

A scoping review of research that examines El Sistema and Sistema-inspired music education programmes

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Abstract

Dominant discourses promote El Sistema and Sistema-inspired music education programmes as positively transforming young lives through social inclusion and musical excellence. However, critics have raised concerns that the El Sistema model has little support from objective, evidence-based research. To address this issue, the authors conducted a review of peer-reviewed articles published in English between 2010 and 2020, in order to bring together descriptions and findings of research examining El Sistema and Sistema-inspired programmes. Following a scoping review method, the authors identified 30 relevant articles for detailed review. The reported studies were identified to address programme impacts (including musical growth, academic achievement, cognitive development, and social-emotional development) and programme design (e.g., pedagogical approaches, curricular focus, and programme challenges). Reported research methods included randomised control trials, longitudinal randomised studies, qualitative interview studies, a quasi-experimental pre-post design study, and ethnographic studies. Overall, the results of this scoping review strongly suggest that Sistema-inspired music education programmes have great potential for positively impacting students,

particularly in terms of musical and social-emotional development, with less convincing but nevertheless reasonable evidence of increased academic achievement and cognitive development. The authors conclude that realising the potential of El Sistema and Sistema-inspired programming requires context- and student-specific teaching, curricula, and community support.

KEYWORDS

El Sistema, Sistema-inspired, music education, research review, scoping review, academic achievement, cognitive development, social-emotional development

Context and implications

Rationale for this study

Dominant discourses promote El Sistema and Sistema-inspired music education as positively transforming young lives through social inclusion and musical excellence. However, critics have raised concerns that the Sistema model has little support from objective, evidence-based research. To find out what existing research has actually revealed, a review was conducted of peer-reviewed articles published in English between 2010 and 2020, bringing together descriptions and findings of research that has examined El Sistema and Sistema-inspired programming.

Why the new findings matter

This review provides clear details of research that reports both the benefits and limitations of Sistema music education in terms of program impacts and program design.

Implications for policy and practice

Results suggest that Sistema music education has great potential for positively impacting students, particularly in terms of musical and social-emotional development, with less convincing but some evidence of increased academic achievement and cognitive development. Accordingly, policymakers would do well to focus advocacy and improvement efforts on social-emotional benefits. Findings suggest Sistema educators would do well to adopt more learner-centred approaches, particularly those that promote self-expression, creativity, and agency; resist the privileging of Eurocentric music traditions; actively value and celebrate diverse musics, backgrounds, and cultural expressions; and bring teaching methods in line with contemporary K-12 and community music education practices.

INTRODUCTION

Over the past decade, El Sistema and Sistema-inspired music education programmes have developed rapidly and widely in over 60 countries. El Sistema was founded in Venezuela by

Dr. José Antonio Abreu in 1975 (Frega & Limongi, 2019). The core premise is that intensive music education can bring about social transformation for children from economically disadvantaged communities through fundamental principles of social change, ensemble, accessibility, frequency and connectivity (Govias, 2011). In the El Sistema model, students are taught orchestral instruments and/or to sing in a choir in a cooperative learning environment that emphasises performance (Ilari *et al.*, 2016). Most programmes operate after school three to five days per week (Morris *et al.*, 2018).

El Sistema and Sistema-inspired programmes are widely regarded as benefitting young people both in terms of musical development (Boia & Boal-Palheiros, 2017) and socio-emotional well-being (Creech *et al.*, 2013). However, some critics have expressed concerns that the El Sistema model has little support from objective, evidence-based research (Baker, 2014; Baker *et al.*, 2018; Frega & Limongi, 2019); that its emphasis on Western classical music and hierarchical orchestral structures has negative aspects related to authority, control and exclusion (Baker, 2016); and that it is at odds with contemporary music education approaches that encourage self-directed informal music learning and focus on learners' own interests, cultures and experiences (Hallam & Creech, 2010). In 2013 Creech *et al.* published an extremely thorough review of available research and publications that addressed El Sistema and Sistema-inspired programming, including a broad range of literature published in multiple languages. The review was updated in 2016 (Creech *et al.*, 2016). To complement and extend that work, this scoping review focuses on peer-reviewed research published in English between 2010 and 2020, in order to lay out what has been learned about students' participation in El Sistema and Sistema-inspired programmes over the course of that time period, thereby providing evidence-based knowledge concerning the benefits and limitations of this approach to music education. Programme providers and educators can leverage this knowledge to maximise the potential benefits of Sistema methods while recognising and ideally overcoming limitations.

METHOD

We used a scoping review method to 'examine the extent, range, and nature of research activity' (Arksey & O'Malley, 2005, p. 21) addressing El Sistema and Sistema-inspired music education programmes. We followed the five-stage framework proposed by Arksey and O'Malley (2005): (1) identify the research question(s), (2) identify relevant studies, (3) select studies, (4) chart the data, and (5) collate, summarise, and report the results.

Scoping review research question

The primary research question was chosen to set broad parameters for study selection while focusing on the phenomenon of interest (Arksey & O'Malley, 2005): *What is the extent, range, and nature of research activity that addresses El Sistema and Sistema-inspired music education programmes?* This question focused the review on Sistema music education programmes but encompassed studies that examined different aspects of these programmes, e.g., student experiences, programme structure, repertoire, pedagogies, impact on learning achievement, and interactions with policy. We also developed a second research question to focus on the findings of the relevant research: 'What is known from the existing literature about El Sistema and Sistema-inspired music education programmes?'

Identification of relevant studies

Between the summer of 2019 and winter of 2020 we conducted keyword searches of the Education Source, ERIC, and Music Index databases on the EBSCO platform, Queen's University Library's Summon discovery tool, and the Social Sciences Citation Index on the Web of Science platform. In addition to identifying all the relevant research literature addressing *El Sistema* and *Sistema*-inspired music education programmes, we intentionally sought to make our searches transparent and reproducible. For this reason, and because we were excluding grey literature, we chose to search with the Music Index and the Social Sciences Citation Index rather than Google Scholar, which has more limited search strategy options. JSTOR was excluded as a search tool because a recent review of academic search systems by Gusenbauer and Haddaway (2020) revealed that coverage of specific topics is typically broader in subject-specific databases than in the multi-disciplinary JSTOR.

We chose 2010 as our start date limit, as that is when increased global awareness of and appreciation for the original Venezuelan model inspired the formation of many new *El Sistema* and *Sistema*-inspired programmes around the world. We used the search terms '*El Sistema** AND music'. Additional limiting parameters included peer reviewed journal articles only, in English. Arksey and O'Malley (2005) identify that the purpose of a scoping review is not to assess quality. However, as articulated above, a primary motivator for us to engage in this review was to examine the critique that the *El Sistema* model has little support from objective, evidence-based research (Baker, 2014; Baker *et al.*, 2018). We therefore made the decision to include only peer-reviewed articles as a limited strategy to ensure at least some level of research quality control. The search generated 834 references distributed across the databases as identified in Table 1.

We then expanded our search beyond electronic databases by 'hand-searching key journals' (Arksey & O'Malley, 2005, p. 23), scanning the table of contents of each issue as far back as 2010, looking for articles that mentioned *El Sistema* in the title. We carried out hand-searching of the *International Journal of Music Education*, *Music Education Journal*, *British Journal of Music Education*, *Music Education Research*, *Journal of Research in Music Education*, *Research Studies in Music Education*, *International Journal of Community Music*, and *Action Theory and Criticism for Music Education*. This search yielded 37 articles. A further search of the reference lists of relevant articles yielded an additional 17 articles.

All results were imported into reference management software. This made the process of identifying duplicate articles and purging them quite efficient. When duplications were purged, 134 citations remained.

Study selection: inclusion and exclusion criteria

Inclusion and exclusion criteria eliminate irrelevant literature generated by the search that do not address the review's focus (Arksey & O'Malley, 2005). Our scoping review sought to learn about research activity concerning *El Sistema* and *Sistema*-inspired music education programmes, and what is known as a result of that research. We borrow our conception of what is research and what is not from Plano Clark and Creswell (2015), who delineate research as 'a process of steps used to collect and analyse information about a topic or issue' (p. 4). We chose therefore to only review articles that reported the collection and analysis of data related to *El Sistema* or *Sistema*-inspired music education programmes. Many articles identified through our searching strategies did not fit this criterion, but were in fact theoretical discussions (e.g., Fink, 2016), opinion papers (e.g., Baker, 2014), descriptions of *El Sistema* principles or history (e.g., Govias, 2011; Frega & Limongi, 2019); programme descriptions (e.g., Lorenzino, 2015), activity reports (e.g., Nemoy & Gerry, 2015), or literature reviews

(e.g., Creech *et al.*, 2013, 2016), and so were excluded. As we became more familiar with the literature, new criteria were developed to guide decisions of inclusion and exclusion (Arksey & O'Malley, 2005). For example, some articles focused on knowledge exchange between programmes and research teams (e.g., Allan *et al.*, 2010). We chose to exclude these articles as they did not specifically report the collection and analysis of data concerning El Sistema or Sistema-inspired programmes.

After removing duplications and excluding articles that did not meet our criteria, 30 were selected for detailed review.

Charting the data

Our next step in the review process was to chart the data, which involved 'sifting, charting and sorting' material in relation to the following key information and themes (Arksey & O'Malley, 2005, p. 26):

- Author(s), year of publication, journal, study location
- Study participants (number of teachers, students and/or administrators)
- Aims of the study (research focus and/or research questions)
- Method
- Important findings

Collating, summarising, and reporting the results

Based on our reading and analysis of the research articles selected for detailed review, we organised them into two broad categories of research focus: (a) programme impact ($n = 23$), and (b) programme design ($n = 7$). Within each of these categories we also identified sub-categories of research focus, as detailed in Table 2. A number of articles span categories and sub-categories.

RESULTS

The intent of a scoping review is to provide an overview of all the reviewed studies, as opposed to synthesising or aggregating findings (Arksey & O'Malley, 2005). In this section we respond to our primary research question 'What is the extent, range and nature of research activity that addresses El Sistema and Sistema-inspired music education programmes', by providing a description of each reviewed study, organised by research focus. We include details about location, participants and methods. We also include the key findings of each

TABLE 1 Scoping review search results

Database	Search terms	Limiters	Search results
Education Source	El Sistema* AND	Scholarly peer-reviewed	32
ERIC	music	journals; English language. 2010–present	31
Music Index			54
Social Sciences Citation Index			42
Queen's University library Summon search			675

research study, thereby addressing our second research question: ‘What is known from the existing literature about El Sistema and Sistema-inspired music education programmes?’ In the section summaries we highlight themes and patterns identified across the study findings.

A number of the reviewed studies had multiple research foci, and so are mentioned in more than one section of the results overview. We provide a detailed description of the study when it is first introduced, but describe only relevant findings in subsequent mentions.

Programme impact

We have organised the reviewed studies that address programme impact into sub-categories of musical growth, academic achievement, cognitive development, and social-emotional development. These impacts align closely with Kyriacou *et al.*'s (2009) articulation of Sistema teachers as ‘social pedagogues’ who support multiple facets of the learners’ overall development, including musical, cognitive, social and creative. We present the sub-categories in order, from impacts focusing on musical development, then expanding outwards to include impacts related to broader cognitive and social-emotional development.

Musical growth

Advancement in music is at the heart of Sistema programming, with Shieh (2015, p. 577) proposing that building musical skills can offer learners the chance to join in a ‘global music tradition’. In this section we present two clusters of related studies that focused on musical development, ordered chronologically.

Slater *et al.* (2013) conducted a longitudinal, randomised study to examine whether a year of participation in a Sistema programme, based in Los Angeles, would have an impact on the development of beat-keeping skills for participants aged six to nine. Slater *et al.* (2013) found that after one year of participation in the programme, the music students ($n = 29$) demonstrated greater accuracy in a basic finger-tapping task compared to a control group ($n = 31$). The control students were on a waiting list to participate in the programme, and were students of similar socio-economic status and ‘as well-matched as possible in terms of student motivation and parental support’ (p. 2).

Slater *et al.* (2015) conducted a related longitudinal study of seven-year-olds ($N = 38$) to determine whether music training in a Los Angeles Sistema programme improved the ability of students to extract information from competing sounds and noise. The researchers compared one group ($n = 19$), who had participated in the Sistema programme for two years, to a second group ($n = 19$) who had participated in the programme for only one year of the two-year study (the second group of students began the programme a year later). Using Nilsson *et al.*'s (1994) Hearing In Noise Test as a tool to measure speech-in-noise, the study compared the two groups over three data collection periods in two years. Results showed

TABLE 2 Categories and sub-categories of research focus

Categories	Sub-Categories
Programme impact	<ul style="list-style-type: none"> • musical growth • academic achievement • cognitive development • social-emotional development
Programme design	<ul style="list-style-type: none"> • pedagogical approaches • curricular focus and programme challenges

that students enrolled in the music programme for two years experienced improved hearing in noisy environments compared to the second group.

In order to provide a baseline for later studies, Habibi *et al.* (2014) studied 15 participants in Los Angeles, California, aged six to seven, to determine whether the children had any pre-existing differences before engaging in three different after-school activities: music (the children were registered for a Sistema programme), sports (the children were registered for an athletics programme), and no programme. Habibi *et al.* (2014) found no significant differences in cognitive, motor, musical, emotional, or social behaviours, nor in structural and functional brain measures.

In a subsequent related study, using a control-trial method, Ilari *et al.* (2016) examined the development of musical skills amongst 50 students, primarily Latino, aged six and seven. Twenty-three of the children participated in the Los Angeles Sistema programme. The twenty-seven children in the control group were recruited from nearby schools and did not participate in any intensive after-school programming. While both groups improved in rhythm perception, the music group showed greater improvement in pitch perception when listening, in pitch matching when singing, in accuracy of singing 'Happy Birthday', and in rhythmic synchronisation. The students in the control group, from the same ethnic and social background, actually showed a decline in singing and pitch discrimination skills over the course of the year. The results suggest that participation in the Sistema programme affected children's musical development in distinct ways, with pitch perception and production skills developing more noticeably than rhythmic skills.

In another related study, Habibi *et al.* (2016) measured the ability to detect changes in tonal or rhythmic content of unfamiliar melodies and the associated brain processing among 45 Sistema participants (mean age = seven years old) in Los Angeles. The authors used a control trial study that compared students enrolled in the Sistema programme ($n = 13$), a soccer-based community sports programme ($n = 11$), and a group involved in no training programme ($n = 13$). Findings revealed that children in the music group showed 'an enhanced ability to detect changes in tonal environment and an accelerated maturity of auditory processing as measured by cortical auditory evoked potentials to musical notes' (p. 1). The authors accordingly suggest that music training may lead to stimulus-specific brain changes in young children.

In summary, all the reviewed studies examining musical growth of students in Sistema programmes identified positive results. Specifically, students showed greater improvement than control groups in beat-keeping skills (Slater *et al.*, 2013); ability to hear (extract information) in noisy environments (Slater *et al.*, 2015); pitch perception and production skills (Ilari *et al.*, 2016); and maturity of auditory processing related to tonal and rhythmic content (Habibi *et al.*, 2016).

Academic achievement

A number of research studies and evaluations have examined links between participation in Sistema programming and academic achievement (Creech *et al.*, 2016), seeking tangible evidence of the broader, non-musical benefits espoused by Sistema proponents. In this section we describe four such studies that met our review criteria, presented chronologically.

Morin (2014) studied an intensive after-school Sistema programme at one school site in a low socio-economic neighbourhood in Manitoba, Canada. Research participants included seven teachers, 29 families, three administrators, and 31 children aged six to nine years old. Through parent surveys and music teacher interviews, Morin identified that the programme seemed to have 'a positive impact on the quality of children's academic work generally'(p. 23).

In a controlled longitudinal study involving 42 children aged six to nine, from low socioeconomic status bilingual households in Los Angeles, California, Slater *et al.* (2014) used three standardised English language literacy measures to capture silent word reading fluency (Mather *et al.*, 2004), oral reading speed (Torgesen *et al.*, 1999), and phonological processing (Wagner *et al.*, 1999). When tested a year later, the reading scores of students in the Sistema programme ($n = 23$) did not improve, but maintained a level normal for their age, whereas students in the control group (on a waiting list to participate in the programme) ($n = 19$) showed a decline in reading scores. The authors interpreted the results as evidence that involvement in the Sistema programme may counteract delayed English literacy growth among participants from low-income and bilingual families.

In Melbourne, Australia, Osborne *et al.* (2016) used a quasi-experimental pre-post design in two schools participating in Sistema programming over a 12-month research period to compare a group of eight- to 11-year-old students (School 1, $n = 34$; School 2, $n = 18$) with a control group of students at the same two schools who were not enrolled in the music programme (School 1, $n = 26$; School 2, $n = 14$). The researchers used the Interactive Computerised Assessment System (Centre for Evaluation and Monitoring, 2013) to provide diagnostic information on reading and maths ability in relation to Australian norms. The music programme students at School 1 achieved higher results than their non-music programme peers on all four literacy and maths skills subtests. This was not the case, however, at School 2, where the students in the music programme did not achieve higher scores.

Holochwost *et al.* (2017) undertook an experimental study of all 265 Grade 1–8 students (mean age, 10.2 years) at a school in the Northeast United States to examine if participation in a Sistema programme improved performance on measures of academic achievement and executive functions. Of the participating students, 135 were randomly assigned (by lottery) to the music programme, while the other 130 students comprised the control group. Year end results indicated that students in the Sistema programme scored higher on standardised tests in reading, maths, and English language arts; earned better grades in English language arts and math; and exhibited superior performance on select tasks of executive functions (EFs) and short-term memory (STM). Of note, the authors highlight that this study is the first study to use experimental methods (rather than correlational or quasi-experimental) 'to demonstrate that music education, offered in a naturalistic context over the course of years, yields benefits to academic achievement, EFs, and STM' (p. 163).

In summary, reviewed studies examining the potential of Sistema programming to positively impact academic achievement reveal generally positive results that are not, however, entirely conclusive. Morin's (2014) study found positive results but these were based on parent and teacher anecdotal reports only and were not compared to a control group. Slater *et al.* (2014), Osborne *et al.* (2016), and Holochwost *et al.* (2017) all convincingly reported that participants who experienced Sistema programming achieved higher academic scores than those in the control groups. However, there is no indication that the students in the control groups received any additional programming at all, so it is not clear whether the music programming was beneficial because it was music-related, or simply because it provided the children with more structured and supported activity than their peers. Further, Osborne *et al.* (2016) reported that, unlike the School 1 students, the School 2 students in the music programme did *not* score higher on academic achievement measures than their peers who were not in the music programme.

Cognitive development

Cognitive development refers to the development of neural processes, for example those that govern gross and fine motor skills, memory, language development, and intelligence

(Supartini *et al.*, 2020). In this section we present, in chronological order, seven studies that examined cognitive development.

In a two-year study Kraus *et al.* (2014a) examined whether greater engagement (defined by attendance and classroom participation) in a Los Angeles Sistema programme positively impacted neural encoding of speech (how neurons represent sound with electrical activity) amongst 26 participants. The researchers introduced an auditory stimulus (the syllable 'da') and measured evoked potentials in the auditory brainstem. They found that students who demonstrated more engagement in the Sistema classes developed stronger neural encoding of speech. More engagement also predicted higher reading scores, as measured with the Test of Oral Word Reading Efficiency (Torgesen *et al.*, 1999).

Kraus *et al.* (2014b) conducted a randomised control study that examined whether duration of participation in the Los Angeles Sistema programme would alter auditory neurophysiology and improve the neural processing of speech syllables. The 44 Los Angeles students were randomly assigned into two groups: one group began the Sistema programme in 2011 ($n = 26$), and the other was offered deferred entry in 2012 ($n = 18$). Both groups were matched for age, maternal education, hearing thresholds, and gender. The assessments were conducted in 2011 (start of programme for group 1), 2012 (start of programme for group 2), and 2013. The measures involved a neurophysiological test battery consisting of click and speech-evoked auditory brainstem responses. Findings revealed that participants who had been in the Sistema programme for two years showed improvement in neural differentiation of syllables, but the improvement was relatively small. Those who participated for only one year showed no improvement.

In a related study designed to distinguish the impact that active engagement with sound through instrumental music learning has on auditory neural processing, versus engagement in a more passive music appreciation class, Kraus *et al.* (2014c) followed 19 Los Angeles Sistema students for one year. The researchers measured the students' brainstem responses to a series of 'd' syllable sounds and clicks at various frequencies and found 'faster and more robust brainstem responses to speech' (p. 4) for the nine students who were enrolled in the active music programme than the 10 students in the music appreciation class. The researchers found no differences in reading fluency as measured with the Test of Oral Word Reading Efficiency (Torgesen *et al.*, 1999).

Hedayati *et al.* (2016) compared neural activity between two groups of students, aged 9–12, in Ottawa, Canada. They hypothesised that exposure to intensive ensemble music training in a Sistema programme should induce neuroplastic functional changes. Students in the Sistema programme ($n = 8$) and a comparison group ($n = 8$) of children who did not participate in intensive music training participated in an auditory Go/No-Go task. The task required children to press a button when they heard a 'go' tone and to *not* press the button when they heard a 'no-go' tone. Reaction times and response accuracy were recorded. While performing the task, the children were connected to electrodes that measured electrophysiological signals (brain activity), enabling the researchers to record event-related potentials (ERPs) associated with executive and other cognitive functions. For the participants who took part in the Sistema programme, neural activity associated with executive and other cognitive functions showed higher levels of topographical overlap and was more distributed and coordinated. The researchers interpreted this topographical mapping of ERP activity to indicate that the children with music training may have had a 'heightened level of appraisal or awareness of the auditory task' (p. 545). The researchers concluded that intensive instrumental ensemble music training may be associated with changes in neuroplasticity that support neural information integration.

As mentioned in the previous academic achievement section, Holochwost *et al.* (2017) not only reported higher academic scores for students in Sistema programming, but also a superior performance on tasks of EFs and STM. EF assessments included the go/no-go

task (Bezdjian *et al.*, 2009), the colour-word Stroop task (Troyer *et al.*, 2006), the flanker task (Erikson & Schultz, 1979), the trail-making task (Buck, *et al.*, 2008), the Tower of London task (Phillips *et al.*, 1999) and a version of the Wisconsin Card Sorting Task (Fox *et al.*, 2013). Visual STM tasks included the digit-forward condition of the digit span task (McCarthy, 1972), the Corsi block task (Corsi, 1973), and a pictorial span task. The authors noted that although the largest differences in task performance were observed between students in the control group and those who had been enrolled in the music programme for two to three years, conditional effects were also observed on three executive function tasks for students who had been in the programme for only one year.

Alemán *et al.* (2017) conducted a cluster-randomised control trial study of 16 El Sistema centres across five states in Venezuela, involving the participation of 2,914 six- to 14-year-old students and their guardians. Each centre included orchestra and choral instruction. Approximately half of the students joined the El Sistema programme in September 2012 (the treatment group), and half in September 2013 (the control group). Cognitive skills were assessed with a digit recall task to measure working memory, a symbol search (processing speed), and a further task for visual-spatial reasoning. Data were gathered in participant households by children and adult caregivers at two different points in time – the autumn of 2012 and the autumn of 2013. The researchers did not find any full-sample effects on cognitive skills.

In Los Angeles, Sachs *et al.* (2017) compared the EF of children who attended a Sistema programme ($n = 14$, mean age = 8.67) with children of similar cognitive ability and socioeconomic status who attended a sports programme ($n = 13$, mean age = 8.85), and with children who were not involved in music or sports ($n = 17$, mean age = 9.05). Using a functional MRI scanner, the children completed the colour-word Stroop task (Golden & Freshwater, 1978). They also performed a battery of behavioural assessments that required cognitive control outside the scanner, including the colour-word Stroop task again, along with the Wechsler abbreviated scale of intelligence (Wechsler, 1999), the Hearts and Flowers task (Diamond & Wright, 2014), which ‘tests working memory, response inhibition, and task switching/cognitive flexibility’ (Sachs *et al.*, 2017, p. 8), and the Flanker Fish task (Rueda *et al.*, 2004) – a child-friendly version of the Flanker task (Eriksen & Eriksen, 1974), used to assess selective memory, task switching, working memory, and inhibitory control. The researchers found no differences in behavioural measures of EF, i.e., in performance on tasks of response inhibition, working memory, or task switching. However, results of brain imaging indicated that the children with music training and sports training had greater bilateral activation in comparison to the control group. The researchers therefore concluded that regular extracurricular training, and in particular music training, may be associated with cognitive control network changes that lead to ‘improved monitoring of emotional responses during conflict processing, which fosters more successful actions and decisions in the future’ (p. 21).

In summary, there is some limited evidence that Sistema training can support cognitive development. With regard to speech processing, Kraus *et al.* (2014a) found that students with greater attendance and classroom participation in the Los Angeles Sistema programme developed stronger neural encoding of speech. Children who had been in the Sistema programme for two years showed a small improvement in neural differentiation of syllables (Kraus *et al.*, 2014b). When Kraus *et al.* (2014c) compared students taking music appreciation classes to those engaged more actively (with learning instruments), the latter exhibited better and faster perception of speech syllables. Hedayati *et al.* (2016) identified that neural activity associated with EFs showed higher levels of topographical overlap and was more distributed and coordinated for the Sistema children in their study, suggesting changes in neuroplasticity which may support neural information integration. Holochwost *et al.* (2017) found that children in a Sistema programme performed better than a control group when doing EF and STM tasks. On the other hand, in a study involving almost 3,000 participants,

Alemán *et al.* (2017) did not find any full-sample effects on cognitive skills. Sachs *et al.* (2017) did not find any differences in behavioural EF measures between Sistema participants and control groups either, although brain imaging did indicate that children with music training (and sports training) had greater bilateral activation, suggesting, perhaps, 'improved monitoring of emotional responses' (p. 21).

Social-emotional development

Social-emotional development refers to emotional self-regulation (Alemán *et al.*, 2017) and the ability to interact positively with peers (Morris *et al.*, 2018). Such capacities have been emphasised in writings detailing foundational El Sistema principles, including a disciplined work ethic (Govias, 2010) and playing and working as a team, an experience that Booth (2011) claims enhances the development of social skills. In this section we present, in chronological order, ten studies that examined various aspects of social-emotional development.

Morin's (2014) study, in Manitoba, Canada (detailed above), surveyed 31 children in the Sistema programme using the Anderson-Butcher and Conroy's (2002) 'Sense of Belonging Scale' to measure sense of belonging at school, and an adaptation of Begley's (2000) 'School Situations Grid' to measure school self-concept. The children generated high scores with both instruments, indicating that they felt 'comfortable, accepted, and supported' (p. 23), and high in self-concept, particularly in relation to musical competence. Parent surveys indicated that family pride as well as inter-family, intra-family and school-family relationships improved.

In the Melbourne study, Osborne *et al.* (2016) compared students at two schools participating in Sistema programming with students at the same two schools who were not enrolled in the music programme. The researchers investigated psychosocial outcomes using a 20-minute online interactive game, *Clowning Around* (Pathways to Prevention Research Group, 2012), designed to measure educational well-being, emotional well-being, social well-being, protective factors, supportive positive social relationships, attachment to school and self-regulation. The School 1 students who participated in the Sistema programming reported significantly greater well-being than their peers who were not in the music programme – they felt happier, had more purpose in life, a greater sense of belonging, got along better with others, and had better self-control over impulsive behaviour. These characteristics largely remained the same, or increased slightly, over a 12-month period. School 1 students also reported higher attachment to school, motivation to achieve, positive identity and self-esteem, and perception of school as positive. However, School 2 students in the music programme actually scored slightly lower on the well-being measures than their peers who were not in the programme. The authors suggest that School 1 students may have scored higher as a result of being part of a more established and robust programme, which included a close and well-publicised relationship with the local symphony orchestra.

In the Venezuelan study by Alemán *et al.* (2017), self-regulation variables were assessed with self- and guardian-reported questionnaires and computerised games measuring future orientation, response inhibition, attention functioning, and planning skills. Behaviours were assessed with self- and guardian-reported measures of broad prosocial behaviour, difficulties and aggression, along with a risk-taking game. Prosocial skills and connections were assessed along with scale measures of self-esteem, empathy, and school and family engagement. Results indicated that the Sistema group had higher self-control and fewer behavioural difficulties. The researchers found greater effects among children with less educated mothers and the effects were concentrated among boys, especially those exposed to violence. Boys who had been exposed to violence also showed a reduction in self-reported aggressive behaviour. The researchers did not find any full-sample effects on prosocial

skills and connections. They found few effects on girls overall, with some unexpected decreases in different skill domains.

Hopkins *et al.* (2017) examined a Sistema programme in a medium-sized city in the midwestern United States through a case study that included fifth-grade students ($n = 22$), teachers ($n = 3$), and families ($n = 22$). The perceived programme benefits reported in parent and student focus groups and interviews with programme teachers included the empowerment students felt when performing in a professional space and impressing family members, and connections forged between students and proud parents.

Ehrlin and Gustavsson (2018) conducted a qualitative case study to gain insight into how parents ($n = 3$) perceived their own and their children's participation in a Sistema programme. Ehrlin and Gustavsson reported that the parents felt their children's sense of well-being had increased. The three participants, who were recent refugee immigrants in Sweden, felt that their own social network, sense of well-being and community had increased as well. The researchers suggest that the programming does not simply promote the interest and commitment of parents in relation to their children's schooling, but also promotes the children's development and the well-being of the parents more broadly.

In a related interview study with four preschool teachers and four music teachers, Gustavsson and Ehrlin (2018) explored Swedish educators' opinions on working with a Sistema programme. According to the teachers, the most significant aspect was experiencing joy: "Just before we start singing and playing, something happens. It's difficult to define. It's like magic." (p. 189). The teachers also considered activities which would support social growth and the integration of immigrant children and parents into Swedish society. From an intercultural perspective, however, the researchers identify that the teachers were, to some extent, promoting assimilation over integration.

In a quasi-experimental research study in Miami, Florida, Hospital *et al.* (2018) sought to determine whether involvement in the Sistema after-school music programme 'The Miami Music Project' led to enhanced positive youth development. The researchers recruited stakeholders from three chapters of the programme, including eight- to 17-year-old students ($n = 180$), parents ($n = 178$), and teachers ($n = 24$). They also recruited a control group ($n = 60$) of young people of the same age range who participated in non-music after-school programming, such as sports, dance, art programmes, and Big Brothers/Sisters. The researchers identified 'five Cs' of positive youth development to investigate: competence, confidence, caring, character, and connection. The measures used were the Children's Hope Scale (Snyder *et al.*, 1997) for competence; a short version of Bandura's (2006) multidimensional scale of perceived self-efficacy for confidence; the Positive Indicator Project's four-item scale of empathy for caring (developed by Lippman, *et al.*, 2014); the Grit Scale (Duckworth & Quinn, 2009) for character; and a self-reporting survey developed by the researchers for connection. Findings revealed that students in the programme showed significant increases across all five Cs over the course of the year and showed greater improvements over time in character, competence and caring when compared to the comparison group.

In a longitudinal study based in Los Angeles, California, Ilari *et al.* (2018) tracked the development of rhythmic entrainment, prosociality, and theory of mind skills in children ($n = 45$, mean age = six years and nine months) attending an after-school Sistema music programme ($n = 17$), sports programme ($n = 15$), and in a control group of children that did neither programme ($n = 4$), over the course of three years. All children improved their ability to drum in time with external (recorded) rhythms in two contexts (alone and social), with the music group showing greater improvement entraining to external rhythms in the social condition. To measure the theory of mind, the researchers used the child version of the Reading the Mind in the Eyes test (Baron-Cohen *et al.*, 2001; Baron-Cohen *et al.*, 2001), which 'requires children to recognise mental states from images of human eyes' (p. 4). The researchers

found no significant group differences. Prosociality was assessed via two age-appropriate tasks that took the form of spontaneous helping and sharing behaviours by using toy blocks and stickers. Again, the researchers found no significant group differences, but did find that entrainment scores in the alone-drumming condition for children in the Year 3 music group positively correlated with their prosocial scores, indicated by how many stickers they shared with friends. The authors note that 'it could be interpreted as an indication that the connections between the temporal and interpersonal aspects of entrainment were more robust in this group' (p. 7), and further suggest that, along with improving rhythmic synchronisation skills, formal music education may impact children's 'affect towards members of their in-groups' (p. 7).

Fasano *et al.* (2019) sought to explore whether short orchestral music training in a Sistema programme in Italy would reduce impulsive behaviours, hyper-activity, and inattention in children aged eight to 10 ($n = 113$). The study, performed over two subsequent years, compared a group of 55 children participating in two-hour music lesson groups for a three-month period each year, to a control group of 58 children who received no music training. Children in the music group showed a significant improvement in inhibitory control, in comparison to the control group, based on assessments made with the Walk–No Walk test (Marzocchi *et al.*, 2010) and the Matching Figures MF-14 test of impulsivity control (Marzocchi *et al.*, 2010). The researchers also measured hyperactivity-impulsivity and inattention with scales designed by (Marzocchi *et al.*, 2010), and identified that the control group showed an increase in self-reported hyperactivity that was not found in the music group. Results suggest that even a brief intense period of orchestral music training can facilitate the development of inhibitory control.

Merati *et al.* (2019) conducted a community-based participatory research study to explore children's lived experience of a Sistema programme in Montreal, Quebec. The qualitative descriptive study included eight children aged seven- to 12-years-old grouped by age into two semi-structured focus groups. The participants described positive associations with the programme and their well-being. Emotional benefits included learning about stress management, patience and confidence; socially, the participants described benefitting from the programme's fostering of community relationships and relationships with family and peers; personal and educational benefits included the programme's promotion of career ambition and scholarly motivation.

In summary, research indicates that Sistema programming can result in a strong sense of belonging and self-concept (Morin, 2014); empowerment through a sense of professionalism, and strong connections with proud parents (Hopkins *et al.*, 2017); wellbeing, for students and parents (Ehrlin & Gustavsson, 2018); experiencing joy, as well as social growth and integration of immigrant families (Gustavsson & Ehrlin, 2018); enhancements in character, competence and caring (Hospital *et al.*, 2018); participants feeling a positive affect towards members in their music group (Ilari *et al.*, 2018); improved inhibitory control (Fasano *et al.*, 2019); and improved stress management, patience, confidence, and relationships with family and peers (Merati *et al.*, 2019). In addition, in a group comparison study, Osborne *et al.* (2016) identified benefits, including a greater sense of well-being, happiness, purpose, and belonging than peers not in the music programme, as well as getting along better with others, and having better self-control over impulsive behaviour; however, these benefits were only experienced by students in the more established and robust of the two school programmes examined. In another group comparison study, Alemán *et al.* (2017) identified higher self-control and fewer behavioural difficulties amongst male (but not female) Sistema students than those in the control group. On the other hand, they measured but did not find an increase in self-esteem, empathy, or school and family engagement.

Programme design

We organised the reviewed studies – which address programme design – into sub-categories of (a) pedagogical approaches, and (b) curricular focus and programme challenges. The studies are presented chronologically.

Pedagogical approaches

Morin's (2014) study, in Manitoba, Canada drew on data from focus group interviews with teaching musicians, an in-depth interview with the lead Sistema music specialist, and the researcher's own observations to identify the most effective pedagogical practices within their context: (a) maximising activity and minimising teacher talk; (b) instructional differentiation; (c) varying activities; (d) varying scheduling of small ensemble groups, and individual work; (e) activities that allow for learner success; (f) colour-coding music scores; (g) scaffolding music learning with recordings; (h) appealing, and level-appropriate repertoire choice; and (i) selecting choral works for social learning and literacy development.

Dobson (2016) reported an ethnographic study (location not supplied) of Sistema orchestral rehearsals with children of five to seven years, which he conducted from his perspective as an instrumental tutor. Dobson described authoritarian and teacher-centred pedagogy which, he concluded, inhibited students' agency and creativity. Dobson also engaged in discourse analysis of correspondence, texts and documents produced by the programme's administration. He identified 'a project deeply mired in its own contradictions, where humane instincts and notions of social betterment clash with archaic, dehumanising, and elitist pedagogical tools' (p. 114).

The Hopkins *et al.* (2017) study in the midwestern US included detailed descriptions and analyses of videoed rehearsals. The researchers reported, for example, time allocated to teacher interventions (42%) vs. student responses (40%), and that 92% of the teachers' verbal interventions offered positive feedback. They also described peer mentoring, including students taking turns as section leader, musical decision-making within student groups, and opportunities for advanced students to support struggling peers.

Boia and Boal-Palheiros (2017) reported a qualitative case study focused on a Portuguese Sistema orchestral rehearsal of a group of 35 students, aged 12–16. The study sought to uncover to what extent discipline and authority, as constituents of orchestral socialisation, may or may not empower participants' musical development. During a 75-minute session, the maestro rehearsed the young musicians in the performance of eight scales. Through close observation and analysis, the researchers identified that the conductor was: disciplining minds through stimulating attention, focus, and self-assessment; disciplining bodies through addressing posture; manifesting authority through threatening to delay the rehearsal break; and expressing trust in their ability. The researchers identified that the young players were: cooperating with the conductor (most of the time); helping to maintain order (occasionally); and being disruptive (sometimes) by giggling, talking, or reacting slowly to instructions. The researchers suggest the disruptive behaviour may have been the result of tiredness, boredom or resistance. In the second half of the rehearsal, focused on concert repertoire, the young musicians 'seemed satisfied and [were] enjoying playing in a positive atmosphere' (p. 158). The conductor concluded the rehearsal with positive feedback and by telling them he 'trusted' them to perform well in the upcoming concert.

The researchers identify that the conductor's approach was complex and ambivalent, recognising that his leadership may be read as empowering the musicians' self-concept and the importance of concentration, effort and persistence; but it also may be read as a form of symbolic violence through authoritarianism. The authors question whether alternative

pedagogical approaches – for example, those that support learner agency – may have been more effective in supporting musical growth. They opine, “We should neither neglect the importance of pleasure in learning and making music nor undervalue positive forms of discipline” (p. 163).

Kuuse (2018) sought to understand children’s experiences of a Sistema programme in Sweden through the lens of musical agency. Using a reflective ethnographic case study design, Kuuse spent three months with the small string orchestra of three teachers and 10 students aged seven to nine years, collecting data which included observations and audio recordings of rehearsals, lessons and events along with programme documents. Kuuse reports detailed descriptions and analyses of the rehearsals, identifying (a) tightly controlled space for action as children sit on stools and follow instructions with very little opportunity for interaction; (b) teachers’ use of ‘empowering constructions’ (p. 146) which take the form of praise for the students’ musical and social growth within a warm and welcoming climate; and (c) spaces for creative action appropriated by the children, e.g., when Rose dances in front of the stools and improvises on her violin to a Sistema tune – action which was met with praise for her ‘effervescence’, but a request to sit down. Kuuse found musical agency was determined by constructions of discipline, empowerment, and space, and was ‘distributed and negotiated within a social discursive practice’ (p. 152).

In summary, Morin (2014) identified varied practices that suited the context of the Manitoba programme. Dobson (2016) found outdated authoritarian and teacher-centred approaches which inhibited students’ agency and creativity. In contrast, Hopkins *et al.* (2017) observed an even balance of teacher-directed interventions – most offering positive feedback – and student responses, along with facilitated peer mentoring. Boia and Boal-Palheiros (2017) reported juxtaposed approaches within the same rehearsal: a lengthy, authoritarian and highly disciplined technical drilling of eight scales with minimal learner agency which met with student compliance, boredom and some resistance, contrasted with a positive-toned repertoire rehearsal after the break that students seemed to enjoy. Kuuse (2018) similarly reported a balance of tight discipline but also that students received empowering constructions and negotiating opportunities for learners’ musical agency manifested in creative action.

Curricular focus and programme challenges

Bergman and Lindgren (2014) used an ethnographic approach to explore how teachers and administrators in a Sistema programme in Gothenburg in Sweden legitimise music and its function within an educational context. The authors gathered data including observations of rehearsals, interviews with teachers and leaders, and programme documents. They identified that the programme leaders conceptualised music – and specifically, Western art music – as a ‘power to unite’ people of diverse backgrounds and to de-segregate society; as a tool for personal development, i.e., to create better citizens through fostering empathy, a sense of belonging to the orchestra, and strict discipline; and as a social ladder, both in terms of convincing members of ‘financially important circles’ (p. 53) to support the programme and in terms of helping children to achieve their dreams by enabling them to experience the benefits of hard work. The authors conclude by pointing out that although the programme rhetoric is very similar to late 19th century Swedish ideals of ‘musical training improv[ing] quality of life’ (p. 55), the programme demonstrates a contemporary openness to more diverse music genres.

Morin’s (2014) study, in Manitoba, Canada sought to identify how the Sistema programme had been adapted from the Venezuelan model to the Canadian context. Data sources included in-depth interviews with three institutional partner senior administrators and the lead Sistema music teacher; focus group interviews with seven teaching musicians, and

observations by the researcher. The programme was found to be similar in terms of philosophy and principles, programme intensity, and use of Western classical music. Differences included ongoing development of the curriculum (including Canadian and Indigenous fiddling tunes and techniques) as opposed to Venezuela's national music curriculum, family involvement limited to concert attendance rather than parents participating in classes and ensembles as in Venezuela, and private and corporate as opposed to government funding. The study identified the challenges of a growing gap in musical achievement between students who participated in the Sistema programme and those who did not at the hosting school, as well as a strain on physical spaces for other after-school programmes.

Simpson Steele (2017) studied the characteristics of a Sistema and public school partnership in a rural community in Hawaii and its realisation of the principles of El Sistema. The researcher used ethnographic observation and focus group interviews with students ($n = 28$), parents ($n = 6$), schoolteachers ($n = 6$) and teaching artists ($n = 6$). Along with students developing persistence, and pride in their musical achievements, the research identified programme challenges with student behaviour and with meeting the varied needs of students with diverse socio-economic, cultural-linguistic, and educational backgrounds; tensions with the teachers in the hosting school over curriculum priorities and lack of space; and a resistance to frequency of instruction, with a 45% rate of attrition seen largely as a result of the programme's high time demands.

Hopkins *et al.* (2017) reported that perceived challenges to the midwestern US programme included a 65% rate of attendance (students reported they would prefer less hours per week), expectations for students (teachers reported tensions around striving for excellence, i.e., finding the balance to motivate meaningful engagement), delivery of instruction (balancing different teachers' approaches), parental support (lack of parent engagement beyond concert attendance), and inequality of educational opportunity (i.e., with regard to music [band] students at the school who were not involved in the strings programme). The researchers noted, "An interesting finding from this case study was that the increased intensity was the source of most of the benefits *and* challenges reported by the participants" (p. 254).

Rimmer (2018) explored children's reflections on the value of their participation in a Sistema programme at three programme sites in the United Kingdom. Rimmer employed a multiple case study design and interviewed 111 students aged six to 11. Rimmer found that the children valued the way the programme led to their parents praising and acknowledging their efforts. They also valued making progress on their instruments. They did not value the physical exertions of playing their instruments, nor the type of 'calm and smooth' music they played, preferring 'loud' popular music (p. 52). Rimmer concluded that the programme's approach to music and music learning generally does not connect to children's own musical interests nor to the ways music is valued in their homes and communities.

In summary, Bergman and Lindgren (2014) identified in the Swedish programme a curricular focus on Western art music (with some openness to other music genres) as a tool to desegregate society and for personal development. Morin (2014) found the programme in Manitoba, Canada to parallel the Venezuelan model in philosophy, principles, programme intensity, and focus on Western classical music, but that local curriculum development was ongoing, including the incorporation of Canadian and Indigenous fiddle tunes. Simpson Steele (2017) reported some of the challenges experienced in a Hawaiian programme, including learner variability, managing student behaviour, tensions with the hosting school teachers, and a resistance to frequency of instruction. Hopkins *et al.* (2017) similarly reported a resistance to frequency of instruction as a challenge, along with finding the right level of expectations for students, negotiating different programme teachers' approaches, engaging parents, and the frustration of the disenfranchised host school (non-strings) music teachers and students. (Morin (2014) also reported the latter two challenges. Rimmer (2018)

found that the approach of three UK programmes and their focus on Western classical music did not resonate with the children's own musical interests nor with the ways music was valued in their homes and communities.

DISCUSSION

This scoping review of 30 peer-reviewed studies was focused on two categories: programme impact ($n = 23$) and programme design ($n = 7$). The overall findings indicated that with respect to *programme impact*, all reviewed studies showed positive results for musical growth (Slater *et al.*, 2013; Slater *et al.*, 2015; Habibi *et al.*, 2016; Ilari *et al.*, 2016) and socio-emotional development (Morin, 2014; Osborne *et al.*, 2016; Alemán *et al.*, 2017; Hopkins *et al.*, 2017; Ehrlin and Gustavsson, 2018; Gustavsson and Ehrlin, 2018; Hospital *et al.*, 2018; Ilari *et al.*, 2018; Fasano *et al.*, 2019; Merati *et al.*, 2019). Broadly, our scoping review supports the findings from larger, cross-national literature reviews by Creech *et al.* (2013, 2016) that Sistema music programmes can foster social and emotional wellbeing and promote social development through music.

Less persuasive was evidence for academic achievement and overall cognitive development. While some articles convincingly reported an improvement in academic achievement (Slater *et al.*, 2014; Holochwost *et al.*, 2017), Morin (2014) offered only anecdotal evidence for this claim. And while Osborne *et al.* (2016) did find that Sistema students at one study site achieved higher scores than their non-Sistema peers, the Sistema students at another site did not have a higher score than the control group. The evidence for cognitive development was also limited and inconclusive. While some studies found that cognitive abilities of Sistema participants improved (Kraus *et al.*, 2014a; Kraus *et al.*, 2014c; Hedayati *et al.*, 2016; Holochwost *et al.*, 2017), other studies showed no or few positive effects (Kraus *et al.*, 2014b; Alemán *et al.*, 2017). It is also important to note that academic achievement and cognitive development are constructs subject to environmental and structural factors which make it difficult to determine that the effects are a result of any particular programming (Evans, 2004).

As for *programme design*, some of the reviewed studies identified were critical of teacher-centred, authoritarian pedagogical approaches (Dobson, 2016; Boia & Boal-Palheiros, 2017), although others reported approaches supporting learner agency (Kuuse, 2018) and peer mentoring (Hopkins *et al.*, 2017). While curricula tended to focus on Western music (Bergman & Lindgren, 2014; Morin, 2014; Rimmer, 2018), Morin (2014) also identified the Manitoba programme attempting to include music from other cultures. Programme challenges reported included resistance to the frequency of instruction (Hopkins *et al.*, 2017; Simpson Steele, 2017) as well as learner variability, managing student behaviour, and issues arising from the host school (Morin, 2014; Simpson Steele, 2017).

The results of this scoping review highlight several limitations in existing research and directions for further research. One key limitation is the socio-economic, cultural, and racial heterogeneity of various geographical contexts in programme impact and design. Sistema-inspired programmes exist in over 60 countries (Baker, 2014) and our scoping review included literature from the United States, Canada, Australia, the United Kingdom, Sweden, Venezuela, Brazil and Portugal. The socio-economic heterogeneity of these varied contexts makes it challenging to draw conclusions about the impact of El Sistema and Sistema-inspired programmes. The context of each country differs in the degree to which socio-economic disparities may influence factors such as academic achievement and cognitive development, because of vast differences in government expenditures for education and early learning (OECD, 2016). These differences in public spending on education may influence the degree of access to host schools, teacher preparation, and programme funding.

OECD (2017) data also indicates that disparities in socio-economic inequality may lead to variable educational outcomes across country contexts. These have implications for how we may evaluate programme impact. Other factors related to geographic context include cultural and racial heterogeneity. The scholarly literature indicates that culturally and racially marginalised students across different country contexts experience more challenges in schooling, relative to students from dominant cultural groups (Stevens & Dworkin, 2014). For example, the Ilari *et al.* (2016) study included a sample of 50 primarily Latino and Latina children in Los Angeles, California. Sistema programmes may offer promise for these marginalised populations since the programmes have been found to positively influence their socio-emotional development and sense of belonging (Morin, 2014). Further studies should be conducted on the impact of the programme for racially marginalised children.

Another identified limitation in comparing findings across the reviewed studies was the studies' methodological variability, which included randomised control trials (Kraus *et al.*, 2014b; Habibi, *et al.*, 2016; Hedayati *et al.*, 2016; Ilari *et al.*, 2016; Alemán *et al.*, 2017; Holochwost *et al.*, 2017; Hospital *et al.*, 2018), longitudinal, randomised studies (Slater *et al.*, 2013; Slater *et al.*, 2015; Ilari *et al.*, 2018), qualitative interview studies (Boia & Boal-Palheiros, 2017; Ehrlin & Gustavsson, 2018; Gustavsson & Ehrlin, 2018; Hopkins *et al.*, 2017; Merati *et al.*, 2019; Morin, 2014), a quasi-experimental pre-post design study (Osborne *et al.*, 2016), and ethnographic studies (Bergman & Lindgren, 2014; Dobson, 2016; Kuuse, 2018). While the methodological variability is valuable in providing diverse perspectives and understanding of the programmes and their impacts on students, families and communities, it is challenging to meaningfully compare findings across such an array of diverse approaches.

A further limitation is that existing research studies have been designed, conducted and analysed by university researchers. This may have influenced the findings of these studies by situating them within conventional research traditions. Participatory action research approaches, where the Sistema teachers and children have the opportunity to contribute to the development of the survey instruments and interview questions, might yield different findings (Sabo Flores, 2008).

It is also important that we note limitations within our scoping review process. One such limitation is that we only included English-language publications even though many Spanish language publications on this topic exist. The inclusion of those articles may have yielded rich findings from diverse geographical contexts across Latin America. In addition, the inclusion of evaluation reports and other grey literature might have included some valuable evidence about the programme impact and design of El Sistema and Sistema-inspired music education programmes.

FINAL WORDS

Given the range of variability across programmes that are necessarily impacted by differing geographic contexts, student demographics, teachers, curricula, programme age, financial and community support (e.g., relationship with an orchestra and/or university partner), and so on, it is not surprising that existing research is not able to convincingly and consistently provide evidence of cross-context Sistema programme benefits. The study conducted by Osborne *et al.* (2016) that found positive impacts from School 1 and none from School 2 effectively illustrates how drastically programme variability can influence programme outcomes. Overall, however, the results of this scoping review strongly suggest that Sistema music education programmes have great potential for positively impacting students, particularly in terms of musical and social-emotional development, with less convincing but nevertheless some evidence of increased academic achievement and cognitive development.

A reviewer for this article raised an important question: some argue that other music education programming may just as effectively provide these same positive impacts, so what is the significance of the Sistema approach? We agree that many other music learning approaches do indeed deliver a range of positive impacts, and strongly suggest that learners will do best in programmes which match their musical interests and learning styles. Nevertheless, the Sistema approach *is* significant as a brand which provides ‘valuable inspiration’ (Frega & Limongi, 2019) amongst those who champion music education. In addition, the research reviewed in this article largely supports the notion that its fundamental principles of social change, ensemble, accessibility, frequency and connectivity (Govias, 2011) effectively function together to support positive impacts. Of particular significance, this approach – ostensibly – enables marginalised children and families to experience those benefits when other forms of music education may not be accessible to them.

On the other hand, this review highlights that there is much about Sistema programming that remains problematic, including a reliance on teacher-centred approaches that severely limit opportunities to meet the needs of individual learners or promote self-expression, creativity, and agency; and a privileging of Eurocentric music traditions that inherently de-values other music, backgrounds, and cultural expressions. The studies in this review do not effectively challenge criticisms from Frega and Limongi (2019, p. 567), who characterise Sistema music training as drawing ‘somewhat haphazardly on a range of older methods, primarily of European origin, plus some Suzuki elements’, nor from Baker (2014) and Baker *et al.* (2018), who point out that Sistema programming is profoundly Eurocentric in its limited focus on a Western classical music repertoire. Although some Sistema programmes identified in the reviewed studies seem to be contemporising their pedagogical strategies and attempting to move away from a reliance on Western classical music, these efforts are piecemeal at best. For Sistema programmes to bring their teaching methods in line with current music education practices and meaningfully honour cultural inclusivity, systemic change is necessary.

Based on the findings encountered in this review, we recommend that researchers continue to employ a variety of inquiry methods to better understand in nuanced ways how students experience and benefit from Sistema-inspired music education within their unique contexts, with particular attention to the ways programmes are moving towards learner-centred and culturally inclusive approaches. We recommend that Sistema educators, students and parents seek within this literature the studies that are most relevant to their own contexts and current needs, recognising that while El Sistema and Sistema-inspired programming certainly has the potential to positively impact young learners, that potential needs context- and student-specific teaching, curricula, and community support to be realised.

CONFLICT OF INTEREST

The authors have declared no conflict of interest.

AUTHOR CONTRIBUTIONS

Benjamin Bolden designed the project. Sean Corcoran managed the electronic article searches and oversaw the data analysis. Benjamin Bolden and Sean Corcoran categorised the data. Benjamin Bolden and Sean Corcoran wrote the manuscript with contributions from Alana Butler.

ETHICAL APPROVAL

As this article reports a scoping review study, no participants were involved and an ethical review was not required.

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