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ORIGINAL ARTICLE

Expectations and experiences of a dance programme for autistic children: A qualitative study of parents, teachers and therapists

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Abstract

This study explores the expectations of dance therapists/practitioners and parents and teachers of autistic children engaging in a developmental dance programme. Information gathered will support development of an evaluation tool aligned with the International Classification of Functioning Disability and Health (ICF) Core Sets for autism spectrum disorders (ASD). A qualitative study included a convenience cohort of teachers ($n=6$), parents ($n=2$) of children with ASD and therapists ($n=3$). Three role specific focus groups were undertaken considering potential benefits and challenges of the programme. Content and thematic analysis was undertaken using NVivo12. Findings reflected four positive themes relating to behaviour, skills, social interaction and environmental supports. Therapists, teachers and parents focused differently on stereotypical and restricted behaviours, environmental supports and habits and routines respectively. These themes also emerged as challenges (to implement/achieve); with parents identifying more emotional and behavioural restrictions. A fourth challenge theme of transferability of skills emerged from teachers and therapists. Items mapped against 28 ICF Core Sets (across the lifespan) and six to ICF categories, with creativity and imagination mismatched. Findings highlight need for a specific outcome measure for dance and/or movement programmes for autistic individuals that captures meaningful functions across ICF domains for differing stakeholders.

KEYWORDS
autism spectrum disorders, child development, Dance, movement disorders

Key points

- Parents, teachers and therapists have many similar as well as divergent perspectives of the potential benefits as well as challenges of dance movement therapies for autistic children.
- This paper highlights the potential of a developmental dance therapy programme for autistic children while simultaneously recognising the need for an outcome measure to evaluate outcomes of importance to families, teachers and professionals involved with these children.
- Further research is needed to capture expectations, experiences and perspectives of autistic individuals, particularly those who are non-verbal.
- Linking findings to ICF core sets in ASD marks a progression in identifying acknowledged and potentially new categories of functioning as a first stage towards developing a specific novel measurement tool for dance movement research and the impact of dance interventions in educational and clinical settings.

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INTRODUCTION

Autistic individuals might exhibit differences in social interactions and behaviours, including atypical responses to sensory stimuli and sensory sensitivities (American Psychiatric Association, 2013). Difficulties with movement skills and spatial perception are common, particularly in gross motor skills such as bilateral motor coordination (Fournier et al., 2010; Green et al., 2009), balance (Minshew et al., 2004) and gait (Hallett et al., 1993) as well as fine motor delays (Downey & Rapport, 2012; Green et al., 2009; Provost et al., 2007). McCleery et al. (2013, p3) propose that autistic infants and young children show 'delays in a number of motor-related milestones' and other authors concur that many of these differences are associated with important speech, language and social communication skills (Hardy & LaGasse, 2013; Ohara et al., 2019). Additionally, poor imitation has been linked to both poor motor planning (praxis) (Green et al., 2002), poor social interaction (Ingersoll, 2008) and expressive language delay (Wan et al., 2010). While movement difficulties are evident in up to 87% of autistic children (Bhat, 2020; Green et al., 2009), there has yet to be formal recognition of these problems and their impact in the assessment of, or interventions for, these children (Licari et al., 2019).

Evidence suggests that cognitive and motor development follow similar trajectories (Leisman et al., 2016), yet this area of autism research has received much less scientific attention than development of cognition and communication (Hardy & LaGasse, 2013; Leonard & Hill, 2014). Indeed Engel et al. (2013) suggest that cognition itself is 'enactive', that is to say an embodied activity that necessitates an involvement with the external world and sensorimotor coupling. In other words, to feel one's body, perceive its sensations and emotions, and respond temporally and spatially to others and the environment is the basis of understanding, communication and engagement (Leisman et al., 2023). Through this lens motor skill interventions are broadly acknowledged as effective early help to address developmental delay, yet limited evidence exists particularly when applied to autistic children (Ketcheson et al., 2017). For non verbal autistic individuals, experiencing varying imitation abilities and social interaction skills, the therapeutic use of dance and movement may provide powerful tools for expression and learning.

Green and Payne (2018) outlined a framework to support participation that captures the dynamic interactions between experiences and expectations and the skills and opportunities that are available at the personal, temporal and environmental level (see Figure 1). This framework highlights the need to capture broader perspectives of expected potential benefits or challenges when introducing interventions in order to measure relevant outcomes for autistic individuals and their families as well as professionals. Dance provides a number of channels for learning and skill acquisition as well as self-expression and group interactions that may shift expectations through active (and enjoyable) engagement. Programmes which integrate sensory and physical experiences may thus provide a basis for learning as well as positive participatory experiences, particularly for children who find traditional teaching methods difficult to access. While language-based tasks can be a barrier to understanding and expression of thoughts, music and movement and dance is by nature multi-modal, largely non-verbal and has the potential to be effective

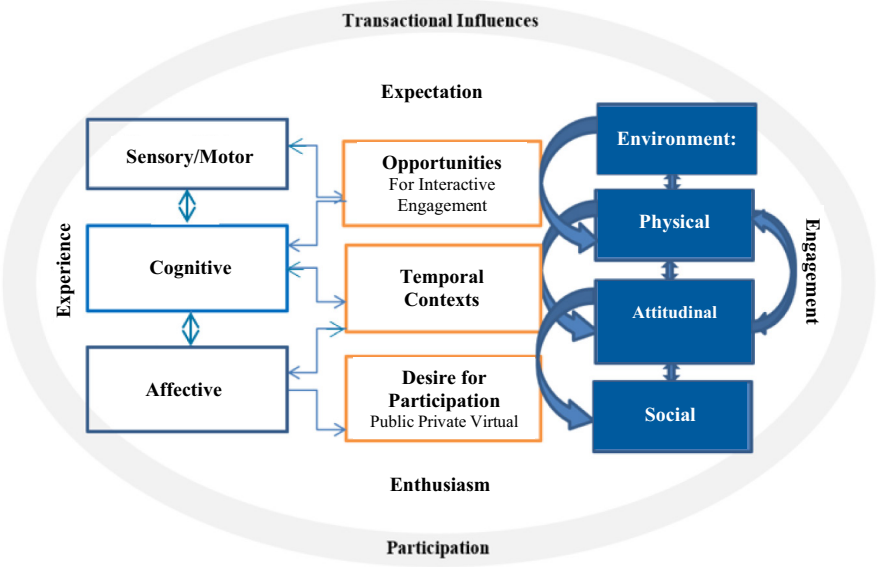

FIGURE 1 Transactional framework to capture dynamic interactions between the person, participatory elements and environmental influences.(Green & Payne, 2018, p. 37).

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via multi-systems for typical and neurodiverse populations (Amonkar et al., 2021; Golding et al., 2016; Stamou et al., 2019; Su et al., 2022). Organised movement programmes may support psychosocial-development as well as cognitive skills of young children (Ketcheson et al., 2017; Rintala et al., 1998). A similar impact for older children (7–13 years) of physical activity interventions supporting 'embodied cognition' and advancements in Key Stage 2 (reading, writing and maths), was particularly evidenced for the slower learners and maintained at one-year follow-up (McClelland et al.,2015). The rhythmic and musical elements that anchor dance instruction may be additional significant contributing factors in the efficacy of a physical intervention to support key areas such as speech, language and communication (Hardy & LaGasse, 2013; James et al., 2015; Lang et al., 2016; Teixeira-Machado et al., 2022; Wan et al., 2010) and enhance neural activation (Slater & Tate, 2018; Trost et al., 2014). Furthermore, refinement of imitation skills through building experiences across the combination of modalities used in dance, that is visual, aural and motor processing, has potential to contribute to recommended sensory enrichment programmes for autistic children (Woo & Leon, 2013). Hence dance movement programmes appear to hold potential to impact on a number of learning and behaviour outcomes for children generally, but the potential benefits for autistic children are less well charted (Aithal et al., 2021; Golding et al., 2016; Srinivasan & Bhat, 2013; Teixeira-Machado et al., 2022). Recent systematic reviews of creative/dance movement therapies have highlighted the weaknesses in methodologies (Aithal et al., 2021; Takahashi et al., 2019). However the lack of validated standardised measures for outcomes and of the perspectives of key stakeholders were rarely considered (Amonkar et al., 2021; DeJesus et al., 2020).

Under a general umbrella of dance movement programmes used in health and education, dance movement therapy (DMT) is an art therapy which has been defined as 'the psychotherapeutic use of movement as a process which furthers the emotional and physical integration of the individual' (Chodorow, 1991 cited in Stanton, 1991, p.108). For the purpose of clarifying definitions and use of abbreviations within this paper, DMT is the recognised abbreviated term used when including the psychotherapeutic context of work and professional registration of clinicians better known in the UK as Dance Movement Psychotherapy usually involving clinician-patient relationships, with outcomes frequently focused on self-actualisation. On the other hand, our use of the term Developmental Dance Therapy (DDT) describes dance movement approaches used therapeutically by professionally qualified dance practitioners largely in educational/community settings involving teacher-student relationships with a focus on learning and development; thus not necessarily including registered Dance Movement (Psycho) Therapists (Amonkar et al., 2021). The umbrella of DDT incorporates Developmental Dance Movement® (DDM), targetting early developmental skills through music and movement (Golding et al.,2016) and Autism Movement Therapy® (AMT), a sensorimotor music and movement approach specifically designed for autistic individuals and those with similar differences (Lara, 2015). In a recent systematic review by Aithal et al. (2021), it is acknowledged that the descriptive reporting of approaches to using DMT/P is not widespread among the limited current studies which confounds interpretation.

The MovementWorks® programme is a specific approach to using dance therapeutically which incorporates both DDM, as an early intervention for children from 2.5 years and AMT for children from age 7 and upwards. This programme has been delivered as an 'all school' approach in a number of autism specific London (UK) based schools to augment and complement traditional Occupational Therapy and Speech and Language Therapy. While reception of the programme within schools has been positive, there is a need to evaluate the potential effectiveness in an objective and systematic manner. Systematic analysis enables evaluation of the mechanisms of change and identification of salient ingredients of the programme as well as develop the programme to optimise outcomes for children and their families. Importantly, measurement of effectiveness of specialist dance movement programmes is hampered by lack of sensitivity and responsivity of available tools. This study explores the expectations and experiences of parents, teachers and therapists for autistic children engaging in a DDT programme, in order to develop an evaluation tool aligned with the International Classification of Functioning Disability and Health (ICF) children and youth version (ICF-CY) and ICF Core Sets for ASD developed to support standardisation of assessment of function across differing contexts (Bölte et al., 2019; World Health Organisation, 2007 respectively) In order to move away from measures of symptom expression, the ICF-CY was chosen as a biopsychosocial framework which provides a common language across family, health, education and social care contexts to consider the transactional nature of intervention outcomes on individual characteristics alongside influences of the environment.

METHOD

This study was approved by the University Research Ethics Committee (UREC/16.2.5.10) of the University of Greenwich. Qualitative methodology, utilising focus groups, was used to capture expectations and experiences of teachers, parents and therapists exposed to the DDT programme being delivered in a special school for autistic children (in London, UK), all with the same practitioner leader during the school year 2016–2017. The DDM and AMT programmes provided

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by MovementWorks®, were delivered across the academic year during which children had weekly sessions (36 weeks in total) lasting 30 min. Data were collected at the half-way point in the school year. This programme was directed towards development and learning within the early years and primary curriculum, incorporating spatial/directional concepts and balance/vestibular and proprioceptive development. The activities also aimed to encourage interoceptive body awareness, co-ordination, and enhance the movement processing and development of autistic children. This is achieved by promoting imitation, repetition, variation, imagination and transitions between movement sequences in group and paired activities (See Lara, 2015 and Golding et al., 2016 for fuller details and illustrations of the programme). The classes included 32 children, aged between 5 years and 11 years, with an average of six children per session that undertook the DDT programme. All children were identified as 'having moderate to severe ASD with intellectual impairment' from their medical records. Verbal communication was extremely limited for all children.

Parents of autistic individuals and teachers working in the field of autism were consulted in the conceptualisation, design and implementation of the project with the knowledge that we would be including them in the development of an outcome measure that captures issues of concern to the community. We worked with an autism charity, specialised to deliver movement therapy to autistic children (who engaged with us as an author), the headteacher of a specialist school and the parent of an autistic child to design and implement this work. Our advisors who assisted with concept and implementation included a parent of an autistic child. These advisors informed our decision to retain 'stakeholder' specific focus groups to avoid any influences of (un)conscious perceptions of power or authority within the groups impacting on contributions to the group. There was agreement that focus groups had potential to encourage freer discussion than individual interviews. Further, we endeavoured to use identity-first language to refer to autistic individuals, in alignment with current best-practice recommendations (Bottema-Beutel et al., 2021, Autism in Adulthood) to avoid a disorder-focused approach. Although this is at times in contrast to the ICF terminology referring to autism spectrum disorders (ASD) (Bölte et al. 2019), despite its attempts to move away from more medicalized language.

Participants and recruitment

Teachers, Learning Support Assistants (LSA) and parents of children participating in DDT classes were recruited via the specialist school hosting the MovementWorks® programme. Dance therapists/practitioners were invited from those who were involved in delivering, supervising or researching therapeutic dance programmes in South London. Potential participants were provided with information about the project, inviting them to attend one of three separate focus groups. Consent forms were returned to the lead researcher who then contacted individuals to coordinate suitable dates. No incentives were offered to study participants. Focus groups for parents took place in a dedicated room at the school environment kindly provided by the headteacher at times carefully integrated to suit school pick up time, to ensure minimal disruption. Focus groups for teachers took place in the same room on a different date and for therapists the focus group took place in the University premises. Travel expenses were compensated for study participants.

Procedures

The focus groups were undertaken in 2016–2017 at the half-way point in the school year. Stakeholder specific focus groups of therapists (practitioners), parents and teachers were led by a research lead (CM) following an open script that invited comment and discussion on the benefits and challenges (to implementation or outcomes) as well as what could help improve current practice of dance movement based therapy/ies. A second independent group lead facilitated recording and discussions for the parent group. Topics focussed on (1) the perceived benefits of dance movement based therapy/ies for autistic children, (2) specific areas of improvements noted in the children/their child, (3) aspects that parents or therapists would like to have seen more progress on and (4) any perceived negatives/challenges of the DDT programme. Focus group sessions were audio recorded and members were requested to preserve anonymity of the participants in their group. Audio recordings were transcribed verbatim with codes assigned to anonymise and de-identify individuals speaking or mentioned during the group.

Analysis

Transcripts were analysed for themes via an independent research assistant (RA), unfamiliar with the levels and categories of the ICF, using qualitative content analysis via software (NVivo 12; QSR International, 2018) following a five-step process: (1) reading and rereading data for familiarisation; (2) identifying and coding all relevant features of data; (3) collating data into initial themes; (4) reviewing themes to consider any shared patterns or concepts including analysis of manifest and latent constructs; and (5) labelling themes (Braun & Clarke, 2012). An inductive thematic approach was

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utilised for data analysis to capture manifest and latent meanings, without predetermined categories or theoretical frameworks (Bernauer et al., 2013; Braun & Clarke, 2012). All transcripts were imported to NVivo 12 by the RA who coded the content line by line under weekly supervision of one academic lead (CM). Codes were organised and grouped into initial themes, with repeated reference to original transcripts. Regular meetings were undertaken between the RA and CM and DG, who independently read transcripts and highlighted content for coding to discuss codes and emerging themes and discuss disagreements until a consensus was reached. A final set of themes for benefits and challenges was then constructed. Themes and content were then mapped against the ICF (components, chapters and categories) to define items for development of an outcome measure consistent with the Core Sets across the entire lifespan of the ICF identified for ASD (Bölte et al., 2019) in view of the ages of children crossing the pre-school and school-age. We also wished to consider future use of a tool with capacity to consider impacts for adolescents and adults. The ICF is a comprehensive framework across multiple levels and types of functioning, disability and health, whereas the Core Sets for autistic individuals were developed by stakeholders involving parents, teachers and health and social care professionals and allowed for a more focused approach to mapping relevant factors (Bölte et al., 2019). Content identified via the process of qualitative content analysis were linked to relevant 'body structure and function', 'activities and participation', and 'environmental factors' components of the ICF and second, third, and fourth level categories within each chapter.

RESULTS

Participants

Two MovementWorks DDTs (only one of whom had delivered the programme to the children involved in the study) and one external registered dance movement psychotherapist consented to and were available for a focus group; two with an MSc and the latter with a PhD. All had between five to 10 years of clinic/educational professional experience. From a potential pool of 32 parents, four mothers consented but only two were available to attend a focus group, the other two offering to join remotely but limitations to available technology prevented them from joining. Teachers from all four classes included in the study participated alongside two LSAs: all with more than 2 years' experience of specialist teaching for autistic children. This resulted in three focus groups overall.

Themes and categories

Four themes emerged; three representing key areas of behaviour, skills and social interaction of the child and a further theme of environmental supports were identified. Table 1 illustrates the areas identified for positive benefits of the DDT programme. Table 2 illustrates potential challenges of the DDT programme. While the themes and categories corresponded across both positives and challenges, aggressive behaviour was raised by participants only when discussing challenges.

Figure 2 illustrates the differential perspectives and emphasis of therapists, teachers and parents with respect

TABLE 1 Themes, categories and descriptors identified for potential positive outcomes of DDT.

Theme	Category	Description of content
Behaviour	Self-stimulatory and restricted behaviours	Decrease in behaviours such as stimming, eloping (escaping)
	Emotional expression	Increases in emotional expression, regulation, less outbursts, confidence, enjoyment, trust
	Habits and routines	Eating habits, sleep routines, understanding of structure and anticipation of what comes next
Skills	Cognitive	Increased ability to follow instructions, memory, creativity/imagination, self/situational awareness
	Attention	Increased concentration, focus and attention
	Engagement	Engagement within specific tasks and session leader
	Independence	Transitioning from nappies to toilet trained, asking to go to the toilet, completing tasks without assistance
	Physical and sensory development	Balance, co-ordination fine and gross motor skills, activity, fitness, body, spatial and sensory awareness, tolerance of physical proximity to others, being able to sit still
Social interaction	Social interaction	Increased social interaction with adults
	Communication	Increases in verbal and non-verbal (eye-contact), communication and mirroring
Environmental support		Benefits of teacher involvement/support in sessions

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TABLE 2 Themes categories and descriptors identified for potential challenges for implementation of DDT or achieving outcomes.

Theme	Category	Description from transcript
Behaviour	Self-stimulatory and restricted behaviours	Restricted interests, e.g. obsessions with technology/TV programmes, behaviours such as flapping and stimming
	Emotional development	Difficulties expressing emotions/feelings, regulation, understanding of emotions
	Habits and routines	Sleep duration, daily routines, e.g. getting dressed independently
	Aggressive behaviour	Physical aggression towards others and self, e.g. outbursts more intense
Skills	Cognitive development	Creativity/imagination did not increase as much as key stakeholders expected
	Engagement	Lack of engagement at beginning of programme, misusing props, disengaging
	Independence	Independence, e.g. getting dressed independently
	Physical development	Hyperactivity, lack of strength
Social interaction	Engagement	Lack of engagement at beginning of programme, misusing props, disengaging
	Social interaction skills	Lack of ability to interact / play with same age peers and /or siblings
	Transferability of skills	Lack of generalisability of skills outside the session
Environmental support	Environmental support	Teacher/therapist collaboration

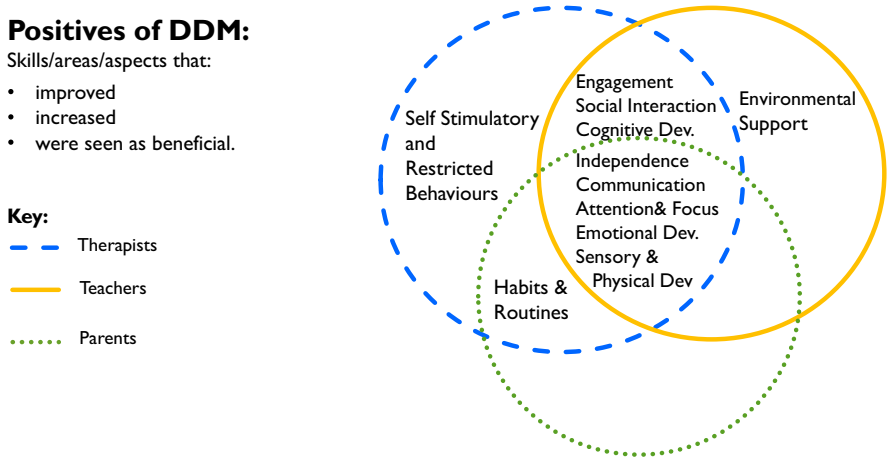

FIGURE 2 Positives of DDM from perspectives reported by therapists, teachers and parents.

to the themes and content of the positive aspects of the DDT programme. Differences were noted, particularly with respect to the importance of the programme on habits and routines and behaviour from the parental perspective. In considering some of the differing perspectives of positive aspects of the dance programme, teachers referred to the benefits of routines with respect to the outcomes of repetition and structure:

> '*…One or two who were really kind of noticeable that they would almost never follow instructions and then within MovementWorks a few of us were just really surprised that suddenly they were—four movements four sounds were coming out…*' (T1).

T3 continued: '*And that was, that was a result of repetition, structure, routine.*'

Teachers also considered the structure of the programme when talking about spatial awareness:

> *'That's the youngest ones; that has really improved with it, because they do so much about that. They do the walking on the line, first of all they wouldn't have a clue where the line was, what the line is'* (T2) '*What to look at'* (T3) *No. They would just be everywhere. But because of the repetition and the structure and the routine that's really improved'* (T2).

Whereas for the DDT practitioners (DDTp), discussion of structure and routine focused on the structure and scaffolding within the dance sequences and across the whole programme:

> *'One of its advantages is it being, especially with the AMT, is it being so structured and then with the DDM it changes, it's always the same, follows the same structure but the activities within it change and are scaffolded so the children know what to expect structurally.*' (DDTp2).

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This is in contrast to habits and routines as discussed by parents with the hope that their child would be more flexible in daily activities and adapt to change/try new things as potential benefits from participating in the dance:

> *'She is eating a wider range of food than she was before and she's more accepting of trying it now.' (P1)*

> *'Yeah, he's more calmer now, he's more calmer.'* (P2)

> *'He goes to bed, he puts himself to bed when he's tired he just goes to sleep.*
>
> *Before that he would just you know, try and fight it'* (P2).

Figure 3 illustrates the differential perspectives across the groups of the challenges of the DDT programme. Parents discussed habits and routines also with respect to the challenges for their child in daily activities for example in:

> *'Using the toilet'* (P1) or with sleep *'It hasn't worn her out any extra, [laughs]. It hasn't made a difference to the sleep [laughs]'* (P1).

A different approach was taken by teachers when talking about flexibility and adapting to change. Teachers referred to this in relation to the DDT practitioner and dance programme rather than the child's behaviour:

> *'But she [DDTp] was very flexible. But it's being flexible.'* (T2)

> *'you need to be flexible and adapt to individuals or the group accordingly.' (T3)*

> *'I think yeah being flexible is [important] and obviously every class and every child is very different as well, so children will respond differently.'* (T5)

This point is expanded on in comments by teachers with respect to creativity:

> *'So in dance they'd still be creative'* (T4)

> *'Yeah they'll be a bit more creative'* (T2)

Nuanced differences were also noted with respect to 'independence' with teachers linking this to independent working in contrast to the confidence to work in a group but with DDT practitioners and parents linking independence to more practical daily living tasks:

> *'I'm thinking of children that I've seen in dance lessons that are really anxious to just express themselves in front of other people…and they have to get used to the children that they are around and feel confident to share'* (T4).

> *'Just because of working together, the holding hands, dancing, skipping or whatever it is they are doing, that sort of thing, even if they are just waiting in line, the sort of understanding of respecting each other's space has improved and respecting the fact that they are er waiting to do something basically'* (T1)

> *'Being able to complete a new task independently'* (DDTp1)

> *'Using the toilet and she actually asks now, she was in nappies when she first came here so…'* (P1).

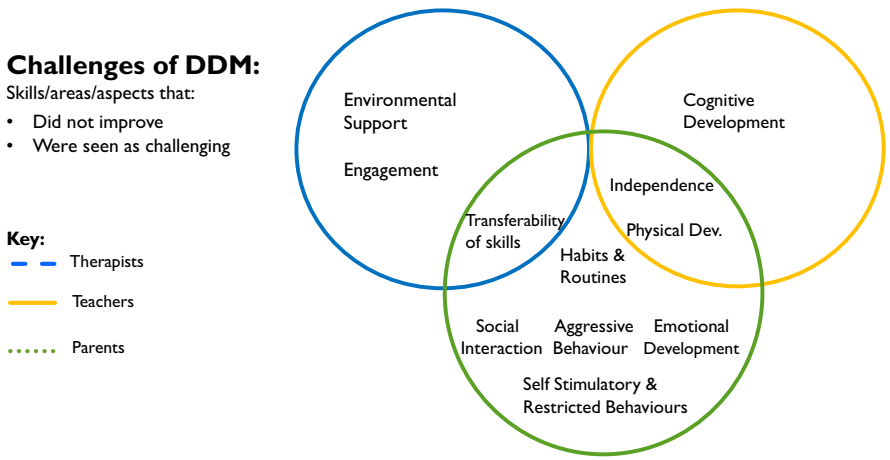

FIGURE 3 Challenges of DDM from the perspectives of therapists, teachers and parents.

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Figure 4 summarises the content listed in Tables 1 and 2, matched to identified ICF Core set categories. Most items matched against components of body function and activity and participation. Impacts from environmental supports reflected physical supports, societal attitudes, general support with systems and policies and role of health education and training. Items raised across the groups mapped against 28 s-level categories of the 111 categories (which include one body structure category) in the ICF Core Sets for ASD (Bölte et al., 2019). The majority of items mapped were to categories under body functions (10 of 20, 50%), followed by activity and participation (13 of 59, 22%) and five of 31 (16%) environmental categories. An additional six categories were mapped on the ICF-CY (WHO, 2007); one body function, four activity and participation and one environment. Seven categories appeared as both benefits and challenges, with one mismatched item related to creativity and imagination. For benefits, domains of body functions had six categories, activity performance two, participation five and environment two. For challenges, six categories were identified in body function and three activity, two participation and two environmental categories.

DISCUSSION

The purpose of this study was to explore the expectations and experiences of a DDT programme for autistic children from the perspectives of key stakeholders (namely dance therapists, teachers and parents) with a view to identifying relevant items for outcome measurement. Four main themes of behaviour, skills, social interaction and environmental supports emerged, with content mapped against the ICF Core Sets (Bölte et al., 2019) in relation to the needs of autistic children.

All stakeholders focused on the importance of fundamental skills for independence. While therapists also considered how the DDT programme may influence self-stimulatory or restrictive behaviours, teachers were interested in environmental supports (to support independence) and parents were concerned with how the DDT may impact on habits and routines. Therapists and teachers also highlighted potential to support social and cognitive skills. When looking at potential challenges for the DDT programme, the same themes emerged with concerns over independence, but these were much more framed by the focus of the role of each group of stakeholders. Therapists highlighted the challenge of engagement and the importance of environmental support, whereas teachers focused on the challenge of cognitive development. Parents similarly drew out aspects they personally encounter in the home environment; aggressive, self-stimulatory and/or restrictive behaviours, challenges with habits and routines, emotional development and social interaction. Areas of crossover with parents only occurred with therapists on transferability of skills and with teachers on independence and physical development. No areas of crossover of challenges occurred between all three stakeholder groups, which further serves to highlight the importance of having opportunities to share perspectives for optimal outcomes, as well as need for common terminology across contexts of health and education (Simeonsson et al., 2003).

One of the key strengths of arts activities is that they have potential to challenge executive functions while

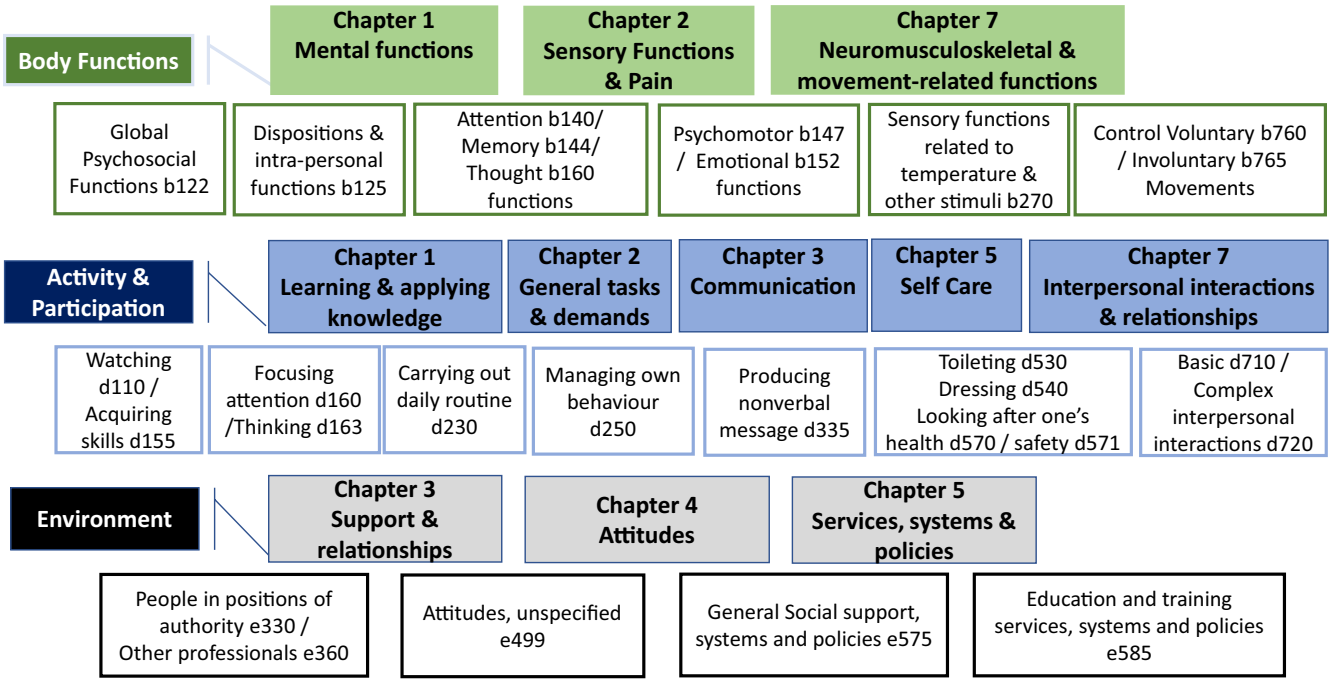

FIGURE 4 Summary of components, chapters and categories of the ICF Core Sets (Bölte et al., 2019) matched to content.

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supporting social, emotional, sensory and physical needs (López-Ortiz et al., 2019; Richardson, 2022; Teixeira-Machado et al., 2022). As dance is predominantly a sensorimotor experience, expectations for improvements in skills were unsurprisingly aligned across all three focus groups at the body function level. Findings from our study are consistent with those from the systematic review of Amonkar et al. (2021) that refer to creative movement approaches being grounded in Dynamic Systems Theory and Shared Affective Motion Experience which are both theories based on the concept of cognition being enactive; emphasising the inter-relationship between sensory-motor-cognitive development.

Considering the recognised risks of delays in gross and fine motor skills in young autistic children (Bhat et al., 2020; Downey & Rapport, 2012; Fournier et al., 2010; Green et al., 2009; McCleery et al., 2013; Provost et al., 2007) and with reduced movement ability having also been associated with more limited social communication in autistic children (Ohara et al., 2019), dance movement is broadly perceived to be helpful (Scharoun et al., 2014; Teixeira-Machado et al., 2022). Given that it is acknowledged that motor and cognitive development typically follow similar trajectories (Leisman et al., 2016) the MovementWorks® DDM and AMT programmes primarily function to foster learning though a crafted kinaesthetic sensorimotor (embodied) experience in order to better support children who find traditional teaching methods difficult to access (Benson et al., 2020). The potential for increased cognitive development through DDT was highlighted by therapists and teachers (teachers particularly referring to benefits of creativity) but this was not an area considered by the parents. Learning through the arts may contribute positively to enhancing creativity, imaginative play and therapeutic goals, including motor control and motor skills (Green et al., 2013) and with accompanying neuroplastic changes (Slater & Tate, 2018; Weinstein et al., 2015).

The DDT programme incorporates the more widely evidenced extra beneficial supporting factors of rhythm and music which provide temporal and emotional support assisting with expression and communication (Lopez-Ortiz et al., 2019). The structure of rhythm and use of music underpinned by entrainment theory (Trost et al., 2014) has the potential to contribute to language (Wan et al., 2010), social interaction (Hardy & LaGasse, 2013) and social bonding (James et al., 2015; Lang et al., 2016). Our study concurs with this literature, given that possible benefits for communication were acknowledged across all stakeholders.

Hardy and LaGasse (2013) explored rhythmic rehabilitation as a model for autism as a support for environmental navigation. This is further supported by Srinivasan and Bhat (2013) in their review of music and movement therapies for autistic children, embodied interventions using music and movement may support multisystem approaches as therapeutic tools for autistic children and as alternative channels for expression, communication and human connection (Sharda et al., 2018). This correlates with our findings of the potential for DDT to impact on environmental supports for independence. Teachers and therapists may have expressed this differently, using different terminology from parents, who also recognised the benefits in creating habits and routines but emphasised flexibility in the child's behaviour to adapt to changes within the environment(s). It was not clear whether the perspectives were similar and expressed differently, or whether fundamental differences in how environments and environmental supports are considered. From an educational perspective, Carpenter et al. (2016) reflected on the resources educational environments may provide to support anticipation, creativity (initiation and curiosity) along with behaviours to enhance children's engagement in learning. This is in contrast to the ICF-CY (Bölte et al., 2019) where the environment is considered from predominantly physical (access), attitudinal (social) or policy perspectives.

Woo and Leon (2013) provide support showing sensorimotor environmental enrichment benefits child development as evidenced also with recent studies exploring the role of Forest Schools for autistic children (Friedman et al., 2022). Enhancing opportunities for sensorimotor challenges through adventure playgrounds have also been shown to be effective in developing trust and communication for autistic children (Zachor et al., 2016). Consistent with Zachor et al. (2016), the framework of a DDM/AMT session may provide students with the ability to anticipate and understand expectations, developing a level of trust and reducing feelings of anxiety that may otherwise lead to eloping or aggressive behaviours. Emotional functions were identified by all stakeholders, and particularly parents with respect to the challenges, which are consistent with systematic reviews of the impact of dance in developmental disorders (Amonkar et al., 2021; DeJesus et al., 2020; Takahashi et al., 2019). This is in line with the transactional framework described by Green and Payne (2018); dance may provide enjoyable active experiences that may shift expectations (attitudes) as well as opportunities for sensory-motor, cognitive and emotional development.

In mapping findings to the ICF, it is notable that there are no categories representing 'creativity' within the ICF or Core Sets. The abilities to imagine, pretend and develop new ways of moving and interacting with the environment have been shown to have a role in child development (Alper & Ulutaş, 2022; Lai Keun & Hunt, 2006). Within the ICF-CY, the second order category d131, 'Learning through actions with objects', describes symbolic and pretend play in relation to use of objects but neglects the more creative imaginative elements of play. The ICF-CY category, d880 Engagement in play, focusses on the social aspects of play, albeit at the third level which allows for 'other as specified or unspecified'. Core elements of play have been described as: intrinsic motivation, free choice, self-determination,

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enjoyment or pleasure, active engagement, nonliterality, exploitation, competence, achievement and playfulness (Parham, 2008; Skard, 2008). On the other hand, Eberle (2014) sets out six core elements for the concept of play: anticipation, surprise, pleasure, understanding, strength, and poise. Both approaches fail to consider more creative elements of 'artistry' in development. Yet, children's engagement in arts programmes has been documented as contributing to better problem solving skills (Alper & Ulutaş, 2022). Our findings of the perspectives of parents, teachers and therapists are aligned with some of these aspects. 'Cognitive' skills were not explicitly stated in relation to higher level cognitive functions (b164), which incorporate abstraction and organisation of ideas and cognitive flexibility. These constructs are not necessarily the same as creativity or imagination per se, since problem solving (d175) is defined as the activity of 'solving simple or complex problems' (ICF, 2007). Creativity, imagination and flexibility in problem solving are recognised as areas of difficulty for many autistic children, with implications for engagement in pretend play with peers impacting on social interactions (Campbell et al., 2016; Jarrold, 2003).

Reflecting on the importance of engagement in educational and learning acrivities, these findings are consistent with those of Carpenter et al. (2016). Carpenter et al. (2016) highlighted the role of anticipation, initiation and curiosity along with investigation, persistence and discovery, as important factors for engagement of children with complex learning disorders in educational environments. Notably, among these behaviours, only 'persistence' is present as a behavioural feature in the ICF-CY (b125; WHO, 2007). This raises important issues, not just with respect to 'creativity' within medical models of impairment, but also the terminology used to reflect skills and deficits which differ between medical and educational programmes (Bölte et al.,2019; Carpenter et al., 2016). Utilising the transactional framework set out in Figure 1, we can build on the common language of the ICF; extending this to provide an avenue for understanding the dynamic interactions between the person, context and environment based on the expectations of key personnel in control of providing the opportunities for experiences. Capturing these interactions in an outcome measure will be a challenge. Across dance and music and movement based approaches, there is a need for a commonality of language to compare and contrast the potential benefits. McConachie et al. (2015) highlighted some of these challenges illustrating the differences in methodologies and outcome measures depending on perspectives of researchers. Our study has taken a different perspective in attempting to identify outcomes of relevance to key stakeholders to define a measurement tool that utilises a common language in order to consider effectiveness of the programme but also explore the salient ingredients of change. Both our study and the literature identify gaps in defining the role arts have as skills (imagination and creativity) and participation (in play, learning and leisure) which are not captured within ICF domains, with the only mention of arts under recreation and leisure as 'attending art galleries' (d920; WHO, 2007).

The findings from the current study were considered relative to the extent in which they may overlap for the future purpose of developing a specific validated measurement tool. This aim is in line with recent research objectives in developing appropriate and specific measurement tools for this population (Napoli et al., 2021). While individualised goal-setting is an imperative for child and family centred approaches to intervention, these do not easily allow for comparisons of effectiveness of particular therapies. Development of a tool that incorporates the key categories identified for movement and arts based therapies, which are consistent with the ICF, but allow for situated context for different stakeholders will be important. This may potentially be achieved by 'weighting' pre-defined items (for comparability between stakeholders, including children, and or interventions) by level of importance as well as then rating behaviours by level of skill or performance (Turner-Stokes, 2009). The key domains and categories identified in this study will form the basis of a pilot project to define an outcome measure for dance, movement and arts-based interventions.

Motor impairment is not currently included in the diagnostic criteria for autism (Licari et al., 2019). However, deficits in perceptuo-motor performance have been linked to cognitive development, communication and social skills and are attributed to shared neuroanatomical functioning (Ohara et al., 2019; Su et al., 2022). Kaur et al. (2018) call for the recognition of motor dysfunction as integral to the difficulties of autistic individuals and Licari et al. (2019) suggest these difficulties become a specifier in the DSM diagnostic framework. This disrupts the current conception that autism is primarily a communication and social impairment. Despite this increasing evidence, studies within this area focusing on dance are few and often lack a description of perspective and/or the particular approach of the intervention (Aithal et al., 2021). Similarly, systematic reviews providing stakeholder perspectives and evaluation of movement and dance approaches are few (Amonkar et al., 2021). Furthermore, benefits are not substantiated as the data demands an appropriate tool for measurement. Based on current systematic reviews (Aithal et al., 2021; Amonkar et al., 2021) it seems appropriate to advocate for a standardised measurement tool that would serve the therapeutic outcomes of a broad range of dance practices/interventions which move away from analyses of symptomatology (Frazier et al., 2023).

Furthermore it is suggested that creative fun movement activities such a whole-body yoga and rhythmic music and movement should be encouraged by clinicians and educationalists (Kuar et al., 2018; Stamou et al., 2019)

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to better link the fields of dance movement based therapy/ies across health and education. As a response to the call for more research to explore the use of dance-based interventions for autism, this study provides much needed perspectives across stakeholders and is the first step towards the development of a standardised evaluation tool for this specific purpose.

LIMITATIONS

There are a number of limitations to the study, not least the small numbers of stakeholders involved and the lack of representation of autistic individuals and limited representation of caregivers as we were unable to coordinate virtual participation. There is a need for greater representation across larger samples, and scoping review of items of potential impact from other creative/dance movement programmes for autistic individuals to see if they would differ from or reinforce our findings as we work towards developing a suitable outcome measure. This highlights the challenges associated with engaging families, teachers and therapists in research, let alone autistic individuals (Haas et al., 2016). Complexities and practicalities affecting recruitment, participation and follow-up exist among the stakeholders, such as engaging independent DMT's, access to teachers' time and also ability for families to travel to attend. A potential pool of 32 parent perspectives highlights the difficulties in capturing these key perspectives. However this should not distract from the importance of including parental voices in order to capture issues of value and meaning to them. This latter point has been overcome somewhat with the move to more 'digital/virtual' participation in interviews and focus groups post COVID-19 pandemic; although the ability of families to engage with research when many other pressing concerns consume family time, remains a problem in engaging families in research. It is especially important to consider ways to capture the childrens' independent perspectives and incorporate these into an accessible outcome measure.

CONCLUSIONS

Our findings identified the commonalities and differences in expectations of therapists, teachers and parents from therapeutic programmes, in this case a developmental dance therapy intervention. The study highlights the need for a commonality of language and ways to measure skills, behaviour and environments, as well as habits and routines, across relevant outcomes and contexts that meet the needs of key stakeholders. Linking findings to ICF core sets in ASD marks a progression in identifying acknowledged and potentially new categories of functioning. This is the first step towards developing a specific novel measurement tool for dance movement research and the impact of dance interventions in educational and clinical settings. A gap is evident across the ICF domains for quantifying the unique impact of therapeutic dance movement interventions in areas of creativity and imagination, which have the potential to be beneficial across broader areas of functioning of autistic individuals.

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CONFLICT OF INTEREST STATEMENT

Ali Golding is the founder as well as Artistic and Managing Director of MovementWorks®, the programme that was delivered in the special school which included children, parents and their teachers. The research does not report on outcomes of this particular programme and the focus groups were led and analysed by individuals not related to MovementWorks®.

DATA AVAILABILITY STATEMENT

Data not shared to retain confidentiality.

ETHICS STATEMENT

This study was approved by the University Research Ethics Committee (UREC/16.2.5.10) of the University of Greenwich.

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