), anxiety reduction (n = 2), attention (n = 2), communication (n = 2), anger management (n = 1), and sense of calm (n = 1)</p> | <p>Medium 5/11 (SCED Scale)</p> |

(Continued)

Table 5. (Continued).

| MIND-BODY INTERVENTIONS | | Single-subject studies | | | | |
|-------------------------|-------------|---|---|--|--|--------------------------------|
| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
| Dickinson et al. (2017) | New Zealand | Number: 1 Age: 59 years Gender: F Ethnicity: European Aphasia type: Broca Aphasia severity: severe | Intervention: Mindfulness-Based Stress Reduction Programme (MBSR) Setting: 1:1, face-to-face Duration: once weekly for 1.5–2 hours over 4 weeks + home practice Aphasia-friendly modifications: Reduced length of the course (from 8 to 4 weeks), changes from group to 1:1 setting, individualised programme, supported conversation strategies (adaptations made by the clinical psychologist trained by an SLT) | Mixed-methods Data collection methods: pre-test-post-test (baseline, weeks 1 and 3 post-intervention) and observation Outcomes: anxiety, communication, and disability/impact of aphasia | Feasibility: n/r Effectiveness Anxiety: decline (from moderate to low) Spoken and written comprehension: no significant improvement; Confrontation naming: significant improvements for nouns ($p = 0.012$) and verbs ($p = 0.016$); Repetition: significant improvement ($p = 0.021$); Word fluency: no improvements in generative naming; improvements in picture description task Disability: non-significant improvements Improved communication ability with increased verbal output and changes in emotional state (e.g., decline in crying) | Medium 5/11 (SCED Scale) |

(Continued)

Table 5. (Continued).

MIND-BODY INTERVENTIONS

Single-subject studies

| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|---------------------------------|---------|--|---|---|---|--------------------------------|
| Laures-Gore and Marshall (2016) | USA | Number: 1 Age: 60 years Gender: F Ethnicity: African-American Aphasia type: conduction Aphasia severity: WAB quotient = 70.4 Aphasia aetiology: left hemisphere stroke Time post-onset: 14 years Educational level: n/r Marital status: n/r Living status: n/r | Intervention: Mindfulness meditation (Kabat-Zinn, 1982, Zeidan et al., 2010, and Wenk-Sormaz, 2005) Setting: 1:1, face-to-face. Duration: once daily for up to 30 min over 4 consecutive days + home practice followed by independent 30-min practice on the 5 th day Aphasia-friendly modifications: reduced course length and speech rate; questions to verify participants' instruction comprehension | Quantitative methods Data collection methods: pre-test-post-test (2 ax at baseline, 1 ax day 5, and 1 ax week 1); psychophysiological data collected pre-/during/post-intervention Outcomes: language (word productivity, auditory comprehension, verbal fluency, and length of utterance), attention, and psychophysiological data (heart rate and cortisol level) | Feasibility: n/r Effectiveness Changes in some psychophysiological and behavioural measures: Heart rate: some changes; Cortisol level: no changes in pattern Word productivity: most notable gains immediately after MM training and MM during the 3 rd ax; auditory comprehension: little changes; verbal fluency and length of utterance: small increases for naming, fluency, and generative naming; decreased performance in Personal Information Attention: small decreases in inattentiveness and impulsiveness; no changes in vigilance | Medium 6/11 (SCED Scale) |

(Continued)

Table 5. (Continued).

| MIND-BODY INTERVENTIONS | | Single-subject studies | | | | |
|-------------------------|---------|--|---|---|--|--------------------------------|
| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
| Merriman et al. (2015) | UK | Number: 4 Age: 47–62 years (range) Gender: M = 3; F = 1 Ethnicity: n/r Aphasia type: dysphasia with reduced reading and writing abilities n = 1 Aphasia severity: n/r Aphasia aetiology: right hemisphere ischaemic stroke n = 3; left hemisphere stroke n = 1, and ≥ 1 year n = 2 Time post-onset: 2 years n = 1, 3 years n = 1, and ≥ 1 year n = 2 Educational level: n/r Marital status: n/r Living status: n/r | Pilot study Intervention: Mindfulness-based Cognitive Therapy (MBCT) Setting: group, face-to-face Duration: not specified Aphasia-friendly modifications: n/r Stroke-friendly modifications: handouts with audio version, stickers for objects to act as a reminder of mindful activity, movement exercises modified to allow participants to remain seated and focus on the upper body, and reduced exercise duration | Mixed-methods Data collection: pre-intervention and post-intervention interviews; psychometric ax Outcomes: psychological measures, mindfulness skills, anxiety and depression, attention, stroke survivors' experience of MBCT, and MBCT feasibility | Materials: ease of revisiting content with resources provided; difficulties with writing task (n = 4) Mindfulness practice: long practices resulted in challenging (n = 3), reduced motivation to practice at home (n = 1), and Body Scan challenging for participants with hemiplegic arms (n = 3) Effectiveness For participant with dysphasia: Psychological measures: no observable difference Mindfulness skills: decrease in anxiety and depression: improvements Attention: improvements | Medium 5/11 (SCEd Scale) |

(Continued)

Table 5. (Continued).

| MIND-BODY INTERVENTIONS | | Single-subject studies | | | | |
|-------------------------|---------|--|---|---|---|--------------------------------|
| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
| Orenstein et al. (2012) | USA | Number: 3 Age: 53 years (mean); 49–59 years (range) Gender: M = 2; F = 1 Ethnicity: n/r Aphasia type: borderline Wernicke n = 1, Wernicke n = 1, anomic n = 1 Aphasia severity: mild n = 2, moderate n = 1 Aphasia aetiology: left-hemisphere brain damage n = 3 Time post-onset: 61, 36, and 96 months Educational level: n/r Marital status: n/r Living status: n/r | Intervention: Mindfulness Meditation Setting: 1:1, face-to-face; Duration: Phase B: length increased gradually from 5 min up to 30 min over a minimum of four sessions + home practice Phase A2: 5 sessions, 30 min each, no guided practice Aphasia-friendly modifications: n/r | Mixed-methods Data collection methods: data collected pre-/during/post-intervention, participants' feedback Outcomes: divided attention, sense of effort (SOE), language, and participants' experience | Feasibility: n/r Effectiveness Divided attention: no observed changes Language: no significant improvements Sense of effort: no observed changes Participants reported MM as easy to learn and carry out on a daily basis and a feeling of relaxation associated with MM | Medium 5/11 (SCED Scale) |

(Continued)

Table 5. (Continued).

| MIND-BODY INTERVENTIONS | | Single-subject studies | | | | |
|-------------------------|-----------|---|--|--|---|---|
| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
| Panda et al. (2020) | Australia | Number: 5 Age: 65.4 years (mean); 50-72 (range) Gender: M = 3; F = 2 Ethnicity: n/r Aphasia type: n = 3 fluent (anomic), n = 2 non-fluent (Broca) Aphasia severity: n = 3 mild, n = 2 moderate Aphasia aetiology: stroke | Intervention: informal lunch meditation Setting: group, face-to-face Duration: once weekly for 2 hours over 6 weeks Aphasia-friendly modifications: trainer = expert aphasiologist, reduced course duration, structured sessions, aphasia-friendly consent form and info sheet, and supported conversation strategies offered during interviews | Qualitative methods Data collection methods: post-test semi-structured interviews Outcomes: lived experience of meditation | Feasibility: Learning meditation initially difficult; time needed to develop meditation skills; facilitator essential for learning; not stroke-related activity; language output not required; a 'break' and 'deeply immersive experience'; Importance of being part of a group Effectiveness pwa reported that meditation helped them to develop self-acceptance and manage negative emotions, and this contributed to their recovery journey Meditation as a tool to overcome fear of another stroke, to develop resilience, and to feel relaxed/calmed/reduce stress/to feel more alert | High 10/10 (CASP Qualitative Checklist) |

(Continued)

Table 5. (Continued).

| MIND-BODY INTERVENTIONS | | Single-subject studies | | | | | | |
|--------------------------------|---------|--|--|---|------------------|--|--------------|-----------------------------|
| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Feasibility: n/r | Effectiveness | Key Findings | Quality |
| Wantsala et al. (2010; poster) | USA | Number: 1 Age: 29 years Gender: F Ethnicity: n/r Aphasia type: Broca Aphasia severity: mild with significant word finding difficulties Aphasia aetiology: left hemisphere stroke Time post-onset: 6 months Educational level: n/r Marital status: n/r Living status: n/r | Intervention: Mindfulness-Based Stress Reduction (MBSR) training Setting: 1:1, face-to-face; Duration: once weekly for 1 h over 8 weeks (+ home practice) Aphasia-friendly modifications: n/r | Quantitative methods Data collection methods: pre-test-post-test (baseline, week 8) Outcomes: language production, mood, quality of life, stress symptoms | Feasibility: n/r | Effectiveness Improved hearing and mood | | Low 4/11 (SCED Scale) |

(Continued)



Table 5. (Continued).

MIND-BODY INTERVENTIONS

Single-subject studies

| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|-----------------|---------|--|---|---|---|-------------------------------------|
| Yeates (2019) | UK | <p>Number: 1</p> <p>Age: 44 years</p> <p>Gender: M</p> <p>Ethnicity: n/r</p> <p>Aphasia type: expressive, relatively intact comprehension</p> <p>Aphasia severity: n/r</p> <p>Aphasia aetiology: left middle cerebral artery infarction</p> <p>Time post-onset: 6 years</p> <p>Educational level: n/r</p> <p>Marital status: n/r</p> <p>Living status: n/r</p> | <p>Design: Single subject</p> <p>Intervention: Tajiri</p> <p>Setting: group, face-to-face; Duration: over 6 months + home practice, not specified</p> <p>Aphasia-friendly modifications: visual and kinaesthetic teaching</p> <p>Stroke-specific modifications: adjustments for balance, hemiplegia, fatigue, attention, dyspraxia, communication, memory, and disorientation</p> <p>e.g., chair-based sequences, therapy bands, reduced sequence length, regular breaks, and short instruction</p> | <p>Mixed-methods</p> <p>Data collection methods: pre-test-post-test (baseline, repeated every 4 weeks); focus group interviews</p> <p>Outcomes: anxiety, depression, fatigue, QoL, and experience</p> | <p>Feasibility: Intervention perceived as a meaningful social activity</p> <p>Effectiveness</p> <p>Anxiety: constant, no changes</p> <p>Fatigue: constant, no changes</p> <p>QoL: higher scores</p> | <p>Low</p> <p>4/11 (SCED Scale)</p> |

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Table 5. (Continued).

| MIND-BODY INTERVENTIONS | | Single-subject studies | | | | |
|-------------------------|---------|--|--|--|---|--|
| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
| Marshall et al. (2018) | USA | <p>Number: 8</p> <p>Age: 38–73 years (range)</p> <p>Gender: M = 5; F = 3</p> <p>Ethnicity: Caucasian n = 6; African-American n = 2</p> <p>Aphasia type: anomia (n = 6); Broca (n = 1); conduction (n = 1)</p> <p>Aphasia severity: n/r</p> <p>Aphasia aetiology: n/r</p> <p>Time post-onset: 1 year</p> <p>3 months – 5 years</p> <p>Educational level: 12th grade – doctorate</p> <p>Marital status: n/r</p> <p>Living status: n/r</p> | <p>Design: Within-subjects repeated-measure wait list control design</p> <p>Intervention: Aphasia Mindfulness Meditation n = 5; waiting list n = 3 (mind wandering)</p> <p>Setting: group, face-to-face</p> <p>Duration: once daily for up to 30 min over 5 days</p> <p>Aphasia-friendly programme developed by SLT; reduced session duration (30 min), reduced content, language simplification, pictorial instruction sheet, and non-verbal strategies</p> | <p>Quantitative methods</p> <p>Data collection methods: pre-test-post-test (2 ax at baseline, 1 ax day 5, and 1 ax week 1); psychophysiological data collected pre-/during/post-intervention</p> <p>Outcomes: language (word productivity, auditory comprehension, verbal fluency, and length of utterance), attention, and psychophysiological data (heart rate and cortisol level)</p> | <p>Feasibility: n/r</p> <p>Effectiveness</p> <p>Little or no changes</p> <p>Language measures: no sig differences between groups or over time.</p> <p>Attention: no sig differences between groups or over time; significant decrease in commission over time for both groups; sig increase in detectability over time for both groups</p> <p>Heart rate: average beats per minute (BPM) did not change over the sessions; HRV significantly lower on average in the control group</p> <p>Cortisol level: sig differences in average cortisol between sessions 1 and sessions 2–4 for the control group; no sig differences across sessions for the training groups</p> | <p>Medium-high</p> <p>7/9</p> <p>(JBI Critical Appraisal Checklist for Quasi-Experimental Studies)</p> |

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Table 5. (Continued).

| MIND-BODY INTERVENTIONS | | | | | | | |
|----------------------------------|---------|---|---|--|--|---|---------|
| Single-subject studies | | | | | | | |
| Author/s (year) | Country | Participant details | Intervention type, setting, duration, and aphasia-friendly modifications | Data collection methods and time; Outcome(s) of interest | Feasibility: n/r Effectiveness | Key Findings | Quality |
| Marshall et al. (2014) | USA | Number: 11 Ethnicity: native English speakers Time post-onset: 4 months-6 years Educational level: n/r Marital status: n/r Living status: n/r | Design: Within-subjects repeated-measures design Intervention: Unilateral nostril breathing (UNB) n=6. Control group (LHD) n=5 Setting: group, face-to-face Duration: 10-week program (once weekly for 1 h of guided instruction + up to 40 min of daily practice followed by 6 weeks of individual UNB) Aphasia-specific modifications: n/r | Quantitative methods Data collection: pre-test-post-test (at baseline, weeks 4, and 6). Outcomes: language, attention, spatial abilities and depression, and anxiety | No effect of UNB treatment found to last through week 10 of the study Language: LHD group with sig higher scores than the IWA. IWA showed sig positive changes from baseline to week 4. For both groups, performance on language comprehension, attention, and spatial abilities tasks did not change Anxiety: for both groups, anxiety was less after 4 weeks of guided practice than at baseline | Medium-high 7/9 (JBI Critical Appraisal Checklist for Quasi-Experimental Studies) | |
| Marshall et al. (2014)-continued | USA | Number: 6 Gender: M = 5; F = 1 Age: 58.2 years (mean); 52-74 years (range) Aphasia type: Broca n = 3; Wernicke n = 1, Borderline fluent n = 1; transcortical n = 1 Aphasia severity: ADP scores: 95-110 | Aphasia aetiology: brain damage Control group (LHD) Number: 5 Age: 52.4 years (mean); 31-66 years (range) Gender: M= 4; F= 1 Characteristics: left-hemisphere stroke with no aphasia | | | | |

Key

sig: significant/significantly

CREATIVE ARTS INTERVENTIONS

Single-subject studies

| Author/s (year) | Country | Participant details | Intervention type | setting, duration, and aphasia-specific modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|-------------------------|----------------|--|---|--|---|----------------------------|----------------|
| Andrew [2015] | UK | Number: 6 Age: 52.33 years (mean); 44–59 (range) Gender: M = 5; F = 1 Ethnicity: n/r Aphasia type: word finding difficulties n = 6, receptive difficulties n = 5, planning utterances Aphasia severity: mild-severe Aphasia aetiology: stroke | Intervention: Observational drawing Setting: group, face-to-face Duration: 8 2-hour sessions, over 8 consecutive weeks Aphasia-specific modifications: information was delivered in an aphasia-friendly format with illustrated handouts | Mixed-methods Data collection methods: pre-test-post-test, interview Outcomes: language, cognition, QoL, and acceptability | Feasibility: high acceptability Effectiveness QoL was the area with most gains observed, followed by mood, confidence, and concentration Visual attention: not overall improvements Language: gains in semantic information gathering. | Medium 5.5/11 (SCEd Scale) | |
| Andrew [2015]-continued | | Educational level: finished education between ages of 13 and 21. Degree (n = 1). Marital status: n/r Living status: n/r | | | | | |

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CREATIVE ARTS INTERVENTIONS**Single-subject studies**

| Author/s (year) | Country | Participant details | setting, duration, and aphasia-specific modifications | Intervention type | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|------------------------|----------------|---|--|--|--|---|----------------|
| Castka et al. (2009) | Not specified | Number: 23 but data collected for n = 19 (n = 11 'veterans'; n = 8 first-time members) Age, gender: n/r Ethnicity: n/r Aphasia severity, aetiology: n/r Time post-onset: n/r Educational level: n/r Marital status: n/r Living status: n/r | Intervention: Musical production/performance Setting: group, face-to-face Duration: Once weekly for 2 hours, 12 weeks of rehearsal + final performance Aphasia-friendly modifications: aphasia-friendly scripts, adapted musical score and choreography created by SLTs | Qualitative methods Data collection methods: pre- and post-participation survey for participants; feedback from participants and carers Outcome: benefits of participations Measures: bespoke survey; not specified | Feasibility: n/r Effectiveness Benefits: challenging oneself, having fun, performing for a group, team-work, returning to performing (first-time members); increased confidence ('veterans') Themes: 1. Psychosocial (empowerment, teamwork opportunity, enjoyment, and hope). 2. Linguistic (promotion of spontaneous communication, improvisation, and multimodal strategies use). 3. Recreational (meaningful activity and no experience required) | Low 1/9 (CASP) Qualitative Checklist) | |

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CREATIVE ARTS INTERVENTIONS

Single-subject studies

| Author/s (year) Country | Participant details | setting, duration, and aphasia-specific modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|------------------------------|---|--|--|--|-----------------------------|
| Cherney et al. (2011) USA | Number: 7 Age: 56.7 years (mean) Gender: M = 5; F = 2 Ethnicity: white n = 12, black n = 2 Aphasia type: Broca (n = 4), anomic (n = 3) Aphasia severity: moderate n = 4; mild n = 3 Aphasia aetiology: stroke, n = 6; gunshot n = 1 Time post-onset: 6.1 years (range: 11 months to 27 years). | Intervention: Drama class (theatre experience and performance) Setting: group, face-to-face Duration: once weekly for 90 minutes over 18 weeks + 3 rehearsals + 1 dress rehearsal Aphasia-specific modifications: SLT and drama therapist used supported conversation strategies to facilitate communication among the participants | Mixed-methods Data collection methods: patient-reported outcomes pre-test/post-test (baseline and week 18 post-intervention) Outcomes: mood and communication confidence | Feasibility: n/r Effectiveness Perceived improvements in communication and mood Medium effect sizes: communication-burden; communication-distress; mood-positive items Small effect sizes: Social Relations-Distress, Social Relations-Distress, Mood-negative items, Mood-Distress, and CCRSA. | Medium 7/11 (SCED Scale) |

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CREATIVE ARTS INTERVENTIONS**Single-subject studies**

| Author/s (year) | Participant details | setting, duration, and aphasia-specific modifications | Intervention type | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|------------------------------------|---|--|--------------------------|---|--|---------------------|
| Gadberry & Ramachandra 2015 USA | <u>Number:</u> 1 <u>Age:</u> 69 <u>Gender:</u> M <u>Ethnicity:</u> n/r <u>Aphasia type:</u> Broca <u>Aphasia severity:</u> n/r | <u>Intervention:</u> Music Therapy (Tomaino's protocol) <u>Setting:</u> 1:1, face-to-face <u>Duration:</u> 17 sessions of 45 min each Aphasia-specific modifications: not specified, apart from observing pt reactions to songs during the song selection phase | | <u>Mixed-methods</u> Data collection methods: baseline data, observation, pre- and post-test Outcomes: communication and mood | <u>Feasibility:</u> n/r <u>Effectiveness</u> Communication: increased verbalisations; renewed interest in using AAC; increased in communication initiative Mood: reduction in anxiety and depression | Low (SCED Scale) |

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CREATIVE ARTS INTERVENTIONS

Single-subject studies

| Author/s (year) | Country | Participant details | Intervention type | setting, duration, and aphasia-specific modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|------------------------|----------------|--|--|---|---|---------------------|----------------|
| Duarte et al. (2020) | Brazil | Number: 1 Age: 67 years Gender: F Ethnicity: n/r Aphasia type: resolved expressive aphasia; deficit in oral phrases comprehension moderate severe Aphasia aetiology: 2 strokes | Intervention: Clowning session Setting: group, face-to-face Duration: once weekly for 3 hours over 6 months Aphasia-specific modifications: facilitator provided support according to participants' needs and initiatives | Mixed-methods Data collection methods: pre-test-post-test, interview Outcomes: well-being and QoL | Feasibility: experience perceived as positive; participant reported to feel more relaxed and comfortable with herself Effectiveness Improvements in all investigated components of well-being and QoL | 5.5/11 (SCEd Scale) | |
| | | Time post-onset: > 1 year Educational level: incomplete elementary education Marital status: has a partner Living status: living alone Others: depression, smoking, and alcoholism | | | | | |

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CREATIVE ARTS INTERVENTIONS**Single-subject studies**

| Author/s (year) | Participant details | Intervention type | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|----------------------------|---|--|---|---|----------------|
| Kim et al. (2008) Korea | Number: 1 Age: 59 years Gender: F Ethnicity: n/r Aphasia type: Broca Aphasia severity: 9 th percentile on Korean WAB- very limited linguistic communication Aphasia aetiology: subarachnoid haemorrhage from a cerebral aneurysm rupture Time post-onset: 18 months Educational level: n/r Marital status: n/r Living status: n/r | Intervention: Art therapy Setting: 1:1, face-to-face Duration: twice weekly for 40 min over 75 days Aphasia-specific modifications: n/r | Quantitative methods Data collection methods: pre-test-post-test Outcomes: cognition, language, spatial perception, and functioning | Feasibility: n/r Effectiveness Cognitive function: improvement in all areas; improved visual perception, capability and motor function; improved disorientation, 3-step oral commands performance, and geometric figures drawing; improved attention, construction, conceptualization, and memory. Language: not many improvements, apart from slight improvements in the understanding category | Low 4.5/11 |

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CREATIVE ARTS INTERVENTIONS

Single-subject studies

| Author/s (year) Country | Participant details | setting, duration, and aphasia-specific modifications | Intervention type | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|--------------------------------|---|---|--|---|-------------------------------------|---------|
| Manti-Kozolowski et al. (2020) | <p>Number: 1</p> <p>Age: 64</p> <p>Gender: F</p> <p>Ethnicity: n/r</p> <p><u>Aphasia type:</u> expressive and receptive difficulties</p> <p><u>Aphasia severity:</u> severe</p> <p><u>Aphasia aetiology:</u> PPA</p> <p><u>Time post-onset:</u> > 1 year</p> <p><u>Educational level:</u> n/r</p> <p><u>Marital status:</u> n/r</p> <p><u>Living status:</u> living with her brother</p> | <p>Intervention: Therapeutic songwriting</p> <p>Setting: 1:1, face-to-face</p> <p>Duration: 13 sessions in total, twice weekly for 55 min over 8 weeks</p> <p><u>Aphasia-specific modifications:</u> Therapy delivered by a language pathology graduate student. One of the song writing techniques was modified (pt to select phrases for lyrics from materials) Conversational repair strategies used during the session.</p> | <p>Mixed-methods</p> <p>Data collection methods: pre-test-post-test, clinician's field notes.</p> <p>Outcomes: perception of meaningfulness of song writing activity and quality of communication life</p> | <p><u>Feasibility:</u> activity perceived as enjoyable and satisfying</p> <p>song writing techniques were described by the pt as "meaningful", "valuable", and "rewarding" and that the activity "allowed for self-reflection</p> <p>Effectiveness</p> <p>Positive impact on confidence</p> <p>Higher scores for feeling "included", "seeing the funny things in life", and were more "confident in her ability to communicate"</p> | <p>Low</p> <p>4/11 (SCEd Scale)</p> | |

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CREATIVE ARTS INTERVENTIONS

Single-subject studies

| Author/s (year) Country | Participant details | Intervention type setting, duration, and aphasia-specific modifications | Data collection methods and timer, Outcome(s) of interest | Key Findings | Quality |
|---|---|--|--|---|--|
| Mantie- Kozlowski et al. (2018) USA | Number: 5 Age: 60–69 (range) Gender: M = 3; F = 2 Ethnicity: Caucasian n = 3, Hispanic n = 1, African-American n = 1 Aphasia type: non- fluent aphasia (n = 3), mixed nonfluent aphasia (n = 1), apraxia of speech (n = 1) Aphasia severity: severe n = 4, moderate-severe n = 1 Aphasia aetiology: left hemisphere CVA n = 4; Surgical removal of benign left frontal lobe neoplasm n = 1 | Feasibility study Intervention: Sing-along group Setting: group, face-to-face Duration: 10 90-min sessions twice monthly Aphasia-specific modifications: large font size, song text contained to one page (whenever possible), attempts made to include participants' preferences, and musical needs | Qualitative methods pwa-Data collection methods: pre-/post- participation interviews; post-participation questionnaire, and observations Outcomes: attitude toward their caregiver, musical background, feasibility, caregiver involvement, personal and believed caregivers' feeling about sing-along group, Likert scale, and songs enjoyment | Feasibility: pwa and carers reported that the location was accessible, and frequency and duration of the meetings appropriate; participants enjoyed sing- along sessions. Effectiveness Familiar and non- worded songs were associated with a less frustration for pwa. However, both pwa and caregivers expressed preference for familiar and worded over novel and non-worded songs. Caregiver involvement: no discernible patterns in pwa's responses; slight preference for caregiver involvement, but this seemed to be related to desire to be in a larger group | High 8/9 (CASP) Qualitative Checklist) |

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CREATIVE ARTS INTERVENTIONS

Single-subject studies

| Author/s (year) | Participant details | Intervention type | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|---|---|--|--|---------------------|----------------|
| Mantie- Kozlowski et al. (2018)- continued USA | Time post-onset: 18– 57 months Educational level: n/r Marital status: n/r Living status: n/r Caregivers N = 5 Age = 42–69 (range) Gender = M = 2; F = 3 | setting, duration, and aphasia-specific modifications | Caregivers-Data collection methods: pre-/post-participation interviews, pre-/post-test, post-experience questionnaire, observations Outcomes: level of burden, strain, musical background, sing-along experience, and feasibility | | |



| Quasi-experimental studies | | Intervention type setting, duration, and aphasia-specific modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|---|---|--|---|--|--|
| Author/s (year) | Participant details | Intervention type | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
| Croteau et al. (2008) (poster) Canada | Experimental group Number: 7 pwa with their significant others Age: 56 (mean) Gender: n/r Ethnicity: n/r Aphasia type: n/r Aphasia severity: 2.6 (BDAE) Aphasia aetiology: CVA Time post-onset: 5 years (mean), at least >1 year Educational level: 13 years Marital status: n/r | Intervention: Theatre workshop Setting: group, face-to-face Duration: once weekly sessions over a year Aphasia-specific modifications: SLI- led workshops together with a theatre professional | Mixed-methods Data collection methods: pre-/post- test, interview (for the experimental group) Outcomes: social participation, communication, personality changes | Feasibility: n/r Effectiveness Social participation: pwa had significant increase for fitness, personal care, communication, and community life; significant decrease for recreation scales. Pwa who participated in the workshop had less time for other activities. For significant others, significant increase of satisfaction on: mobility, responsibility, interpersonal relationships, community life, and recreation. No significant change in performance for life habits. No significant change in the control group Communication: significant others perceived a statistically meaningful increase in the ability of pwa at getting involved in a group conversation about themselves. No change in the control group Personality changes: significant increase on: "nurturance", "self- control", and "A-3" (affiliative, respectful of others' rights and wishes, and conciliatory in social style); significant decrease on the "critical parent scale" → pwa described as more able to take care of others; more able to take into consideration other people, more accommodating and tolerant of the weakness of others, and more able to have self-control Control group: a significant decrease on: "achievement" and "self- confidence" → Pwa not involved in activities tended to lose self- confidence and the need to achieve over time. Three adjectives showed a decrease of more than 50% on the post- test: "obliging", "dissatisfied", and "high-strung". → pwa less obliging. They might have had less time at home to help out. Control group: Four adjectives showed an increase of more than 50%: "headstrong", "thirty", "tense", and "unemotional" → pwa described less positively at the post-test. | Medium-high 7/9 (JBI Critical Appraisal Checklist for Quasi- Experimental Studies) |
| Croteau et al. (2008)- continued (poster) Canada | Living status: n/r Control group Number: 5 pwa with their significant others Age: 62 (mean) Gender: n/r Ethnicity: n/r Aphasia type: n/r Aphasia severity: 3.6 (BDAE) Aphasia aetiology: CVA Time post-onset: 5 years (mean), at least >1 year Educational level: 10 years Marital status: n/r Living status: n/r | | | | |

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Quasi-experimental studies

| Author/s (year) | Country | Participant details | Intervention type setting, duration, and aphasia-specific modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|------------------------|----------------|---|---|--|---|--|
| Tamplin et al. (2013) | Australia | <p>Number: 13</p> <p>Age: 58.3 years (mean); 37–82 (range)</p> <p>Gender: M = 10; F = 3</p> <p>Ethnicity: n/r</p> <p>Aphasia type: non-fluent Broca with receptive difficulties n = 10;</p> <p>Wernicke n = 3</p> <p>Aphasia severity: mild-moderate</p> <p>Aphasia aetiology: stroke</p> <p>Time post-onset: n/r</p> <p>Educational level: Secondary school n = 6; Certificate/Diploma n = 3, Bachelor /H igher Degree n = 4</p> <p>Marital status: married n = 11, single n = 1, divorced n = 1</p> <p>Living status: n/r</p> | <p>Pilot study</p> <p>Intervention: Community choir singing</p> <p>Setting: group, face-to-face</p> <p>5:1 proportion of stroke survivors singing to healthy others</p> <p>Duration: one weekly for 2 h over 20 weeks (90 min of singing/vocal exercises + 30 min of coffee break for rest and socialization)</p> <p>Aphasia-friendly modifications: vocal warm-ups, song lyrics, and musical arrangements adapted by a music therapist</p> | <p>Mixed-methods</p> <p>Data collection methods: pre-test-post-test (weeks 12 and 20), semi-structured interviews with participants able to communicate verbally to some extent (n =), and caregivers (n = 5)</p> <p>Outcomes: mood; stroke impact on communication, cognition, and global recovery, and social participation and experience</p> | <p>Feasibility: n/r</p> <p>Effectiveness</p> <p>Mood: possible reduction in adverse mood symptoms sustained to week 20; high degree of variability across participants, reduction in feeling of being 'Tired'; increase in feelings of being 'Afraid'</p> <p>Communication: small increase in scores</p> <p>Cognition: reduction in perceived thinking and memory scores</p> <p>Global recovery: increase in scores</p> <p>Social participation: reduction</p> <p>Most frequently reported benefits for choir participants were increases in confidence (n = 29), development of peer support networks (n = 26), and enhanced mood (n = 25); increase in participants' motivation both within and outside of the choir (n = 15); some changes in communication abilities (n = 14)</p> | <p>Medium</p> <p>5/9</p> <p>(JBI) Critical Appraisal Checklist for Quasi-Experimental Studies)</p> |

| RCT | | Intervention type setting, duration, and aphasia-specific modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|---|---|---|--|--|---|
| Author/s (year) Zumbansen et al. (2016) Canada | Participant details Number: 22 Ethnicity: Francophone Aphasia aetiology: stroke n = 21, brain tumour n = 1 Time post-onset: 1.0–35.3 years Educational level: 6–23 years Marital status: n/r Living status: n/r Intervention Group Number: 7 Age: 64.3 years (mean); 54–69 years (range) Gender: M=2; F=5 | Intervention Group: Choir sessions Control Group: drama Classes; waiting list: no intervention Setting: group, face-to-face Duration: once weekly for 2 h over 6 months | Data collection methods Data collection: pre-test-post-test Outcomes: functional communication, speech and language skills (motor-speech ability; automatised series, repetition, naming, connected speech, and comprehension), mood, and QoL | Key Findings Feasibility: n/r Effectiveness No significant differences between groups in any outcome measure Significant positive correlation found between attendance to any social activity and functional communication improvements | Quality High 8/11 (CASP RCT Checklist) |
| Author/s (year) Zumbansen et al. (2016)-continued Canada | Participant details Aphasia type: Transcortical sensory n = 3; mix n = 3, transcortical motor n = 1 Aphasia severity: severe n = 2, moderate n = 4, mild-moderate n = 1 Control group Number: 8 Age: 54.0 years (mean); 28–82 years (range) Gender: M = 5; F = 3 Aphasia type: mix n = 3, Broca n = 1, conduction n = 1, global n = 1, anomic n = 1, transcortical motor n = 1 | | | | |

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RCT

| Author/s (year) Country | Participant details | Intervention type setting, duration, and aphasia- specific modifications | Data collection methods and time; Outcome(s) of interest | Key Findings | Quality |
|-------------------------------|--|--|--|--------------|---------|
| | Aphasia type: moderate n = 5, severe n = 2, mild-moderate n = 1 Waiting list Number: 7 Age: 54.0 years (mean); 39–69 years (range) Gender: M = 2; F = 5 Aphasia type: mix n = 4; Wernicke n = 1, conduction n = 2 Aphasia severity: moderate n = 3, mild- moderate n = 2, severe n = 1, moderate- severe n = 1 | | | | |