

Impact of Music Therapy to Promote Positive Parenting and Child Development

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Abstract

The effectiveness of a 10-week group music therapy program for marginalized parents and their children aged 0–5 years was examined. Musical activities were used to promote positive parent–child relationships and children's behavioral, communicative and social development. Participants were 358 parents and children from families facing social disadvantage, young parents or parents of a child with a disability. Significant improvements were found for therapist-observed parent and child behaviors, and parent-reported irritable parenting, educational activities in the home, parent mental health and child communication and social play skills. This study provides evidence of the potential effectiveness of music therapy for early intervention.

Keywords

- *child development*
- *early intervention*
- *music therapy*
- *parenting*
- *social disadvantage*

Introduction

DURING THE infant and toddler years, the quality of children's social interactions with their primary caregivers is of considerable significance to healthy development. This article is focused on the evaluation of an early intervention program to promote children's good health in the domains of behavioral, communicative and social development. In early childhood, positive interactional skills such as parental responsiveness, warmth and sensitivity combined with an absence of angry, irritable parental affect are key factors associated with developmental outcomes (Kochanska, Forman, & Coy, 1999; Landry, Smith, Miller-Loncar, & Swank, 1997; Landry, Smith, Swank, & Miller-Loncar, 2000). The influence of these factors on children's behavioral, social and communication skills are evident across diverse circumstances, including for children from disadvantaged socio-economic backgrounds (Bradley, 1989) and those with developmental disabilities (Spiker, Boyce, & Boyce, 2002). These findings suggest that early interventions which promote positive parent-child interactions are likely to result in improved developmental outcomes for children at risk (Mahony, Boyce, Fewell, Spiker, & Wheeden, 1998). The assumption of such interventions is that immediate and long-term developmental benefits can accrue for children if parents can be supported to achieve greater responsiveness and engagement in interactions with their children (McCullum & Hemmeter, 1997).

The intervention program

Sing & Grow is a short-term early childhood parenting intervention structured around music-based play activities (Abad, 2002; Abad & Edwards, 2004). It is a 10-week group intervention delivered by Registered Music Therapists. Based on the principles and approaches of attachment theory, interaction theory and behavioral parent training (Kim & Mahoney, 2004; Mahoney & Perales, 2005; Stern, 1990), the program seeks to foster children's developmental competence by enhancing parental responsiveness and promoting the use of developmentally appropriate parenting skills. Specifically it aims to enhance children's behavioral, social and communication skills by using music-based activities as a non-threatening context in which to promote quality parent-child interactions. Music is an

activity that most children enjoy and most parents can relate to. The act of singing (e.g. of lullabies) is one of the earliest and most common forms of musical interaction between parents and their children. By playing and singing to music, parents share an intimate experience with their child that is believed to have powerful bonding qualities (Williams & Abad, 2005).

This interactive context presents the opportunity for a music therapist to work with parents to develop skills that enhance parent-child relationships and that promote children's developmental skills (Williams & Abad, 2005). In this program, therapists plan musical activities that aim to elicit specific parental behaviors, and foster parental skill development and self-confidence through use of non-didactic behavioral strategies such as demonstration, rehearsal, feedback and praise. The targeted parenting behaviors are those known to be associated with children's developmental competence and parent-child attachment (Sanders, 1995; Werner, 2000), including parental expression of affection, physical touch, praise, appropriate instruction-giving and development of age-appropriate expectations, improving parents' emotional responsiveness to their children, and strengthening parents' self-confidence in their parenting skills.

Effectiveness of music therapy parenting interventions

The use of music in a therapeutic setting has been associated with enhanced parent-child relationships and child development (Kennelly, 2000; Papousek, 1996; Ulfarsdottir & Erwin, 1999), and the fun nature of music programs may make them accessible to a wider range of parents than those who access more traditional forms of parenting interventions. Families who are marginalized and disadvantaged typically do not engage in mainstream parenting interventions, limiting effectiveness due to poor reach and retention (Barlow, Kirkpatrick, Stewart-Brown, & Davis, 2005; Ireys, DeVer, & Chernoff, 2001). If parents are satisfied with the nature of the intervention, they are more likely to maintain their involvement in the program and benefit from the experience. Therefore, parent satisfaction is important in its own right, and because it may relate to other family outcomes, such as increased empowerment, enhanced parenting self-efficacy, reduced parental stress or parental depression (Green, McAllister, & Tarte, 2004).

Parent satisfaction data have been reported from *Sing & Grow* programs conducted in Queensland, Australia (Abad & Williams, 2007). For a sample of 694 families attending 63 groups, the intervention was found to be successful in reaching high-risk client groups including single parents, economically disadvantaged families, parents with a history of domestic violence or abuse and parents of children with a disability. High levels of satisfaction were reported. Parents who completed the program reported positive ratings of the program's impact on parent-child relationships and a translation of music-based activities to the home setting (Abad & Williams, 2007).

Other studies have reported evaluations of music-based programs that target parenting in early childhood for first-time mothers (Vlismas & Bowes, 1999), parents of infants with developmental delay (Shoemark, 1996) and multi-ethnic or highly disadvantaged parents (Lyons, 2000; Oldfield, Adams, & Bunce, 2003; Oldfield & Bunce, 2001). These interventions have been found to be associated with positive parent satisfaction (Oldfield & Bunce, 2001), high levels of parent and child engagement (Lyons, 2000; Oldfield et al., 2003), improved parent-child interactions and child social and developmental skills (Lyons, 2000) and strengthened social networks for families (MacKenzie & Hamlett, 2005). However, these studies have mainly been descriptive case studies drawing on qualitative data and conducted with small samples. With the exception of the *Sing & Grow* evaluation, all previous studies have combined music activities with other interventions (e.g. mother-only therapy groups). Only one study used a control group design (Vlismas & Bowes, 1999), but this was non-randomized, and no studies have employed measurement tools of established reliability and validity. Thus, while the results from *Sing & Grow* and other music-therapy studies have been encouraging, the impact of music-based early childhood parenting interventions is yet to be established. There is a clear need for studies that employ more rigorous evaluation designs and measurement methodologies.

Purpose of the study

The current study aimed to address this gap using a multi-method design that assessed participants at pre and post intervention. Changes over time were assessed in terms of parent-reported parent-child interactions, parenting behaviors, parenting self-efficacy, parent mental health and children's behavioral,

social and communication skills, and therapist observation of parent and child behaviors. Outcomes were compared across three client groups: families facing socioeconomic disadvantage; young parents; and parents of children with a disability.

Methods

Design

Parents and children attended 37 *Sing & Grow* group programs conducted in the second half of 2005. Data were collected from participating parents at pre and post, and by clinicians during the first two and last two sessions of the program (typically sessions one, two, nine and 10). For data collection purposes, the 'parent' was the responsible adult attending the first session with the child.¹ While the program was designed primarily for parents of children aged 0-3 years, those who were referred with children up to age five years were also accepted.

As part of the service delivery contract, brief demographic data were collected from all families attending programs. For those parents who agreed to participate in the evaluation, questionnaire data were collected at the ends of the first (pre) and last sessions (post). Post questionnaire were mailed to parents who failed to attend the final session. Questionnaires were five pages long, taking 10-15 minutes to complete.

Measures

Questionnaire measures Four aspects of parent-child interactions were assessed using short parent-report measures employed by a national Australian study of early child development (Zubrick et al., 2007). *Parental responsiveness* was assessed using six items from the Child Rearing Questionnaire (Paterson & Sanson, 1999) on which parents rated their expression of physical affection and enjoyment of the child. *Irritable parenting* was assessed with five items from Parental Perceptions and Behaviors Scale (Institut de la Statistique du Quebec, 2000) which rated the frequency of parental anger and irritability toward the child. *Parenting self-efficacy* was assessed with four items modified from the Early Childhood Longitudinal Study—Birth Cohort (National Center for Education Statistics, 2004) which rated parents' confidence undertaking tasks associated with raising an infant. For each of these measures, items were rated on five-point scales, then summed and averaged to give a total score ranging from 1-5, with higher scores

indicating higher levels of responsiveness, irritability and self-efficacy respectively. Internal consistency was acceptable with alphas of .86, .87 and .78 respectively. *Play and incidental teaching activities* were rated on five items assessing the frequency of activities in a typical week (e.g. 'How often do you play with toys or games indoors with your child?') rated on a four-point scale: 'not at all' to 'every day'; $\alpha = .71$).

Parental mental health symptoms was measured with the Kessler K6 screening scale which aims to detect psychological symptoms and has been widely used in Australian and international population studies (Furukawa, Kessler, Slade, & Andrews, 2003). Parents completed six items about feelings over the last four weeks, rated on a five-point scale ($\alpha = .91$). Higher scores indicated the presence of more symptoms.

Child behavior was assessed with four items from the Mood and Behavior subscale of the NEELS Scales of Developmental Competency (SRI International, 2003). For each item the parent was asked to indicate which of three descriptions was most like their child, with items assessing mood, temper and manageability ($\alpha = .77$). Higher scores indicated more difficulties. *Social play skills* (social awareness, social interactions; $\alpha = .82$) and *receptive communication skills* (awareness, understanding of instructions; $\alpha = .86$) were assessed with five items each, derived from subscales of the NEELS Scales of Developmental Competency (SRI International, 2003). Each item described a developmental skill and parents rated the extent to which the child currently displayed that skill (from 'does not do it at all' to 'does it a lot'). Scores were averaged across items so that greater developmental competence was indicated by higher scores (range = 1–3).

Family demographic details included: (1) for the parent and child: age, gender, ethnicity and main language spoken (English or other); (2) for the parent: marital status, highest level of education and employment status; (3) for the family: family structure and whether the family income is mainly from government benefits. In addition, a single item assessed experience of a depressive episode lasting for two weeks or more in the last 12 months (Kemper & Babonis, 1992).

Parents' ratings of *satisfaction, benefits* and *generalization to home* were completed at post. Parents completed a series of questions that asked about their satisfaction with the program and staff (two items, four-point rating scale from 'very dissatisfied' to 'very satisfied'), the extent to which they gained an improved understanding of child

development and learnt new ways to play with their child (two items, three-point rating scale from benefited 'not at all' to 'a lot') and their use of the program CD and music activities (four items, rated yes/no: regular use at home or in the car, use of music to manage difficult behavior or to keep their child amused).

Observational measures Clinicians completed a six-item observational checklist for each parent–child pair attending the first two and last two sessions of the program. This measure was derived from a review of rating scales used to assess the quality of parent–child interactions in early intervention programs (e.g. Drotar, Eckerle, Satola, Pallota, & Wyatt, 1990; Mahony, 1999; Mahony et al., 1998; Masur & Turner, 2001). In selecting items, consideration was made for: the structured group context in which the interactions occurred; child age; cultural appropriateness; and the need to minimize the observational load on clinicians. The quality of parental behavior toward the child was rated on three items (sensitivity to the child demonstrated through awareness of the child's signals; effective engagement of the child in the program; and acceptance of the child demonstrated through positive affect), and the child's behavior toward the parent and others was rated on three items (responsiveness to parent demonstrated through positive interactions with the parent; interest and participation in the program; and social engagement with other adults and peers). Scores were averaged across the two observations at pre and post to provide means ranging from one to five, with higher scores indicating more frequent displays of positive behaviors.

Behaviors were independently coded by a second observer in 10 percent of sessions. The clinician and observer compared their independent ratings and discussed the reasons for any discrepancies of more than ± 1 with a view to reaching a consensus. Clinician and observer ratings showed high concordance. The proportion of ratings consistent to ± 1 , ranged from 87 percent for child interest to 94 percent for parent sensitivity.²

Procedure

Participants were referred by community and government agencies offering services to families with young children. Referring agencies distributed information brochures and groups were scheduled once

sufficient numbers were obtained. Programs were typically conducted at the premises of the referring agency. Programs were conducted for three main types of clients: families facing general social and economic disadvantage; young parents (defined by government services as those aged 25 years or younger); and parents of a child with a disability.³ Program content did not vary by client group.

The intervention

Sing & Grow is a 10-week group intervention, designed for weekly delivery to around eight to 10 parent-child pairs. Sessions followed established session plans with set learning objectives. Each session typically contained the following elements, each addressing one or more developmental skill as described: greeting and farewell songs acknowledging each child individually by name to encourage social responsiveness; action and movement songs to provide practice of fine and gross motor skills; instrumental play to provide further motor skills practice and also focused on following simple instructions (e.g. 'start', 'stop', 'louder', 'quietly'), turn-taking and sharing; and quiet music to encourage physical touch, closeness and bonding between parent and child.

The music consisted of traditional children's songs, original compositions and improvised material. Original compositions by the program's developers were designed to provide a context for the practice of specific developmental skills such as concept comprehension (e.g. 'up', 'down') and expressive language skills. Some contained instructive lyrics to support parents in their use of music for interacting with their child. Improvised material was usually based on a known song, embellished musically or harmonically. This material enabled the clinician to respond to group dynamics and specific events. For example, improvised materials could be used to influence the mood of the group (e.g. to facilitate a transition from boisterous to quiet activity), or as a means of responding to a particular parent or child either to highlight achievements or to engage their attention and participation.

Using this format, music and songs provided a therapeutic context for promoting positive parent-child interactions, parental responsiveness, parenting self-efficacy and child skills development. Following behavioral parent training principles (Sanders, 1999), observed skills (of the parent and child) were identified, described and reinforced. Parents who were observed to have specific

skills deficits were given verbal encouragement to try new things, by use of behaviorally specific verbal suggestions, followed by descriptive praise for attempted change. Specific parenting strategies that were modeled included: the use of praise, modeling and positive reinforcement to shape children's social, behavioral and motor skills; improving parental non-verbal communication through eye contact, smiling, touch and physical affection; the use of simple instructions and limit setting; the use of co-facilitated play to practice fine and gross motor skills; and the use of music to entertain or calm children. Parents were guided through the practice of activities that extend children's developmental skills and were shown how repetition enhances developmental competence. To aid in the transfer of activities to the home environment, participants were provided with a CD and song book. The amount of intervention believed to be therapeutically effective was defined by the developers as a minimum of six sessions.⁴

Group programs were conducted by 17 clinicians who were all tertiary qualified and professionally registered music therapists. Clinicians were provided with training in the therapeutic methodology of the intervention, which included the established session plans and related repertoire, materials and resources, an overview of the needs apparent in the client populations and the administrative and evaluative procedures related to service provision. Five senior clinicians conducted site visits at least once for each group program to provide supervision, support and to ensure consistency in the implementation and quality of delivery.

Results

Services delivered

Programs were provided to 358 parents and children attending 37 group programs conducted in seven Australian states and territories. The agencies referring clients to the program provided services to: families facing general social and economic disadvantage (17 groups, 45.9%); parents of a child with a disability (11 groups, 29.7%); or young parents (nine groups, 24.3%). While *Sing & Grow* was designed as a 10-session program for eight to 10 families per group, the programs delivered varied from this goal. The number of sessions provided ranged from eight (22% of groups) to 10 (54%), $M = 9.41$, $SD = 0.73$. Group sizes ranged from four to 20 parent-child pairs per group, $M = 9.68$, $SD = 3.15$. Of these 78

percent of groups were optimal size (defined as six to 12 parent–child pairs), with 5 percent smaller and 16 percent larger than optimal. Number of sessions and group size did not vary by type of group (i.e. general disadvantage, young parent or disability).

Response rates

From the 358 parent–child pairs attending the program, basic demographic data were provided by 355 participants (99.2%). Evaluation data were provided at pre by 301 parents (84.1%), at post by 232 parents (64.8%) and at both pre and post by 210 parents (58.7%). Comparisons were undertaken of the demographic characteristics of those who provided complete evaluation data (i.e. both pre and post, $n = 210$) with those who provided partial data (i.e. either pre or post, $n = 113$) and those who provided no data ($n = 35$). Across most measures there were no differences. However, parents whose children were Indigenous, $\chi^2 = 11.72$, $p = .004$, and young parents, $\chi^2 = 4.80$, $p = .029$, were significantly more likely to provide no data. Type of group was significantly related to data completion, $\chi^2 = 11.60$, $p = .021$. The proportion that provided no data was very low for the disability groups (1.1%) compared to either the general disadvantage or young parents groups (12.6% and 13.5% respectively). For those who provided pre data, comparisons were also undertaken on baseline measures of family demographics, parenting and child skills between those with complete or partial data at pre and post. Parents were significantly less likely to provide complete data at both times if they were receiving a government benefit, $\chi^2 = 6.09$, $p = .014$, and if they reported a history of depression, $\chi^2 = 7.59$, $p = .006$.

Participant characteristics

Across the sample, there was clear evidence that the program was effective in attracting participants from disadvantaged backgrounds: 25.3 percent were single parents, 51.2 percent had not completed high school, 42.8 percent reported that their main family income was from government benefits, 42.4 percent reported they had experienced an episode of depression in the last two years, 16.4 percent of parents (and 14.7 percent of their children) had a main language other than English and 3.4 percent of parents (and 6.5 percent of their children) were Indigenous. Over three-quarters of the children (77.1%) were aged 0–3 years.

Table 1 summarizes the brief demographic data for 355 parent–child pairs and extended demographic

data for the 301 who completed questionnaires at pre. Data are presented separately for participants attending general disadvantage, young parents and child with a disability groups. As expected, there were differences between groups on demographic measures. In the young parents groups, parents and children were significantly younger than parents and children attending all other groups, a greater proportion of parents were of Indigenous status when compared with the general and disability groups and a smaller proportion reported their child had a developmental delay when compared with the general disadvantage groups. Additionally, a greater proportion were single parents and had a family income that was mainly from government benefits. In the disability groups, children were significantly older, and there were the lowest proportions of parents who were aged less than 20 years, were single parents, were not in paid employment and whose main income was from benefits, compared to the other groups.

Attendance, satisfaction, benefits and generalization

Attendance data were recorded for 353 parents and their children. Parents and children attended together for an average of 5.57 (SD = 2.74) sessions. Attendance at six sessions was regarded as the minimum that would be required for parents and children to receive sufficient intervention to impact on functioning. This minimum ‘therapeutic dose’ was received by 53.1 percent of parent–child pairs.

There were no significant differences in attendance by type of group. However, there were highly significant attendance differences between parents who did and did not provide evaluation data. For example, those who provided post data attended an average of 6.9 sessions compared to 3.0 sessions for those who did not provide post data, $F(1,351) = 303.94$, $p = .000$. This resulted in 76.4 percent of those who completed post data collection receiving a therapeutic dose compared to just 12.1 percent of those not completing post, $\chi^2 = 133.91$, $p = .000$.

Of those parents who completed the post assessment, 79.8 percent of parents reported being very satisfied with the intervention, 85.0 percent were very satisfied with the music therapy staff, 97.2 percent of parents reported that they would like to attend another *Sing & Grow* program and 98.0 percent indicated that they would recommend the program to other parents. Additionally, an improvement (rated as

Table 1. Demographic characteristics of participating parents and children, by type of group

Individual characteristics ^a	N	Type of group			Significance	
		General disadvantage (n = 167)	Young parents (n = 96)	Child with a disability (n = 95)	F	p
<i>Age</i>		<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>		
child (months)	347	23.6 (13.5)	15.6 (11.5)	34.1 (11.3)	51.35	.000
parent (years)	315	32.7 (8.0)	23.9 (6.1)	34.9 (5.0)	70.89	.000
<i>Child characteristics</i>		<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	χ^2	<i>p</i>
female gender	357	77 (46.4)	49 (51.0)	43 (45.3)	0.75	.686
Indigenous	355	11 (6.6)	10 (10.6)	2 (2.1)	5.69	.058
main language other than English	354	29 (17.6)	16 (17.0)	7 (7.4)	5.57	.062
developmental disability	292	27 (21.4)	9 (11.7)	87 (97.8)	164.36	.000
<i>Parent characteristics</i>		<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	χ^2	<i>p</i>
female gender	346	160 (96.4)	94 (97.9)	92 (96.8)	0.48	.787
Indigenous	354	4 (2.4)	7 (7.4)	1 (1.1)	6.78	.034
main language other than English	354	30 (18.2)	15 (16.0)	13 (13.7)	0.91	.635
aged < 20 years	315	9 (5.5)	19 (20.4)	0 (0.0)	29.22	.000
single parent	296	35 (27.1)	30 (39.5)	10 (11.0)	18.15	.000
incomplete high school education	291	58 (46.4)	45 (59.2)	46 (51.1)	3.11	.212
main income from benefits	278	56 (47.1)	42 (58.3)	21 (24.1)	20.35	.000
not in paid employment	289	92 (73.6)	61 (81.3)	48 (53.9)	16.14	.000
depression in past year	288	61 (48.0)	27 (37.0)	34 (38.6)	3.04	.219

^a Data on age, gender, Indigenous status and main language were collected as part of the service delivery contract from all attending individuals

‘a lot’) was reported by 58.2 percent in relation to their understanding of child development and by 73.4 percent in relation to learning new ways of playing with their child. The program CD was used at home by 89.8 percent and in the car by 44.5 percent of parents. Music activities were used by 81.2 percent of parents to amuse their child and by 49.5 percent to manage difficult behavior. There were no statistically significant differences by type of group in the proportions of parents who reported high satisfaction or the use of music.

Parent and child behaviors

Groups were similar on parent self-report measures at pre intervention, with the exception of ratings of

the target child’s communication and social skills, which were rated significantly lower for children attending the disability groups. Pre and post scores are shown in Table 2. Comparisons for time and group effects were undertaken using repeated measures analysis of variance (ANOVA). Time (pre, post) was the within-subjects factor and group type (general disadvantage, young parents, child with a disability) was the between-subjects factor. As shown in the table, statistically significant improvements over time were found for parental irritability, activities with the child, parental mental health, child communication skills and child social play skills. Improvements were evident across all three types of groups, and there were no significant time

Table 2. Pre and post outcome scores, by type of group

Measure	N	Type of group						Significance for time	
		General disadvantage		Young parents		Child with a disability		F (d.f.)	p
		pre	post	pre	post	pre	post		
<i>Parent reports</i>		M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)		
Parenting warmth	202	4.54 (0.57)	4.57 (0.56)	4.70 (0.38)	4.79 (0.30)	4.60 (0.47)	4.59 (0.51)	2.29 (1,199)	.132
Parenting irritability	203	2.09 (0.85)	1.96 (0.69)	1.93 (0.69)	1.87 (0.60)	2.11 (0.66)	2.01 (0.70)	4.89 (1,200)	.028
Parenting self-efficacy	203	4.22 (0.62)	4.34 (0.56)	4.27 (0.65)	4.39 (0.54)	4.19 (0.63)	4.11 (0.54)	2.18 (1,200) ^a	.142
Activities with child	200	3.21 (0.63)	3.34 (0.56)	3.04 (0.64)	3.15 (0.65)	3.15 (0.67)	3.25 (0.62)	9.83 (1,197)	.002
Parent mental health	198	1.82 (0.88)	1.60 (0.65)	1.80 (0.77)	1.62 (0.70)	1.61 (0.68)	1.48 (0.50)	10.83 (1,195)	.001
Child behavior problems	192	1.71 (0.56)	1.64 (0.49)	1.54 (0.46)	1.47 (0.40)	1.83 (0.54)	1.84 (0.55)	2.93 (1,189)	.088
Child communication	193	2.53 (0.56)	2.64 (0.52)	2.18 (0.59)	2.36 (0.56)	2.12 (0.59)	2.27 (0.56)	22.25 (1,190)	.000
Child social play skills	186	2.23 (0.55)	2.41 (0.51)	1.96 (0.48)	2.11 (0.52)	1.83 (0.52)	1.87 (0.54)	16.00 (1,183)	.000
<i>Observer ratings</i>									
Parent sensitivity	221	3.12 (0.83)	3.78 (0.79)	2.97 (0.88)	3.71 (0.78)	3.05 (0.83)	4.04 (0.66)	193.07 (1,218)	.000
Parent engagement	220	2.91 (0.84)	3.66 (0.87)	2.69 (0.95)	3.58 (0.91)	2.84 (0.90)	3.78 (0.73)	210.25 (1,217)	.000
Parent acceptance	222	2.96 (0.81)	3.65 (0.84)	2.81 (0.86)	3.72 (0.85)	2.69 (0.95)	3.64 (0.70)	199.00 (1,219)	.000
Child responsiveness	208	2.70 (0.74)	3.51 (0.80)	2.81 (0.81)	3.58 (0.82)	2.75 (0.93)	3.55 (0.76)	162.56 (1,205)	.000
Child interest	211	3.08 (0.85)	3.88 (0.89)	3.18 (0.81)	3.82 (0.83)	2.73 (1.02)	3.85 (1.00)	142.54 (1,208)	.000
Child social participation	209	2.70 (0.91)	3.70 (0.94)	3.05 (0.76)	3.85 (0.82)	2.38 (0.78)	3.58 (1.06)	196.36 (1,206)	.000

^aSignificant time-by-group interaction: $F = 3.37 (2,200), p = .036$

by group interactions. Parent-reported parenting warmth, and child behavior problems did not show significant changes over time. Parenting self-efficacy showed a significant time-by-group interaction. While self-efficacy increased from pre to post for the general disadvantage and young parents groups, it showed a slight (non-significant) decline for parents in the disability groups.

Groups were similar on therapist rated observational measures at pre intervention, with the exception of ratings of the target child's interest, $F(2,287) = 6.49, p = .002$, and social participation, $F(2,287) = 7.95, p = .000$. Children attending the disability group were rated lower on interest in group activities compared to children attending the young parents group, and lower for levels of social participation than children from either the general disadvantage or young parents groups. Across all observational measures, there were highly significant effects for time, with clinicians reporting significant improvements from pre to post (see Table 2). There were no main effects for group and no time-by-group interactions.

To examine the extent to which changes over time were related to the amount of intervention received, the ANOVAs were repeated for all outcome measures, with therapeutic dose (attendance at six or more sessions) as the between-subjects factor. Across the majority of parent-report and observational measures, there were no significant interactions between time and dose. For two measures a significant interaction was obtained. For parent-reported child behavior problems, those who received a therapeutic dose ($n = 159$) showed reductions in problems from pre ($M = 1.72, SD = 0.55$) to post ($M = 1.64, SD = 0.51$), while those who did not receive a therapeutic dose ($n = 32$) showed an increase in problems from pre ($M = 1.66, SD = 0.48$) to post ($M = 1.72, SD = 0.45$), $F(1,189) = 4.30, p = .039$. For therapist observations of child social interactions, both those who did ($n = 173$) and did not receive a therapeutic dose ($n = 62$) showed improvements from pre ($M = 2.73$ and 2.66 respectively) to post ($M = 3.47$ and 3.76), but these gains were significantly greater for those who received a therapeutic dose, $F(1,207) = 4.66, p = .032$.

Discussion

This study is the first to evaluate the short term effects of a music therapy parenting intervention using validated measurement tools and it is only the second

study to employ a repeated measures design. The results confirmed our previous findings (Abad, 2002; Abad & Williams, 2007) indicating a high degree of parent satisfaction with the music therapy intervention, and high rates of reported use of the intervention strategies at home. In addition, this study found significant improvements over time on both parent-reported questionnaires and clinician observations. The analyses showed improvements from pre to post in parenting behaviors (reported irritability, and observed sensitivity, engagement and acceptance), child outcomes (reported communication and social play skills, and observed responsiveness, interest and social participation) and parent mental health. These results suggest that a 10-week group intervention using music in a therapeutic context can enhance children's behavioral, social and communication skills and promote positive parenting. Improvements were similar across the three client groups. While these results are promising, and the study design represented a significant improvement over previous research in this field, several issues remain.

The most significant limitation of the current research was the lack of a non-intervention comparison group. Data were collected as part of a service delivery contract that did not provide funding for a control group. In the absence of control group data, the possibility that the changes observed were due to normal maturational processes cannot be excluded. Replication using a non-intervention comparison group is a high priority for future research.

A second limitation concerned the observational measurement approach. These data were based on reports from clinicians conducting the programs and may be biased by clinicians' expectations of change. We examined this possibility in three ways. First, 10 percent of observations (from this and a follow-up study—see note 2) were coded independently by a second observer. Concordance between observers was high, indicating that ratings were being applied in a consistent manner. Second, we examined change over time in observer ratings. While the majority of ratings showed a positive change from pre to post, 22–28 percent indicated either no change or a deterioration over time. Finally, the mean improvements in parent and child behavior as rated by clinicians were consistent with the mean improvements found on the parent-reported data. While the optimal approach would be to collect observational data from non-clinicians blind to the timing of data collection, these lines of

evidence suggest that we may have some confidence in the validity of the observational data.

From a clinical perspective, the evaluation highlighted some areas of concern. While the program was designed to be conducted by one clinician with eight to 12 families per group, 22 percent of groups were smaller or larger than optimal. Group size may impact on effectiveness and efficiency. Sub-optimal group sizes increase the per person costs of service delivery, while overly large groups limit the opportunities for clinicians to respond to individual needs.

There was also variability in program length, with 46 percent of programs being eight or nine sessions rather than the planned 10 sessions. On average participants attended 5.6 sessions (56 percent of the planned program), and only just over half attended enough sessions to receive what was regarded to be sufficient for a therapeutic effect (a minimum of six sessions). Comparable data are seldom reported for early intervention programs. What is available, suggests considerable variability across programs, with average attendance figures ranging from 42 percent to 84 percent of the delivered group sessions (Barrera et al., 2002; Leung, Sanders, Leung, Mak, & Lau, 2003). This raises concerns about the extent to which participants received sufficient amounts of the intervention to make a difference. We examined this by comparing outcomes for those who did and did not receive a 'therapeutic dose'. While the analyses indicated no significant differences, only one-fifth of those for whom both pre and post data were available had received less than the therapeutic dose. This resulted in a lack of power in the design and it is not possible to conclude that the amount of intervention received was unrelated to outcomes.

The variability that was observed in terms of group sizes, number of sessions provided and attendance rates has implications for the costs and benefits associated with the current form of service delivery. Historically, this program has been offered as a free service, with a policy of not turning away referred clients. While families are encouraged to attend all scheduled sessions, some families commenced part way through a 10-week program, and limited attempts were made to follow up with those who missed a session or failed to return. The costs of providing a service to families who attend only a few sessions needs to be evaluated against the potential for these families to derive some benefits.

While the current program had limitations in terms of retention and completion rates, these problems are common for early childhood interventions

with high-risk families. Drop-out from intervention commonly exceeds 20 percent (Barlow & Coren, 2001; Barlow & Parsons, 2002), and can be as high as 47 percent for teenage mothers (Coren, Barlow, & Stewart-Brown, 2003). As participants in the current intervention were not required to indicate their intentions of continuing, actual rates of drop-out are unknown. However, if failure to attend the last two sessions is taken as evidence of drop-out, then the current program is comparable with other early childhood interventions, with 30 percent not attending these sessions. Our drop-out rates for young parents were not significantly different from the other groups and were better than those reported in previous studies (Coren et al., 2003).

The dissemination of preventive interventions to parents of young children remains one of the most significant challenges faced by those trying to improve early life outcomes (Turner & Sanders, 2006). Despite wide advocacy of the importance of early childhood interventions for at-risk children and parents, most parenting interventions are limited by poor uptake. Only 19 percent of parents surveyed from the general community, report ever accessing any form of parenting interventions (Sanders et al., 1999), and up to 38 percent of those offered group parenting interventions fail to attend (Barrera et al., 2002). Program reach has also been limited by the reluctance of some community service providers to adopt behavioral parenting programs (Taylor & Biglan, 1998). These findings highlight the need to consider alternate approaches that take account of the interventions that parents are willing to attend, and that are acceptable to community organizations.

Music-based parenting programs have potential advantages in this respect. They provide a non-threatening and enjoyable context for the delivery of a therapeutic intervention, and it is our experience that demand for the program from community agencies continues to exceed our capacity for providing programs. This study shows that *Sing & Grow* was highly acceptable to the types of parents who fail to attend traditional parenting interventions, and provides evidence of potential benefits in terms of parenting behaviors and child developmental skills. The current study is an important step in the process of building an evidence-base for early intervention music therapy.

Notes

1. Ninety-eight percent were the children's parents, the remainder were other carers, typically the child's grandparent.

2. Data were collected for 240 parent-child pairs from this sample and from another ongoing study.
3. Programs were also conducted for Indigenous families, multicultural families, mothers in prison, families referred for child protection concerns and parents with drug and alcohol problems ($n = 8$). Due to small numbers and the diversity of these groups, they have not been included in the current analyses.
4. In the absence of research evidence indicating the necessary amount for therapeutic effectiveness, the selection of six sessions was determined by consensus discussion with senior *Sing & Grow* clinicians based on their several years' combined experience with the program.

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