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A systematic review of the role of group music therapy for enhancing prosocial behaviour in children with autism spectrum disorder

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Abstract

Individuals with Autism Spectrum Disorder (ASD) tend to experience core deficits in prosocial skills, which can have a lifelong impact on socialisation, communication and forming meaningful relationships with others. While early childhood interventions for ASD are recommended, opportunities for children of primary school age with ASD to learn and practice social skills are also crucial. Since individual music therapy has been widely recognised as an effective intervention for ASD, the aim of this integrative literature review was to investigate the role of music therapy in a group setting for enhancing the prosocial behaviour of children (age five to 14) with ASD. Although the term “prosocial” is generally linked to social competency, it lacks conclusive definition in ASD research and thus needed to be addressed within this review. Eight studies met the eligibility criteria, of which five were quantitative and three were qualitative. Findings from all eight studies suggested that group music therapy provides benefits for the development of prosocial skills in children with ASD because of the type of proximity to peers that is facilitated in sessions that provides opportunities for interaction, communication and shared play. What also emerged was that the music therapist plays an important role in facilitating the subsequent processes of interaction with other group members. Some evidence for how music therapy functions in offering opportunities for learning and practicing prosocial skills are also presented. Recommendations are made for further research into the precise function of specific music therapy techniques and standardised assessment measures for prosocial skills in relation to children with ASD.

Keywords

Autism Spectrum Disorder; children; prosocial; group music therapy.

UNIVERSITY OF PRETORIA

FACULTY OF HUMANITIES

RESEARCH PROPOSAL & ETHICS COMMITTEE

DECLARATION

Full name: **Maritsa Joy Barlow**

Student Number: **U19305762**

Degree/Qualification: **MMus Music Therapy**

Title of thesis/dissertation/mini-dissertation:

A systematic review of the role of group music therapy for enhancing prosocial behaviour in children with autism spectrum disorder

I declare that this thesis / dissertation / mini-dissertation is my own original work. Where secondary material is used, this has been carefully acknowledged and referenced in accordance with university requirements.

I understand what plagiarism is and am aware of university policy and implications in this regard.

10/10/2021

SIGNATURE **DATE**

Dedication

I live in a time of tremendous privilege where not only do I have access to creative therapeutic modalities for my own development, but I also had the wonderful opportunity to study and immerse myself in the field of music therapy and find my true calling. Technology and vaccinations also meant that I could finish my studies in the midst of a worldwide pandemic. I look back to my grandparents and dedicate this degree to them. I honour their grit and determination during difficult life circumstances where they did not have the support and opportunities we have today, and I appreciate all the ways in which they contributed to my musical and academic development.

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Chapter 1: Introduction

1.1 Background and context

Global estimates of Autism Spectrum Disorder (ASD) put the prevalence at 1 in 160 persons, although this number might be an underestimation since prevalence of ASD in low to middle income countries remain unclear (Abubakar et al., 2016). ASD is a lifelong condition characterised by core deficits in prosocial skills, such as socialisation, communication and initiating and maintaining relationships (Schwager, 2021) and treatment interventions mainly include behavioural therapies to enhance overall wellbeing and development (Medavarapu et al., 2019). Interventions aimed at targeting prosocial behaviour are important as these deficits impact overall quality of life and can reduce the capacity to form meaningful relationships. Music therapy has long been established as an effective intervention, possibly owing to the predictability and highly structured nature of music which makes it attractive to individuals with ASD (Baron-Cohen, 2008).

Research studies on the efficacy of music therapy for clients with ASD often lack specificity regarding type of intervention and specific skills targeted (Boster et al., 2021; Simpson & Keen, 2011). The age range of participants is also not always sufficiently specified (Marquez-Garcia et al., 2021), very wide, or limited to pre-school children. Schools are the primary service providers for children with ASD and effective, economically viable interventions within educational contexts are vital. Kasari and Smith (2013) report a lack of evidence-based interventions for ASD in schools and further suggest that interventions should be tested where they are to be implemented. Some studies have shown that music groups offer unique opportunities for socialisation with individuals with ASD (Eren, 2015; White, 2015). Group interventions can also reach multiple children simultaneously, making it more effective and less costly. Group norms can provide opportunities for social skills development in ASD and provide opportunities for engagement with peers (Williams White et al., 2007).

1.2 Research aim

The aim of this study is to explore the available research on the development of prosocial skills in children with ASD through the use of group music therapy. This exploration will be carried out systematically through an integrative literature review. One of the benefits of a systematic process is that it aims to gather all known research on a specific area of interest, which then provides a bird's eye view of the research topic. This in turn allows the researcher to make recommendations to practitioners in the field. If specific interventions can be identified that appear effective in developing prosocial skills, this can assist practitioners in tailoring their interventions. A systematic literature review process can also identify gaps in the literature and serve as a motivation for further research (Grant & Booth, 2009). If little or no results are found, this will serve as a motivation for more research in the field of group music therapy and ASD.

1.3 Research questions

The primary research question that guided this study was:

- Does music therapy in a group setting improve prosocial skills in children with autism spectrum disorder?

The following secondary research questions followed on from the primary question:

- To what extent has group music therapy been researched as an intervention for the development of prosocial skills in children with autism spectrum disorder?
- Which specific prosocial skills, if any, have been developed in children with autism spectrum disorder through group music therapy?
- What are the affordances of group music therapy that allows for the development of prosocial skills in children with ASD?

1.4 Chapter overview

The second chapter gives an overview of ASD with specific focus on problems with socialisation and communication. It then provides an overview of the literature on prosocial skills and music therapy in ASD and situates the background for this review in the current literature. Chapter three explains the methodology of this study, offers a rationale for doing a systematic literature review, and describes the benefits and process of an integrative review. It also describes the various stages of the literature search and specifically clarifies the language used when

searching for “prosocial” behaviour. The results from the literature search as well as the studies chosen for inclusion in the review are presented in chapter four. Relevant key points from each study are first summarised in table format and then further discussed and compared. Chapter five addresses the research questions and provides further implications for music therapists and researchers in the field of ASD. In the last chapter, the study is concluded and limitations and suggestions for further research are provided.

Chapter 2: Literature review

2.1 Introduction

In this section I will give a brief overview of ASD with specific focus on the social and communication difficulties involved. I will then discuss music therapy and ASD, and finally explore definitions of prosocial skills as this relates to ASD and music therapy.

2.2 Autism Spectrum Disorder

ASD, as defined by the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5) (American Psychiatric Association, 2013), is a neurodevelopmental disorder characterised by a heterogeneous constellation of social and behavioural difficulties, the most prominent being social interaction and communication. Deficits are observed in the areas of social reciprocity and nonverbal communication, which influence social interaction and the development and maintenance of relationships. Apart from social communication deficits, a diagnosis of ASD also requires observable patterns of restriction and repetition with regard to behaviour, interests or activities. The prevalence of children with ASD in the United States is currently estimated by the Centres for Disease Control and Prevention to be one out of 54, with boys being four times more likely to be affected (CDC, 2012). These numbers are the most widely accessible, while global figures remain difficult to access. There are no differences in the prevalence of ASD across diverse racial, ethnic and socioeconomic groups (Maenner et al., 2020).

ASD is a lifelong condition with diverse symptoms that range from mild to severe and individuals often present with substantial comorbidities (Lord et al., 2018). Although the precise cause and development of ASD remain unclear, the strongest evidence points to genetic factors (Bai et al., 2019). The implicated genomic imbalances in ASD share commonalities with epilepsy and intellectual disability, and current genetic research may result in a better understanding of the neurobiological implications which might lead to the development of new therapeutic interventions (Betancur & Coleman, 2013). Since ASD is characterised by atypical brain connectivity, researchers are also starting to investigate neuroimaging as an assessment tool in determining intervention efficacy (Sharda et al., 2018).

2.3 Early intervention for ASD

Early interventions that take psycho-educational, behavioural and developmental approaches to address the core deficits of ASD are widely accepted to be crucial in reducing the long-term

negative impact of the condition, thereby improving quality of life for individuals with ASD (Corsello, 2005; Khan et al., 2012; Weitlauf et al., 2014). Unfortunately, barriers to treatment exist for many families and communities worldwide due to delays in diagnosis and lack of access to specialised interventions (Hahler & Elsabbagh, 2015). These barriers are more prevalent in low income countries as early-intervention strategies are often labour-intensive, specialised and costly (Hastings et al., 2012; Khan et al., 2012). Kahn et al. argue for more research in this field to address the needs of diverse and under-resourced communities, stating that research into culturally-sensitive and community-based models of alternative intervention treatments for ASD will increase its generalisability to and accessibility for low income settings.

2.4 Socialisation and communication in ASD

Social interaction deficits are a hallmark of ASD and are seen across a range of developmental and cognitive levels of functioning over the lifespan (Carter et al., 2014). These deficits also include communication difficulties and language delays (Baron-Cohen, 2008), and impairments in areas of socialisation and communication often overlap. The diagnostic criteria for ASD in the DSM-5 underscore this fact by including both social communication and social interaction in one diagnostic category. The manifestations of these challenges in the social and communication spheres are described in the DSM-5 (APA, 2013) as deficits in social-emotional reciprocity, non-verbal communicative behaviours used for social interaction, and developing, maintaining and understanding relationships. In general, when persons are newly diagnosed with ASD, health practitioners pay specific attention to their range of social communication and interaction when formulating intervention and treatment plans (Murray, 2012). One reason why social functioning is so well-researched and an important focus point for the treatment of ASD is the fact that social skills have a lifelong impact on functioning, as they affect family and community interactions, academic skills, self-worth and independence (LaGasse, 2017).

Current research is showing that social prediction errors and difficulty interpreting the intentions of others might underly social deficits in ASD (Balsters et al., 2017). This correlates with the two-factor empathising-systemising theory of ASD which references delays and deficits in empathy. According to this theory, low empathy is a way to explain social communication difficulties in ASD while high systemising (the drive to analyse or construct systems) is a way of explaining repetitive and restrictive interests and behaviours. The strength of this theory is that it explains both the social and non-social features in ASD (Baron-Cohen, 2008).

Deficits in various foundational processes of social behaviour, such as eye gaze, imitation and joint attention, can be an early indication of ASD in infants. Together these behaviours form more complex skills such as social use of language, symbolic play and social cognition (Davis & Carter, 2014). Integrated approaches that address these processes are therefore highly suited to assess as well as treat children with ASD.

2.5 Prosocial skills

Prosocial behaviour is generally defined as any voluntary behaviour that benefits another (Eisenberg et al., 1997). Definitions of prosocial behaviour are often concerned with motive. For example, Eisenberg et al. (2010) define prosocial behaviour as

> a superordinate category that includes different kinds of behaviours, for example, helping, sharing, and comforting, as well as behaviours enacted for diverse reasons. Prosocial behaviour can be motivated by a host of factors, including egoistic concerns (e.g., the desire for reciprocity, a concrete reward, or social approval, or the desire to alleviate one's own aversive emotional arousal), practical concerns (e.g., the desire to prevent waste of goods), other-oriented concern (e.g., sympathy), or moral values (e.g., the desire to uphold internalized moral values such as those related to the worth or equality of all people or a responsibility for others). Altruistic behaviours—a subtype of prosocial behaviour—often are defined as prosocial behaviours motivated by other-oriented or moral concerns/emotion rather than egoistic or pragmatic concerns (p. 146).

Other authors make a distinction between the terms “prosocial behaviour” and “altruism” by pointing out that altruism has added characteristics of perspective-taking and empathy (Bierhoff, 2002). For the purposes of this integrative literature review, the focus will be on the behaviour itself and not the functions thereof. What is very clear from the research is that prosocial behaviour is positively correlated with social competency (Eisenberg & Fabes, 1998). In ASD, this relates to the empathising-systemising theory of autism described by Baron-Cohen in section 2.3. In his study on the use of music therapy towards social development in children with disabilities, Bai (2019) explains that the definition of prosocial behaviour can vary depending on the context, situation and individuals involved. This became evident in the early scoping searches of the review. The following section will aim to clarify prosocial behaviour in the context of this specific study.

2.5.1 Prosocial skills in children with ASD

Jackson and Tisak (2001) define four dimensions of prosocial skills in children that, to varying degrees, involve interaction with others. These dimensions of helping, sharing, cooperating and comforting are important developmental measures since they are within the realm of a child's social thinking. Prosocial skills can develop as early as the middle of the second year in healthy children (Thompson & Gullone, 2003). Development of prosocial skills is found to be an indicator of healthy social and psychological development, where difficulties with prosocial behaviour could indicate a risk for behavioural and affective disorders (Scourfield et al., 2004). Various studies have found that antisocial behaviour and poor social skills could render children vulnerable to bullying and victimisation (Johnson et. al, 2002; Raskaukas et. al, 2010).

A variety of studies suggest that children with ASD experience noticeable impairment in prosocial behaviour (Dunfield et al., 2019). In their study on prosocial skills and ASD, Oerlemans et al. (2018) state that some of the most evident examples of decline in social behaviour may include an inability to support or help others, communicate or cooperate efficiently and share with or comfort others. They explain that these reduced prosocial behaviours in children with ASD may introduce a barrier for building friendships as these are core features of reciprocal relationships. Adding to the argument, Zhao et al. (2019) found reduced prosocial behaviour in children with ASD with a specific focus on the area of feeling empathy as well as showing empathy towards others in general daily interactions. Baumgarten and Wheeler (2016) highlight the adaptive function of prosocial skills such as verbal and non-verbal communication and interpersonal skills and argue that limited adaptive skills lead to a reduction in independence and an inability to cope with various situations and environments, thereby reducing quality of life.

Considering the lack of definitive and generalisable definitions of the term "prosocial" in ASD research, a provisional exploration of existing literature was necessary to compile a list of descriptors used in order to define terminology for this study. For most studies, use of the word "prosocial" serves as a collective term for describing various behaviours that relate to the symptomology of socialisation and communication in ASD (Baumgarten & Wheeler, 2016; Beer et al., 2020; Crozier & Tincani, 2007; Grandgeorge et al., 2012; Jameel et al., 2014; Oerlemans et al, 2018; Rum et al., 2021; Schwager, 2021; Wright & McCathren, 2012). These behaviours are sometimes referred to more broadly, for instance as "socialisation", "social-communication" or "communication", and sometimes more specifically, such as "offering to share" or "talking with peers". In chapter three, a full list of prosocial skills as it relates to this study is provided.

2.6 Music Therapy for Individuals with ASD

Extensive research has been conducted to show the efficacy of music therapy for persons with ASD. A meta-study carried out by Whipple (2004), found that all musical interventions within music therapy were effective for children and adolescents with ASD with regards to the following areas: increasing appropriate social behaviours; increasing communication and engagement; improving body awareness and coordination; increasing body awareness and symbolic play; and reducing anxiety. However, these benefits are not differentiated based on intervention designs and Whipple suggests further research into the efficacy of specific musical interventions. During the same time, other reviews by Kaplan and Steele (2005) and Wigram and Gold (2006) on music therapy interventions for ASD found similar results, with specific focus on the positive effects of music therapy for communication skills, language, psychosocial behaviour as it pertains to relationship with others, emotional responsiveness and attention span. The review by Kaplan and Steele included studies with participants within a wide age range (2-49 years) and focussed mostly on individual music therapy. Wigram and Gold suggested that the positive results in their study offered a good rationale for developing more rigorous research into the complexities of music therapy and context-specific variables.

Shi et al. (2016) conducted a meta-analysis of the effects of music therapy on children with autism in China and found that music therapy can improve mood, language, sensory perception, behaviour and social skills. A Cochrane review published in the same year provided evidence that music therapy may help children with ASD in core issues such as social interaction, verbal communication, initiating behaviour, and social-emotional reciprocity (Geretsegger et al., 2014). While these two literature reviews have found music therapy as a stand-alone as well as complimentary intervention to be successful in improving social functioning, they both included only quantitative research in the form of randomised controlled trials and controlled clinical trials. The Cochrane review also included individuals of all ages. Both studies also included individual and group music therapy.

An integrative literature review that includes both quantitative and qualitative data, focusing on children and group music therapy specifically could make a meaningful contribution to the literature. Due to the importance of early intervention in ASD, most current intervention strategies target children under the age of six years (Weitlauf et al., 2014). Since the school environment offers many opportunities for socio-communicative development, it is important to focus on this population and provide opportunities for social engagement to children in primary school. Developmental transitions remain challenging for children with ASD and more robust

interventions in primary school could assist with transitions into secondary school (Makin et al., 2017). While quantitative research shows the efficacy of music therapy with ASD, qualitative research clarifies and deepens our understanding of the mechanisms behind the intervention, thereby addressing a gap in the research. Music therapy interventions differ widely in their quality and approach, and there is a need for more clarity around which specific techniques target which specific goals in therapy. If the literature review shows that music therapy in a group setting specifically has value in the broader areas of social interaction and communication, practitioners working with ASD could streamline their practice and incorporate more specific music therapy techniques into their group work when social and communication deficits are part of their clinical goals.

2.6.1 Prosocial skills and music therapy

A rapid review carried out by Bai (2019) found that the prosocial behaviours most often targeted by music therapists in clinical practice when working with children with disabilities include effective communication, active listening and responding, conflict resolution as well as empathy. Even more complex concepts such as emotional understanding have been shown to improve as a result of a musical intervention (Katagiri, 2009). The function of music in emotional understanding is a complex phenomenon that involves various mechanisms of human behaviour (Juslin & Västfjäll, 2008), and is specifically linked to emotional modulation through its effect on the hippocampus, auditory cortex, and other structures of the brain (Koelsch, 2020). Numerous studies have shown that music therapy can enhance both verbal and non-verbal communication, which in turn have a positive influence on the development of social skills (Bieleninik et al., 2017; D'Ausilio et al., 2015; De Vries et al., 2015; James et al., 2015; Raglio et al., 2011). Other specific prosocial skills related to socialisation that have shown improvement after music therapy interventions include joint attention (Kalas, 2012; Montgomery, 2015), turn-taking (Holck, 2004), and peer interactions (Kern & Aldridge, 2006; Twyford, 2012).

2.7 Conclusion

Using music therapeutically to address developmental and adaptive goals that target the specific core issues of prosocial behaviour provide an enjoyable, non-invasive intervention for individuals with ASD. As the incidence of ASD increases, there is a greater need for more specific guidelines on the efficacy of different therapeutic modalities. Economic realities play a role in delaying early intervention for individuals with ASD. Group-based therapeutic activities in special education settings can be of great value in this respect. Integration of skills from music therapy groups into the school day provide continuity, and when a larger number of students are

targeted, interventions become more cost-effective. Music therapy in a group setting demonstrates added benefits in term of peer interactions (Kern & Aldridge, 2006; Sussman, 2009). It would therefore be of value to analyse the available literature and make recommendations for specific group music therapy interventions that enhance prosocial skills in children with ASD.

Chapter 3: Methodology

3.1 Introduction

This chapter will discuss the motivation for using a systematic review process and describe the benefits and stages of an integrative review. The various stages of the search process will be explained, specifically clarifying the language used in screening for literature that investigates prosocial behaviour.

3.2 Systematic literature reviews

Systematic literature reviews analyse all the research done in a particular area in order for researchers, practitioners and policy makers to have a broad, unbiased understanding of the efficacy of interventions to enable rapid and informed decision-making (Harden & Thomas, 2005; Uman, 2011). Systematic literature reviews are stand-alone research studies characterised by rigorous methodology and the formulation of a clearly defined research question. When existing literature on a target research question is summarised, conclusions can be drawn and issues that have not yet been addressed can be highlighted (Hanson-Abromeit & Moore, 2014).

Systematic literature reviews developed as a way to specifically investigate the impact of interventions and, as such, synthesise findings of experimental research only. They ask specific research questions concerning effects, costs, and attributes of an intervention as well as accuracy of diagnostic tools (Gough et al., 2012). By answering these specific questions regarding efficacy of treatment methods, systematic literature reviews also allow advocates in a particular field to present motivations for funding (Bradt, 2016).

3.2.1 Integrative reviews

Integrative reviews allow for a broader type of review than the systematic literature review as they include experimental and non-experimental research by integrating qualitative, quantitative and mixed methods research data. Findings from these diverse methodologies are grouped for synthesis by virtue of the fact that they address the same research questions and target phenomena, but from different angles. The methodological differences between quantitative and qualitative research are minimised since the assumption of the integrated design is that both quantitative and qualitative studies within a common research domain – music therapy and ASD in this case – can address the same research purpose and area of concern, while offering

different vantage points (Sandelowski et al., 2006). Integrative reviews can address both large bodies of existing knowledge by critiquing and reconceptualising the knowledge base in a certain field, or they can address new emerging topics by synthesising the available literature to date (Torraco, 2005). In both cases, an integrative review contributes to theory development and aids in directing future research by giving a clear picture of the current state of the field of study through reviewing theory and evidence, analysing methodological issues and highlighting research areas not yet addressed (Hanson-Abromeit & Moore, 2014; Whittemore & Knalf, 2005).

3.2.1.1 Characteristics of different designs and benefits of an integrated approach

As the current review is integrative in nature, and includes quantitative, qualitative and mixed methods research studies, the features of all three methodologies warrant closer inspection. Creswell (2014) reminds us that quantitative and qualitative research should not be seen as opposites or dichotomies, however, they represent "different ends on a continuum" (p. 3), with mixed methods research residing in between. One of the secondary research questions of this study asked to what extent group music therapy has been researched as an intervention for the development of prosocial skills in children with ASD. In order to answer this question, all the relevant research studies (quantitative, qualitative and mixed methods) needed to be included. In the case of this review, no mixed methods studies were found in the existing literature (which will be discussed further in the following chapter).

The aim of quantitative research is to examine the relationship between measurable variables in order to explain, predict or even control certain phenomena. The approach is deductive and outcome-based, and research methods often include instrument-based questions, numerical data and statistical analysis and interpretation (Creswell, 2014). Quantitative research is based on measurement, causality, generalisation and replication, and strong quantitative research is concerned with protection against bias and controlling for alternative explanations (Bryman, 2012). Experimental studies, such as the experimental and quasi-experimental designs in this review, are based on causal logic and rely on hypothesis testing (Leavy, 2017). Since quantitative research is concerned with precise measurement, it is often used to investigate causal relationships and is therefore valuable in providing evidence of intervention efficacy. For this reason, quantitative research was included in this integrative review to answer the question of whether group music therapy has a measurable effect on prosocial skills in children with ASD.

Qualitative research is a form of social inquiry that uses a variety of different approaches to investigate how people make sense of their lived experiences. At its core, qualitative research is an interpretive approach that aims to explore the behaviours, perspectives and feelings that inform people's social reality (Holloway & Wheeler, 2010). Qualitative research therefore aims to not just observe, but also understand certain phenomenon (Merriam, 2009), thereby allowing this review to answer questions regarding how group music therapy functions in relation to prosocial skills. Since qualitative research is context-specific in the sense that the research background and setting are understood as playing an important role in determining findings (Holloway & Wheeler, 2010), there is value in exploratory research done by a music therapist who is immersed in the setting and can focus on the processes of interaction. Naturalistic inquiry, for example, is specifically suited to studying the process of music therapy with its focus on the reciprocal relationship between researcher and participant and the importance of interpretation and values in creating insights (Arnason, 2016).

3.3 Stages of An Integrative Review

The current study followed Whittemore and Knafl's (2005) framework for conducting an integrative research review. They developed their framework from the approach proposed by Cooper (1998) that had five main stages: the formulation of a problem; a literature search; data evaluation; data analysis; and presentation. Since Cooper's framework was largely aligned with systematic reviews or meta-analyses, Whittemore and Knalf expanded upon it with the aim of distinguishing the integrative review and addressing issues specific to integrating diverse data sources. In this next section, the five methodological stages as proposed by Whittemore and Knalf will be discussed in more detail, with reference to this specific study.

3.3.1 Problem identification

This initial stage of the integrative review process allows the researcher to get a clear picture of the problem they are trying to address. Clearly defining the review purpose and variables of interest allow for differentiation between relevant and peripheral information during the data extraction stage.

An initial scoping search of titles and abstracts revealed questions that helped frame the specific aim of the current review and clarify the variables of interest. The hypothesis that music therapy in a group setting could provide more opportunities for the development of prosocial skills (as explained in chapter 2) was one of the driving forces behind this review, and therefore one of the research questions asks to what extent this had been researched in the past. Since group

work can reach more children simultaneously and is therefore economically more viable, a case could be made for the development and implementation of more of these programmes in special education settings. An integrative review may assist in this regard and may provide more information on the specific affordances of group music therapy that encourage prosocial behaviour in persons with ASD.

Oftentimes, the word “prosocial” is included in research titles and abstracts, without it clearly being defined in the text (Baumgarten & Wheeler, 2016; Beer et al., 2020; Crozier & Tincani, 2007; Grandgeorge et al., 2012; Wright & McCathren, 2012). Authors choose rather to examine the phenomenon through the lens of elements of the diagnostic criteria of ASD, such as communication or social skills, when defining research questions and collecting data, simply implying that these are prosocial skills, but without presenting a clear case for their classification. Some studies do briefly explain prosocial behaviour, often as behaviours of helping, sharing, comforting or cooperating (Eisenberg et al., 2010), and then still go on to measure broader behaviours of relation, communication or socialisation (Jameel et al., 2014; Oerlemans et al, 2018; Rum et al., 2021; Schwager, 2021). This discovery during the problem identification stage guided the literature search, as will be explained in the following section.

3.3.2 Literature search

The goal of this next stage in the process is to identify all the relevant literature that relates to the research problem. Whittemore and Knalf (2005) warn that inaccurate research results are one of the outcomes of incomplete and biased searches. They suggest that the search process should be clearly documented and should include the search terms, databases used, additional search strategies, as well as inclusion and exclusion criteria. Enough information should be provided so that the searches can be replicated. Hanson-Abromeit and Moore (2014) report that the most common databases in music therapy research have included MEDLINE, PsychINFO, PubMed, CINAHL, ERIC, and Social Sciences Abstracts.

A comprehensive search strategy was developed and carried out in order to identify and retrieve all published research that met the inclusion criteria for this study. Strict search criteria were applied uniformly, and the search was carried out electronically across several databases with the help of an information specialist, through the University of Pretoria Library Website. No reference management software was used. The databases that were searched were as follows:

- ERIC (Education Resource Information Centre)
- PsychINFO (American Psychological Association)

- RILM (Abstracts of Music Literature)
- Music Periodicals Database
- Health and Medical Collection (ProQuest Central)
- ProQuest Dissertations and Theses Global
- PubMed (MEDLINE)
- Scopus
- ScienceDirect
- Google Scholar

Firstly, an inclusive search of the literature on music therapy groups, children and autism was conducted, as shown in Table 1. Due to the difficulty identified above (in section 3.3.1) – that "prosocial skills" are poorly defined in the literature - the term "prosocial" was not included in the initial search. Once all the relevant articles with the terms "music therapy groups", "children" and "autism" had been found during the first search, these were then reviewed for any aspects of prosocial skills measured or observed.

The inclusion criteria for this first inclusive search were as follows:

a) Literature relating to the use of group music therapy, whether as a stand-alone intervention or in conjunction with individual music therapy and/or other interventions
b) The target group was children between the ages of five and 14
c) Participants had a diagnosis of autism spectrum disorder or autism spectrum disorder and co-morbidities.
d) Primary sources such as peer-reviewed articles, dissertations and theses, and book chapters
e) Sources published between 2000 and 2021 were included.

The exclusion criteria for the first inclusive search were as follows:

a) Studies that described informal use of music by classroom teachers or did not refer to the intervention as music therapy specifically
b) Studies where the group music therapy only consisted of dyad work between the ASD child and their parent.

Table 1

Keywords used in first inclusive search

Interventions	and	Participants	and	Diagnosis
"Music therapy" AND "Groups"		"Children"		"Autism"

After articles were selected that strictly adhered to inclusion criteria, the reviewer scanned for any language that related to prosocial behaviour, keeping in mind the DSM-5 diagnostic criteria for ASD (American Psychiatric Association, 2013), as well as the definitions of prosocial behaviour that are used in the literature on ASD (as discussed in chapter 2). Table 2 summarises all variations of the language used in the search for prosocial behaviour, keeping in mind that descriptions of behaviours often overlap.

Table 2

Language used in search for prosocial behaviour

Language pertaining to core diagnostic criteria of ASD	Language relating to "prosocial" from the literature
Social Social skills; social-emotional skills; socialisation; interaction; social communication Communication: Language and/or speech; verbal/non-verbal communication; communication skills; Relation:	Empathy; sympathy Eye gaze; joint attention Helping; comforting; supporting Mediating conflict Complimenting/praising others Including others' interests Perspective-taking

Initiating; responding to or maintaining interactions	Cooperative/collaborative/shared/appropriate play Sharing; cooperating; turn-taking Imitation; peer modelling Identifying/expressing emotion Taking responsibility Understanding social instructions like “wait” and “share”

3.3.3 Data evaluation and quality assessment

The evaluation of research quality in integrative reviews that incorporate diverse research designs is complex. Although no gold standard for assessing quality currently exists, the overall quality of the review depends on the quality of the included studies and the assessment of studies not only directs the integration and strength of the findings but could also explain variation in outcomes.

Standards of quality assessment vary according to the type of review being done (Whitmore & Knalf, 2005) and, in the case of an integrative review where generalisation of findings is an important component, quality assessment is an important step in the review process. Okoli (2015) recognised that quality assessment does not necessarily need to be used as a “yes-or-no” cut-off, but rather serves as a tool for reviewers to be aware of and acknowledge differences in study quality. Results from quality assessment can inform the interpretation and discussion of the findings (Barnish & Barran, 2020) as well as reveal weaknesses, inconsistencies and contradictions (Xiao & Watson, 2019).

Since this review included quantitative and qualitative studies, it was necessary to find appropriate quality assessment tools for the different methodological designs. The Specialist Unit for Review Evidence (SURE) critical appraisal checklists were used. The SURE conducts systematic and literature reviews on a diverse range of topics in the field of health and social care. The various SURE checklists are adapted to specific study methodologies and they all ask similar questions. The following two checklists were used to assess the quality of studies

included in this review (https://www.cardiff.ac.uk/specialist-unit-for-review-evidence/resources/critical-appraisal-checklists):

- **SURE Experimental Studies Critical Appraisal checklist**.

This checklist includes 14 main questions with further subheadings. All aspects of experimental research are explored, such as research hypothesis, population, randomisation, control groups, intervention, analysis, results and ethical considerations. It further encourages evaluation of issues such as allocation concealment, contamination, baseline differences between groups, follow-up procedures, missing data and potential sources of bias. The checklist also asks questions around study protocol, conflict of interest and discussion of limitations of the study.

- **SURE Qualitative Studies Critical Appraisal checklist**

In similar fashion, this checklist asks ten main questions related to all aspects of qualitative research, with more illustrative questions in each section to encourage in-depth quality analysis of the study. The main questions centre around research hypothesis, choice of method, sampling, data collection, analysis and interpretation, conflict of interest, limitations and ethical considerations. The checklist also explores the relationship between researcher(s) and participants and credibility of the findings in depth.

3.3.4 Data analysis and presentation

The goal in the data analysis stage is to create a thorough and unbiased interpretation of the search results, as well as an innovative synthesis of the results that centres around answering the research question and identifying gaps in the literature. Results of reviews should be ordered, coded, categorised and summarised. Since integrative reviews include varied data from diverse methodologies, a constant comparison method is described and suggested by Whittemore and Knalf (2005) for this stage of the process. This includes data reduction, data display, data comparison, conclusion drawing, and verification.

In order to facilitate analysis, all the studies included in the review should be divided into subgroups and categorised. In the current review, studies were divided into quantitative and qualitative methodologies. Data should then be extracted and coded into a manageable framework, according to the foci of the research questions and data are organised into a spreadsheet or matrix, allowing for similar datapoints from all included studies to be represented and compared. Data display involves assembling the extracted findings from individual sources around particular variables such as research aims, methodology and results, and serve as a starting point for interpretation. Data comparison comprises an iterative process of examining

data points from all studies included in the review in order to identify patterns, themes, or relationships.

The last phase in the data collection method involves drawing conclusions. This “moves the interpretive effort from the description of patterns and relationships to higher levels of abstraction” (Whittemore & Knalf, 2005, p. 551). Important elements or conclusions from each subgroup are synthesised in order to give an integrated summation of the research topic. All the relevant information for this study will be presented, displayed and summarised in chapter four.

In the final stage of an integrative literature review, a synthesis of explicit findings from primary sources and evidence to support conclusions need to be provided. All methodological limitations of the review should be explicitly stated (Whittemore & Knafl, 2005). A discussion of the findings and recommendations for future research will be presented in chapter five and the conclusion and limitations will be presented in chapter six.

3.4 Conclusion

This chapter outlined the rationale for using an integrative systematic review and described the qualities of quantitative and qualitative research designs. It then described the five stages of an integrative review as outlined by Whittemore and Knalf (2005) with specific reference to this review and provided a clear outline of the search strategy used by providing search terms and eligibility criteria. The complex process of defining and searching for terms relating to prosocial skills was explained. The process of quality assessment as well as instruments used were discussed. The data presentation and discussion will continue in the following two chapters.

Chapter 4: Analysis and Findings

4.1 Introduction

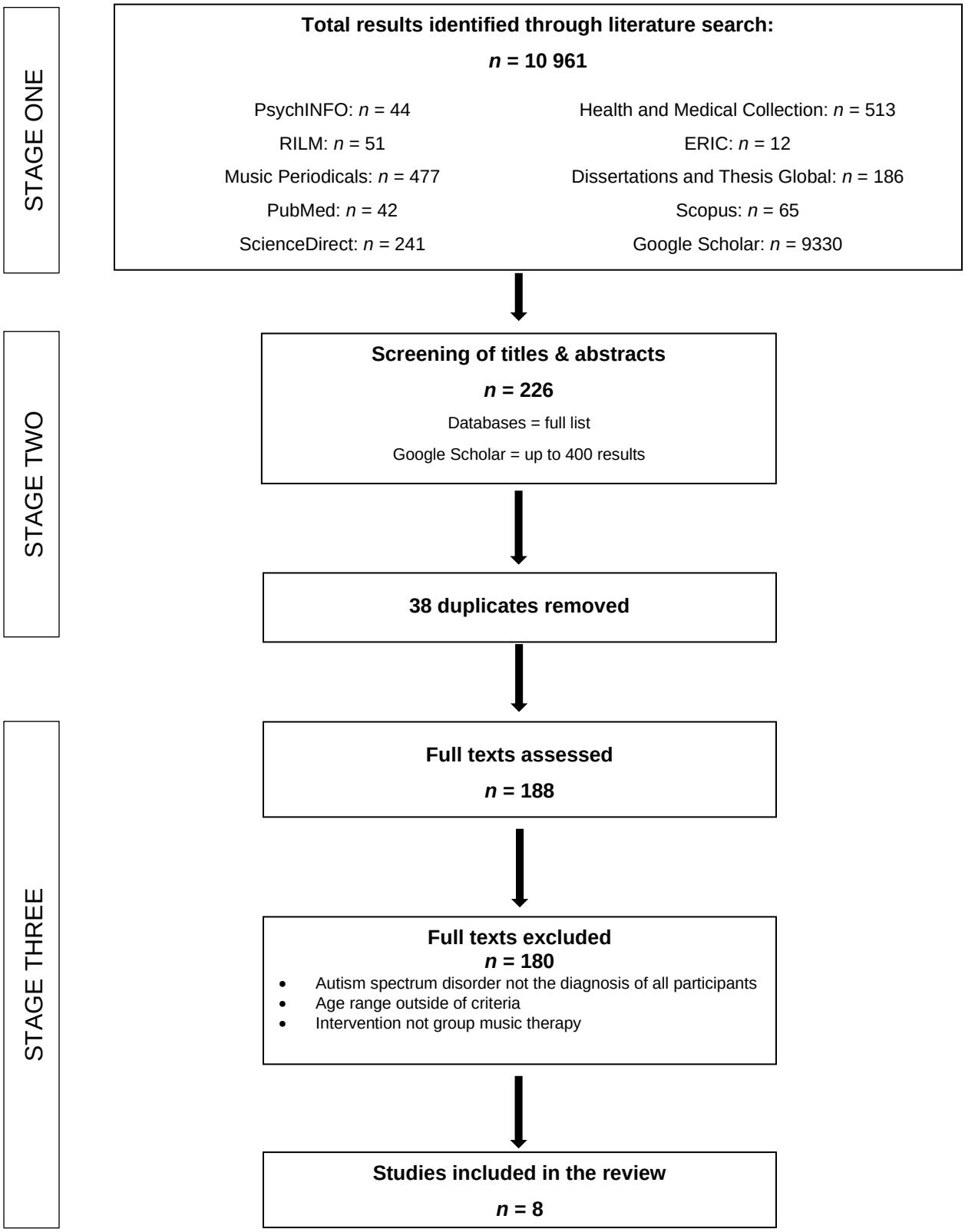
This chapter offers an overview and discussion of the findings from the studies included in the review as they pertain to the review aim and research questions. It details the search process and lists studies chosen for inclusion. Relevant information from each study was extracted, tabled and discussed in terms of study parameters and outcomes.

4.2 Data collection

The first stage of the literature search was carried out using the search terms in Table 1 (chapter 3) and 1 390 results were returned across all the databases mentioned in chapter three, except for Google Scholar, which returned 9 330 results (these were scanned up to result number 400, at which point it became clear that the list contained either duplicates of the results identified in the other databases or studies that did not meet the inclusion criteria). During the second stage of the search, titles and abstracts were scanned keeping the inclusion and exclusion criteria in mind, as well as the terms relating to prosocial skills defined in chapter 3 (Table 2). This resulted in a list of 226 relevant studies. After duplicates were removed, 188 studies remained. The third and final stage of the search consisted of assessing the full texts of these 188 studies, since it was not clear from the majority of the abstracts what the exact ages of the participants were and what form the music therapy intervention took. This stage entailed a final rigorous application of all eligibility criteria (as detailed in chapter 3) and eight studies were selected for inclusion in this review. Table 3 in section 4.3.1 lists these eight studies. Figure 1 is a representation of the data collection process.

Figure 1

Flowchart of data collection process



4.3 Data extraction

This section will present an overview of the information extracted from the identified studies. The information will be summarised and displayed in table format. General information will be presented in Table 3, followed by a summary of specific methodological aspects of each study in Table 4.

4.3.1 General overview of studies selected for the review

Table 3 displays the title of the studies, author/s, year of publication and country of origin. The studies are arranged firstly according to methodology – from quantitative to qualitative studies – and then chronologically within those categories, starting with the most recent ones. Five quantitative and three qualitative studies were included. Half the studies were conducted in the United States, with the remaining four conducted in New Zealand, Iran, India and Brazil.

4.3.2 Relevant information extracted from the studies

Table 4 provides a summary of all the data extracted from the studies that are relevant to answering the research questions of this review. Each study is summarised under relevant headings that include the methodology and design of the study, the number of participants and their age range, the data collection methods and specific prosocial skills they either targeted or observed, the research objectives of the study, the intervention design, intervention procedure, and results and conclusions.

Table 3

Studies selected for review

Study No.	Title	Author(s) & Date	Country
1	An investigation of a classroom-based specialized music therapy model for children with autism spectrum disorder: *Voices Together* using the VOICSS™ method	Schmid et al., 2020	USA
2	Music therapy as a therapeutic tool in improving the social skills of autistic children	Bharathi et al., 2019	India
3	Music therapy effects on social-communicative response of children with autism spectrum disorder	Payton, 2019	USA
4	Music therapy: an effective approach in improving social skills of children with autism	Ghasemtabar et al., 2015	Iran
5	Effects of a music therapy group intervention on enhancing social skills in children with autism	LaGasse, 2014	USA
6	Understanding group dynamics in DIR-based improvisational music therapy with autistic children	Crean, 2019	USA
7	The psychodynamics of music-centered group music therapy with people on the autistic spectrum	Mattos, 2015	Brazil
8	A play ground [sic]: Supporting interactions of children with autism through music therapy groups in a special education classroom	Sanders O'Connor, 2013	New Zealand

Table 4

Summary of studies

Study No.	Methodology and Design	Participants	Data collection methods and Prosocial skills Targeted/observed	Research Objectives	Intervention design	Intervention procedure	Results and conclusions
1	Quantitative Quasi-experimental single-group, pre/post-test study	*n*=64 (Age 5-11 years)	DUACS (Duke University Autism Communication and Socialization) Pervasive Developmental Disorder Behavior Inventory (PDDBI) Spoken language rating scale completed by teachers. The DUACS measures aspects of communication and socialisation	This study evaluated the effects of the group-based music therapy method VOICSS™ (Vocal Interactive Communication and Social Strategies) and proposed a new measure, the DUACS, to assess outcomes associated with a group music therapy program, Voices Together (VT).	Participants were recruited from nine elementary schools in a south-eastern US school district. The DUACS consists of assessment prompts designed to elicit gestural/non-verbal and verbal responses. Participants received the DUACS assessment prompts, and video-recordings were made of this process three times during a 6-week pre-intervention baseline period and three times during the 16-week intervention. Teacher-reported measures were collected at the start and end of the program.	The VOICSS™ method was offered by trained music therapists for 45min each week during the 16-week intervention period. This method uses specialised music, counselling skills and an interactive structure to promote language acquisition, communication and social-emotional skills. Specialized music techniques, group process and routinised curriculum are all used to improve speech and communication	VT program participants showed gains in language, communication, and social-emotional learning. Greater gains were shown by children with higher baseline scores on the DUACS compared with children with lower baselines scores. Teacher-reported data was used to measure whether these gains generalized to everyday behaviours. Significantly, students with higher empathy scores at baseline had higher DUACS scores, and students with higher social pragmatic problems had lower scores. The authors concluded that the peer-to-peer interaction fostered in the VOICSS™ model is instrumental in supporting expressive and pragmatic communication skills. The (DUACS) assesses social communication behaviour in children with ASD who participated in the VT intervention. The authors suggested further research to determine a whether there is a link between the focus on verbal responses in the DUACS and the findings of the study, since the VT program is optimal for children with functional verbal communication skills.

Study No.	Methodology and Design	Participants	Data collection methods and Prosocial skills Targeted/observed	Research Objectives	Intervention design	Intervention procedure	Results and conclusions
2	Quantitative Quasi-experimental pre/post-test with control group	*n*=52 (Age 6-12 years)	Childhood Autism Rating Scale (CARS) TRIAD Special Skills Assessment (TSSA) The four subsets of questions from the TSSA measured: understanding/perspective taking, initiating interactions, responding to initiations, and maintaining interactions.	This study focused on assessing whether music therapy could improve the development of social skills in autistic children and measured whether these effects were long lasting.	Fifty-two children recruited from Coimbatore city were included in the study if they met criteria for mild or moderate to severe ASD score as per the Childhood Autism Rating Scale (CARS) scale. Difficulties in language, verbal and social communication were identified through a structured interview with parents/caregivers. The TSSA was administered before and after the intervention period, as well during a three-month follow-up.	Four songs were selected and played for six minutes each during every music therapy session for each of the two groups, after which the children were observed in silence for ten minutes. The experimental group was an active music therapy group that participated in singing, dancing, and playing instruments while listening to the music. The control group remained passive while listening to the music. Each session lasted 35 minutes and both groups received three sessions weekly for three months.	The active music therapy intervention showed positive results for the experimental group in the areas of understanding/perspective-taking and initiating, responding to and maintaining interactions with others. Significant increases were measured with understanding/perspective taking and the ability to maintain interactions, while the ability to respond to others showed a relative increase compared to the control group. Children in the active music therapy group did not show a statistically significant difference in initiating social interactions compared with the control group. T-test analysis showed no significant difference between post-test and follow-up, indicating that positive results from the experimental music therapy group were maintained. The authors concluded that musical activities in the social context provided valuable opportunities for interaction with social partners. Furthermore, they emphasized the value of using music therapy in the context of the Orff-Schulwerk method and propose that the non-verbal elements of music – like song, rhythm and body movement – help individuals with ASD to apply the non-verbal behaviours that are needed to regulate interaction and communication.

Study No.	Methodology and Design	Participants	Data collection methods and Prosocial skills Targeted/observed	Research Objectives	Intervention design	Intervention procedure	Results and conclusions
3	Quantitative Single-subject A-B research design	*n*=6 (Age 5-11 years)	Assessment of Social Skills for Children with Autism (ASSCA) Social-communication skills, with a focus on receptive and expressive language	The main objective of this study was to determine the effects of music therapy on the social-communication skills of children with ASD.	Participants for this study were six children with ASD, who were permanent members of a special education classroom in a school in New Jersey. Music therapy interventions in these special education classrooms were mandated by the school district. The ASSCM was completed by teachers as a pre-test, post-test and at least three times during the intervention to satisfy single-subject design standards.	Nine weekly music therapy sessions were administered by a music teacher. The intervention consisted of a variety of pre-recorded songs (designed by an autism specialist and music therapist), movement activities and instrumental activities to target specific skills. The pre-recorded songs had various social skill-building objectives, such as naming peers, sharing instruments, making eye contact and using expressive language.	All six participants showed improved scores on the ACCSM at the end of the intervention period. Findings indicated that students with ASD benefited from music therapy and showed increases in appropriate communication behaviours. This led to the creation of a professional development program for teachers and administrators regarding the benefits of music therapy for children with ASD. The main aim of the program was to educate teachers and administrators on music therapy, with the hope of facilitating dialogues between administrators, supervisors, teachers and parents on the effects of music therapy and its long term benefits in order introduce new knowledge on effective treatments for ASD into schools.

Study No.	Methodology and Design	Participants	Data collection methods and Prosocial skills Targeted/observed	Research Objectives	Intervention design	Intervention procedure	Results and conclusions
4	Quantitative Experimental, pre/post-test design with control group	*n*=27 (Age 7-12 years)	Childhood Autism Rating Scale (CARS) Social Skills Rating System for Parents (SSRS-P) The (SSRS-P) measures social skills, with sub-scales of cooperation, assertions, self-control and responsibility	The aim of this study was to identify whether Music Therapy can be effective in improving the social skills of children with autism	Children with ASD were identified at three Child and Adolescent Psychiatry Centres in Tehran, and CARS were used to select children who had mild to moderate autism. The SSRS-P were used as a pre-test, post-test, and 2-month follow-up test to investigate the consistency of the effect of music therapy. Data were analysed using covariance analysis and independent sample *t*-test.	The children in the experiment group received a music therapy intervention of twelve sessions (two 60-min sessions per week) over a period of 45 days. Musical activities were conducted based on the Orff-Schulwerk method with the help of two music therapists, and consisted of music listening, singing, clapping, movement & dancing, special musical drama, accustoming and working with instruments, and free improvisation.	SSRS-P scores in the post-test phase showed clear social skills improvement in the experimental group, with an insignificant difference between scores of post-test and follow-up in both groups. The social skills improvement scores were consistent for up to two months after the intervention. The authors conclude that music therapy can be considered as an effective method in treating social skills of children with autism. Their hypothesis is that musical interaction provides context and structure for interaction, in that music has a complex range of expressive qualities, dynamic form and dialogue, and is a means by which some form of alternative communication can be established to help achieve engagement, interaction, and relationships. They suggest further research that examines other methods and approaches for social skills improvement in children with ASD.

Study No.	Methodology and Design	Participants	Data collection methods and Prosocial skills Targeted/observed	Research Objectives	Intervention design	Intervention procedure	Results and conclusions
5	Quantitative Quasi-experimental pre/post-test with control group	*n*=17 (Age 6-9 years)	Social Responsiveness Scale (SRS) Autism Treatment Evaluation Checklist (ATEC) Quantifying and coding of behaviours through analysis of video recordings Eye-gaze, joint attention and communication	The objective of this study was to examine the effects of a music therapy group intervention on eye gaze, joint attention and communication in children with ASD.	Participants were recruited through non-probability sampling, and randomly selected to be in either a music therapy group or a social skills group. Data were collected using the Social Responsiveness Scale (SRS) before and after the intervention, and the Autism Treatment Evaluation Checklist (ATEC) six times before, during and after the intervention. Video analysis of sessions three and 10 were used to measure instances of eye gaze, joint attention and communication.	Each group met for a 50-minute session, twice a week for five weeks. A music therapist with training in Neurologic Music Therapy led the activities in the music therapy group, while the social skills group was led by a certified educator. Group sessions consisted of the same structure and similar exercises specifically targeting social skills, with the addition of music in the music group. The social skills group focused on cooperative play experiences, and the music therapy group utilised the Transformational Design Model where the primary role of music was to provide anticipatory cues to promote prosocial tasks such as instrument-sharing and cooperative play.	A paired samples t-test was used to show significant differences between the music group pre-test and post-test SRS scores. The children in the social skills group showed no significant differences, which indicate that the parents of the children in the music therapy group noticed more gains overall in prosocial behaviours. The measurements of eye gaze and joint attention increased for the children in the music group only. The author notes, however, that only instances of eye gaze towards another individual were counted, not length of eye contact. Since holding eye gaze with another individual may be more meaningful, further research on this factor is suggested. Joint attention and peer-to-peer interactions also increased in the music group in contrast with the social skills group where only interactions with adults were maintained. This may suggest that the musical structure provided support for the children's interactions with one another and was also more successful at maintaining the children's attention to their peers.

Study No.	Methodology and Design	Participants	Data collection methods and Prosocial skills Targeted/observed	Research Objectives	Intervention design	Intervention procedure	Results and conclusions
6	Qualitative Qualitative content analysis of three video recordings	*n=2* (Age 9 years)	Group dynamics were described using meaning categories that developed from a process of content analysis using the Music Therapy Group Improvisation Analysis Model (MTGI-AM). This involves a cyclical process of listening, writing and analysing descriptive narratives. The following prosocial meaning categories were developed through analysis: working together, individual initiations, communication, and collaborative play.	The purpose of this study was to describe the group dynamics of children with ASD in a developmental, individual difference, relationship-based improvisational music therapy group.	A music therapy group comprised of two ten-year-old children with ASD (carried out at a university-affiliated music therapy centre) was selected through purposive sampling. Video recordings of the opening group improvisations from the first, middle and last sessions of a year-long intervention were used to gain an understanding of changes in group dynamics. Narratives were used to describe the observed group dynamics and gain an understanding of changes over time, as well as identify the role of music in the context of these group dynamics.	The music therapy sessions were conducted by a music therapist with three years of experience in the DIR-based IMT (Improvisational music therapy) approach. DIRFloortime® is a therapeutic model that promotes social-emotional and cognitive development, where DIR stands for developmental, individual difference and relationship based. DIR-based IMT allow for interactions to take place within the context of music. The music therapist starts by musically following the child's lead and then scaffolds interactions from two-way communicative play to joint play where the child initiates their original ideas freely.	This study found increases in relatedness for the children through participation, initiation and positive responses to directions. Playful interactions with the therapist and each other increased dramatically throughout the year, pointing to a shift in the children from individual play to shared, interactive play with peers. The children's extended interactive behaviour indicates the potential benefits of group music therapy for children with ASD. Moments of musical congruence between the group members contributed to stability in the group. The music therapist acted as connector which helped bridge patterns of togetherness and differentiation between the two children, which supported the children's interactions with each other and facilitated collaborative musical experiences despite moments of conflict. The author noted the small group size as a limitation to the study, since larger groups may have different dynamics.

Study No.	Methodology and Design	Participants	Data collection methods and Prosocial skills Targeted/observed	Research Objectives	Intervention design	Intervention procedure	Results and conclusions
7	Qualitative Naturalistic inquiry of group music therapy sessions	*n*=8 (Age 8-14 years)	Four data sources were employed, namely: video recordings, written descriptions of sessions, therapists' observations, and meetings between therapists and researcher. Elements that characterise intrapersonal and interpersonal dynamics in the group were investigated. The latter included communication, initiative and the ability to engage and establish relationships.	The aim of this study was to conduct a naturalistic examination of the process of a music therapy group with preverbal individuals with ASD.	A music therapy group for children with ASD was established at a specialized private centre in Porto Alegre for this research study. Participants were chosen through convenience sampling. After each session, the transcription of the video recording was analysed and coded. The researcher then used grounded theory to review codes, summarise emerging themes, identify patterns, document future treatment ideas and record speculations on the meaning of musical and verbal interactions in the sessions.	Sixteen music-centred psychotherapy sessions were carried out by a primary therapist qualified in music therapy and a co-therapist who had to have experience in working with ASD. The interventions were based in a Nordoff-Robbins improvisational music therapy approach. Parents were invited to join three sessions towards the end. Clients' therapeutic issues were accessed and worked through using passive and active music therapy techniques.	Analysis of the sessions revealed that the children demonstrated curiosity, interest and initiative. Inter-relationships with peers was difficult for the group members, and only one participant showed initiative in playing with a peer. All participants showed effort in trying to establish relationships with the therapists and developed ways to communicate with them. They also developed the initiative to open and close cycles of communication through body language and music. The researcher found that although all the children in the study were on a preverbal level, they demonstrated some observed improvement in relational and communication skills. The group members demonstrated a capacity to solve problems and the group as a whole became an inviting space for interpersonal contact to happen. It was also concluded that the music itself played a role in the therapeutic dynamic through assessment, treatment and evaluation. Specifically, music provided opportunities for interpersonal learning through mutuality and organisation, and offering ways to communicate and play.

Study No.	Methodology and Design	Participants	Data collection methods and Prosocial skills Targeted/observed	Research Objectives	Intervention design	Intervention procedure	Results and conclusions
8	Qualitative Exploratory study	*n*=4 (Age 8-10 years)	Secondary analysis of three data sources were carried out. The following prosocial behaviours were noted in the study: instances of engagement, vocalising, eye contact, smiling, waiting, joint attention and initiating interaction	This purpose of this study was to explore and critically reflect on the ways in which the researcher supported the interactions of children with ASD during group music therapy sessions.	Secondary data analysis was carried out utilising the researcher's clinical notes, records from supervision and staff meetings, as well as a reflective journal kept during ten months of clinical work. Two different music therapy groups were run throughout the year and thematic analysis was employed to identify, analyse and report patterns and themes within the data collected	Two different music therapy group sessions were conducted two to three times a week over the course of ten months by a music therapy student as part of her clinical studies. The first session was structured and well-established, and there was a focus on joint attention, turn-taking, group awareness and a sense of belonging through listening, anticipation and participation in the group. The second session was more fluid and spontaneous and provided children with options to engage or withdraw as they chose as a way to support self-regulation	Five themes were identified in relation to how the researcher supported the interactions of the children in the music groups. These included emotional engagement through voice, touch and movement, attending to the individual through an individual greeting and identification of sensory preferences, promoting calm by responding to distress and simplifying the sensory environment, providing new experiences to gain attention, and providing specific form to enable interaction. The structured morning group lent itself to more opportunities for engagement, whereas the free afternoon group resulted in more spontaneous initiations of interactions by the children. Nevertheless, interactions between children were rare, and it is the opinion of the researcher that this is a result of the children's early developmental level. Peer modelling was observed, and although the meaning of this remains unclear, it points to the potential of a group to provide peer modelling for children with ASD.

4.4 Quality

The Specialist Unit for Review Evidence (SURE) critical appraisal checklists were used to assess the quality of the studies included in the review. An overview of the two checklists used for quantitative and qualitative studies is given in chapter 3, section 3.3.3. All the studies included in the review were found to be of good methodological quality, and the following two sections will give an overview of the main points arising from this quality assessment.

4.4.1 Quantitative studies

Of the five quantitative studies included in the review, one was a fully randomised controlled trial (study 5), two studies were quasi-experimental designs with control group (study 2 and 4) and two studies were one-group pretest-posttest designs (study 1 and 3). In all five studies, the research question and results were well described, and the methodology and data analysis were appropriate. Intervention methods were defined to varying degrees, ranging from sufficient for studies 2 and 4 to detailed in studies 1, 3 and 5. Three of the studies had fewer than 30 participants (3, 4 and 5). Although this potentially reduced the power of statistical significance of outcomes, the studies met the inclusion criteria for this review and contributed to knowledge in the field.

4.4.2 Qualitative studies

All three qualitative studies were well-situated within a clearly focused research question. Data collection methods and intervention strategies were well-described. All three researchers used multiple data sources and the author of study 7 detailed his use of triangulation. Limitations and ethical considerations were discussed and findings from all three studies were credible and contributed to the knowledge for this review.

4.5 Methodology, design and participant characteristics

The five quantitative studies included in this review drew on either an experimental, pre-experimental or quasi experimental approach. Four of the studies used a pre/post-test design and one a single-subject A-B design.

Table 5

Duration of interventions

Study	Duration of intervention	Number of sessions
1	16 weeks	16
2	3 months	36
3	9 weeks	9
4	45 days	12
5	5 weeks	10
6	1 year	3* (sessions analysed)
7	4 months	16
8	10 months	±70

The three qualitative studies in this review each employed a single case study design with different approaches and data collection methods. These were qualitative content analysis with a systematic, cyclical approach; naturalistic enquiry with analysis rooted in grounded theory; and a qualitative, exploratory study that analysed secondary data. Table 5 summarises the duration of the eight studies.

The total number of participants in all eight studies was 180, with 62 females and 118 males. Except for studies three, four and five, participants included an equal distribution of participants in terms of gender**.**

4.6 Data collection methods

Data collection methods for the range of studies included were varied and unique to each study. Two of the quantitative studies used the Childhood Autism Rating Scale (CARS) to assess children prior to the intervention. Every quantitative study used a different rating scale to assess behaviour and social skills, and these ranged from direct student behavioural measures to teacher- and parent-reported questionnaires. The different rating scales included the Social Skills Rating System for parents (SSRS-P), the Duke University Autism Communication and Socialisation tool (DUACS), the Pervasive Developmental Disorder Behaviour Inventory (PDDBI), the TRIAD Special Skills Assessment (TSSA), the Assessment of Social Skills for Children with Autism (ASSCA), the Social Responsiveness Scale (SRS), the Autism Treatment Evaluation Checklist (ATEC), and a spoken language rating scale completed by teachers. Study

5 also incorporated video analysis of sessions where pre-defined behaviours were coded and quantified and Intraclass Correlation Coefficients were calculated to determine the average inter-rater reliability for behavioural observations within each category.

The qualitative studies employed data collection methods that overlapped. Study 6 used a qualitative content analysis of three video recordings taken at the start, middle, and end of a year-long intervention. Study 7 involved a naturalistic enquiry of the process of a group music therapy intervention that took place over sixteen weeks collecting data through video recordings, written descriptions, observations and discussions with therapists. In study 8, a secondary analysis of clinical records, notes from supervision and staff meetings and a reflective research journal were used within an exploratory approach where patterns and themes were identified using thematic analysis.

4.7 Prosocial skills

Most of the studies used terms such as “social”, “communication”, “interaction” and “relationship” when formulating research objectives, implementing intervention strategies, and assessing outcomes. As explained in chapter three (section 3.3.1), this most likely stems from the language used in the DSM-5 for ASD diagnostic criteria, which refers to deficits in “social communication and social interaction”, “nonverbal communicative behaviours used for social interaction” and “developing, maintaining, and understanding relationships” (5th ed.; DSM-5; American Psychiatric Association, 2013). Table 6 lists terminology used in the research objectives, assessment and outcomes of the eight studies that relate to the core issues of ASD. It is important to note that most of the studies used these terms in their titles, abstracts, and research objectives and then proceeded to specify behaviours within these broader categories of social, communication and relational behaviour when either measuring, assessing or observing behaviour, contributing to a more extensive list of relevant prosocial behaviours targeted in this review. These are listed in Table 7, with the understanding that all these behaviours broadly belong to the categories of socialisation, communication, and interaction.

Table 6

Terminology related to "prosocial" behaviour from the DSM-5 identified in each study

Terminology	Study							
	1	2	3	4	5	6	7	8
Social skills		●		●				●
Social-emotional skills	●							
Socialisation	●							
Interaction		●					●	
Social communication	●		●					
Communication	●				●	●		●
Communication skills	●		●					
Language/speech	●							●
Initiative		●						●
Engage/establish relationships						●		

Table 7

Terminology related to "prosocial" behaviour from literature review identified in each study

Terminology	Study							
	1	2	3	4	5	6	7	8
Empathy; sympathy	●							
Eye gaze; joint attention	●		●		●			●
Helping; comforting; supporting								
Mediating conflict								
Complimenting/praising others								
Including others' interests			●		●			
Perspective-taking		●						
Cooperative/collaborative/shared/appropriate play					●	●		
Sharing; cooperating; turn-taking	●		●	●	●			●
Imitation; peer modelling								●

Identifying/expressing emotion	●	●	
Taking responsibility			●
Understanding social instructions		●	

4.8 Research objectives

The research objectives of the studies can be broadly classified into two main categories: examining the effects of group music therapy on prosocial skills as the primary objective (studies 1, 2, 3, 4, and 5); and observations of changes in prosocial skills as a secondary outcome to the main objective of analysing group music therapy processes (studies 6, 7, and 8). Only three of the studies conducted follow-up assessments at three weeks (study 5), two months (study 4) and three months (study 2) respectively.

In terms of the quantitative studies, all but one (study 1) had the objective of specifically studying the effects of group music therapy on “social skills” (study 2 and 4), “communication skills” (study 3) and “eye gaze, joint attention and communication” (study 5). Study 1 measured the “effects” of the music therapy programme and did not clarify specific prosocial skills, although the new measure that was developed by the researchers (DUACS, Duke University Autism Communication and Socialisation) was described as serving to assess “social communication behaviour” in children with ASD.

The researcher in study 3 found that music therapy provided a unique variety of musical experiences in an intentional and developmentally appropriate manner to effect changes in behaviour and facilitate development of prosocial skills in children with ASD. Thus, the author’s secondary objective was to create a professional development program for teachers and administrators with the aim of providing tools and skills to incorporate music intervention into daily class instruction to increase social communication with ASD children.

The main aim of each qualitative study in this review was to either describe, examine or explore the process of a group music therapy intervention for children with ASD. Study 6 focused on the group dynamics of a DIR-based improvisational music therapy group and study 7 examined the process of a music group with preverbal individuals with ASD. The themes that emerged from both these studies included elements of prosocial behaviour. The aim of study 8 was more directly related to prosocial skills, as the researcher investigated how interaction between participants in the group was supported by the music therapist.

4.9 Intervention procedures

Every study selected for this review employed music therapy interventions in a group setting. In order to answer the research question of *how* group music therapy functions to improve prosocial skills in children with ASD, a closer inspection of the various music therapy methods and techniques employed within group setting was warranted.

4.9.1 Therapists' qualification and group structure

There were differences between the studies in terms of the number of music therapists facilitating sessions and their experience. One study also included parents in some of the group music therapy sessions. Table 8 summarises the number of therapists/facilitators for each intervention and their specific training. Even though all the primary facilitators were music therapists, only some studies explicitly stated the therapist's certification.

Table 8

Summary of therapists and specialisation for each study

Study	Primary therapist	Specialised training	Assisted by	Parents included
1	Music therapist	VOICSS™ method	-	-
2	Music teacher*	-	-	-
3	Music teacher*	-	-	-
4	Music therapist	-	Music therapist	-
5	Music therapist	Neurological MT	-	-
6	Music therapist	DIR-based improvisational MT	-	-
7	Music therapist	-	Music therapist	Three sessions
8	Music therapy student	-	Staff members	-

*These studies were still included since the intervention is described as group music therapy and the assumption is that these music teachers had some training in music therapy. No further explanation was provided in the articles.

The music therapy intervention in study 8 was unique in that it offered two differently structured groups on each of the days when the children had music therapy. The first group was an established daily music group with structured songs and activities, and the second group took on a free form and occurred during free play time, before the end of the school day. This latter session provided the children with an opportunity to actively choose whether they wanted to engage with their peers in music making.

4.9.2 Intervention approaches and techniques

In general, the interventions in all the studies consisted of both active and receptive group music therapy techniques such as music listening, singing and vocalising, clapping, movement and dancing, and improvisation on a variety of instruments. With regards to improvisation, all the interventions included some form of free instrumental play, supported by the music therapist. Studies 2 and 3 used pre-recorded songs exclusively to elicit prosocial behaviours. In study 2, the focus was on active music therapy for the intervention group and receptive music therapy for the control group. Four pre-recorded songs were played to both groups and the active music therapy group was described to have been involved in singing, dancing and playing musical instruments while the control group listened to music alone. The pre-recorded songs used in study 3 were written by a music therapist and autism specialist, and each song had a specific therapeutic goal aimed at prosocial behaviour (verbal and non-verbal communication, turn-taking, group music-making and sharing of instruments).

Authors in two of the studies (7 and 8) specifically mentioned basing their intervention on Nordoff-Robbins improvisational music therapy. In study 7 the intervention was described as music therapy based on music-centered psychotherapy where receptive and active music therapy techniques were used, with an emphasis on relationship and improvisation. Study 8 described the music therapy intervention as specifically based on the Nordoff-Robbins theory of meeting the “music child”, concepts of Stern’s “affect attunement“ (central to mother-infant communication), and Winnicott's play theories. The researcher specifically described her music therapy method as “Notice-Invite-Respond”, which meant noticing how a child would present, using that to invite a response either to herself, the music or an object, and then responding to the child’s response. This approach was chosen to support the prosocial behaviour of interaction between children in the group.

Study 1 used a specific group music therapy program called VOICSS™ (*Vocal Interactive Communication and Social Strategies*). This approach used evidence-based interactive songs to teach social-emotional skills, speech, and communication skills. Specific techniques were incorporated into the songs to make communication more likely, such as leaving requests for a response on an unresolved musical note, internal structure for turn-taking that alternates between group and individual response, and directly asking each individual questions that alternate between singing and speaking (Mendelson et al., 2016). The approach was structured but non-directive with the aim of providing participants with clear expectations. Study 5 utilised music in a similar way to provide anticipatory cues to aid in follow-through with tasks and use engagement in music making to practice social skills.

Studies 2 and 4 based musical activities on the Orff-Schulwerk teaching method, which focuses on adapting and working with a variety of melodic and rhythmic percussive instruments. The Orff method was described as being “child-centred” and comprised activities that aided children with developmental delays. Study 2 posited that the non-verbal approach of the Orff method, where communication is mediated through song and rhythm, helped participants to apply the non-verbal behaviours needed to regulate interaction and communication, and thus was important in enhancing their social skills in children with ASD.

4.10 Results of the studies

The five quantitative studies measured prosocial skills as “social skills” (studies 1, 3, 4 & 5) and “social communication skills” (study 1), and all five studies showed significantly higher scores on their particular measurement scales as a result of group music therapy. Studies 2, 4 and 5 included follow-up testing (at 3 months, 2 months, and 3 weeks respectively) and all three showed that the effectiveness of music therapy in terms of improving social skills in children with ASD was maintained.

All five studies showed positive results in areas of verbal and non-verbal communication and language, socialisation, cooperation, understanding and perspective taking, maintaining interaction, eye gaze and joint attention with peers. No significant results were reported for initiation of interactions in studies 2 and 5, with the latter also not showing significant between-group differences for response to communication or joint attention with adults.

The aims of all three of the qualitative studies were to examine and describe the process of group music therapy, and each study outlined different aspects of the affordances of the process. An important aspect of each of the three studies was the relational component of

music therapy – specifically the importance of an interested and supportive adult in the form of the music therapist and in some cases, other teachers. All three studies found that moments of relatedness mostly happened between the participants and the music therapists, and that peer-to-peer interactions remained a rarity. It was pointed out, however, in both study 6 and 8 that the music therapist played a role in acting as a connector or "bridge" between the group members.

Further investigation into the ways in which the music therapist supported the interactions of group members in study 8 revealed the importance of emotionally engaging with each group member individually through voice and movement and tending to the unique sensory challenges of each group member in order to promote a calm environment. This environment also had to be structured and predictable in order for the members to engage fully.

All three studies showed that music therapy in a group context had a positive impact on children with ASD in terms of initiating and maintaining interactions, building relationship, providing opportunities for verbal and non-verbal communication, and making collaborative play possible.

4.11 Authors' conclusions

A synthesis of the authors' conclusions from all eight studies will be presented in the following section in two parts. Conclusions concerning methodological issues will be followed by suggestions for further research.

4.11.1 Methodology

Some of the authors of the studies included in the review mentioned what they perceived to be methodological strengths. The authors of study 4 felt that they identified and eliminated the methodological weaknesses in the literature that they discussed to situate their own study by using a control group, a relatively large sample, random placement and a follow-up phase. Study 4 specifically used a control group in order to match participants with similar individuals to better assess whether the results of the study were due to the intervention and not differences between group members. Study 5 was the first nonblinded randomised controlled trial to examine the impact of group music therapy on social skills of children with ASD.

In terms of limitations, the authors of all the studies cautioned against generalisation of their findings, firstly due to relatively small sample sizes. The author of study 5 specifically mentioned that a larger sample size would result in bigger groups with different dynamics. She also argued that the potential for generalisation of findings could have been improved if the study included parent or sibling training, since skills could have been more directly practiced outside of therapy.

In study 4, the researchers emphasised their use of only one method of music therapy and suggested further research in this field to compare different methods. The authors of study 2 was of the opinion that language skills should also be evaluated when studying social skills. In the conclusion section of study number 3, the author mentioned the added limitation that treatment was not removed as is required in single-subject design due to ethical reasons. He also noted that an intervention period of nine weeks was possibly too short. This conclusion was supported by the finding from study number 8 that children with ASD take time to engage in new activities, and that a longer time period for an intervention is needed for ASD research. This author therefore noted that her intervention period of ten months added to the methodologic strength of the study.

4.11.2 Suggestions for further research

In terms of suggestions for further research, all the studies mentioned the need for more studies with larger sample sizes. A number of studies also mentioned that more research is needed into the efficacy of specific music therapy techniques to determine which strategies works for different children under different conditions. It was explicitly stated in study 4 that different methods of music therapy should be compared to test for intervention efficacy. The DUACS measure developed in study 1 was primarily a language-based measure and results might reflect how the music therapy program was optimal for students who have functional language skills. The authors therefore concluded that further research is necessary to determine whether and how the focus on verbal responses in the DUACs affected the findings. It was the opinion of the educator in study 3 that educators are not adequately prepared to deal with the inclusion of ASD children in mainstream classrooms, and that there is a need for more ASD specific research and training. The second part of study 3 on the effects of social-communicative response of children with ASD was therefore aimed at developing specific training for educators on using music for ASD in the classroom. A suggestion for further research on whether learned behaviours from music therapy group in the classroom would translate to other aspects of the school day was made by the researcher of study 8. This point was addressed in study 1 by examining teacher-reported gains and comparing them to gains observed in the music therapy group. The findings of this study also suggested correlations with empathy and social pragmatic problems but did not expand on whether gains in the group translated into the classroom.

4.11.3 Prosocial skills

A number of authors emphasised that the effectiveness of music therapy in the development of prosocial skills could be attributed to the fact that it was conducted in a group setting. In study 1

it was found that peer-to-peer interaction fostered expressive and pragmatic communication skills. The authors of study 4 mentioned that since peers can be considered as interventional factors in this regard, group settings provided opportunities for imitation, turn taking, social reciprocity, joint attention, shared affect, and empathy. One of the main themes that emerged from study 6 was the interplay between conflict and resolution in group dynamics and how this significant dynamic supported collaboration and closeness between the children. As was mentioned in the results, however, peer interactions in the qualitative studies were not as noticeable as interactions with the music therapist or other adults in the session. Overall, aspects of prosocial behaviour within music therapy groups seem to be directly encouraged and supported by the relationship between the children and the therapist.

Authors in both studies 1 and 2 specifically noted that the effects of group music therapy on prosocial skills development on children with ASD were impacted by the level of functioning of the individuals, with low to moderately impacted children showing more significant improvements. The author of study 8 also noted that the low incidence of interactions between the children could be a result of their early developmental level. Parent-child interactions in study 7 seemed to be affected multi-directionally, with more aggressive and rejection behaviour in children linked to frustration in their parents. This finding highlights the need for more strategies for healthy integration between children and their caretakers.

To varying degrees, the authors of all the studies describe the importance of *music* in group music therapy when it comes to positive outcomes for children with ASD. Music is a vehicle for assessment and evaluation of prosocial skills, for example when greeting songs invite group members to focus their attention on one another and offer greetings, or when group music making invites turn-taking. Music can also offer stimulation, emotional support and community through mutuality to individuals with ASD in a group.

4.12 Conclusion

This chapter presented the findings extracted from the identified studies that addressed the research questions guiding this study. Research into group music therapy for prosocial skills development in children with ASD is not particularly extensive. Even though the studies that do exist show positive results, the lack of a clear definition of prosocial skills used in research on music therapy and ASD makes it difficult to establish homogeneity. This then makes it challenging to draw conclusions regarding the *specific* prosocial skills that benefit from group music therapy and exactly how the intervention functions. The following chapter offers a further discussion of the synthesis of findings from the data analysis.

Chapter 5: Discussion

This chapter seeks to address the research questions through careful consideration of the findings investigated in chapter 4. An attempt will also be made to refine the conclusions to suggest implications for music therapy practitioners and researchers.

5.1 The extent of research on group music therapy for the development of prosocial skills in children with ASD

The literature review in chapter 2 revealed that extensive research has been done in the field of music therapy and ASD, with a large portion of the research focusing on individual music therapy interventions or a combination, and less on group music therapy alone. Intervention populations also often include preschool children and, to a lesser degree, adolescents. This review identified only eight studies in the last 21 years that have specifically investigated *group* music therapy as an intervention for children (aged 5 – 14) with ASD. There seems to be a tendency in research on music therapy and ASD to focus on younger children, specifically pre-schoolers. A recently published systematic literature review on music therapy and autism by Marquez-Garcia et al. (2021) focused on two aspects of music therapy – improvisational music therapy and singing/listening to songs – and reviewed articles published between 2008 and 2018. Almost 60% of the articles included in the review included participants of 7 years and under. As mentioned in chapter 2, one possible reason for this is the drive for early intervention in ASD. The review by Marquez-Garcia et al. also showed that over 70% of studies are conducted exploring individual music therapy as an intervention. It is unclear why this tendency of preferring individual music therapy exists, and further research could investigate this phenomenon within different contexts. The complexity of ASD causes individuals to present in a vast array of unique ways and to experience a wide range of personal challenges. In an effort to individualise therapeutic techniques and goals, practitioners and researchers might lean towards providing treatment in an individual one-to-one setting. Group work also entails certain logistical issues such as having to ensure all the group members attend all the sessions, as well as having enough funding for bigger spaces, a large number and variety of instruments and possible co-therapists.

The extent to which the eight studies reviewed in this research examine the topic is relatively small in terms of number of participants. Only two of the quantitative studies (study 1 and 2) had more than 30 participants (n=64 and n=52 respectively). There is a collective appeal from the

authors of all five quantitative studies to replicate their findings with larger sample sizes, different demographics and by using more specific intervention techniques. In only two of the quantitative studies (study 1 and 5), more than one rating scale was used to measure social skills, and only in study 5 were specific aspects of prosocial skills (eye gaze and joint attention) isolated, codified and measured. It would seem that the need for larger studies, where specific prosocial behaviours are isolated and measured, still remains.

5.2 Specific prosocial skills that have been developed in children with ASD through group music therapy

Due to the lack of standardised definitions of prosocial skills, it remains challenging to pinpoint specific and highly defined aspects of prosocial skills that are developed as a result of group music therapy. Adding to that, different tools were used for measuring prosocial skills in the review studies which makes comparison of results a challenging task. The list of prosocial terminology defined in chapter 3 serves as a tool to identify specific prosocial skills that have been developed in children with ASD through group music therapy.

Categories from the core deficits of ASD as described by the DSM-5 criteria that showed the most improvement as a result of group music therapy were “social skills” (study 2, 4 and 8) and communication/language (study 1, 3, 5, 6 and 8), specifically eye gaze and joint attention (study 1, 3, 5 and 8). This supports the findings of other researchers as mentioned in chapter 2. In the case of “social skills”, the focus point and resulting terminology used in each of the three studies were slightly different, which highlights the issue with generalisability of findings when multiple measurements are used. In study 4, the SSRS-P is used and measures aspects of assertions, self-control and responsibility – three terms which are still too broad for isolation of specific skills. The “social skills” measured in study 2 seem to centre around interacting with others – initiating, responding to, and maintaining interactions. In study number 8 there is a more detailed description of the “social skills” observed. These are described as “instances of engagement”, such as smiling, vocalising and eye contact, as well as “waiting” (which implies awareness of social norms) and “joint attention”. Table 7 in chapter 4 provides a comparison of more refined terms of prosocial behaviour observed in the eight review studies.

Interaction and initiative showed moderate improvements (study 2, 7 and 8), although it should be noted that a general finding from these three studies points to the majority of interactions happening between a child and the music therapist, with very little peer-to-peer interaction improved through group music therapy. This does not mean that the children were completely

unaware of other members of the group, since sharing, cooperating, turn-taking and collaborative play were some of the prosocial skills that also showed significant improvements (study 1, 3, 4, 5, 6 and 8). Rather, this highlights the importance of the therapeutic relationship and the positive effect of an emotionally engaged therapist leading the session. More on this in section 5.4.

5.3 The affordances of group music therapy that appear to allow for the development of prosocial skills in children with ASD

The question of exactly *how* music therapy effects change remains difficult to answer in the field of music therapy. Research methodologies often lack specific information on the method and techniques of music therapy interventions used, especially in quantitative research articles. This ongoing problem was also evident in the current review, with the majority of the quantitative studies suggesting further research into which specific intervention techniques are useful for which population groups (study 1, 2, 4 and 5). One benefit of an integrative review is that it allows for inclusion of qualitative studies, which offer a more in-depth exploration into the workings of music therapy so as to shed more light on how the process of group music therapy may operate in enhancing prosocial skills in children with ASD. While quantitative data is valuable in offering more objective conclusions, complex human experiences may also be oversimplified. With ASD in particular there is a broad range of symptoms with unique individual presentation, adding to the complexity of formulating clinical goals and deciding on the “right” music therapy approach. It is therefore important for research to tease apart the specific techniques in music therapy that support specific challenges in ASD and explore those in a more nuanced way, as is the case with qualitative designs.

In terms of the affordances of group music therapy, findings from the review highlight the importance of the therapeutic relationship and the value of active music therapy techniques with a focus on improvisation. None of the studies included in the review showed positive results for receptive music therapy techniques, such as music listening only. This would imply that prosocial skills might develop most prominently in group music therapy when children are actively engaged in the group either through singing, movement and dancing, and improvisational music-making using a range of instruments. This should come as no surprise, since prosocial behaviour directly implies interaction with another person. Opportunities for interaction are provided in the group music therapy context through collaborative music-making that includes turn-taking and sharing. This supports findings from the literature review in chapter 2, where group music therapy that showed positive changes employed improvisational

techniques (Eren, 2015; White, 2015). The music therapy group sessions in the majority of the studies included in this review also incorporated “hello” and “goodbye” songs where children were encouraged to greet their peers and sing their names. This technique that further encourages children to become aware of other group members and greeting within the safety of the music therapy group could possibly be a learned prosocial behaviour that is applied outside of the group. Further discussion of the research questions will be divided into implications for practitioners and implications for researchers.

5.4 Implications for practitioners

The most important theme from the qualitative studies relating to the affordances of group music therapy for children with ASD (study 6, 7 and 8) was the role of the therapist in creating a strong therapeutic relationship with each child (the main research objective in study 8), while also acting as a bridge between the child and the rest of the group members. The latter emerged as main themes in both study 6 and 7. The music therapist is required to be sensitive to the individual needs and goals of the children while also using the music as a creative connection between the group members by creating music and songs based on what is happening in the group at any given time. There is an immediacy to this process that benefits the prosocial behaviour in the group in more than one way. As a start, it supports the emotional expression of the individuals by making them feel heard while alerting the other children to what is going on and drawing them into the expression. This often leads to a sense of grounding and cohesion in the group and acts as invitation for other members to either join in the expression or offer support to each other. In essence, this means that the music therapist needs to be extremely well attuned to everything that is happening in the group and a session plan has to incorporate improvisational aspects that allow for making music in the moment. The relational aspects of prosocial behaviour in the review studies seemed to increase more towards the therapists and less towards peers. Acknowledgment and strengthening of these dyadic relationships by the therapist within the group structure seem to play a vital role in supporting and encouraging children to extend prosocial behaviour towards their peers. Sanders O’Connor (study 8) highlights the significance of this dyadic relationship between therapist and child within the group and makes a connection to Vygotsky’s zone of proximal development. She notes that the individual greeting and extended improvisations by a supportive adult can help the child to “use their capacities and apply them to new situations” (Sanders O’Connor, 2013, p. 43). Positive relational experiences between adult and child could thus act as a precursor for positive peer-relationships, as was found to be one of the primary roles of the music therapist in study 6. The

researcher calls this the “connector” role and explains how it supported the interactions between the children, stating “[t]he music therapist incorporated both members’ differentiated contributions into the improvised themes or used verbal and gestural prompts to promote a greater awareness of each other” (Crean, 2019, p. 46). Considering the unique presentation of ASD, a further step would be to create individualised goals for each child in the group and to keep those in mind during these individual improvisations. Having a co-therapist can greatly assist the process.

Certain specific group music therapy techniques that promote prosocial behaviour in the group emerged from this review and may therefore be beneficial for practitioners to focus on these techniques when working with children with ASD. As mentioned before, the most effective techniques for promoting prosocial behaviour appear to be active music therapy, such as singing, movement and playing an instrument. Elements of prosocial behaviour that are challenging to individuals can be built into the group music and “practiced”, like turn-taking and sharing instruments, as explored in studies 1, 5, 6 and 8. Another valuable technique appears to be creating anticipatory cues through use of rhythm and melody (as identified in study 1, 5 and 8). An anticipatory cue serves as prompt to encourage children to engage. An example of this would be to invite a child to finish a cadence or rhythmic pattern through creating a sound of their own. In general, it is important to build prosocial opportunities into the music for the group sessions if the development of prosocial skills is a therapeutic goal. Greeting, turn-taking and sharing can easily be built into songs, as was the case in the music intervention used in study 3:

> For example, a song entitled *Pass it along* gave students a chance to practice sharing musical instruments with other students. Another song, *Can you find a friend?* expected students to discover a companion who had the melodic instrument named in the tune and request that they share their instrument (Payton Jr, 2019, p. 33).

Another factor that played an important role in the identified studies was that of predictable structure. It was found by the author of study 7 that predictability and structure in the music therapy group sessions led to a calmer environment where chaos was minimised. Structure has an organising effect on a child with ASD since clear norms provide guidance and assist in engaging the child. The author of study 8 makes an important point about rigidity in ASD, stating that it may be less about the need for repetition, and more “about the *knowing what to do here* and seeking order when the environment is experienced as overwhelming or under-stimulating” (Sanders O’Conner, 2013, p. 48). When a session is predictable, there is sense of clarity about what needs to be done coupled with a sense of safety – two aspects of group music therapy

that proves important in promoting engagement between persons with ASD (Eren, 2015; White, 2015).

5.5 Implications for researchers

Issues around assessment of efficacy in music therapy are raised in music therapy literature, and the findings from this review highlight two related problems. The one concerns consistency and standardisation of specific behaviours addressed and music intervention designs, and the other relates to the unique presentation of ASD in individuals.

The articles included in this review used various rating scales for measuring prosocial behaviour, and since “prosocial” as a term is very broad and not clearly defined (as explained in sections 3.3.2 and 4.7), it is not fully possible to draw generalised conclusions about how specific aspects of group music therapy promote specific prosocial skills. It could be argued that there is a need for homogeneity when it comes to assessment measures in music therapy. It has also been suggested that music therapy research can benefit from a combination of assessment measures since diagnostic measures alone might not be sensitive enough to the global effect of music therapy (Marquez-Garcia et al., 2021). In study 5, participants showed improvements on the SRS but not the ATEC, and the author suggests that this is a result of the ATEC not being as sensitive to changes in social skills as the scale covers behaviours in several areas of functioning. This supports the argument for more specific rating scales that focus on one area of functioning in detail. An attempt was made by the researchers of study 1 to address this limitation. They developed their own systematic measurement tool (DUACS) to assess more specific aspects of prosocial behaviour (communication and socialisation). Furthermore, this measurement addressed other methodological issues. Children’s behaviours were addressed directly (the majority of existing measures are parent- or teacher reported) and in a quick and simple way within the school setting (many standardised assessments are lengthy and has to be administered in a laboratory setting). In addition, it measures changes in behaviour over time and generalises behavioural components to real-world situations.

Individuals with ASD present with unique strengths and if treatment goals are more effective when tailored to the individual, so assessment measures can be more effective when a combined approach is taken. Scales and questionnaires can benefit from more specific and standardised language, but additional measures such as behavioural analysis and physiological assessments may give a more holistic picture of the effect of music therapy on each individual, and thus treatment can be individualised within the group process, as suggested earlier.

Marquez-Garcia et al. (2021) suggests using a combination of parent/self-reports, psychometric measures, coded analysis of video recordings, and even neurophysiological assessments. Mixed-methods research studies would greatly contribute to the field by incorporating a combination of assessment measures, multiple data sources and a more in-depth evaluation of the effects of a music therapy group intervention.

Chapter 6: Conclusion

6.1 Introduction

The purpose of this study was to conduct a systematic literature review on the role of group music therapy in enhancing prosocial behaviour in children with ASD. In order to include different research designs, Whittemore and Knafl's (2005) framework for conducting an integrative review was used. During the search phase, the need to define the term "prosocial" in the context of this study became evident, and this process is explained in chapter 3. Eight studies were in selected for inclusion in this review (five quantitative and three qualitative) and findings from all eight studies support the hypothesis that music therapy interventions in a group setting can support the development of prosocial skills in children with ASD.

6.2 The value of the integrative review

The benefit of an integrative review, where different methodological designs are included, is that it allows for more than just statistical evidence of research findings. When something as complex as human nature is studied in music therapy, integrated knowledge is extremely valuable. Bradt et al. (2013) encourage overcoming the limitations of quantitative and qualitative data in music therapy research by combining data since this "provides context or meaning for quantitative results, arguments from multiple perspectives, and more evidence to assist in the application of findings to clinical settings" (p. 124). The five quantitative studies in this review provided statistical evidence that music therapy in a group context indeed supports the development of prosocial skills, while the three qualitative status added more nuanced answers to the question of how this works.

6.2 Limitations of this study

While care was taken to synthesis findings from this review in order to answer the various research questions, combining research findings from various methodologies remain complex and challenging (Whittemore & Knalf, 2005). It should be noted though that the findings do not contradict each other and also support similar results on the effects of individual music therapy in ASD – with the distinction that group work does seem to support prosocial development. Since the majority of the studies (six out of eight) included less than 30 participants, and only three of the studies did a follow-up assessment to verify the sustainability of the results (study 2, 4 and 5), caution should be exercised regarding the generalisability of the findings.

A relatively small number of studies met the inclusion criteria for this review. Studies into the effects of group music therapy with children with ASD are limited, and the fact that few studies were identified for inclusion also points to a need for more rigorous research in the field. The review only included literature published in English, and therefore might have missed important research published in other languages. While an effort was made to do an extensive search of the most relevant databases, included even more databases could possibly have yielded more results.

6.3 Recommendations for future research

Further research into the efficacy of group music therapy for the development of prosocial skills in children with ASD should focus on clearer definitions and specificity of behaviours measured. When these behaviours are identified, targeted and measured across larger sample sizes with longer follow-up investigation, more generalisable conclusions may be drawn about the efficacy of intervention. This body of evidence can then be used to advocate for targeted group interventions in schools to reach children with ASD who might not be able to afford individual therapy and who would benefit more from a group intervention. While early interventions are still important, the primary school environment serves as a crucial time and place for individuals with ASD to learn skills that will assist in important developmental phases through adolescence into adulthood.

Since the focus of this study was on group music therapy interventions for children in primary school, no research studies that included adolescents or pre-school children were eligible. The developmental trajectory for individuals with ASD is unique for each person, and research findings for the effect of group music therapy on pre-school children or adolescents with ASD might in fact provide more answers to the question of how music therapy functions for individuals with challenges in areas of socialisation, communication and interaction.

This review also provides a foundation for mixed methods research on supporting the prosocial development of children with ASD with group music therapy. The quantitative component of mixed method studies will provide not only statistical evidence of the types of prosocial behaviours that can be targeted and improved with group music therapy, but also build a more specific knowledge base related to which musical interventions are most effective for which targeted behaviours. An integration of this knowledge with qualitative data will enrich the field by providing a more holistic picture of the intrinsic value of music therapy for individuals with ASD.

6.4 Conclusion

Prosocial skills consist of a myriad of behaviours that form the building blocks for socialising, communicating and interacting with others. In ASD, core deficits in prosocial behaviour are often successfully targeted in music therapy interventions. Music therapy provides safe, predictable spaces where prosocial skills can be learned and practiced. The present integrative literature review aimed to investigate the effect of group music therapy on the development of prosocial skills in children with ASD. An extensive search was carried out, identifying eight studies for inclusion in the review. Findings suggest that there are added benefits to prosocial development when the intervention is carried out in a group context. This is good news for educators who need cost-effective interventions in schools where the number of ASD individuals is on the rise. The review also concluded that the field of music therapy and ASD research could benefit from more studies into specific music therapy interventions for specific aspects of prosocial skills, as well as more standardised measurements in general.

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