INCREDIBLE YEARS AUTISM – PARENT AND TEACHER TRAINING PROGRAMMES

EVALUATION REPORT

Associate Professor Laurie McLay, Dr Cara Swit, Professor Neville Blampied, Dr Anne-Marie McIlroy, and Dr Dean Sutherland

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Correspondence regarding this report should be addressed to:

A/Prof. Laurie McLay

School of Health Science, University of Canterbury

Private Bag, 4800

Christchurch 8140

Email: laurie.mclay@canterbury.ac.nz

Phone: (03) 369 3522

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EXECUTIVE SUMMARY

The Incredible Years Autism programmes are part of a series of interconnected evidence-based parent and teacher training programmes developed by child psychologist and researcher, Dr Carolyn Webster-Stratton. The Incredible Years Autism – Parent (IYA-P) and Incredible Years Autism – Teacher (IYA-T) training programmes were developed specifically to target parents and teachers of 2-5 year old children on the autism spectrum. Internationally, IY programmes have been shown to be effective across cultural and ethnic groups and those of different socioeconomic status (Allen, 2011), In Aotearoa New Zealand, IY programmes have been delivered by iwi-based providers and Māori NGOs. Participation in the IYA programmes is funded from the 2017 Budget as part of a Social Wellbeing initiative which focuses on supporting child wellbeing, engagement in education, and improving child behaviour. Access to the programmes is currently available in eight regions in Aotearoa New Zealand.

A typical IYA-P programme involves 14 sessions and an IYA-T programme involves six sessions. Sessions are delivered face-to-face by two trained and accredited facilitators. Caregiver and teacher participants are those who look after or teach a child who is on the autism spectrum or who demonstrates characteristics of autism. The majority of children receiving support through the IYA programme attend an early learning service.

A focus of IYA programmes is equipping participants with the knowledge, skills and attitudes to support children's social interactions, emotional regulation, communication and school readiness skills. The goals of the programme are achieved through the use of a range of learning-based activities. These include the use of group discussions, reflections on vignettes, role play and homework activities.

The approaches and theoretical underpinnings of the IYA-P/T programmes are sourced from child development, attachment and social learning theories. For example, it is well known that children on the autism spectrum are likely to present with communication and behaviour challenges, and social learning theory suggests that children's behaviour and development is heavily influenced by the adults they spend time and interact with. Therefore, supporting adults to develop new skills and strategies to interact and communicate can, in turn, support change and development in a child on the autism spectrum. On completion of an IYA-P/T programme, parent and teacher participants are typically better equipped to provide a supportive and enabling environment – at home, early learning services or schools and the wider community. A more comprehensive overview of the IYA programmes is provided in Appendix A.

Evaluation questions

The overarching aim of this evaluation was to assess the effectiveness and impact of the IYA-P/T programmes. This was evaluated by examining the extent to which the IYA programmes contributed to:

1) increased engagement, emotional regulation and communication skills of young children demonstrating behaviours associated with autism (child outcomes);

2) increased wellbeing and coping skills of caregivers enabling them to better support their child (caregiver outcomes);

3) increased teacher capability to help children demonstrating behaviours associated with autism (teacher outcomes); and

4) longer term and unintended benefits for those involved and the wider communities (additional benefits).

Where sufficient data was available, this evaluation also aimed to explore how different participants (e.g., differing by demographic characteristics, region of programme delivery) and their children benefited from the programme.

This evaluation report presents data obtained from Cohort 1 and Cohort 2 evaluations. IYA-T Cohort 2 data, also includes pre- and post-participation data obtained from Cohort 3 participants. An analysis of the Cohort 3 IYA-T data deemed it was appropriate to integrate this data within the Cohort 2 evaluation (henceforth, collectively referred to as Cohort 2).

The evaluation team drew upon qualitative and quantitative data to make an overall judgement about the effectiveness of the IYA programme in achieving expected child, parent, and teacher outcomes. These judgements were made in accordance with the programme specific evaluation rubric provided in the evaluation framework, which describes the criteria for classifying outcomes as 'excellent', 'very good', 'adequate', or 'poor'. This rubric is presented in Appendix B. It should be noted that according to the theory of change proposed in the Ministry of Education Evaluation Framework, it was first expected that IYA participants would acquire skills, strategies, and behaviours that they would apply around the child. This would then result in secondary improvement in child outcomes. As such, we may expect to observe larger effects for proximal (parent and teacher) outcomes and smaller effects for more distal (child) outcomes.

Data collection and analysis

For the purpose of this evaluation, a combination of quantitative and qualitative methods were used that aligned with the evaluation questions and programme theory. Quantitative data was collected using a combination of caregiver- and teacher-reported assessment measures, administered during the pre-, post-, and/or ex-post training phases. In addition, several interviews were undertaken with parent and teacher participants during the ex-post training phase. Pre- and post-training assessments were administered via the IYA providers using the IYA app. Ex-post assessments were administered through the evaluation team, via telephone or Zoom. Qualitative data was analysed in accordance with inductive qualitative content analysis procedures.

Cohort 1, assessment data was collected from 60, 50, and 20 caregivers during the pre-, post-, and ex-post phases, respectively, and a total of 95, 70, and 47 teachers provided assessment data during the pre-, post-, and ex-post phases, respectively. A total of 14 parent and 27 teacher interviews were undertaken. This represents a survey attrition rate of 67% and an interview attrition rate of 77% from pre- to ex-post phases, for consenting caregiver participants. For consenting teacher participants, this represents survey and interview attrition rates of 51% and 72% respectively, from pre- to ex-post phases.

For Cohort 2, assessment data was collected from 61, 42, and 21 caregivers and 96, 75, and 26 teachers during the pre-, post- and ex-post phases, respectively. A total of 12 caregiver and 21 teacher interviews were undertaken. This represents a survey attrition rate of 66% and an interview attrition rate of 80% from pre- to ex-post phases, for consenting caregiver participants. For consenting teacher participants, this represents survey and interview attrition rates of 73% and 78% respectively, from pre- to ex-post phases.

A summary of the outcomes of this evaluation for Cohort 1 and 2, and a synthesis of these collective findings is provided below, and described in greater detail in the main body of this report. Attrition rates in the sample were high, especially at the ex-post phase, limiting the generality of conclusions drawn. For both quantitative and qualitative measures taken only at the ex-post point, only conclusions about the current state of the participants and their children are possible. It is not possible to draw causal conclusions about the contribution of participation to the state of affairs noted at the ex-post point because of the lack of pre-data.

Child outcomes (evaluation question 1)

Evaluation question 1 examined the extent to which participation in the IYA programme contributed to increased engagement, emotional regulation and communication skills of young children demonstrating behaviours associated with autism. The primary outcome of interest was child engagement, though additional measures were selected by the evaluation team to assess emotional regulation and communication skills, as secondary outcomes. Based on the Young Children's Participation & Environment Measure (YC-PEM; Khetani, Graham, Davies, Law, & Simeonsson, 2015) there was some improvement reported in the frequency of children's participation in the home environment for Cohort 1, and a reduction in the percentage of activities where change was desired by caregivers across cohorts. This change was most evident between pre- and ex-post training phases suggesting a delayed effect of training, while also providing evidence of the beneficial long-term effects of training. For the remaining two relevant YC-PEM variables (percentage of activities that the child participates in and the average involvement of the child in home activities), outcomes were trending (to a small extent) in a positive direction; however, the Effect Sizes (ES) were negligible and the practical magnitude of the change was often relatively small, suggesting little change in these outcomes in response to training.

Selected items on the Participant Program Satisfaction Questionnaire: Autism Spectrum and Language Delays Programme (PSQ-P) and Incredible Years Participant Satisfaction Questionnaire – Helping Preschool Children with Autism Program (PSQ-T) were also used by the evaluation team to measure secondary child outcomes (i.e., emotional regulation and communication skills). Both parents and teachers consistently reported that children's self-regulation and imagination and social and emotional skills had 'improved' or 'greatly improved' post-participation in the IYA programme.

During interviews, caregivers commonly reported increased engagement with others, increased participation in the learning environment, and improvements in their child's social and emotional regulation, communication and understanding. Some caregivers also reported that their child was more enthusiastic about attending their early childhood service, and teachers and other children were including the child in a greater number of activities such as structured games and birthday parties. Other caregivers indicated that their child had always been enthusiastic about attending the centre and there was no change in the child's attendance or inclusion. Several caregivers said that the IYA programme exceeded their expectations and their child has shown significant progress since the IYA strategies have been implemented.

Based on quantitative data, it is the judgement of the IYA evaluation team that the impact of participation in the IYA programme on child outcomes is 'adequate'. However, based on qualitative data the impact of participation in the IYA programme is considered to be 'very good' (while remembering that attrition meant that only a minority of participants supplied interview data).

Caregiver outcomes (evaluation question 2)

The second evaluation question examined the extent to which participation in the IYA programme increased the wellbeing and coping skills of caregivers, enabling them to better support their child. Based on the Autism Parenting Stress Index (APSI; Silva & Schalock, 2012) data, caregivers experienced reduced stress levels post-training, with an effect size indicating a borderline large and medium effect for Cohort 1 and Cohort 2, respectively. This reduction in stress was still evident at follow-up for both cohorts. The effect size was smaller (Cohort 1, -.5; Cohort 2, -.45) at this time point but still indicated a medium effect overall, particularly for those who entered the programme with high stress scores to begin with.

The Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was administered for Cohort 1 only. For this cohort, DASS-21 scores were within the normal range during the ex-post training phase. Interestingly, there was a significant correlation between APSI and DASS-21 scores, suggesting that these measures have good convergent validity as measures of stress. Therefore, the DASS-21 was not administered for Cohort 2.

On the PSQ-P, caregivers rated themselves as generally 'optimistic' about their progress toward the use of strategies that they were taught during the IYA programme and their goal achievement, suggesting that caregivers felt confident in the use of skills that they had acquired during the programme. Qualitative data analysis also revealed caregiver-reported improvement in their wellbeing and increased feelings of confidence and competence in their use of strategies.

Based on this data, the impact of programme participation on caregiver wellbeing and coping skills is considered to be 'very good' (but noting the caveat stated above re attrition).

Teacher outcomes (evaluation question 3)

The third objective of this evaluation was to determine the impact of participation in the IYA-T programme on the wellbeing and coping skills of teachers, enabling them to better support their child. Based on Incredible Years Teacher Strategies Questionnaire for Children with Autism (IYTSQ) pre-, post-, and ex-post data, teachers' confidence and frequency of use of strategies improved across pre- post- and ex-post training phases. This finding is similarly reflected in PSQ-T (post-) data, which suggests that teachers felt 'optimistic' or 'very optimistic' about their future use of social and emotional coaching strategies.

Teacher interview data was also overwhelmingly positive, with key themes indicating that teachers felt more confident in their knowledge of Autism and in their ability to apply strategies to support children on the autism spectrum in their educational contexts. Many teachers described the IYA-T programme as the most useful professional development they have attended. A small number of teachers (Cohort 1, $n = 4$; Cohort 2, $n = 1$) felt that their participation in the IYA programme had a limited impact, as strategies that they learnt were ineffective when applied to a child on the autism spectrum or they felt they were already using strategies that had been taught.

Based on the available quantitative and qualitative data, the impact of the IYA-T programme on teacher outcomes was determined to be in the range of 'very good' to 'excellent'.

Longer term and unintended benefits (evaluation question 4)

The final evaluation question was designed to assess any long-term and unintended benefits of programme participation. The long-term impact of participation in the IYA programme on children's health and wellbeing was assessed using the Pediatric Quality of Life Inventory – Generic Core *Scales*™ (PedsQL; (Varni, 1998) ex-post data. Unfortunately, insufficient ex-post data and limited data variance meant that it was not possible to draw conclusions about the impact of programme attendance rates on wellbeing outcomes, even when data was pooled across cohorts.

The responses of the minority of caregivers who participated in interviews reported several unintended benefits of programme participation. These included increased communication and collaboration between home and the centre. Caregivers felt this was the result of increased confidence to initiate conversations with their child's teacher. Several caregivers and teachers also reported sharing their learning with their immediate and extended family/whānau and colleagues, thus providing indirect benefit to those around the child. Many caregivers also reported personal benefits, including improvements in their own emotional regulation, the acquisition of new knowledge about autism, the opportunity to share and problem solve collaboratively, a positive effect on their relationship with their child and their partner, and the development of social supports and relationships with other caregivers completing the programme.

Teachers consistently reported an increased ability to support ALL learners, and the ability to share their learning with their colleagues and caregivers. A majority of teachers who were interviewed in Cohort 2 ($n = 20$) said they were still experiencing the benefits of the IYA-T programme, six months on. Overall, those interviewed described having positive and worthwhile experiences in relation to the children with whom they interacted at home and/or school.

A summary of evaluation outcomes is presented in Table 1.

Limitations of this evaluation

While the evaluation outcomes are largely positive, they should be interpreted and generalised cautiously in view of the limitations inherent within the structure of the evaluation design and resulting data. There are noteworthy limitations arising from sample attrition, a small ex-post sample size, and the lack of pre- data for many measures. Data analysis was also limited by the lack of data variance and the relatively small number of participants in the evaluation. This meant it was not possible to analyse the interaction between attendance rates, ethnicity, training region, and child, caregiver, and teacher outcomes, since appropriate analyses require both substantial variance and sample sizes.

This issue is further compounded by the fact that some of the ex-post measures were not administered during the pre-training phase. Additional ex-post measures were added to the data collection process because they were deemed relevant to answering the key evaluation questions. However, this limited the possible approaches to data analysis and prevented any conclusions that participating in training directly resulted in the outcomes measured, since such conclusions can only be based on pre-post, time-series data. It is important to note that, as acknowledged in the evaluation framework, there were limitations to what could feasibly and ethically be administered within the context of the programme.

Finally, a number of measures did not have normative data or criteria for classifications (e.g., the IYPSQ, PSQ, YC-PEM, APSI, and IYTSQ), including sound psychometric evidence for their validity in measuring key constructs, limiting the interpretability of the findings. This is a particular issue for interpretation in Aotearoa New Zealand with its ethnically distinctive and diverse community. These standardised measures were selected as they were designed specifically for the evaluation of IYA programmes and thus, there is a strong rationale for the selection of these tools, however, these limitations do have implication for data analysis, interpretation of findings, and any policy recommendations that may be made based on the findings. These limitations and subsequent recommendations are described more fully in the main body of this report.

Table 1. Summary of evaluation outcomes and overall judgement for Cohort 1 and 2 participants[1].

Evaluation outcomes	Cohort 1 outcomes	Cohort 1 judgement	Cohort 2 outcomes	Cohort 2 judgement	Overall judgement
Child outcomes (quantitative data)	• Increased participation in home environment • Reduction in percentage of activities where change desired ***Positive trend but minimal change in:*** • percentage of activities that the child participates in • average involvement in home activities	**Adequate**	• Reduction in percentage of activities where change desired ***Positive trend but minimal change in:*** • percentage of activities that the child participates in • increased participation in home environment • average involvement in home activities	**Adequate**	**Adequate (approaching 'very good)**
Child outcomes (qualitative data)	• Increased engagement, participation learning, social and emotional regulation, communication and understanding. • Increased enthusiasm for attending early childhood service • Increased inclusion	**Very good**	• Increased engagement, participation learning, social and emotional regulation, communication and understanding. • Increased enthusiasm for attending early childhood service	**Very good**	

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[1] The overall judgement is subject to overarching considerations regarding study limitations such as psychometric validity of measures and sample attrition, especially at the ex-post time point

			• Increased inclusion		
Caregiver outcomes (quantitative data)	• No change or a reduction (majority) in parental stress	**Very good**	• No change or a reduction (majority) in parental stress	**Very good**	**Very good**
Caregiver outcomes (qualitative data)	• Improvement in wellbeing • Increased feelings of parenting confidence and competence • Improved relationships between home and centre	**Very good**	• Improvement in wellbeing • Increased feelings of parenting confidence and competence • Improved relationships between parental social relationships		
Teacher outcomes (quantitative data)	• Increased confidence in use of strategies • Increase in frequency of use of strategies	**Very good**	• Increased confidence in use of strategies • Increase in frequency of use of strategies	**Very good to excellent**	**Very good to excellent**
Teacher outcomes (qualitative data)	• Increased confidence in knowledge of ASD • Increased ability to apply strategies to support children in educational contexts • Some reported limited impact	**Very good to excellent**	• Increased confidence in knowledge of ASD • Increased ability to apply strategies to support children in educational contexts		

INCREDIBLE YEARS AUTISM EVALUATION PROCEDURES AND OUTCOMES

The evaluation team

This IYA evaluation was undertaken by a multi-disciplinary team of academic staff and research assistants at the University of Canterbury (UC). This included Associate Professor Laurie McLay (principal investigator; PI), Dr Cara Swit, Professor Neville Blampied, Dr Anne-Marie McIlroy, and Dr Dean Sutherland.

Consent and recruitment

All participants in the IYA-P/T programme who were approached by the evaluation team had previously consented to being involved in the ex-post evaluation. The evaluation team obtained additional consent within the teacher and caregiver surveys that were administered, to collect ex-post data. This included consent to the audio recording of interviews. A copy of the consent form provided to participants is included in Appendix C. The procedure for participant recruitment is described in detail in Appendix D.

Caregiver participation across evaluation phases

A total of 60 caregivers consented to being involved in the evaluation and provided pre-participation data for Cohort 1, and 61 consented and provided such data for Cohort 2. A total of 92 caregivers provided post-participation data (Cohort 1, 83% of pre-participation respondents; Cohort 2, 69% of pre-participation respondents), and 41 (Cohort 1, 33% of pre-participation respondents; Cohort 2, 34% of pre-participation respondents) provided ex-post participation data. As reflected in Table 2, for each cohort, the majority of caregiver survey respondents across phases were those who completed all sessions. This distribution of respondents is similarly reflected in the number of interview participants whereby 13/14 and 7/12 interviewees completed all study sessions for Cohorts 1 and 2, respectively. For Cohort 2, those who did not complete all sessions, completed 11 sessions. The majority of survey respondents and interviewees across phases and cohorts, were of NZ European ethnicity. For Cohort 1, over half of respondents were from the Wellington or the Bay of Plenty region. For Cohort 2, data was only provided from participants in the Wellington, Bay of Plenty, and Auckland regions.

Teacher participation across evaluation phases

A total of 95 teachers consented to being involved in the evaluation and provided pre-participation data for Cohort 1, and 96 consented and provided such data for Cohort 2. As reflected in Table 3, the majority of teacher survey respondents across cohorts, were those who completed 5-6/6 sessions. The majority of the remaining teacher respondents completed 3-4 programme sessions. This is similarly reflected across interview respondents, where 63% ($n = 17/27$) and 100% ($n = 22/22$) interviewees completed all study sessions for Cohort 1 and 2, respectively. The majority of teacher respondents across cohorts identified as New Zealand European ethnicity. Cohort 1 IYA-T participants were predominantly from Wellington, Canterbury, Taranaki, and Nelson. Cohort 2 IYA-T participants largely resided in Bay of Plenty, Canterbury, and Hawke's Bay.

Table 2. The number of caregiver respondents at pre-, post-, and ex-post training phases, according to participation rates, ethnicity, and region.

	Pre-participation responses (N)		Post-participation responses (N)		Ex-post participation responses (N)		Interviews (ex-post only; N)		Survey Attrition rate pre- to ex-post	
	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2
Participation in IYA-P (14 sessions)										
12-14 sessions	40	30	39	27	16	14	13	7	60%	53%
9-11 sessions	10	15	9	12	2	6	1	5	80%	60%
5-8 sessions	5	7	2	3	2	1	0	0	60%	86%
1- 4 sessions	3	6	0	0	0	0	0	0	100%	100%
No attendance but completed pre-questionnaires	2	3	0	0	0	0	0	0	100%	100%
Ethnicity										
NZ European	25	32	22	26	8	13	6	9	68%	59%
Māori	15	17	13	10	4	4	2	1	73%	76%
Pacific Peoples	5	2	5	0	3	0	1	0	40%	100%
Asian	4	7	2	5	1	3	0	2	75%	57%
Middle Eastern, Latin American/African	1	2	1	1	0	0	0	0	100%	100%
Other/no option selected	10	0	7	0	4	1	5	0	60%	100%
Region										
Bay of Plenty	16	25	16	21	7	9	5	5	56%	64%
Nelson	7	0	4	0	1	0	1	0	86%	
Wellington	15	20	13	15	4	8	2	6	73%	60%
Canterbury	7	0	5	0	2	0	2	0	71%	
Hawke's Bay	9	0	7	0	4	0	3	0	56%	
Otago/Southland	5	0	4	0	1	0	1	0	80%	
Auckland	1	16	1	6	1	4	0	1	0%	75%
Total	**60**	**61**	**50**	**42**	**20**	**21**	**14**	**12**	**67%**	**66%**

Table 3. The number of Cohort 1 and 2 teacher respondents at pre-, post-, and ex-post training phases, according to participation rates, ethnicity, and region.

	Pre-participation responses		Post-participation responses		Ex-post responses		Interviews (ex-post only)		Survey Attrition rate (pre- to ex-post)	
	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2
Participation in IYA-T programme (six sessions)										
5-6 sessions	70	88	50	74	32	26	17	22	54%	70%
3-4 sessions	20	8	16	1	12	0	8	0	40%	100%
1-2 sessions	4	0	4	0	3	0	2	0	25%	0
No attendance but completed pre-questionnaires	1	0	0	0	0	0	0	0	100%	0
Ethnicity										
NZ European	81	76	60	59	42	21	24	20	48%	72%
Māori	4	11	3	7	1	3	1	2	75%	73%
Pacific Peoples	1		1		1		1	0	0%	
Asian	1	2	1	2	0	0	0	0	100%	100%
Middle Eastern, Latin American/African	1		1		0		0	0	100%	
Other or no selection	7	7	4	7	3	2	1	0	57%	71%
Region										
Bay of Plenty	9	16	7	4	4	2	2	4	56%	87%
Nelson/Marlborough/West Coast	14	5	11	4	9	1	6	2	36%	80%
Wellington	24	8	12	8	11	2	4	2	54%	75%
Canterbury	23	45	20	43	10	13	6	9	57%	71%
Hawke's Bay	6	14	3	8	4	4	2	2	33%	71%
Taranaki/Manawatu/Whanganui	19	8	17	8	10	4	7	3	47%	50%
Total N	**95**	**96**	**70**	**75**	**47**	**26**	**27**	**22**	**51%**	**73%**

Quantitative outcome measures

To assess child, caregiver, and teacher outcomes, along with any long-term benefit of programme participation (evaluation questions 1-4), several measures were administered. This included re-administration of each of the questionnaires that were completed pre- and post-participation (excluding programme satisfaction questionnaires). Many of these measures (IYTSQ, IYPSQ, PSQ-P, PSQ-T) were designed specifically for the IY or IYA programmes, by the programme developer, Dr Carolyn Webster-Stratton meaning that they reflected programme content. However, there is limited public information in the peer-reviewed research literature on the psychometric properties of these measures. This precludes full understanding of their reliability and validity and sensitivity to change. A summary of the assessments administered at each phase is provided in Table 4. Further information about each measure and methods of data analysis, is provided in Appendices E and F.

Table 4. A summary of the assessments administered during the pre-, post- and ex-post evaluation phases, as completed by participants in the IYA-P and IYA-T programmes.

	Pre-participation	Post-participation	Ex-post participation
IYA-P measures	YC-PEM	YC-PEM	YC-PEM
	APSI	APSI	APSI
		PSQ-P	*DASS-21
			SDQ-P
			PedsQL
			IYPSQ
IYA-T measures	IYTSQ	IYTSQ	IYTSQ
		PSQ-P	SDQ-T
			PedsQL

* The DASS-21 was not administered for IYA-P Cohort 2 participants due to the strong correlation with APSI data demonstrated during the Cohort 1 evaluation.

Qualitative measures and data analysis procedures

A set of interview questions for teachers and caregivers was designed to align with the IYA programme theory and evaluation questions. Following the Cohort 1 evaluation, the decision was made to modify some parent and teacher interview questions to ensure that that evaluation outcomes unable to be assessed by quantitative data alone, were adequately captured. A summary of interview procedures is provided in Appendix G. A copy of the interview questions for IYA-P and IYA-T Cohort 1 and 2 participants is provided in Appendices H-K.

Fourteen (13 mothers and one father) and 12 (eight mothers, four fathers) caregivers participated in an interview for Cohort 1 and 2, respectively, all with a child on the autism spectrum or who was going through the diagnostic process. This represents 23% and 12% of consenting pre-participation respondents for Cohort 1 and 2, respectively. The majority of respondents across cohorts were NZ European-Pākeha. For Cohort 1, 5/14 respondents were from the Bay of Plenty region, with the remaining respondents distributed across all regions except Auckland where there were no respondents. For Cohort 2, all but one respondent was from the Bay of Plenty or Wellington region.

Twenty-seven and 21 teachers participated in the interview for Cohort 1 and 2, respectively, and all were working with a child who had a diagnosis of autism or was suspected of being on the autism spectrum. This represents 28% and 22% of consenting pre-participation respondents for Cohort 1 and 2, respectively. All teachers were female, and 89% ($n = 24$) and 95% ($n = 20$) identified as NZ European-Pākeha for Cohort 1 and 2, respectively. The remaining participants identified as Māori, Pacific Peoples, Asian, or other. Generally speaking this reflects the demographic characteristics of teachers in early childhood education. Teacher respondents were relatively evenly distributed across regions.

The number of participants recruited from different ethnicities was considered insufficient to allow for meaningful comparisons in their qualitative comments to be made. However, where a relevant cultural perspective was shared during the interview, this response has been conveyed in the report. It was

also our intention to interview a selection of partial and non-completers of the IYA programme; however, the majority of respondents represented those who had completed the programme. All interviewees also completed the online assessments. For further information, see Tables 2 and 3.

EVALUATION OUTCOMES

A summary of the research measures and questions aligned with each of the evaluation questions is provided in Appendix L. The evaluation outcomes are presented in relation to each of the evaluation questions. In this evaluation, key variables were measured at three-time points – pre-, post-, and ex-post – and change was primarily assessed by reference to the baseline (pre) measure by comparing post-, and ex-post scores relative to pre-scores. The durability of any change detected by the pre-post comparison could subsequently be assessed by a post- to ex-post comparison.

Our interpretation of the findings across child, parent, and teacher outcomes is somewhat tempered by the lack of key psychometric data for some measures, thus constraining our confidence that the measures assess domains that map directly onto the stated evaluation outcomes. The limited amount of post- and ex-post data, heterogeneity of participants who consented to providing data, and participant attrition also limits the utility and generalisability of the data, and the strength of the conclusions that are able to be drawn. The limitations of the quantitative data are not able to be directly mitigated by the qualitative data that was collected.

To what extent did the IYA programme contribute toward increased engagement, emotional regulation and communication skills of young children demonstrating behaviours associated with autism? (Question 1)

This question addresses two components of the IYA theory. The first component proposes that parent participation in the IYA programme and the subsequent implementation of strategies that have been learnt would promote and enhance children's participation, engagement, interaction and inclusion, emotional regulation, and communication skills. The second theoretical component addressed within this question is that teacher participation and implementation of newly acquired tools and strategies would increase the participation, engagement, social interaction, inclusion, emotional regulation and communication skills of children on the autism spectrum, in the educational setting.

According to the theory of change proposed in the Ministry of Education Evaluation Framework, it was expected that teacher and parent participants would acquire skills, strategies, and behaviours that they would apply around the child. This would then result in secondary improvement in child outcomes. As such, it was expected that we may observe larger effects for proximal (parent and teacher) outcomes and smaller effects for more distal (child) outcomes. It is also important to note that engagement is considered a primary child outcome, as measured by the YC-PEM. Children's social interaction, emotional regulation, and communication skills, as assessed by the evaluation team, are considered secondary child outcomes.

Based on a comparison of the quantitative data across cohorts, the effect of participation in the IYA programme on child outcomes is considered to be 'adequate' but approaching 'very good' when qualitative data is considered (although this must be tempered bysample attrition across time-points and questions concerning the representativeness of those interviewed).

The YC-PEM suggests some positive effects of programme participation on children's engagement and participation in the home environment, although for some domains of measurement, the ESs were negligible. PSQ-P and PSQ-T data also suggests that caregivers and teachers perceived their children's self-regulation and emotional skills to have improved after participation in the programme. In the absence of a control group, and given the limited number of questionnaire items pertaining to these specific outcomes, it is possible that this reflects a halo effect resulting from participation, rather than a direct effect of learning and experiences occurring during participation in the programme.

Teacher and caregiver interview responses suggest that programme participation had a positive effect on children's engagement and participation in the home and centre environment, particularly in terms of social interactions and confidence to participate in regular activities. More specifically, teacher and caregiver interview responses indicated that children now have some language to communicate their emotions and feelings. This, in turn, allows caregivers to guide the child through strategies (e.g., 'thermometer') to regulate their emotions. Qualitative data also suggests that some children's communication (verbal and non-verbal) was perceived to have improved post-participation.

A component of the evaluation was to evaluate the role of programme attendance on outcomes achieved. The limited variability in data due to overall high attendance across the two cohorts meant that it was not possible to conduct this analysis. Furthermore, as the SDQ, as selected by the evaluation team, was only administered during the ex-post phase, it is not possible to assess whether caregiver and teacher SDQ ratings changed as a result of programme participation. Additional, unintended programme benefits are discussed in relation to evaluation question four.

Child engagement (quantitative data)

Children's participation and engagement (YC-PEM)

The short- and long-term impact of the IYA programme on children's participation and engagement was measured by assessing change in post- and ex-post scores relative to pre-scores for items on the YC-PEM. This included the *percentage of home activities the child participates in*, the *frequency of children's participation at home*, the *average involvement of the child in home activities*, and the *percentage of activities where caregivers would like to see a change* in their child's participation. These outcomes are presented below in Tables 5 to 8.

Regarding the percentage of home activities the child participates in, improvement is reflected as an increase in mean percentages across phases. As seen in Table 5, there is little change in the mean pre-, post-, and ex-post ratings of the percentage of change in children's participation in home activities for Cohort 1 and Cohort 2. The mean change is no more than 6% from pre- to post-training. Change remains stable at the ex-post phase for Cohort 2, though there is a relapse back to pre-training levels at the ex-post evaluation phase for Cohort 1. Furthermore, there is no systematic change in the standard deviations (and hence in variability) nor in minimum and maximum scores across phases and cohorts, indicating that the data is stable. Negligible Cohen's *d* ES values (i.e., values in the range 0 - .3) confirm what is conventionally regarded as a small ES (≤.3) across phases for both cohorts indicating minimal change as a result of training.

Table 5. Mean, median, standard deviation and minimum and maximum scores for caregiver-reported YC-PEM pre-, post-, and ex-post ratings of the percentage of change in child participation in home activities.

YC-PEM Percentage of activities child participates in						
	Cohort 1			Cohort 2		
	Pre	Post	Ex-post	Pre	Post	Ex-post
N	60	50	18	43	42	20
Missing	0	10	42	0	1	23
Mean	81.3	87.1	80	86.7	90.0	91.1
Median	85.7	85.7	85.7	92.9	92.9	92.9
Standard deviation	17.7	15.8	18.5	13.7	10.5	11.6
Minimum	28.6	28.6	30.8	57.1	64.3	57.1
Maximum	100	100	100	100	100	100

Cohort 1 - pre-post = .27 [.067, .48]   pre-expost = ~0
Cohort 2 – pre-post = .28 [.040, .51]   pre-expost = .30 [-0.1, .7]   [=95% Confidence interval]

Table 6 presents pre-, post-, and ex-post training data on caregiver-reported YC-PEM ratings of the frequency of children's participation in the home. Improvement is represented as an increase in mean

frequency scores over the three-time points. During pre-training, the mean rating is just on one scale rating point higher than the mid-point of the scale for Cohort 1. This increased to a mean of 5, 0.5 of a scale rating higher than the pre-training mean. In ES terms, this was a very small improvement in participation (~ one-third of an SD unit). The change in rating from post-training to ex-post was larger, taking the follow-up mean rating to 2.0 scale units above the scale mid-point, yielding an ES conventionally regarded as large (i.e., >.8).

Table 6. Mean, median, standard deviation and minimum and maximum scores for caregiver-reported YC-PEM pre-, post-, and ex-post ratings of the frequency of the child's participation at home.

Frequency of participation at home. Rating scale = 0 - 7						
	Cohort 1			Cohort 2		
	Pre	Post	Ex-post	Pre	Post	Ex-post
N	60	50	19	43	42	19
Missing	0	10	41	0	1	24
Mean	4.66	5.03	5.59	5.62	5.53	5.74
Median	4.79	5.29	5.71	5.57	5.62	5.75
Standard deviation	1.13	1.15	0.629	0.600	0.593	0.818
Minimum	1.64	1.57	4	3.57	3.90	3.50
Maximum	6.79	6.71	6.43	6.75	6.43	7.00

Cohort 1 - Cohen's d   pre- post = .27 [.07, .48]   pre-expost = 1.3 [.53, 2]
Cohort 2 - Cohen's d   pre- post = -.18 [-.48, .25]   pre-expost = .33 [-.3, .9]
[=95% Confidence interval]

Lakens (2013) stresses that ES measures such as Cohen's *d* must be interpreted in terms of what the magnitude of the change indicates with regard to the specific units of measurement. So while it is positive that the pre-training rating is on the positive side of the mid-point of the scale and that the increments indicate improvement, the practical magnitude of the change is relatively small, and the behaviours being rated are still, on average, occurring less than once/day (based on the rating categories of the YC-PEM). A further point to note is that the assumptions underlying Cohen's d_{av} (the ES used for pre-post analyses) require that the standard deviations of the measure are essentially the same at the two-time points. For the pre- and post- measures this assumption holds; for the follow-up measure it does not. In such cases, it might be recommended that Glass' delta (Δ) be calculated as a more conservative ES estimate. For this data, this Glass' Δ = 0.8, still conventionally large, but considerably smaller than the corresponding Cohen's $d_{av.}$ Thus, while these results are encouraging, in that they indicate a positive effect of participating in training, caution should be exercised in interpreting the results, not least because the improvement in frequency ratings evident at follow-up is based on data from only the 19/60 caregivers who completed the follow-up assessment and this might well be positively biased.

For Cohort 2, the pre-training mean is two scale rating points higher than the mid-point of the scale indicating a higher frequency of participation in the home during pre-training, when compared to Cohort 1. There is no evidence of any change from pre- to post-training for this variable, though there is a small effect of training from pre- to ex-post on this variable (*d* = .33).

Table 7 reports pre-, post-, and ex-post training data on caregiver-reported YC-PEM ratings of the average involvement of the child in home activities. On a 1-5 rating scale, the mid-point is 3. For Cohort 1, the pre-training average is below this point, suggesting relatively low involvement in home activities before training. On average, there is a small increase in ratings to an average of 3, and this does not change at follow-up. The ES for the training is in the small to medium range, but the 95% CI indicates that it is likely to be > 0, even given a worst-case scenario for the effect of training. However, given that the improvement in the average rating is ~ one-third of a rating unit, this change must be regarded as very small and as having few implications for judging the benefits of training either way.

For Cohort 2, the pre-training average is slightly above the midpoint, suggesting slightly higher involvement in the home pre-training, compared to Cohort 1. There is negligible change in this measure over assessment periods for Cohort 2.

Table 7 Mean, median, standard deviation and minimum and maximum scores for caregiver-reported YC-PEM pre-, post-, and ex-post ratings of the average involvement of the child in home activities.

Average involvement in home activities. Rating scale 1-5						
	Cohort 1			Cohort 2		
	Pre	Post	Ex-post	Pre	Post	Ex-post
N	60	50	19	43	42	19
Missing	0	10	41	0	1	24
Mean	2.66	3.02	3.09	3.12	3.27	3.44
Median	2.71	3	3.43	3.07	3.25	3.36
Standard deviation	0.741	0.8	0.997	0.681	0.716	0.807
Minimum	0.93	1.14	1.29	1.64	1.71	2.29
Maximum	4.43	4.64	5	4.36	4.57	5.00
Cohort 1 - Cohen's d pre-post = .4 [.2, .6]			*pre-ex-post no change*			
Cohort 2 – Cohen's d pre-post = .2 [-.04, .5]			*pre-ex-post .3 [-0.3, .9] [=95% Confidence interval]*			

Table 8 reports pre-, post-, and ex-post training data on caregiver-reported YC-PEM ratings of the percentage of activities where caregivers desire a change in their child's participation. A positive outcome in this instance is reflected as a decrease in the percentage. For Cohort 1, at pre-participation, change was desired for 76.2% of target activities, and this ranged from just below one third to 100%. This changed very little from the pre- to post-training phases. There was a very slight reduction in the desired change percentage from pre- to post-training of ~4%, and the associated ES was small and not statistically significantly different from zero. However, at follow-up, comparison with the pre-measure yields a 13% reduction and a medium ES.

For Cohort 2, at pre-participation, change was desired for 71.8% of activities, slightly lower than the Cohort 1 average. There is a 9% reduction in this measure from pre- to post-training, and the associated ES (d = -.32), is conventionally regarded as small. There was an 8% reduction across pre- to ex-post phases. This suggests a modest positive long-term beneficial effect of training on caregivers' perceptions of the percentage of activities where they would like to see change. This conclusion is tempered by the fact that the follow-up data were reported by 19/60 and 19/43 caregivers for Cohorts 1 and 2, respectively. The possibility that this change reflects a change in parents' expectations should also be considered.

Table 8. Mean, median, standard deviation and minimum and maximum caregiver-reported YC-PEM pre-, post-, and ex-post ratings of the percentage of activities where change is desired by caregivers.

Percent of target activities for which changed is desired. Σ items scored "yes"/#items x 100						
	Cohort 1			Cohort 2		
	Pre	Post	Ex-post	Pre	Post	Ex-post
N	60	50	19	43	42	19
Missing	0	10	42	0	1	24
Mean	76.2	71.9	63.5	71.8	62.8	63.9
Median	75	78.6	64.3	85.7	71.4	71.4
Standard deviation	18.5	22.1	22	25.4	31.1	31.6
Minimum	28.6	28.6	28.6	14.3	0.00	0.00
Maximum	100	100	100	100	100	100
Cohort 1 - Cohen's d pre-post = -.26 [-.6, .08]			*Pre-ex-post = -.5 [-.98, -.005]*			
Cohort 2 – Cohen's d pre-post = -.32 [-.6, -.4]			*pre-ex-post = -.36 [-.7, .02]*			
[=95% Confidence interval]						

Secondary child outcomes: social, emotional, and self-regulation skills (PSQ-P and PSQ-T data)

Caregiver and teacher responses to items on the PSQ-P (items 1-3) and PSQ-T (items 4-6) that specifically related to child outcomes were examined. These items are assessed immediately upon completion of the IYA programme, within this overall training satisfaction questionnaire, and ask caregivers and teachers to rate change in relation to children's social and emotional, self-regulation, and imaginary play skills immediately post-participation in the programme. For example, caregivers are asked to rate their response to the following statement: "*My child's social and emotional skills are*", according to a seven-point scale (1 = considerably worse; 7 = greatly improved). Data for this measure was anonymous, as it was not collected for programme evaluation purposes. This meant it was not possible to conduct correlational analyses, nor could it be used to assess change. Instead, descriptive data (i.e., mean, median, standard deviation and range) and frequency distributions are presented. It should also be noted that the psychometric properties of this measure have not been reported in the literature.

As indicated in Table 9, mean post-participation caregiver ratings of the level of improvement in self-regulation and imaginary play and social and emotional skills reflect the general caregiver perceptions, replicated across cohorts, that their child's skills in these areas 'improved' post-participation.

Table 9. Mean, median, standard deviation, range of ratings provided, and minimum and maximum possible scores for caregiver-reported PSQ-P child outcomes post-participation.

	Self-regulation and imaginary play		Social and emotional skills	
	Cohort 1	**Cohort 2**	**Cohort 1**	**Cohort 2**
N	50	42	50	42
Mean	6.06	6.10	6.34	6.31
Median	6	6	6	6
SD	0.98	1.04	0.67	0.65
Range	4-7	1-7	4-7	5-7
Minimum	1	1	1	1
Maximum	7	7	7	7

This finding is similarly reflected in the Figures 1a and 1b, whereby the majority of respondents rated their children as having 'improved' or 'greatly improved' in areas of social and emotional skills, across cohorts. While still skewed toward the upper end of the scale, self-regulation ratings were slightly more variable, whereby a greater number of participants indicated that self-regulation skills were 'the same' or 'slightly improved' post-training. Importantly, no participants rated their children as having experienced deterioration in skills across these three dimensions.

Figure 1a. The frequency of PSQ-P post-participation ratings of change in self-regulation and imaginary play skills.

Figure 1b. The frequency of PSQ-P post-participation ratings of change in social and emotional skills.

Table 10 provides mean post-participation teacher ratings of the level of improvement in PSQ-T scores across dimensions. This shows teacher ratings of self-regulation and imaginary play and social and emotional skills were 6.3 (*SD* = 0.6) and 6.12 (*SD* = 0.77), respectively, for Cohort 1, and 6.3 (*SD* = 0.58) and 6.20 (*SD* = 0.73) for Cohort 2, respectively. Findings were remarkably similar across cohorts, in each instance indicating that the majority of teachers rated children's skills in these areas as being 'improved' (6) post-training. A range of 4-7 and 5-7 also reflects that no teachers reported a deterioration in skills across cohorts.

Table 10. Mean, median, standard deviation, range of ratings provided, and minimum and maximum possible scores for caregiver-reported PSQ-T child outcomes post-participation.

	Self-regulation and imaginary play		Social and emotional skills	
	Cohort 1	**Cohort 2**	**Cohort 1**	**Cohort 2**
N	70	75	70	75
Mean	6.30	6.30	6.12	6.20
Median	6	6	6	6
SD	0.6	0.58	0.77	0.73
Range	5-7	5-7	4-7	4-7
Minimum	1	1	1	1
Maximum	7	7	7	7

This finding is similarly reflected in the Figures 2a and 2b, wherein teacher ratings are predominantly aligned to the upper end of the scale across all dimensions, for each cohort. As depicted below, the majority of teachers rated children's self-regulation and social and emotional skills as either 'slightly improved' (5), 'improved' (6) or 'greatly improved' (7). In a small number of instances, the response was neutral (4).
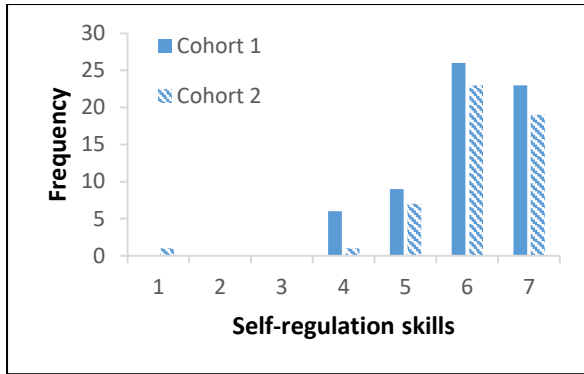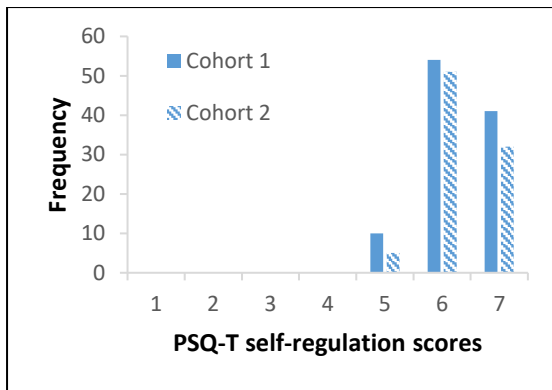
Figure 2a. The frequency of PSQ-T post-participation ratings of change in self-regulation and imaginary play skills

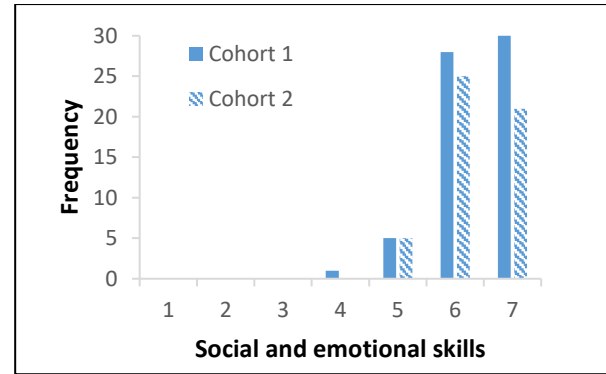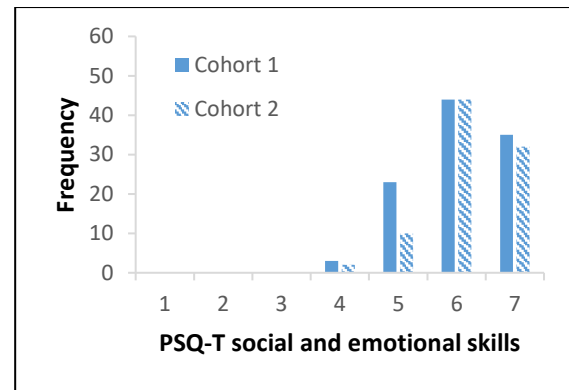Figure 2b. The frequency of PSQ-T post-participation ratings of change in social and emotional skills

Emotional regulation and behaviour (caregiver-reported SDQ data)

SDQ data was collected ex-post primarily as a snap-shot measure of children's interaction, engagement, and emotional problems. However, data on the additional SDQ subscales, while not directly targeted within the IYA programme, has been reported as it has important implications for children's participation and inclusion in both the home as well as educational contexts (e.g., prosocial behaviour, peer problems).

Table 11 presents caregiver-reported ex-post subscale and total scores for the SDQ. Based on SDQ scoring classifications and conventions for children in this age range, Cohorts 1 and 2 differed in classification of hyperactivity and conduct problem scores. In both instances, Cohort 1 participants were in the normal range and Cohort 2 participants were within the borderline range for hyperactivity and conduct problem scores, respectively. Conversely, Cohort 1 participants scored in the borderline range and Cohort 2 in the normal range for prosocial behaviour. Total scores were in the abnormal range for Cohort 1 and the borderline range for Cohort 2. For both Cohorts, emotional problems were in the normal range and peer problems were in the abnormal range.

Table 11. Mean, median, standard deviation and minimum and maximum caregiver-reported ex-post data for the Strengths and Difficulties Questionnaire

	Emotional		Conduct		Hyperactivity		Peer		Prosocial		Total	
Cohort	1	2	1	2	1	2	1	2	1	2	1	2
N	20	26	20	26	20	26	20	26	20	26	20	26
Mean	3.35	2.65	3.5	4.00	3.95	5.60	6.55	4.30	5.15	4.70	19.1	16.6
Median	2.5	2.50	3	4.00	3	5.00	7	4.50	5.5	5.00	19.5	17.0
SD	2.92	1.81	2.14	2.18	1.93	3.05	2.58	1.69	2.41	2.30	6.04	6.05
Range	0-10	0-6	1-8	0-8	2-9	2-10	1-10	1-7	0-8	0-9	9-32	6-28

Figures 3a to 3f display the frequency distribution of the caregiver-reported ex-post SDQ subscale and total scores. As indicated, caregiver-reported total SDQ scores during ex-post training are somewhat normally distributed with the majority of participant's total scores within the abnormal range for both cohorts. Emotional problems, conduct problems, peer problems, and prosocial behaviour scores are similarly distributed across cohorts. The majority of scores were within the normal or borderline range for emotional problems; the borderline to clinical range for conduct problems and

prosocial behaviour; and predominantly in the clinical range for peer problems. By contrast, Cohort 1 hyperactivity scores were relatively evenly distributed across ranges, while Cohort 2 scores were distributed toward the higher end of the scale, predominantly in the clinical range.
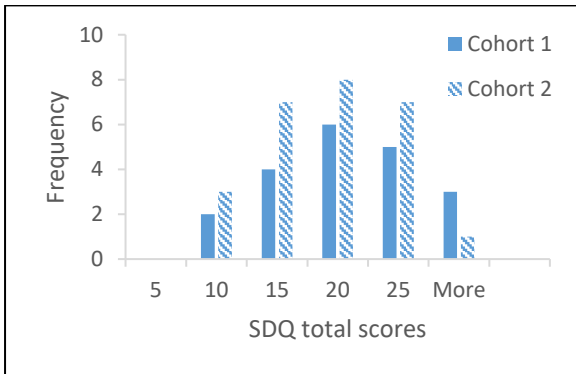
Figure 3a. Caregiver-reported SDQ total scores, ex-post.

Figure 3b. Caregiver-reported SDQ emotional problems scores, ex-post.

Figure 3c. Caregiver-reported SDQ hyperactivity scores, ex-post.

Figure 3d. Caregiver-reported SDQ peer problems scores, ex-post

Figure 3e. Caregiver-reported SDQ conduct problems scores, ex-post.
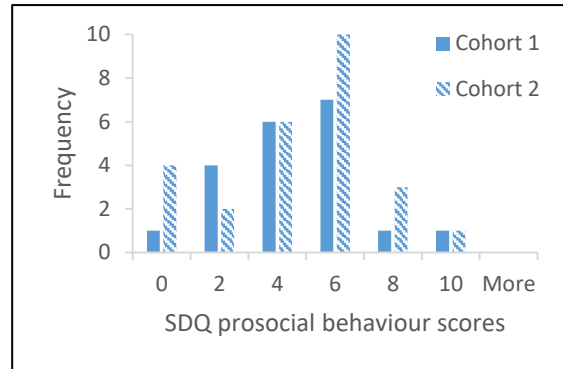
Figure 3f. Caregiver-reported SDQ pro-social behaviour scores, ex-post.

Emotional regulation and behaviour (teacher-reported SDQ data)

Table 12 presents teacher reported ex-post responses to the SDQ. This shows that for both cohorts mean emotional scores are in the normal range, mean peer problems and prosocial behaviour scores are in the abnormal range,and total scores are in the borderline range for both cohorts. Cohorts 1 and 2 differed slightly for mean conduct and hyperactivity scores, in each case Cohort 1 scores falling in the normal range and Cohort 2 scores in the borderline range.

Table 12. Mean, median, standard deviation and minimum and maximum teacher-reported ex-post data for the Strengths and Difficulties Questionnaire

	Emotional		Conduct		Hyperactivity		Peer		Prosocial		Total	
Cohort	1	2	1	2	1	2	1	2	1	2	1	2
N	46	37	46	37	46	37	46	37	46	37	46	37
Mean	2.54	1.78	3.33	2.93	5.93	6.41	4.96	4.00	3.28	3.26	16.7	15
Median	2	1	3	3	6	7	5	4	3	3	16	15
SD	1.88	1.69	2.37	2.48	2.63	2.93	1.7	1.88	2.26	2.55	5.91	5.67
Range	0-8	0-7	0-9	0-9	1-10	1-10	1-8	0-7	0-9	0-9	7-30	5-26

Frequency distributions for teacher-reported ratings on the SDQ are reported in Figures 4a to 4f. As indicated, the distribution of scores is remarkably similar across both cohorts. Emotional and prosocial behaviour scores are distributed toward the lower end of the scale and the majority of ratings are within the normal range at the ex-post time point, and the conduct problem scores most commonly fall in the normal to low-end of the abnormal range. The exception is hyperactivity problem scores wherein for Cohort 1, scores are reasonably evenly distributed across ratings indicating high variability in the levels of this problem behaviour, though for Cohort 2, scores mostly fall within the borderline to abnormal range. Peer problems scores show a relatively normal distribution, with the majority of participants scoring in the abnormal range. This measure was not administered pre- or post-training and it is not possible to determine whether SDQ scores changed as a result of training.
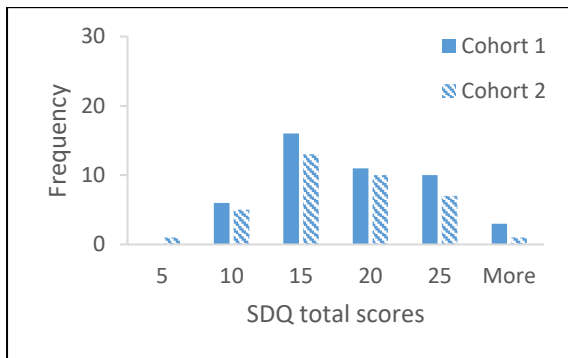
Figure 4a. Teacher-reported SDQ total problems scores, ex-post.
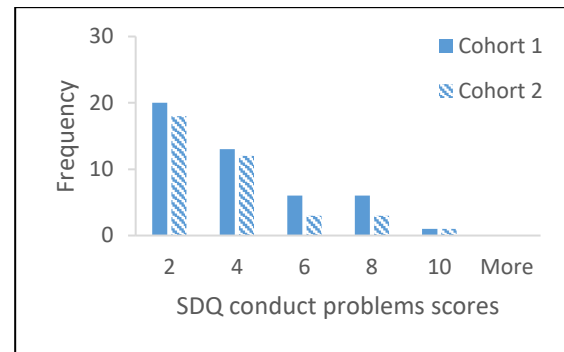
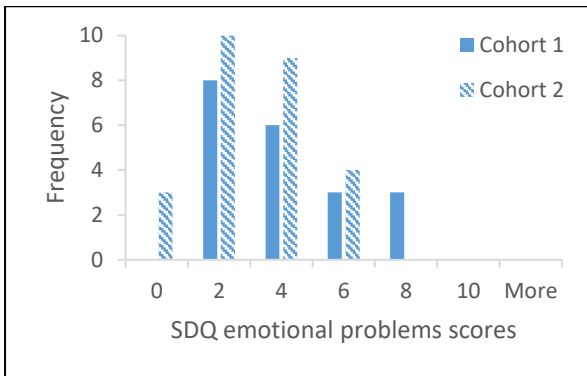*Figure 4b. Teacher-reported SDQ conduct problems scores, ex-post*
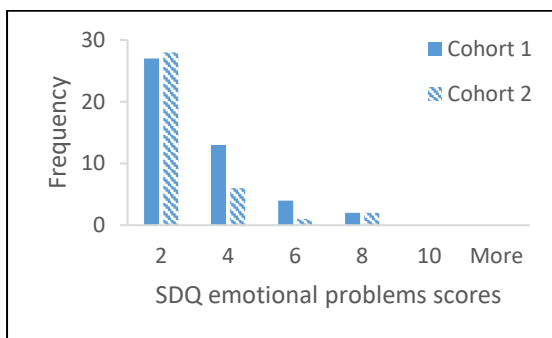
Figure 4c. Teacher-reported SDQ emotional problems scores, ex-post.

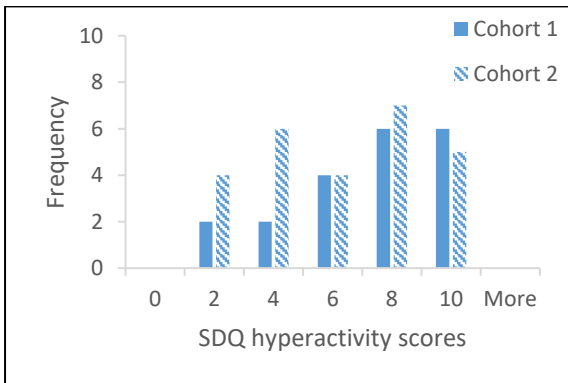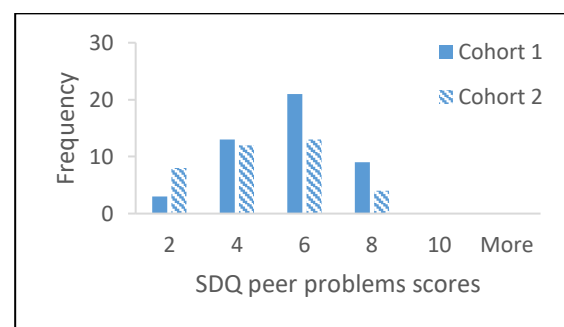*Figure 4d. Teacher-reported SDQ peer problems scores, ex-post.*
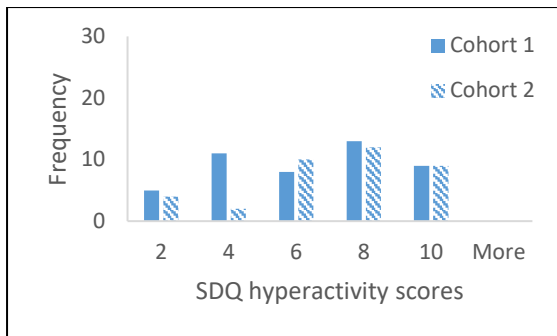
Figure 4e. Teacher-reported SDQ hyperactivity problems scores, ex-post.
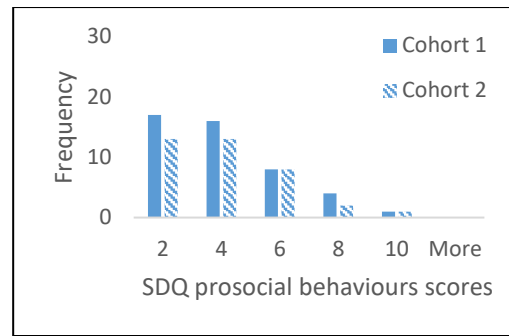
Figure 4f. Teacher-reported SDQ prosocial behaviour scores, ex-post

Child outcomes: engagement, emotional regulation and communication (qualitative data)

The following section describes the interview responses from caregivers and teachers of Cohort 1 and 2 regarding the impact of the IYA programme on the engagement, emotional regulation, communication skills, and wellbeing of children. The specific questions focused on the changes caregivers and teachers have noticed in the child(ren) since completing the IYA programme and whether caregivers and teachers learnt any new strategies as a result of their participation in the IYA programme. This section also describes whether caregiver and teacher participation in the IYA programme has contributed toward any change in children's participation, inclusion and attendance. The key themes are summarised under each of the four outcome areas.

The impact of IYA on children's engagement with caregivers, teachers, and other children

> *"He never used to join the mat times but now he is the first one to join everything"*
> *(Cohort 1: P56D).*

The majority of caregivers (Cohort 1: $n = 10$; Cohort 2: $n = 8$) and teachers (Cohort 1: $n = 24$; Cohort 2: $n = 19$) who were interviewed reported that participation in the IYA programme improved the child's engagement with them and others. Teachers from both cohorts described increased interaction with others as the most notable outcome of using the IYA strategies. They described an improvement in some children's eye-contact, leading to an increase in their communication and engagement with teachers and peers.

> *"When we're talking to [*him*], [he]is actually looking up and looking at us, not looking to the side or looking at the floor, or looking anywhere but at the person with [him]. [He is] actually engaging and is doing it to the other children as well" (Cohort 1: T114C).*

> *"Communicates well with his sister and sometimes he will even read him a book. They cuddle really nicely and they have a nice relationship now. Playing games with us, throwing ball and that sort of stuff". (Cohort 2: P34B)*

> *"She is interacting with other children a lot more. She still has quite a small peer group, but she's definitely making eye contact, she is engaging communication, she's using children's names which she didn't do at the beginning". (Cohort 1: T94F)*

An increase in interaction with others also brought about greater social skills and new friendships between the child with ASD and their peers. Budding friendships and positive peer interactions were reported by teachers and caregivers from both cohorts and was considered a positive outcome of the IYA programme.

> *"One of the big things is that he actually made a friend at school. That is something that is really really hard and he had a play date and he talks about it like "this is my friend!" so that was a very big diffrence". (Cohort 2: P75W)*

"He has since developed another wee friendship on the side of that. He's definitely interested in other children and being friends with them". (Cohort 2: T55C)

Several caregivers (Cohort 1: *n* = 5; Cohort 2: *n* = 4) and teachers (Cohort 1: *n* = 9; Cohort 2: *n* = 7) described increases in their child's participation and engagement in small and large group activities. They also described that children were more curious and interested in participating in a range of activities whereas prior to the IYA strategies being implemented (e.g. child's spotlight, following children's interests), children had narrow interests and spent the majority of their time engaged in repetitive behaviours. One parent from cohort 2 described her son's recent interest in music, stating:

"He has just recently actively participate in action songs like open shut them. Previously, he would listen passively and you weren't even sure if he was registering it. He will now participate with hand actions. Not as well as other child of the same age but it is a huge achievement for him". (Cohort 2: P16T)

"He used to come in and be quite particular about lining up farm animals or lining up the trains. We now see him move into the family area, see him building huts and covering himself with material." (Cohort 1: T79H)

Several teachers from both cohorts also shared examples of children's engagement and participation in new activities. One teacher described the progress a child had made exploring the early childhood environment. Before the teacher implemented IYA strategies, the child was reported to often stand in one spot, refusing to engage with teachers and peers and to participate in activities. Since implementing IYA strategies to promote the child's engagement and inclusion, the child now moves freely around the room and outdoor space, exploring his environment and engaging in a range of activities. Some teachers described the changes in the type of play they observed in the child, going from solitary to parallel play. One teacher described a child who was starting to engage with larger groups of children and showing interest in playing alongside them. Prior to the teacher participating in the IYA programme, the child preferred to play independently and would become overwhelmed by larger play groups.

"…he would engage my hand to stop spinning the wheel. Still no eye contact but he'd push my hand down. It was very exciting because had never done that before". (Cohort 2: T58C)

Some caregivers spoke about the improvements in their child's involvement and engagement in day-to-day activities at home and the early childhood centre or school. They reported that their child was attending the early childhood centre or school for longer days. They also said they have noticed an increase in their child's confidence to participate and they were excited to see their child engaged and included in the same activities as their peers.

"Basically before all he was doing was getting into mischief. Now he will participate like having dinner at the table with us. He gets dressed everyday whereas before I had to do it." (Cohort 2: P34B)

Not all caregivers (Cohort 1: *n* = 2; Cohort 2: *n* = 2) and teachers (Cohort 1: *n* = 3; Cohort 2: *n*= 4) saw a significant increase in their child's participation and engagement since the IYA programme. However, the majority indicated some progress in eye-contact, non-verbal gestures (e.g., taking the adults hand), and engaged interest in a variety of activities since caregivers and teachers have started implementing the IYA strategies. These caregivers and teachers indicated that the child's progress was likely the result of an accumulation of several interventions and programmes (e.g., speech therapy, behaviour workshops provided by the MoE), not solely the IYA programme.

The impact of IYA on children's emotional regulation

The impact of IYA strategies in improving children's emotional regulation was described by most of the caregivers (Cohort 1: *n* = 9; Cohort 2: *n* = 5) and teachers (Cohort 1: *n* = 19; Cohort 2: *n* = 15) interviewed. Caregivers and teachers from both cohorts described IYA strategies such as emotional coaching strategies to help the child understand how they are feeling and how to react appropriately.

"He used to just bash people including me. Now he will stand there and clench his fist and say "Mummy, Mummy I am really angry right now." Then we talk about it. We will talk about how to calm down and what we need to do to calm down". (Cohort 1: P10H)

They reported that these strategies have improved their child's ability to regulate their emotions and seek help from their teacher or caregiver.

"He will take himself away and you will hear him talk to himself and will say "come on, come on". And then he will come back and you can talk to him about what happened and he will share how he is feeling and why he got upset." (Cohort 2: T20T)

Some caregivers and teachers from Cohort 2 spoke of children engaging in fewer meltdowns because they had the skills to self-regulate and seek the support of an adult.

"Back when I did the course she will have quite big meltdowns but now they are lessening. Now when she is feeling upset she will come to a teacher for a cuddle." (Cohort 2: T52C)

"He really responded to the puppet when he was frustrated, Tommy T-Rex going into his shell and taking a few deep breathes. That helps him to settle himself and he will take it away and pet it if he is feeling stressed out. He is very high functioning but very emotional and can be very destructive." (Cohort 2: T54C)

Some of the specific strategies that caregivers and teachers for both cohorts have implemented to improve children's emotional regulation include relaxation techniques and the calm down thermometer, where the child labels their feelings using colours. The caregiver or teacher then coaches the child to use strategies to regulate their feelings. For instance, P52C, a caregiver from Cohort 1, describes that her son now requests to blow out the candles when he is feeling anxious or angry. Other caregivers reported that their child is engaging in less self-injurious and harmful behaviours when stressed or excited because they have other strategies to effectively and appropriately express their emotions.

For several caregivers and teachers in both cohorts, the IYA strategies had minimal impact on children's emotional regulation. In these instances, children already had the skills to regulate their emotions and behaviours or they had limited communication leading to frustration and anger. Some caregivers in both cohorts indicated that emotional regulation was "a work in progress." One caregiver from cohort 2, stated that

"if he can't figure out something he would yell and scream and throw a fit. It depends on him in the moment, sometimes he is good, sometimes he is not. It is … a work in progress" (P76W)

The impact of IYA on children's communication

"We know how to respond to her and she is learning how to respond to us at the same time". (Cohort 1: T86F)

The majority of caregivers (Cohort 1: $n = 11$; Cohort 2: $n = 8$) and teachers (Cohort 1: $n = 19$; Cohort 2: $n = 21$) reported that participation in IYA training improved their child's ability to communicate with them. The IYA programme provided caregivers and teachers with strategies to understand the verbal and non-verbal ways in which children communicate. Overall, the observations shared by caregivers and teachers in Cohort 1 and Cohort 2 indicate that the IYA programme has positively impacted on children's communication with associated impacts on children's self-regulation, engagement and participation in social activities with other peers and adults, improved eye contact and interactions.

"She is engaging communication, she's using children's names which she didn't do at the beginning, she is actually doing well with greetings and regular routines in the kindergarten without having to be prompted. She had to be prompted a lot at the start." (Cohort 1: T94F)

"Now she will take your hand and bring you to places. Like if she wants a push on the swing she will take you there now. She give lots of eye contact. She knows her name. She will say mom, dad, and pen, there are a few things she will say now." (Cohort 2: T52C)

Many caregivers and teachers have implemented visuals to communicate with their child about daily routines and activities. T19T, a teacher from Cohort 2 described a Now and Then board she has been using with a child, with success, to communicate daily routines such as washing hands and going to the toilet. The use of these visuals has improved the child's compliance in following directions because he "understands the routine and what is required of him." Some caregivers and teachers from Cohort 1 described that some children independently use visuals to communicate their needs with caregivers, reducing the child's frustration as they now have strategies to communicate with others.

Other IYA strategies such as getting into the child's spotlight, social coaching and narration, and engaging the child's interest have been effective in increasing children's verbal and non-verbal language and communication. For instance, some caregivers and teachers spoke about the effectiveness of getting the child's attention (i.e., spotlighting) on the child's ability to interact and communicate with caregivers and teachers. Several caregivers also spoke about the effectiveness of following the child's lead as this increased the reciprocal interaction between child and caregiver, making the caregiver more aware of the verbal and non-verbal cues that the child was using to communicate with caregivers.

"Yes, because he is non-verbal, I think the biggest thing was that I was expecting him to just understand me. Whereas I learned that even eye contact is communication. Which I didn't realise at that time. I was like "oh he didn't respond" I wasn't sure how to put it across to him to make him respond. I ended up taking him to the course a few times. They said to me "well, he is actually looking at you, he is actually communicating and giving you eye contact". I was like "oh I didn't think of that to be a form of communication. That was enough for him because of where he is at." (Cohort 2: P53A)

Caregivers and parents from both cohorts described excitement by the fact that their child was able to start communicating with them and other familiar adults and peers. The consistent use of IYA strategies has allowed several caregivers and parents in Cohort 1 and Cohort 2 to observe significant progress in the domain of communication suggesting that IYA has had a positive impact on caregivers, teachers and children.

"I love the sections where they were telling us how to get down and play the right way so that we can interact. My child started opening up a lot after that. She started bringing her drawings to me and telling me what it was. This has not happened before the IYA." (Cohort 2: P64W)

"She is engaging in communication, she's using children's names which she didn't do at the beginning, she is actually doing well with greetings and regular routines in the kindergarten without having to be prompted. She had to be prompted a lot at the start." (Cohort 1: T94F)

His speech really flourished at that point of time. He is talking more, he is using more words. He is able to get his voice heard by using his speech as well as gestures he was already using. He is also started calling me mommy a couple of months ago and it was amazing. So I have a bottle of champagne for about 4 years in the pantry, that got popped open. (Cohort 2: P70W)

"This target child had no communication from the beginning of the course. By using the strategies over a period of time, she was starting to repeat words and even use some sentences occasionally. She went from non-verbal to seeing what the power of words could be." (Cohort 2: T53C)

The majority of teachers from Cohort 1 (except for two) and all of the teachers in Cohort 2 indicated that the IYA programme had a positive impact on children's communication. In contrast, two caregivers from Cohort 1 and four caregivers from Cohort 2 did not think that IYA strategies had improved their child's communication. They suggested several reasons for this including the strategies being beyond the current development of their child, the child already had good communication prior to caregivers completing the IYA programme, and other professionals such as SLTs were working with the child.

To what extent did participation in the IYA-P programme contribute toward the increased wellbeing and coping skills of caregivers enabling them to better support their child? (Question 2)

The short and long-term impacts of the IYA programme on the wellbeing and coping skills of caregivers were evaluated to test the theory that participation in the IYA programme would enhance the confidence, coping skills and wellbeing of caregivers of children on the autism spectrum. This theoretical outcome was tested by assessing caregiver stress, as measured by the APSI total scores at post- and ex-post time points. Caregiver DASS-21 (Cohort 1 only), IYPSQ ex-post scores and selected PSQ post-training scores are also presented. This data gives a snapshot view of caregivers' wellbeing at the follow-up (ex-post) time point for participating caregivers. Interview data was also collected in relation to this evaluation question (see Appendices H-K).

Overall, the impact of programme participation on caregiver wellbeing, specifically caregiver stress, is considered to be 'very good'. APSI data along with interview reports indicate that participation in the programme had a positive effect on caregiver stress levels and that these effects were maintained at follow-up. However, caregiver stress only assesses one dimension of caregiver coping, hence the administration of the DASS-21 for Cohort 1. Unfortunately, the small number of respondents for the DASS-21 meant that it was not possible to determine the impact of participation in the IYA-P programme on caregiver reported ratings of depression and anxiety. The high rates of convergent validity between the DASS-21 and APSI for Cohort 1, meant there was little additional benefit in administering this measure for Cohort 2.

Taken prima facie, PSQ-P data suggests that participation in the IYA-P programme resulted in caregivers perceiving improvements in their use of skills taught during the programme and achievement of their goals. This is similarly reported during interviews where many caregivers reported that participation in the IYA programme had a positive impact on their sense of confidence and self-efficacy. They felt equipped with the knowledge and practical strategies to support their child's developmental success. Limitations associated with the IYPSQ data means that it is not possible to provide a reliable interpretation of this data. As such, the conclusions that can be drawn about the impact of the IYA programme on caregivers' sense of confidence and competence are that it is 'very good'. Given the limitations previously described, this is predominantly based on qualitative data.

Caregiver outcomes: wellbeing and coping skills (quantitative data)

Caregiver wellbeing and coping skills (APSI data)

Caregiver stress was measured using the APSI. Normative data are supplied in Silva and Schalock (2012) for families with a child on the autism spectrum ($N = 107$), families with a child with other developmental disabilities ($N = 28$) and typically developing children ($N = 139$), 6 years or younger. It is not clear how the Likert scale was coded by Silva and Schalock (2012), but the data provided for this evaluation is coded 1-5, yielding possible minimum and maximum scores of 13- 65. Silva and Schalock (2012) reported 'prevalence' data (in percentage terms) for the overall score and sub-scales (e.g., 'Core autism behaviours'; 'Social development') but not the mean or SD of the scale or sub-scales, limiting the possibility of comparing the present data with their data. Chronbach's alpha and test-retest reliability are satisfactory ($\alpha = .83$; test-retest reliability = .88; both for the ASD sample).

Table 13 shows the number of caregivers who completed the APSI for Cohorts 1 and 2 and summarises key data at the pre-, post-, and ex-post training phases. For Cohort 1, only 10 caregivers

dropped out of participating at the post-training phase, however, only 20 (33% of pre-participation respondents) supplied data at the ex-post phase. For Cohort 2, 42 participants provide post-participation data (69% of pre-participation respondents) and 24 provided ex-post data (39% of pre-participation respondents).

Table 13. Number of caregivers completing the Autism Parent Stress Index (APSI), and mean, median, standard deviation and minimum and maximum scores at each study point for Cohort 1 and 2.

	Cohort 1			Cohort 2		
	Pre	Post	Ex-post	Pre	Post	Ex-post
N	60	50	20	61	42	24
Missing	0	10	40	0	19	37
Mean	20.9	14	15.5	17.6	14.0	13.9
Median	19	13.5	14.5	16	12.5	12.5
Standard deviation	9.39	6.79	8.17	8.97	6.52	7.42
Minimum	6	4	0	3	4	4
Maximum	49	31	32	46	30	33

Figure 5 shows the frequency distribution of APSI scores before and after training for Cohorts 1 and 2, for the caregivers who completed the measure at both time points. Figure 5 confirms the shift to lower stress scores following training evident in the mean data for each cohort. Notably, for both cohorts, training seems to have mostly reduced high scores while moderately increasing the number of low scores (≤10). The majority of caregivers reported stress levels in the range of 15 – 29, and the mean for Cohort 1 (21) and Cohort 2 (15) is below the mid-point of the APSI score range, suggesting that the caregivers in each sample were, on the whole, only mildly to moderately stressed, although, it should be noted, stress level categories have not been specified for this measure.
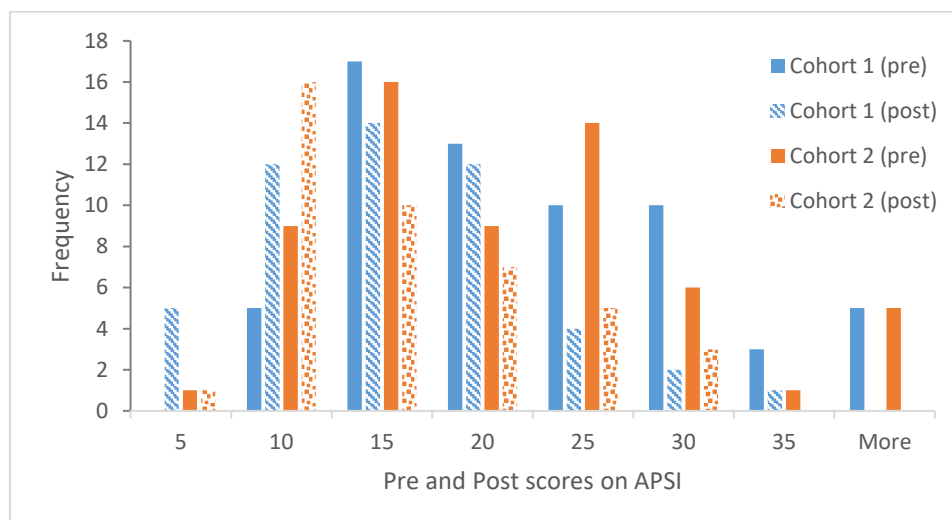
Figure 5. Frequency distribution of pre- and post-training APSI stress scores

The overall change in stress levels for the caregivers who supplied both pre- and post-training data is shown in Figures 6 and 7, for Cohorts 1 and 2 respectively. As explained (see Appendix E), if there has been little or no change in caregiver stress across time, the data points will lie around about the diagonal line of no change. If there has been a systematic improvement in APSI scores data points will tend to lie below the line, and deterioration is shown by points lying clearly above the line.

Figure 6 Panel A shows clearly that most caregivers reported either little change or a reduction in stress following training for Cohort 1; only a small number reported any increase. The Cohen's d_{av}

Effect Size (ES) of -.78 is just on the threshold of being conventionally considered a large ES (.8), and the 95% CI on *d* indicates that, taking a worst-case scenario where the true value of *d* is at the lower end of the CI, the ES is not zero, but in the small-medium range. The pattern does not change greatly for the 20 caregivers who supplied ex-post data (Figure 6 Panel B), although those who had pre-scores >30 seem now to have dropped out of the evaluation, even though their scores did reduce at post-treatment. The ES at follow-up is now in the moderate range, and might in the worst case be zero. The stability of scores at follow-up is further demonstrated in Figure 6 Panel C, which plots follow-up scores against post-treatment scores. The scores are dispersed to much of the same degree around the diagonal line of no change, and the ES = 0, consistent with the mean scores being equal at the two-time points.

As shown in Figure 7, these findings are replicated for Cohort 2 wherein, 83% (*n* = 35) of participants experienced a reduction or no change in levels of reported stress. The Cohen's d_{av} ES of -.51 is considered a moderate ES (.5), and the 95% CI on *d* indicates that, taking a worst-case scenario where the true value of *d* is at the lower end of the CI, the ES is not zero, but in the small-medium range. A moderate ES (-.45) is maintained for the 24 caregivers (57% of pre-participation respondents) who provided ex-post data (Figure 7 Panel B). Scores remain stable in Figure 7 Panel C, which plots follow-up scores against post-treatment scores. The scores are dispersed to much of the same degree around the diagonal line of no change, and the ES = 0, consistent with the mean scores being equal at the two-time points.

For both cohorts, the large majority of participants experience either a reduction or no change in stress levels, with very few experiencing an increase in stress. For participants who provided both post- and ex-post data their level of stress remained relatively stable relative to the stress level they reported at the end of participation in the programme.

The relationship between post- and ex-post participation APSI scores, and attendance, ethnicity, and region was explored by calculating point-biserial correlation coefficients. These correlations indicate the degree to which a classification variable (such as a code for ethnicity) accounts for variability in a continuous outcome variable, and, therefore, indicated the degree to which the classification variable is influencing the outcome variable. For both Cohort 1 and Cohort 2, the classification variables of region, attendance and ethnicity did not predict change in APSI scores.

Parental wellbeing and coping skills (Cohort 1 DASS-21 data)

Cohort 1, caregiver-reported DASS-21 data is presented in Table 14. This shows average depression, anxiety, and stress subscale scores were within the 'normal' range, ex-post. As this measure was not administered pre- or post-training, it is not possible to determine whether this represents a change in DASS-21 scores as a result of training.

Table 14 Mean, median, standard deviation and minimum and maximum scores for caregiver-reported DASS-21 subscale and total scores, ex-post (N=19).

	Depression	Anxiety	Stress	Total
N	19	19	19	19
Mean	4.11	1.95	6.84	12.9
Median	4	1	7	13
SD	3.46	2.63	2.65	6.28
Range	0-16	0-11	3-11	5-28

Cohort 1 APSI data
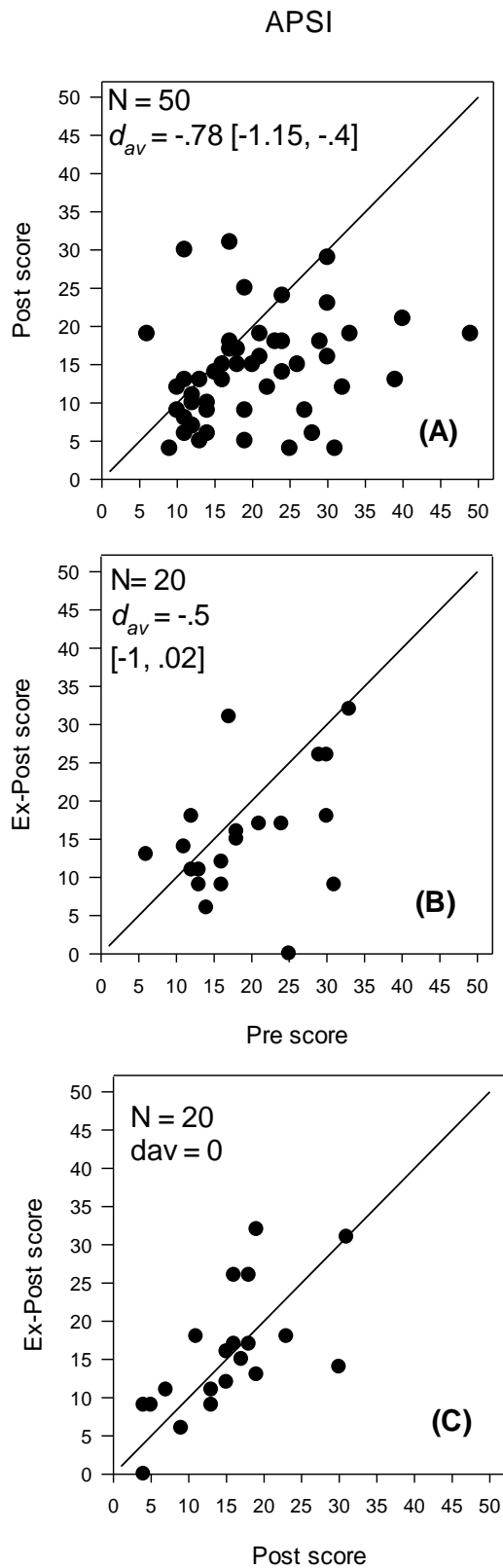
APSI

Figure 6 Modified Brinley Plot showing change in individual caregiver APSI scores at post-training (A) and follow-up (Ex-post, B) relative to pre-training scores, and follow-up scores relative to post-training scores (C) for Cohort 1.

Cohort 2 APSI data
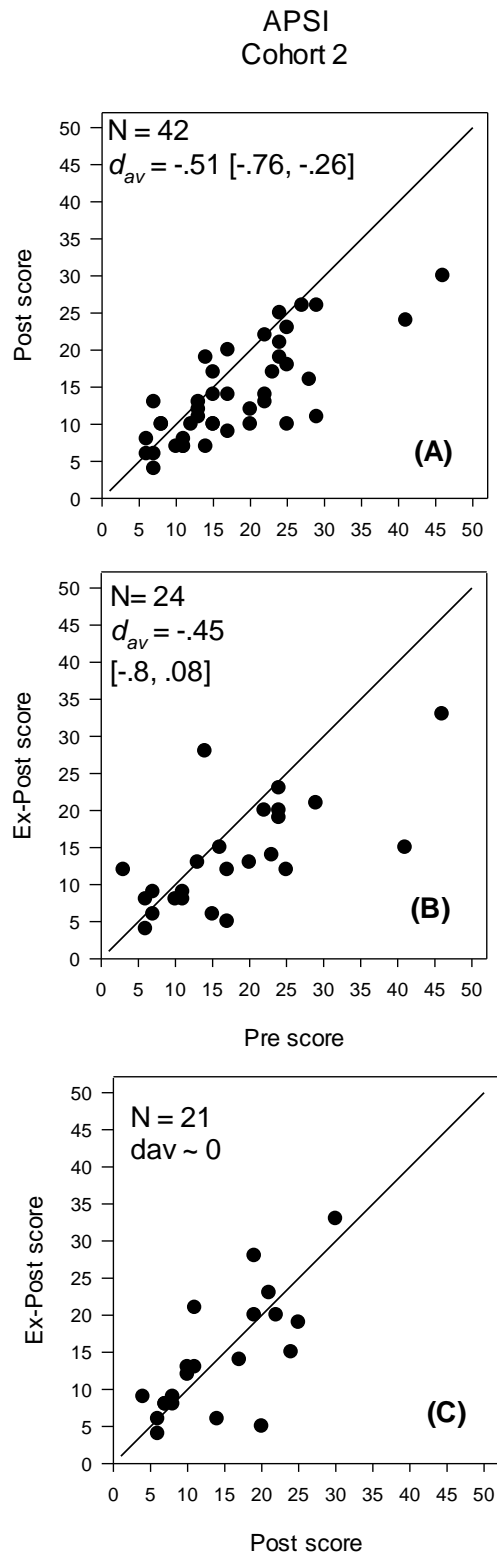
APSI
Cohort 2

Figure 7 Modified Brinley Plot showing change in individual caregiver APSI scores at post-training (A) and follow-up (Ex-post, B) relative to pre-training scores, and follow-up scores relative to post-training scores (C) for Cohort 2.

The distribution of caregiver-reported DASS-21 subscale scores are provided in Figures 8a to 8c. As indicated in Figure 8a, depression subscale scores are largely distributed toward the lower end of the scale with the majority of scores below nine, and thus in the normal range. Only one participant was within the moderate severity range (score = 16). Stress subscale scores were more evenly distributed across the scale, though all participants reported ratings within the normal range. Anxiety subscale scores were also in the normal range for all but one participant, who scored in the moderate range (score = 11).
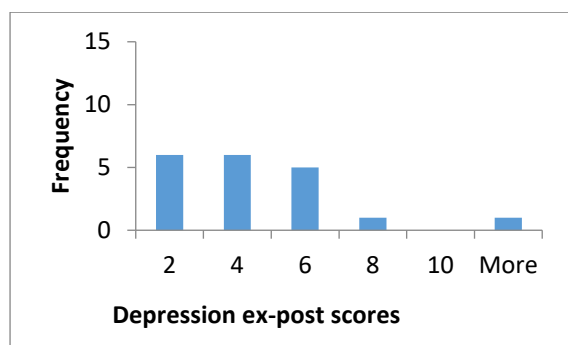
Figure 8a. Caregiver-reported DASS-21 depression subscale scores ex-post.
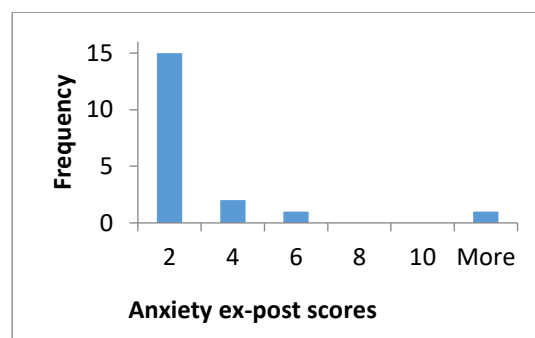
Figure 8b. Caregiver reported DASS-21 anxiety subscale scores, ex-post
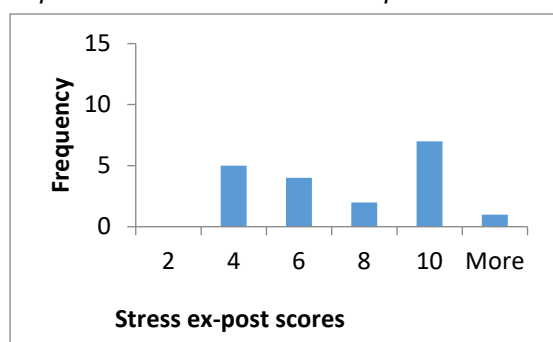
Figure 8c. Caregiver-reported DASS-21 stress subscale scores, ex-post.

Interestingly, there was a significant correlation between APSI pre and DASS-21 Stress subscale scores ($r = 0.704$, $p<0.05$) which (as noted above) suggests that they have good convergent validity as measures of stress. For this reason, and to minimise respondent burden, the DASS-21 was removed from the Cohort 2 evaluation.

Caregiver confidence and coping skills (PSQ-P data)

Post-participation data obtained from the PSQ-P (items four and seven) was examined. Items four and seven were selected as they relate specifically to caregiver's feelings about their level of progress (item four) and goal achievement (item seven). These items assessed caregiver's feelings about their progress and goal achievement immediately following participation in the IYA programme. For example, caregivers were asked to rate their response to the following statement: '*My overall feelings about my personal progress at using the autism spectrum/language delays parenting skills are that I am'*, according to a seven-point scale (1 = very pessimistic; 7 = very optimistic).

The PSQ-P post-participation data for items four and seven is presented in Table 15. This shows caregiver ratings ranged from 'the same' to feeling 'very optimistic' about using the parenting skills taught during the programme, with mean scores for both cohorts reflecting 'slight optimism' about using the acquired skills. Mean feelings about goal achievement reflect a 'positive' rating across cohorts though these scores ranged from 'negative' to 'very positive'.

Table 15. Mean, median, standard deviation scores for items four and seven of the PSQ-P, post-participation

	Personal progress using parenting skills taught		Feelings about goal achievement	
	Cohort 1	Cohort 2	Cohort 1	Cohort 2
N	64	51	64	51
Mean	5.53	5.41	6.08	6.1
Median	5	5	6	6
SD	0.84	0.80	0.87	0.94
Range	4-7	4-7	2-7	2-7

This data is similarly reflected in Figures 9a and 9b, where there is a reasonably normal distribution of responses within the range of 4-7; the majority of respondents indicating feelings of 'slight optimism' (5) or 'optimism' (6) in response to their progress in the use of parenting skills that were taught. As shown in Figure 9b, the majority of caregivers indicated feeling positive (6) or 'very positive' (7) about their progress toward achieving goals for them and their family. Only one participant (Cohort 2), reported 'negative' feelings about their progress.
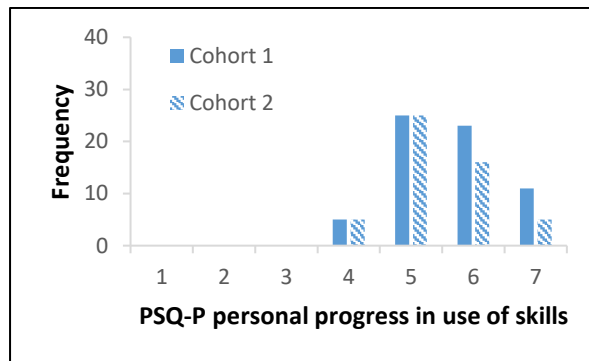
Figure 9a. PSQ-P ratings of feelings of personal progress, post-participation.
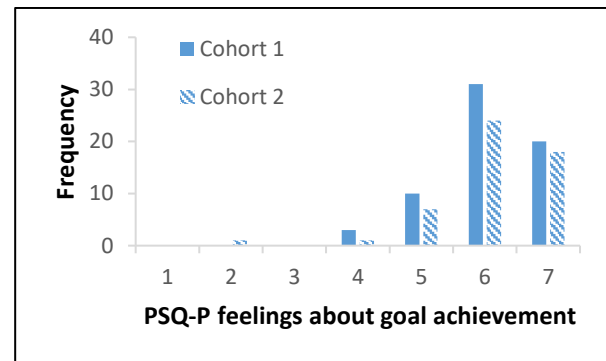
Figure 9b. PSQ-P ratings of feelings about goal achievement, post-participation.

Caregiver confidence and coping skills (IYPSQ data)

Ex-post data obtained from the IYPSQ is presented in Table 16 and Figure 10. Higher scores on the IYPSQ reflect higher levels of perceived confidence and frequency of skill use. There are significant limitations to the interpretation of this data as the measure was only administered during the ex-post phase, there was only a small number of respondents, and there is an absence of normative data or classification rules. Furthermore, as there are no conventions for subscale scoring, only total scores were able to be provided. These total scores are presented as descriptive data and frequency distributions, although, in light of these limitations, no interpretation is able to be provided. It perhaps noteworthy however, that similar mean scores were obtained across cohorts, though more caregivers received scores in ≥ 220 in Cohort 2, when compared to Cohort 1.

Table 16 Mean, median, standard deviation scores the IYPSQ, post-participation.

	IYPSQ Total	
	Cohort 1	**Cohort 2**
N	18	21
Mean	189	196
Median	191	208
SD	40.1	33.0
Range	123-284	132-233
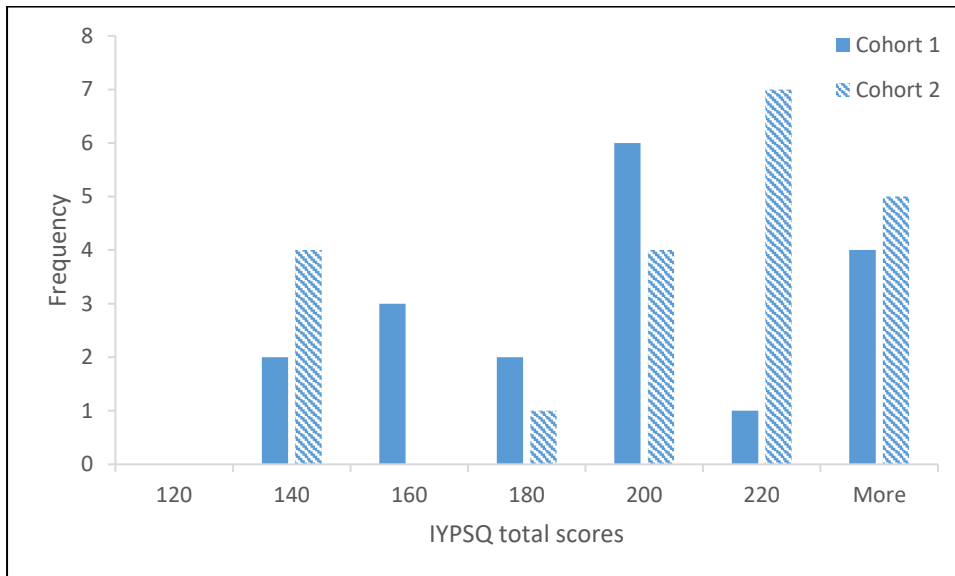
Figure 10. IYPSQ total scores, ex-post participation

Qualitative data (caregiver outcomes)

This section describes what caregivers reported during interviews about their perceptions of the impact of the IYA programme on their wellbeing and coping skills. Caregiver interview questions five, seven, and eight were designed to address this outcome. Three key themes were identified relating to caregiver competence, personal wellbeing, and relationships with others.

The impact of IYA on caregiver coping skills and competence

> *"It made me feel like I wasn't alone. It made me feel like that it wasn't bad parenting…*
> *So I think for me as a mum I am more confident about what I am doing and therefore I*
> *am more relaxed about things".* (Cohort 1: P10H)

Many caregivers spoke about the positive impact IYA had on their confidence and self-efficacy. The knowledge and practical strategies caregivers had learnt has helped them understand, accept their child's diagnosis and to "*celebrate even the small things*." Two parents from cohort 2 specifically mentioned that previous parenting programmes had been ineffective in leading to meaningful change in their child's development whereas IYA had a positive impact on their parenting and wellbeing.

"I had kids around me for most of my life and I felt quite confident becoming a parent. Then I had my son… I had no confidence by the time we did the IYA because none of [my parenting] strategies worked. I went to many parenting courses and nothing worked and I felt horrible and useless. After doing IYA I feel a lot more confident and seeing the benefit as well has made a huge difference." (Cohort 2: P34B)

A few caregivers from Cohort 1 spoke about their obsession with *"googling everything"* and becoming overwhelmed with the information they found online about Autism. Since completing the IYA programme, several caregivers from both cohorts feel better educated about Autism and understanding the needs of their child.

IYA has "given me that toolbox so even if I can't think…I can go find the book and flip through that to see if I can find an idea of something to try if stuff isn't working". (Cohort 1: P55C).

"Before IYA I definitely didn't know anything about ASD… now I know what's going on in his head." (Cohort 2: P68W)

Some caregivers from Cohort 1 also described their excitement about taking their child to public places because they have more confidence in their ability to control their child's behaviour outside.

"The [IYA] course had helped me to know how to manage my son's behaviours outside… I would always panic when I took him out. He would just run away. But IYA has taught me how to control my son, to hold mama's hand before we go out. I show him the picture and where we are going and that if he does it I will give him a reward. So he knows when he holds my hand he will get something good. I feel happier now, I enjoy going for coffee with my son outside in the coffee shop." (Cohort 1: P34J)

The impact of IYA on caregiver wellbeing

"I think the most valuable thing that they taught me was that you can't pour from an empty cup". (Cohort 1: P52C)

Caregivers from both cohorts spoke about the impact IYA has had on their wellbeing. Caregivers in Cohort 1 described the weekly self-reflective activities where they wrote down what they have done for themselves during the week, as a way to take ownership of their own wellbeing. These caregivers described being calmer, engaging in more activities that they enjoyed such as going for a run or nice dinners. Many of these caregivers spoke about the IYA programme as being as much for them as it was for their child. Caregivers in both cohorts also spoke about improvements in their relationships with their family/whānau and partner. The consistent implementation of the IYA strategies contributed to improvements in their child, leaving caregivers more comfortable to go on a 'date night' or 'weekend away' while their child was being minded. These were opportunities for self-care and strengthening relationships with their partner.

"That was also really good to not only do this for my son but also… I am doing this for myself now. I am actually making an effort to look after myself now". (Cohort 1: P29F)

A few caregivers from both cohorts described some of the IYA strategies that have been useful in supporting their emotional regulation and wellbeing. When stressed, anxious or angry, some caregivers have started counting back from 10, have identified 'safe' spaces to retreat to, and have used visualisation and breathing strategies to help regulate their feelings and emotions.

"Breathing… that is something I learned…deep breathing. I never really thought it would work until they really taught you how to do it. You can't teach a kid how to do it until you know how to do it". (Cohort 1: P52C)

Caregivers in Cohort 1 and Cohort 2 described the positive impact the social support and connection received during the IYA programme had on their wellbeing. Caregivers valued the opportunity to meet with other parents who had experiences similar to their own and to share stories about parenting a child with ASD. The social support and friendships developed during with IYA programme was considered the greatest impact for some caregivers.

> *"[The impact on my own wellbeing] was definitely meeting with the other mums. I felt isolated and it was nice to have that weekly meet-up. We gathered and had a yard, talk about what hell of a week it has been." (Cohort 1: P67E)*

> *"The main thing for me was meeting other parents who got you, got what it was about, who understood. Because we've fallen sort of inbetween the cracks, we don't have a diagnosis, but our child is different, it's quite challenging sometimes because other people don't understand. So it was really nice to talk to people who got it, who just knew what it was like… that was probably for me was the nicest thing, the connection with other parents." (Cohort 2: P39B)*

To what extent did participation in the IYA-T programme contribute toward increased teacher capability to help children demonstrating behaviours associated with autism? (Question 3)

To test the proposition that participation in the IYA programme would build the capability and confidence of teachers and their ability to implement strategies to support children's participation and engagement, pre-, post- and ex-post data on the IYTSQ was compared. This data is presented as modified Brinley Plots. Post-participation data on the PSQ-T (items two and three) was also examined, as these items assessed teacher's feelings about their personal progress in using social and emotional coaching strategies, immediately following participation in the IYA programme. For example, teachers were asked to rate their response to the following statement: '*My overall feelings about my personal progress using social coaching strategies are',* according to a seven-point scale (1 = very pessimistic; 7 = very optimistic). Only post-participation data was available for this measure and therefore it is only possible to present descriptive data and frequency distributions. A number of interview questions were also designed to assess this outcome (see Appendices H-K).

Overall, participation in the IYA programme appeared to have a significant effect on teacher capability, as measured by the IYTSQ, PSQ-T, and interview data. As such, teacher outcomes are considered to be in the range of 'very good' to 'excellent'. Overall, caregivers and teachers were overwhelmingly positive about their experience in participating in the IYA programme and indicated that participation resulted in teacher-reported improvement in social and emotional coaching strategies.

Teacher outcomes: teacher capability (quantitative data)

IYTSQ data (teacher capability)

Table 17 shows the number of participant respondents during the pre-, post- and ex-post training phases, and provides a summary of the data obtained at each point. For Cohort 1, 70 teachers provided data at the post-training phase, and 47 (49% of pre-participation respondents) supplied data at the ex-post phase. For Cohort 2, 75 participants provided post-participation data (96% of pre-participation respondents) and 26 provided ex-post data (33% of pre-participation respondents).

Table 17. The number of teacher respondents and mean, median, standard deviation, and minimum and maximum scores on the IYTSQ across phases and cohorts

	Cohort 1			Cohort 2		
	Pre	**Post**	**Ex-post**	**Pre**	**Post**	**Ex-post**
N	95	70	47	78	75	26
Missing	0	25	48	0	3	52
Mean	156	203	195	153	204	180
Median	154	203	196	153	206	182
Standard deviation	32.2	28	27.9	25.9	18.6	22.3
Range	160	148	133	107	74	103
Minimum	69	104	115	102	166	132
Maximum	229	252	248	209	240	235

Figure 11 compares the distribution of scores at pre- and post-training, showing that the distribution had an initial slightly positive skew for both cohorts, with more participants scoring about the mean than below the mean, and that training shifted scores upward. No teacher at either measurement point achieved the maximum possible score of 260, but all were well above the minimum score (52) on initial testing. For Cohort 1, the mean score went from 60% of the maximum to 78% of the maximum, a gain of 18%. For Cohort 2, the mean score was similar to Cohort 1 at pre- and post-training (59% and 79% of the maximum at pre- and post-training respectively), reflecting a 20% gain in average scores.
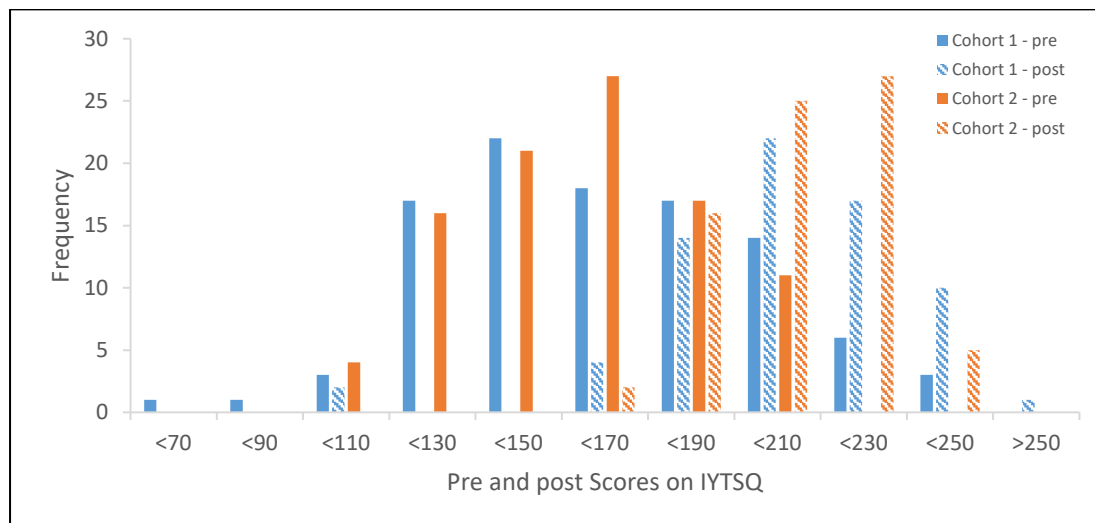
Figure 11. Frequency Distribution of pre- and post-training scores for Cohorts 1 and 2.

The overall change in teacher performance for the teachers who supplied both pre- and post-training data for the IYTSQ is shown in Figures 12 and 13 for Cohorts 1 and 2, respectively, as modified Brinley Plots. If there has been a systematic improvement in scores, data points will tend to lie above the line, and deterioration is shown by points lying clearly below the line.

Figure 12 Panel A (Cohort 1) shows that, overall, almost all teachers improved in their score from pre- to post-training assessment, with only four teachers showing either no clear change or clear deterioration. The evidence of a positive effect of training is supported by the Cohen's d_{av} = 1.74, conventionally considered a large ES. The 95% CI on d indicates that, taking a worst-case scenario where the true value of d is at the lower end of the CI, the ES can still be regarded as large.

A total of 47 teachers supplied both pre-training and ex-post data on the IYTSQ. This data is shown in Figure 12 Panel B, where, again, there is clear evidence that most teachers reported scores that were larger than their pre- training scores. The ES at follow-up was still clearly in the large range, and would still be so in a worst-case scenario. This data indicates that, at least for the teachers who were cooperative with ex-post data collection, their training gains were mostly maintained. Another way of examining the maintenance of gains from post-training to ex-post is shown in Figure 12 Panel C. Here, each teacher's score at the end of training is plotted against their ex-post score. If there was no loss of training benefit over the follow-up time, scores would lie closely about the diagonal line; if there was a systematic loss of learning, scores would lie below the line, while if improvement was maintained and increased, scores would lie above the line. As the plot shows, teachers' scores are clustered quite closely around the diagonal line, suggesting little change from the end of training to follow-up. This observation is confirmed by the small but positive ES, which suggests that, overall, there was even some slight improvement over the end of training to follow-up period. This suggests there may be some incubation of training effects over time.

The IYTSQ data for Cohort 2 is presented in Figure 13 Panel A. Similar to Cohort 1, almost all teachers improved in their score from pre- to post-training assessment, with only three teachers showing either no clear change or clear deterioration. The evidence of a positive effect of training is supported by the Cohen's d_{av} = 2.3, conventionally considered a large ES[2].

A total of 26 teachers supplied both pre-training and ex-post data on the IYTSQ. This data is shown in Figure 13 Panel B, where, again, there is clear evidence that most teachers reported scores that were larger than their pre- training scores. The ES (Cohen's d_{av} = 1.2) at ex-post follow-up was still clearly in the large range, and would still be so in a worst-case scenario. This data indicates that, at least for the teachers who were cooperative with ex-post data collection, their training gains were mostly maintained. The maintenance of gains from post-training to ex-post is shown in Figure 13 Panel C. As the plot shows, teachers' scores tend to be below the diagonal line (18/23 teachers who provided data) indicating that there was some loss of gains from the end of training to follow-up, an observation confirmed by the negative ES.

The association between IYTSQ outcomes ethnicity, and region was explored by calculating point-biserial correlation coefficients. For each cohort, there was an insufficient number of participants in most regions to do a detailed breakdown analysis, however, for Cohort 2, given the large number of participants in the Canterbury region, it was possible to separate the data set into "Not Canterbury" (N = 32) and "Canterbury (#7)" (N = 43). The descriptive data for these two groups is presented in Table 18. Teachers in Canterbury reported larger gains than those in other Regions. Cohen's d for IYTSQ pre-post in Not Canterbury Regions was 1.49 [.97, 1.99]. Cohen's d for IYTSQ pre-post in Canterbury region was 3.38 [95%CI could not be calculated; d >2]. For Cohort 2, the SDs across regions and times were much the same, so there are no great differences in variance at any place or point in time.

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[2] The software used to calculate the 95%CI on d does not compute the CI where d is outside the range -2 to +2, so no CI is presented for this comparison.

IYTSQ Overall Outcomes
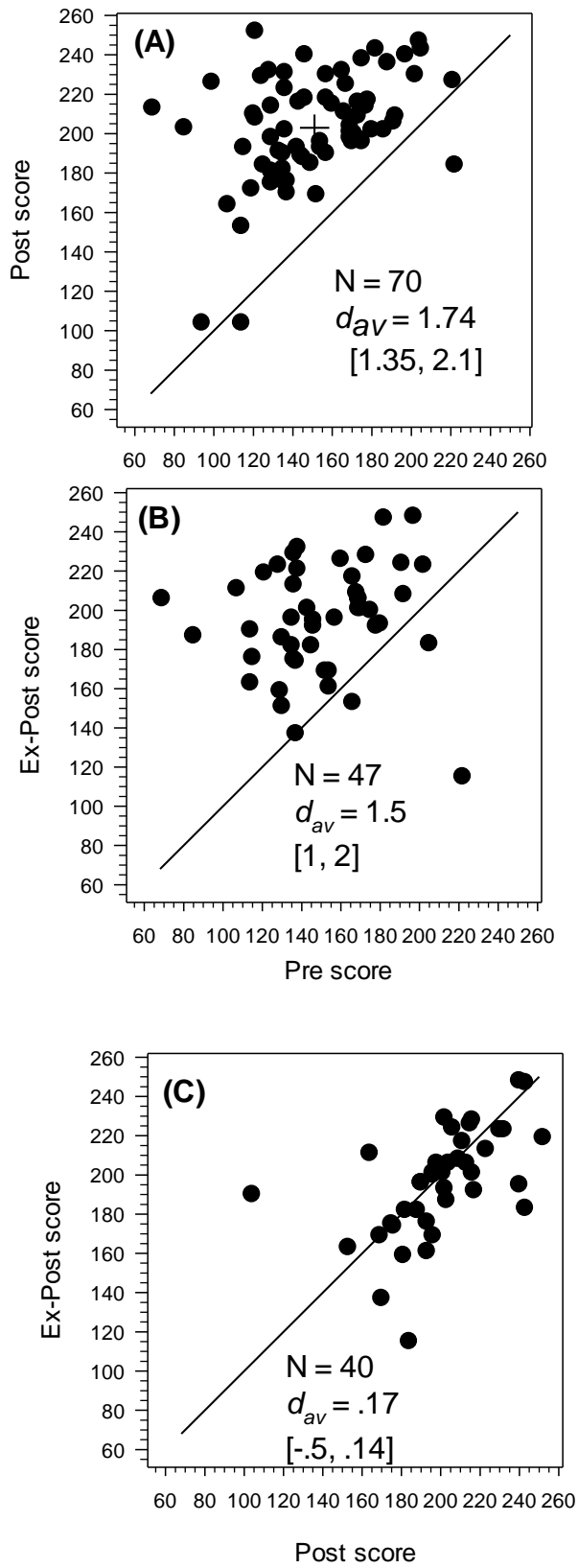
Figure 12 Panels A, B & C IYTSQ Scores for Cohort 1 participants

IYTSQ Overall Outcomes
Cohort 2

(A)

N = 75
d_{av} = 2.3
[not calculated]

(B)

N = 26
d_{av} = 1.2
[.6, 1.7]

(C)

N = 23
d_{av} = -.98
[-1.5, .-.46]
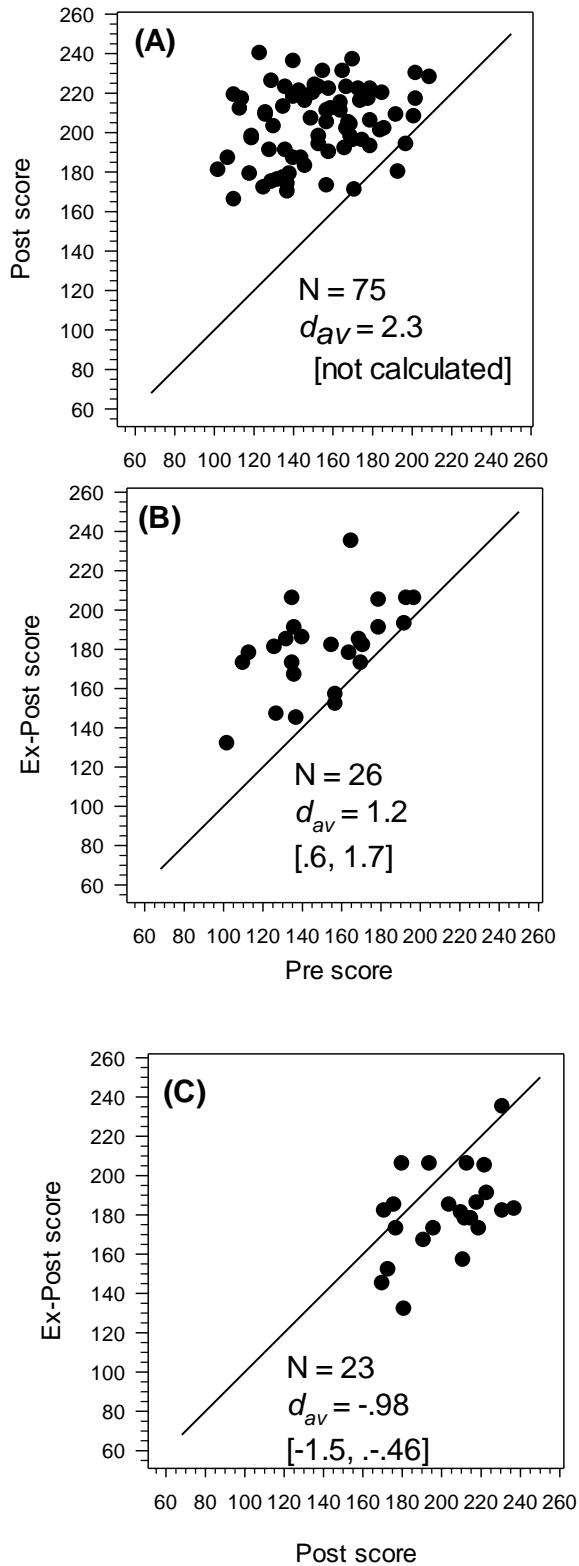
Figure 13 Panels A, B & C IYTSQ Scores for Cohort 2 participants

Table 18. The number of 'Not Canterbury' and Canterbury teacher respondents and mean, median, standard deviation, and minimum and maximum change scores on the IYTSQ for Cohort 2

	Not Canterbury	**Canterbury**
N	32	43
Missing	11	0
Mean	31.8	65.8
Median	31.0	67
Standard deviation	21.4	22.4
Minimum	-13	26
Maximum	87	117

Analysis of ethnicity data revealed that the correlation was not statistically significantly different from zero, so ethnicity (as coded) did not predict IYTSQ gain scores. Furthermore, there was little to no variability in Teacher Attendance for Cohort 1 and 2 (all at maximum) so there was no point calculatingcorrelations.

PSQ-T data (teacher confidence and capability)

The PSQ-T post-participation snapshot data for items two and three is presented in Table 19. Teacher ratings across cohorts, ranged from 'slightly pessimistic' to 'optimistic' for feelings about personal progress in the use of social and emotion coaching strategies, with mean scores reflecting 'slight optimism' about the use of social and emotion coaching strategies respectively. Again, participant responses were largely similar across cohorts.

Table 19 Mean, median, standard deviation scores for items four and seven of the PSQ-T, post-participation.

	Social coaching personal progress		**Emotion coaching personal progress**	
	Cohort 1	**Cohort 2**	**Cohort 1**	**Cohort 2**
N	105	88	105	88
Mean	5.5	5.6	5.49	5.53
Median	6	6	6	6
SD	0.54	0.49	0.57	0.52
Range	3-6	5-6	3-6	4-6

Participant ratings on the PSQ-T social and emotion coaching strategy items are presented as frequency distributions in Figures 14a and 14b. For both items, ratings are aligned to the upper scale scores, with all but two and three Cohort 1 participants on the social and emotion coaching scales respectively rating their feelings of personal progress as 'slightly optimistic' (5) or 'very optimistic' (6). Only one participant (Cohort 1) rated their feelings about their progress as 'slightly pessimistic' (3) for each item.
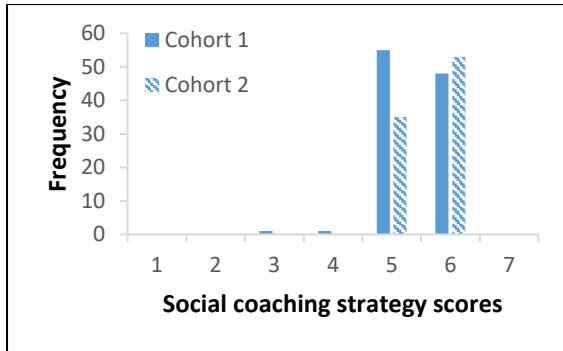
Figure 14a. PSQ-T ratings of feelings of personal progress in use of social coaching strategies, post-participation.
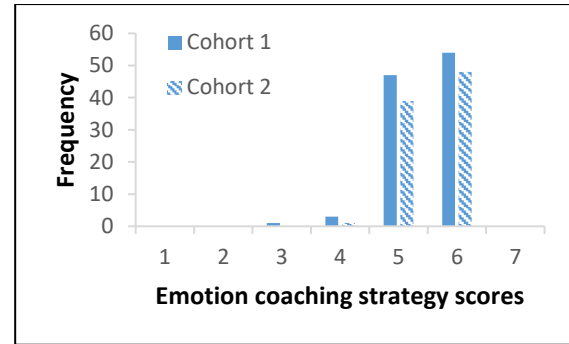
Figure 14b. PSQ-T ratings of feelings of personal progress in use of emotion coaching strategies, post-participation

Qualitative data (teacher outcomes)

This section describes what teachers said about the impact of the IYA programme on their capability. Teacher interview questions five, six, seven, and eight were developed to assess this aim. Four key themes emerged related to this evaluation question: knowledge of autism, use of IYA strategies with all children, information sharing, and teacher capability emerged from the interviews.

The impact of the IYA programme of teachers' knowledge of Autism

> "I feel like beforehand I didn't understand this [ASD] child and I didn't know how to teach these children. Now I feel quite confident that I have the knowledge and some strategies that I can try" (Cohort 1: T118C).

Most teachers (Cohort 1: $n = 21$; Cohort 2: $n = 13$) spoke about the increased knowledge they had developed about the autism spectrum through the IYA programme. For some teachers, this knowledge has led to increased confidence in their ability to speak to other professionals. For instance, one teacher from cohort 1 indicated that she feels more confident to speak to the Ministry of Education behavioural specialists about the types of assessments and professionals her service can access to support children on the autism spectrum. Having a variety of strategies in their kete that they can use to support children with ASD has also positively impacted on teachers' self-efficacy and confidence. The variety of strategies that teachers learnt from the IYA programme has also set them up for success, giving them reassurance that if one strategy does not work, there are others they can try.

> "There are so many different strategies to try... Just having the kind of repertoire and the resources there make me feel so much more confident and not just feel like I am making things up as I go along." (Cohort 2: T54C)

Use of IYA strategies with all children

> "I use it with lots of different ways, not just children who have traits of autism, but with other children that need some social and emotional development and support". (Cohort 1: T153G)

Some teachers in both cohorts indicated that the IYA programme improved their ability to support children on the autism spectrum as well as other children within the EC centres. Teachers described a range of IYA strategies that have been embedded into their daily practices, particularly around supporting young children's communication skills, self-regulation, and behaviour.

"But we found that it didn't matter whether or not you were ASD or not because those things were helping oral language. They were helping different behaviour issues as well so it was kind of beneficial for everyone really." (Cohort 2: T31B)

Teachers are using visuals to communicate with children on the autism spectrum and children for whom English is not their first language. Other teachers described breathing and visualisation techniques and teaching children to label their emotions as strategies that have been embedded across the centre. Some teachers from Cohort 1 spoke about the structure of the IYA programme in allowing them to try strategies in their service and receive feedback from the group. When teachers experienced success using a strategy, they were more likely to embed it into their practice and share it with their colleagues.

"Successful strategies just becomes part of your practice because it actually works." (Cohort 1: T109J)

"Now that I have the knowledge and we're seeing the positive impact [of IYA] and changes in the children… it's like 'WOW! This is awesome'. (Cohort 2: T20T)

Teachers' information sharing

"We often share the different tools we learn to use around the table. It's very much day to day, part of our programme". (Cohort 1: T85F)

"I have shared [the IYA strategies] with the rest of my team. Every staff meeting when I was going to the course I gave a little run down of what we learned that week. I've also talked with others about it, I found it so interesting, friends and family and other teachers." (Cohort 2: T75W)

All of the teachers in Cohort 1 (*n* = 27) and Cohort 2 (*n* = 22) spoke about sharing the knowledge and strategies they learnt from IYA with their colleagues and/or caregivers. Some teachers indicated that there were a group of teachers from the service attending IYA. At their weekly team meetings, they would share with the group new strategies that they learnt. For some teachers, they chose one strategy to focus on each week and would teach other staff members how to embed that strategy within their practice. The sharing of knowledge, resources and strategies gained from the IYA programme was a way to promote consistency in teaching.

The reaffirmation of prior knowledge

"It's really just reiterated what I actually know and that I have got the skills but sometimes I need to pull them out again and use them" (Cohort 1: T129C)

For some teachers, participation in the IYA programme reaffirmed the knowledge and strategies that they were already using in their services. A small number of teachers in Cohort 1 (*n* = 4) reported that the IYA programme had little to no impact on their confidence and capability because the strategies they have implemented have not been effective in improving children's behaviour. This does not suggest that teachers did not learn skills and strategies to support children on the autism spectrum. Rather, they reported that they were yet to see any meaningful change in child outcomes that would lead them to perceive that they had a stronger sense of competence. In comparison, all teachers in Cohort 2 (*n* = 22) reported that the IYA programme had some impact on their confidence and capability to support the learning and development of children on the autism spectrum.

Figures 15-17 visually depicts the percentage of participants who were interviewed (teachers and caregivers combined) that have continued to use communication, social and emotional regulation strategies taught within the IYA programme.

As Figure 15 shows, growing empathy by positioning the child at the centre 'spotlight' of thinking, simplification of instructions and use of visuals are the strategies most used by cohort 1 caregivers and teachers post-IYA training. The most common strategy used by teachers was the 'spotlight' strategy. A small percentage of teachers continued to use puppets and to specifically teach skills of self-regulation. Teachers no longer used the strategies of ABC, One-Up or positive reinforcement. However, caregivers consistently used these three strategies.

In comparison to Cohort 1, Cohort 2 caregivers and teachers described other strategies that they used to promote children's communication. These strategies included modelling language, social coaching, using NZSL sign language, repetition of words, and engaging in the child's interest. Caregivers and teachers in Cohort 2 did not report using strategies of ABC and self-regulation. Like teachers and caregivers in Cohort 1, the largest percentage of teachers in cohort 2 used visuals to promote child communication. Cohort 2 caregivers used visuals to a lesser extent, instead consistently engaging the child's interest and getting into the child's spotlight to promote child communication. In summary, caregivers and teachers in both cohorts used a range of strategies to promote child communication and these strategies were selected based on the effectiveness and success they experienced in implementing the strategies.

Figure 15. The percentage of teachers and caregivers for both cohorts that reported continued use of communication strategies at the ex-post phase.

As shown in Figure 16, eight strategies were identified in Cohort 1 following training (at ex-post) as being used to support social and emotional regulation. There is a notable difference between the strategies used by teachers and caregivers. Both groups continued to extend children's language and to use strategies to support emotional regulation and emotional literacy, although this occurred at different levels. The most common teacher strategies implemented were those used to support emotional literacy. Teachers also reported using scaffolded play and functional behaviour analysis. In contrast, caregivers used neither of these strategies in an ongoing way. However, caregivers continued to use positive reinforcement, ignoring inappropriate behaviour and modelling of appropriate behaviour.

Similar to Cohort 1, the largest percentage of caregivers and teachers in Cohort 2 also used emotional regulation strategies such as the thermometer, puppets, visuals, and books. Like teachers in Cohort 1, teaching children emotional literacy (i.e., labelling emotions) was the most common

Figure 16. The percentage of teachers and caregivers for both cohorts who reported continued use of social and emotional regulation strategies at the ex-post phase.

strategy implemented consistently by teachers. In contrast to Cohort 1, caregivers and teachers in Cohort 2 did not report to extend children's language, ignore children's behaviour, or use functional behaviour analysis strategies. In summary, implementing specific emotional regulation tools and teaching children about emotions are the two strategies used by caregivers and teachers in both cohorts in an ongoing way.

Figure 17 lists engagement strategies that continued to be used by cohort 1 teachers and caregivers at the ex-post training phase. Six strategies used to promote engagement continued to be used at this time, though to varying degrees. Caregivers and teachers consistently valued placing the child at the centre of the process ('child's spotlight'), and this was the most common strategy implemented over time. Caregivers and teachers also continued to follow the child's interests and to model what engagement looked like. Teachers also continued to use visuals, puppets, and coaching, however, caregivers did not report the use of these strategies to promote engagement.

In contrast, caregivers and teachers from cohort 2 used similar strategies, though to varying degrees. Caregivers and teachers in cohort 2 placed greater value on children's interests to promote engagement followed by being in the child's spotlight. Similar to cohort 1, teachers in cohort 2 also used puppets and modelled what engagement looked like. Coaching and visuals were used to a lesser extent by cohort 2 teachers, however, caregivers in this cohort did use visuals and coaching to promote children's engagement. In summary, there was a considerable difference in cohort 1 and cohort 2 with the largest percentage of cohort 1 caregivers and teachers using the spotlight strategy and cohort 2 caregivers and teachers following the child's interest. Engagement strategies varied for teachers and caregivers in both cohorts.
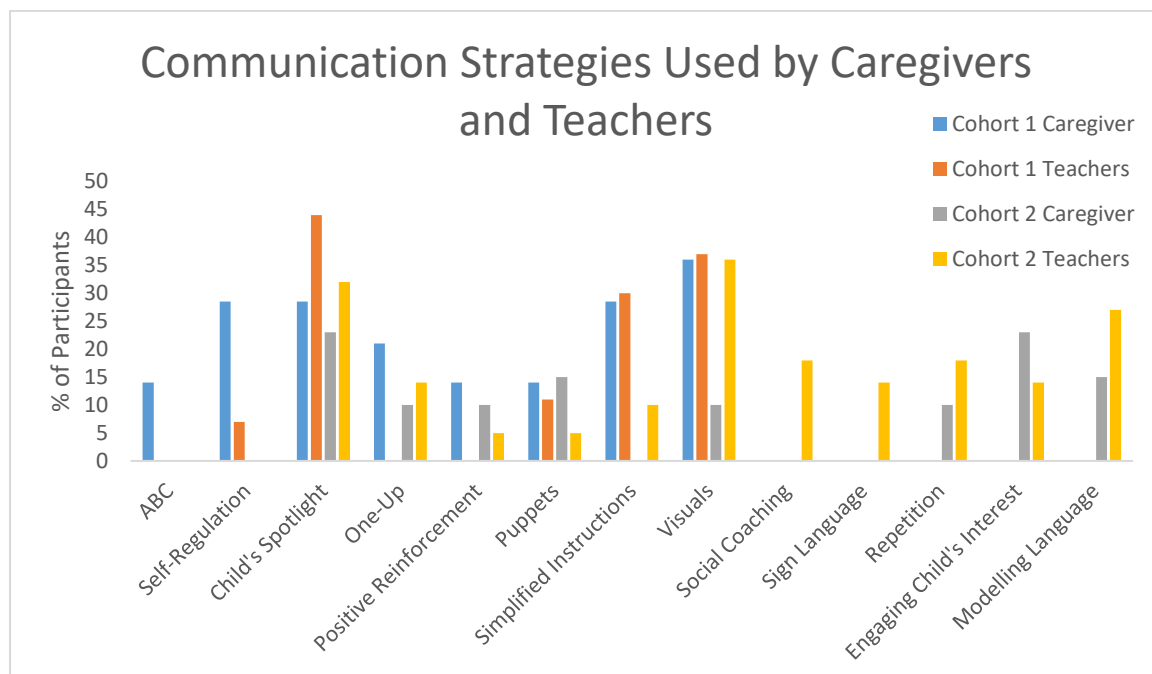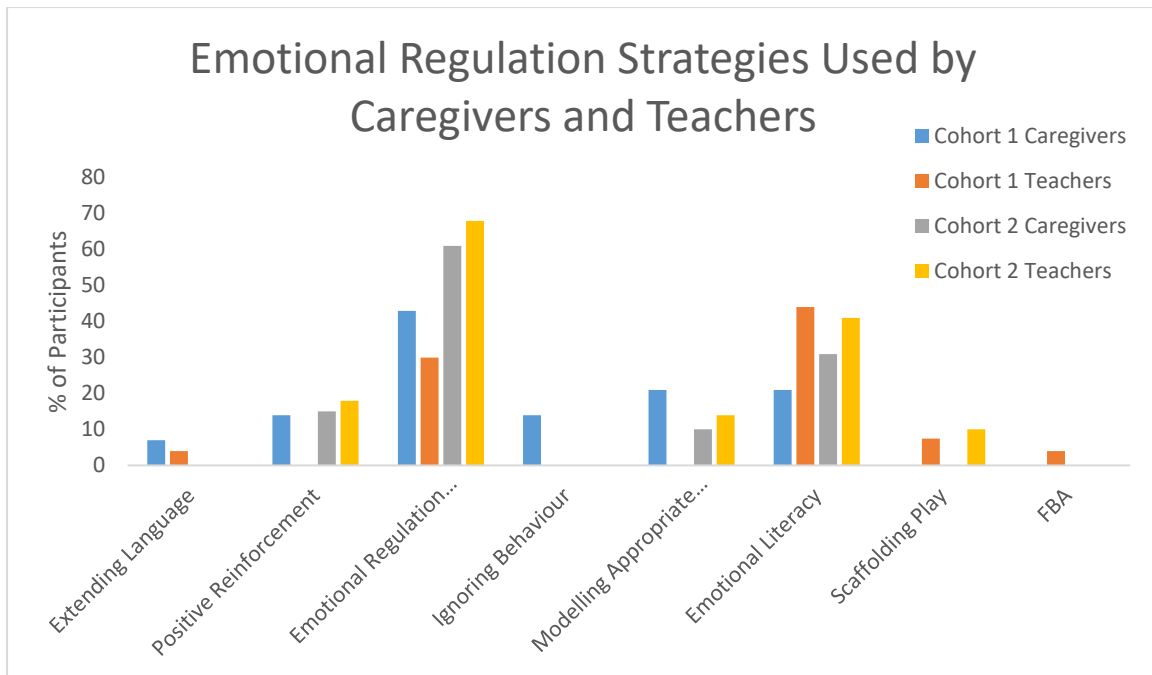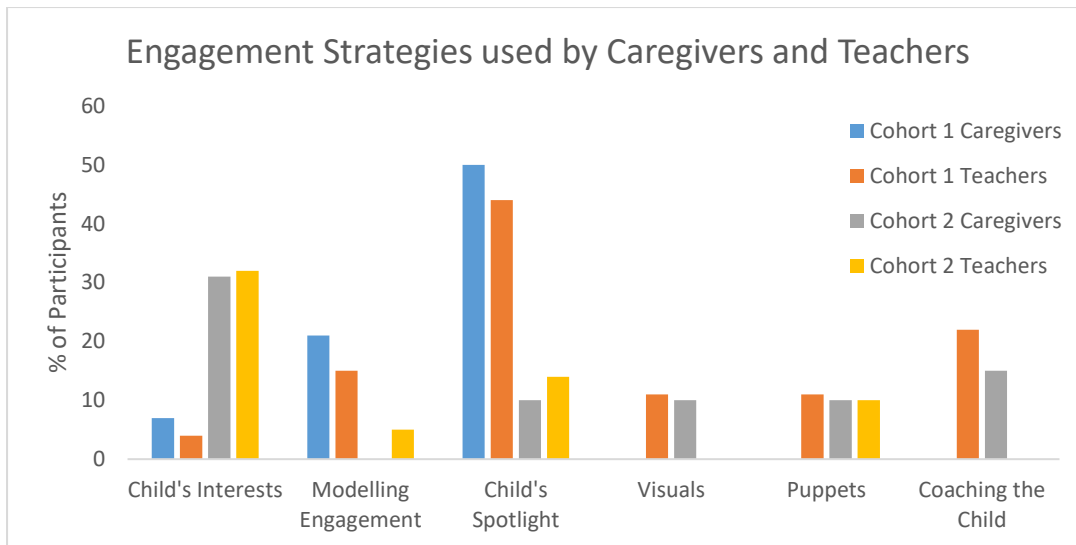
Figure 17. The percentage of teachers and caregivers from both cohorts that reported continued use of engagement strategies at the ex-post phase.

Overall, caregiver and teacher responses reflect that they are aware of and use several IYA strategies to support children. Of importance to caregivers and parents was the theory or rationale for the use of the strategies. When caregivers and teachers understood the purpose of the strategies, they were able to more effectively implement them.

> *"But what I found was more important for me than how to help your child was how to understand him. What he is going through and how he sees the world. It's wonderful to have the strategies but if you don't know why you are doing what you are doing, even with motivation, it is pointless to us… That is pretty much what I took from the IYA not just necessarily the strategies but why the strategies are put into place."* (Cohort 2: P75W)

Long term and unintended benefits of participation in the IYA programme (Question 4)

In terms of the inferences that can validly be drawn from a study, "benefits" can only be assessed across time where there is longitudinal data that provides evidence of beneficial change. Data gathered once at some follow-up (ex-post) point can only be suggestive, in that it provides a snapshot of the psychological state, wellbeing, and relevant self-perceptions of the participants as reported at that time point. Data collected to assess the long-term and unintended benefits is based on the PedsQL and caregiver and teacher interviews. However, for the reasons given above and because of the small number of respondents and the variability in their responses, it is not possible to draw any conclusions about the beneficial impact of programme participation on long-term outcomes from the quantitative data.

During caregiver interviews, a number of secondary benefits of programme participation were reported. This included perceptions of increased communication and collaboration between home and the centre, knowledge sharing among immediate and extended family/whanau, and having a guidebook to refer to when required. Many caregivers also reported personal benefits, in relation to their own emotional regulation, their knowledge of autism, their relationship with their child, and the establishment of social supports and relationships with others who completed the IYA programme.

Teachers were similarly positive, reporting a perceived increase in their confidence and ability to support all children, sharing their learning with colleagues and caregivers, having a guidebook to refer to when required, and being able to incorporate the strategies into everyday practice. Overall, those interviewed reported overwhelmingly positive experiences in relation to the children that they interact with at home and/or school.

Child wellbeing (quantitative data)

Child wellbeing (PedsQL™ data)

Caregiver-reported subscale and total scores for the PedsQL™ are presented in Table 20 and Figures 18a to 18d. Following PedsQL™ conventions (Varni et al., 2003), higher scores in each domain reflect better functioning/quality of life. When scoring the PedsQL™ scores are linearly transformed from ratings of 0-4 to 0-100 (i.e., 0=100, 1=75, 2=50, 3=25, 4=0). Thus, if a child had a score of 100, it would indicate there was 'never' a problem in a particular domain; a score of 0 would reflect ratings of 'almost always' a problem, and the midpoint scores (50) would reflect a rating of 'sometimes' a problem. A total score below 65.4 suggests that a child is at-risk for impaired health related quality of life. As shown in Table 20, mean caregiver total scores for Cohort 1 suggest that these children are at-risk for decreased health related quality of life, while Cohort 2 ratings indicate no risk. Ratings for both Cohort 1 and 2 are below the clinical cutoff for social (clinical cut-off 62.07) and emotional (clinical cut-off 63.29) functioning, indicating increased risk of challenges in these areas. However, ratings are above the clinical cutoff for physical (clinical cut-off 64.38) and school (clinical cut-off 56.75) functioning suggesting little risk of challenges in these areas. Caregiver responses, however, were highly variable across both cohorts, as reflected in the range and standard deviations reported below, and the frequency distribution.

Table 20. Mean, median, standard deviation and minimum and maximum scores for caregiver-reported ex-post data on the Pediatric Quality of Life Inventory™ (N=19)

	Physical		Emotional		Social		School		Total	
	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2
N	19	18	19	18	19	18	19	16	19	18
Mean	74.5	88.8	51	59.3	53.9	58.6	61	79.3	61.8	72.6
Median	78.1	90.5	55	60	55	52.5	66.7	79	60.7	70
SD	18.2	7.95	17.3	15.1	18.8	20.4	24.1	17.5	14.8	10.9
Range	37.5-100	72-100	15-80	38-90	25-90	25-100	0-100	50-100	35.7-86.9	55-90

Figures 18a-18d show that caregiver-reported PedsQL™ scores for physical functioning are somewhat skewed to the upper end of the scale, with the majority of scores falling between 80-100 across cohorts, reflecting low levels of reported problems. Caregiver ratings in the social functioning and emotional functioning domains are relatively evenly distributed for both Cohort 1 and 2, indicating variability in children's functioning across these domains. Likewise, for both Cohorts, participants predominantly scored in the range of 60-100 for school and psychosocial functioning, with the exception of a small number of Cohort 1 participants who scored in the range of 20-40. This suggests that most participants 'almost never' to 'never' had a problem across these domains.
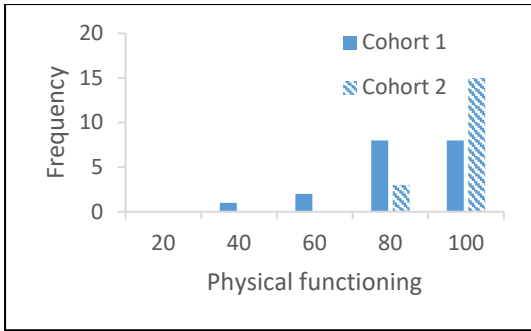
Figure 18a. Caregiver-reported PedsQL™ physical functioning subscale scores, ex-post.
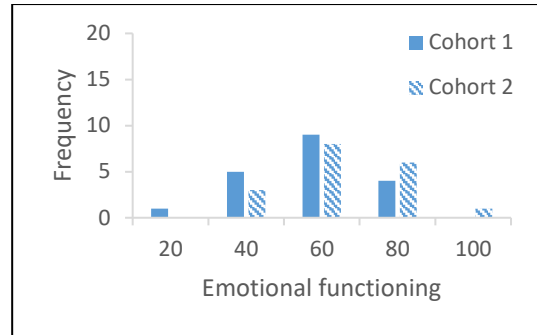
Figure 18c. Caregiver-reported PedsQL™ emotional functioning scores, ex-post.
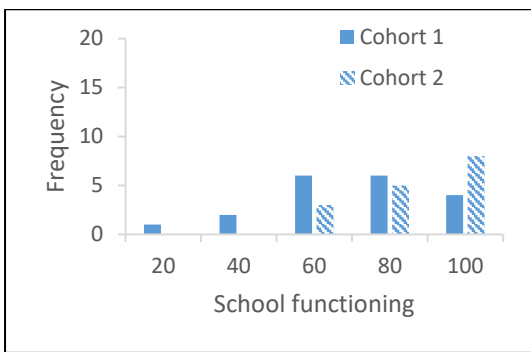
Figure 18b. Caregiver-reported PedsQL™ school functioning subscale scores, ex-post.
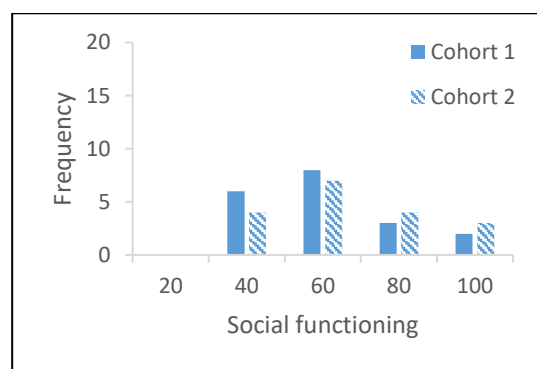
Figure 18d. Caregiver-reported PedsQL™ social functioning subscale scores, ex-post.
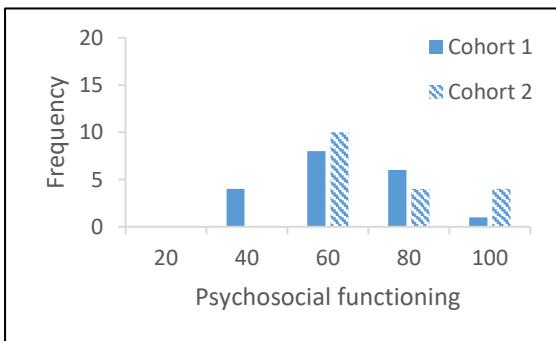
Figure 18e. Caregiver-reported PedsQL™ psychosocial functioning subscale scores, ex-post.

Unintended secondary benefits (qualitative data)

The effects of IYA on child wellbeing

"He is doing really well, he is thriving." (Cohort 1: P13H)

Many caregivers in Cohort 1 (*n* = 7) spoke about their perceptions of the impact IYA had on their child's general wellbeing and happiness. When children were being included in regular activities, caregivers reported a positive impact on the child's wellbeing and happiness. Caregivers in both

cohorts said that the IYA programme helped them understand their child, allowing for trusting and loving relationships to be developed. One caregiver from cohort 2 reflected *"My husband said to me the other day 'I feel like I'm falling in love with my son for the first time.' That brought tears to my eyes"* (Cohort 2: P34B). For some children, their attendance and participation at the early childhood service improved because of the relationships they developed with teachers and peers. One caregiver described her son's excitement going to kindergarten *"he loves it, he loves going and participating"* (Cohort 1: P10H). Another caregiver from Cohort 2 stated *"He used to hate the other kindy, at the gate he never wanted to go… now when I pick him up he will say "I love kindy, I never want to leave" that was completely different"* (Cohort 2: P34B).

Other caregivers from both cohorts reported that their child's attendance at the early childhood service had not changed as a result of the IYA programme, most indicating that the child attended the centre consistently prior to their IYA participation. Some caregivers in Cohort 1 described that their child still had meltdowns at drop off; however, this was not considered a new behaviour.

It should be noted that a small number (Cohort 1: *n* = 3; Cohort 2: *n* = 2) of caregivers indicated that there had been no change in their child's inclusion, participation and engagement in the EC centre. One parent indicated that this was because of the quality of service her son was attending. Other reasons for limited progress in these areas related to the severity and extent of the child's needs, particularly around communication.

Similarly, many teachers (Cohort 1: *n* = 12; Cohort 2: *n* = 12) reported an increase in the child's awareness of the world around them that was not evident before IYA strategies had been implemented. For instance, a teacher from cohort 1 described the improvements in a child's *"tolerance of other peers coming into her space and even allowing them to play with her… she has become more open to the unfamiliar" (*T137D). Some teachers also described an increase in children's happiness, participation, and engagement in the centre.

> *"I've seen him really giggling, and being engaged and laughing so for me that means that he's also relaxed and he's flooded with happy hormones. And that is what we want to see because a happy person is a good learner". (Cohort 1: T95F)*

> *"She has broadened her horizons a lot more. She used to do a lot of repetitive behaviours everyday but she definitely has broadened the activities she is doing."*
> *(Cohort 2: T53C)*

The effects of IYA on caregivers relationships with others

> *"I kind of felt quite isolated and it was just quite nice to have that weekly meet-up. We gather and have a yarn, talk about what hell of a week it has been…. That kind of helped me with my emotional wellbeing at that time. It was about 2 months after we got diagnosed and we were still processing". (Cohort 1: P67E).*

Many caregivers (Cohort 1: *n* = 10; Cohort 2: *n* = 4) expressed the value in completing IYA with other caregivers who had similar experiences as themselves. This social support has been critical for some caregivers in building their confidence and being connected socially with other like-minded caregivers. One parent reported that if she did not have her IYA parent group to turn to she would be isolated and would not leave the house. Other caregivers spoke about the therapeutic benefits of expressing their feelings to other parents who understood their experiences. Some caregivers reported that they are still connected to other caregivers who completed the programme in their region.

> *"I would say we had a fantastic group. People were very open and honest. Everyone shared deep emotional things in the group about how they experienced things; it was almost like going for therapy once a week for me."* (Cohort 2: P75W)

Caregivers also described improvements in their relationships with their partners and children. Some caregivers spoke about ways in which strategies, such as visuals, has improved their ability to communicate and connect with their child. Other caregivers spoke about their child's emotions and

how this understanding allowed them to get down to their child's level and relate to what they were experiencing. Several caregivers from Cohort 1 and Cohort 2 reflected on how IYA has improved their relationships with their partners.

> *"Overall it made me a more confident person and strangely enough closer to my husband just because we got to spend time together outside of the house without the kids… it was a nice thing to do together and talk about afterwards. Also because he understands me more now…his connection to me now is better because he understands if I can't do something I am not trying to be difficult, it's because I actually can't do it".*
> *(Cohort 1: P16H).*

> *"The household wasn't very pleasant before doing the IY course… my son's unhappiness caused tension between me and my wife. We didn't have a lot of specific knowledge on how to deal with him. We would do the best that we could but a lot of the time that was different between what my wife thought and what I thought. We were lucky enough to do the course together so being on the same page and having the same tools was really amazing. It has made our lives a lot better in terms of a happy household."*
> (Cohort 2: P35B)

To assess the theory that participation in the IYA programme would support caregivers and teachers to share knowledge with others, and benefit the home and centre/school partnerships, additional interview questions were developed and asked of caregivers and teachers in both cohorts (see parent and teacher interview question nine, and parent question six). Relevant themes that emerged are summarised below.

The effects of IYA on teacher-caregiver relationships

The IYA programme increased the confidence of caregivers to speak openly with their child's teacher about challenges at home. The strategies caregivers learnt during the IYA programme were shared with teachers to use at the centre. Caregivers from Cohort 1 and Cohort 2 spoke about the collaboration between home and centre with caregivers having more confidence to start these conversations. For one caregiver and teacher dyad, they are now using a communication book to take a consistent approach to the child's behaviour.

> "*I can talk to them about what I wanted to work on like the last IEP that I did with them. I tell them that I want to do this and I want this to be our goal. I want us to work on this here. It gave me the confidence to know what my goals are and how I want to go ahead with that goal". (Cohort 1: P52C).*

Dyads of teachers and caregivers in Cohort 1 who completed the programme together built stronger relationships and caregivers described that they felt more comfortable talking to this teacher than other teachers who had not completed the programme.

> "*Now that I know that one of the teachers have attended the course, I know that if now I a problem with my daughter, she is the one that I can go to because she will be more understanding. Whereas I felt a bit dismissed by the other teacher who didn't attend the course because she didn't really understand." (Cohort 1: P16H)*

These dyads also had greater collaboration, trust in their relationship, and communication.

> *"It has been great to have somebody else learned what we have learned at the same time. We are kind of at the same page and know where each other are coming from".*
> *(Cohort 1: P63D)*

> *"because of the course we now feel very close. Before there was this gap but now I feel very close with my son. Also the teacher now, they understand my son there. He feels very happy with the teachers; he is comfortable and hugs them. This course made me, my son, and the teachers very close". (Cohort 1: P34J)*

"Yes because I had more confidence, and I got very excited about seeing some changes with the child. It meant that every time the parents walk in I would jump up and down and say "hey he did this today!" It meant that the communication between us increases because I am always so excited to see them and they were excited to come in and hear what has been happening". (Cohort 1: T139D)

Some caregivers and teachers from both cohorts described the IYA content and strategies as something that they can share with each other. Since completing the IYA programme, caregivers and teachers have a shared understanding of the language, concepts, strategies that each could relate to.

Sharing of knowledge and/or resources

Some caregivers spoke about how they've shared their learning with their immediate and extended whānau, including their partner, siblings, and the child' grandparents. In some cases, this sharing of knowledge and/or resources occurred more with family compared to sharing with friends and EC services. For some caregivers in both cohorts, the child's grandparents frequently cared for the child, thus they also needed to be educated on the strategies that the family are using to support the development of the child.

For caregivers, the main knowledge and strategies that they shared included teaching others how to get into the child's spotlight to get their attention. The process of sharing knowledge with others allowed caregivers to reflect on their learning and to consider ways in which they will change their parenting practices to support the communication, engagement, and social and emotional wellbeing of their child. Caregivers also shared knowledge from the IYA programme by educating friends, other caregivers and whānau about Autism.

Many teachers (Cohort 1: $n = 25$; Cohort 2: $n = 22$) listed colleagues in their EC centre as the people they shared their learning and resources with. The sharing of information occurred during informal meetings about a child, weekly team meetings, professional development workshops, and explicit modelling of strategies. Teachers also spoke of the leadership they took in their centre to support children on the autism spectrum and to coach their colleagues to use the strategies they learnt in the IYA programme. Some teachers have also been proactive in sharing strategies with the child's caregivers/whānau in an attempt to promote consistency between the EC and home settings.

"Every staff meeting when I was going to the IYA course I gave a little run down of what we learned that week. I've also talked with others about it, I found it so interesting… friends and family and other teachers." (Cohort 2: T75W)

For teachers, the main knowledge and strategies that they have been sharing are communication and emotional coaching strategies. To promote the child's communication, teachers model ways others can extend the child's language. Creating visual schedules, choice boards, and using picture prompts were all strategies that teachers shared and implemented in their teams. Self-regulation and emotional literacy strategies, such as blowing out the candles and using visual cues to label and express emotions, were key strategies that teachers shared with their colleagues and encouraged them to use. The strategies shared by teachers were similar for teachers in cohorts one and two.

Caregivers and teachers in Cohort 2 were specifically asked to reflect on any unexpected outcomes for themselves, children, whānau, and the wider community. Some caregivers ($n = 6$) and teachers ($n = 4$) indicated that there were no unexpected outcomes. Unexpected outcomes listed by caregivers included greater success in their child's progress than they expected, improved parent-child relationship, and change in parents' perspective of Autism. Similarly, teachers also stated that the IYA programme was more successful and useful than expected. Other unexpected outcomes listed by teachers included increased confidence to work with children diagnosed with Autism, change in perspective of Autism, improved teacher-child and teacher-parent relationships, and for some

teachers, the IYA programme highlighted the need for adequate support from their colleagues to follow through with IYA strategies.

"In the beginning I didn't expect it [IYA programme] to be so helpful. That sounds terrible doesn't it! In the first few weeks when we talked about getting into his spotlight and when we were using those songs it was like we unlocked his communication and I didn't expect that to happen and so quickly. Like when he sang 'The wheels on the bus' and signed it, and when he said "I want to choose this one". I didn't expect it to be so helpful so quickly and have the impact that it did on his development and I guess we were so excited. And it was just amazing to have new things that we could try." (Cohort 2: T55C)

"I use the IYA strategies everyday now in my teaching. Its become very much a part of me, the way I teach… when you do a course you say its okay. This one has made a huge difference. This is not just going to be a six-month thing, it's going to be my life long learning. I see children through a different lens now. What a wonderful gift that course has given me, and for the children and their families." (Cohort 2: T76W).

Limitations of the data

There are a number of noteworthy limitations inherent within the data, some consequent on the design of the studies, others due to exigencies such as participation and attrition rates. For those measures administered only once (ex-post), no causal attributions (e.g., an inference that training yielded a benefit) can be made regarding the impact of participation in training. However, it was deemed appropriate to include these measures, as they provided a 'snap-shot' of the psychological state and wellbeing of children, caregivers and teachers some time after training had been completed. Had a large proportion of those who participated in training also provided these measures, more evidence of benefit or disbenefit, might have been seen. The numbers consenting to undertake the ex-post assessments, completed by an independent evaluation team months after the course ended, were low, strongly restricting any interpretation of ex-post data. Also, had a larger number participated at this stage, it would have been possible to conduct the proposed dose-response analysis in which outcomes were analysed according to u levels of participation in training, demographic characteristics and/or region of delivery.

Furthermore, the sample size (i.e., small number of programme participants) and limited data variance limited our ability to assess the effect of attendance rates, ethnicity, or training region on caregiver, child, or teacher outcomes during the ex-post phase, even when Cohort 1 and Cohort 2 data were combined. The evaluation team had also intended to conduct multiple regression analyses to investigate what variables predicted specific outcomes (e.g., to investigate if there were demographic variables that predicted participation); however, there was insufficient data and in some cases insufficient change across phases (e.g., for pre-, post- and ex-post YC-PEM scores) to warrant these analyses and/or to allow reasonable conclusions to be drawn for either cohort, or when data were combined across cohorts. Finally, the PSQ-P and PSQ-T were completed anonymously. Therefore, it was not possible to correlate these outcomes with other variables or to determine whether these outcomes were affected by programme attendance or ethnicity variables when used during secondary data analysis.

Limitations of this report

The findings of this report should be (as already noted above) considered in light of several limiting factors. First, there was considerable attrition in rates of participation in the evaluation across phases, especially for caregivers. Those who did not participate in the post- or ex-post evaluation may be those who perceived little benefit from their initial engagement and/or were those who faced various levels of difficulty in participating. Considerable caution needs to be exercised in interpreting the results obtained at the ex-post point for this reason.

Another issue pertains to the differences in the range and variability of participants across locations. There were very few participants who did not complete all training sessions – a strength of the programme, but one that precludes any dose-response analysis. These limitations precluded some of the planned analyses looking at regional differences and predictors of outcome, and participation.

It is also noteworthy, that there were very few participants in the ex-post evaluation who identified as Māori, Pacific Peoples, Asian or other non-NZ European ethnicities. This limits the generalisability of inferences about the evaluation outcomes across diverse groups, especially in the local Aotearoa New Zealand context.

A further pertinent limitation to the report relates to questions about the validity of particular measures in relation to evaluation objectives, and more generally, to lack of pertinent psychometric data about some measures. Clearly, if it is desired, for example, to assess the impact of a treatment on emotion regulation, then a measure, or set of measures, that have been established by appropriate psychometric research to be reliable and valid measures of emotion regulation [noting that validity is a complex and multi-dimensioned construct in the psychometric context] need to be used. Absent published information on the psychometrics of a number of measures used in this evaluation, means that our capacity to informatively comment on the achievement of some of the evaluation objectives is severely limited.

The YC-PEM did not, for the most part, reveal substantive improvements in child behaviour resulting from their caregivers' participation in the IYA programme. This may be for one of two reasons: either there was in fact no change in child behaviour, or, there was change, but the YC-PEM was not sensitive enough or validly targeted to detect the change that occurred. Since no other measures of child behaviour were included across the pre-, post- and ex-post phases, it is not possible to resolve this issue.

Based primarily on qualitative data, caregivers and teachers did report that they perceived benefits of programme participation on child outcomes, opening the possibility that there was real change that the YC-PEM did not detect. It is equally possible that this perception of improvement was a halo effect, the result of well-known psychological factors such as dissonance reduction (Cooper, 2007) associated with participation in research. It is also not possible to rule out the effect of change over time and experience of on-going pre-school education or participation in additional programmes. Given all of this, we simply lack evidence that programme participation alone affected key child outcomes.

Despite small measured improvement in their child's behaviour, caregivers reported a reduction in stress. Interview data suggests factors such as feeling that autism was better understood, that they had better strategies to deal with their child's behaviour, and the fellowship of being in a group with other caregivers may have contributed to this. Nevertheless, it is hard to see how parent stress would be enduringly reduced without some long-term improvement in their child's behaviour. Exactly how the reduction in stress reported by parents resulted in other benefits to their parenting and the general emotional climate of their family is an interesting question which needs more research. To maintain integrity in the interpretation of intervention research such as this, it is critical that there is evidence that the primary target outcomes do in fact, change, and that the change is maintained.

While considerable efforts were made by the evaluation team to recruit a large and representative sample of respondents, the timing of this evaluation (i.e., the end of the school year – Cohort 1; during COVID-19 – Cohort 2) may have impacted on the number of participants during the ex-post phase. Some caregivers and teachers also reported difficulty recalling the specific strategies they learnt in the programme, due to the length of time that had elapsed between completing the programme and the ex-post evaluation. Conducting the ex-post interviews within a shorter timeframe (e.g., 3-4 months) may provide more specific information regarding the strategies that teachers and caregivers have learnt. Finally, a small number of caregivers and teachers indicated that they completed other parent programmes after participating in the IYA programme. This may have impacted on their responses to the quantitative and qualitative measures.

A final limitation is that a small number of caregivers in Cohort 1 ($n = 3$) had some difficulty responding to the interview questions in English and thus there is some risk that they may have

misinterpreted key questions and/or may have not been able to effectively communicate their responses.

CONCLUSIONS AND OUTCOME LEVELS

Outcome levels were provided within the evaluation framework, based on expectations for this project, and are presented in the project-specific rubric included in Appendix B. Based on the quantitative and qualitative data, the aforementioned limitations, and the project-specific rubric, the effect of participation in the IYA programme on child outcomes is considered to be in the range of 'adequate' to 'very good'. Unfortunately, the value of this conclusion must be tempered by the overall failure to detect substantive change in children's behaviour. The interview and PSQ data does, however, suggest there were benefits of programme participation for children on the autism spectrum. As previously noted, the IYA theory provided by the Ministry of Education, states that the primary objective of the IYA programme was to enhance caregiver and teacher knowledge and skills and therefore, the magnitude of any effects of programme participation are expected to be smaller for child outcomes.

Regarding caregiver outcomes, the impact of programme participation on caregiver wellbeing; specifically, caregiver stress, is considered to be 'very good'. APSI data along with interview reports indicate that participation in the programme had a positive effect on caregiver stress levels and that these effects were maintained at follow-up (although attrition in the sample is a serious limitation regarding long term benefit). However, limitations associated with the data collected restrict the conclusions that can be drawn about the impact of the IYA programme on caregivers' sense of confidence and competence. As such, caregiver outcomes in this regard could be considered to be 'very good'.

Finally, regarding teacher outcomes, participation in the IYA programme appeared to have a significant effect on teacher capability, as measured by the IYTSQ, PSQ-T, and interview data. As such, teacher outcomes are considered to be in the range of 'very good' to 'excellent'. Overall, caregivers and teachers were overwhelmingly positive about their experience in participating in the IYA programme. Unintended benefits described by caregivers and teachers included stronger collaborative teacher-caregiver relationships, opportunities for caregivers to build friendships with other likeminded caregivers, and sharing knowledge and resources with extended family/whānau, friends, and other colleagues. Also of note is that most individuals who began the IYA programme completed most if not all of it. Addressing some of the aforementioned limitations, especially with respect to reliably detecting child behaviour change, perhaps pooling data across cohorts in future evaluations will permit more sophisticated data analysis and in turn, will strengthen the conclusions able to be drawn.

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APPENDICES

Appendix A

Overview of the Incredible Years Autism programme

The Incredible Years (IY) Programme is funded for delivery in Aotearoa New Zealand and is focused on supporting teachers and/or caregivers to learn and practice effective ways of promoting young children's (3-8 years) social, emotional and communicative competence in order to positively manage children's behaviour. More specifically, the IY Programme addresses behavioural and emotional difficulties such as conduct problems (Webster-Stratton, Dababnah, & Olson, 2018), hyperactivity and anxiety in children through upskilling those who are principally responsible for young children's care, wellbeing and learning.

The IY Programme was developed by Dr Carolyn Webster-Stratton, a Clinical Psychologist, and her colleagues in the early 1980s. The programme now consists of a number of interrelated courses which are being delivered internationally. The IY Programme draws upon a number of theoretical frameworks, including attachment, social learning, and developmental stage theories (Webster-Stratton et al., 2018)

The IY programme is described by the IY organisation as:

*a set of interlocking, comprehensive, and developmentally based programs targeting parents, teachers and children. The training programs that compose Incredible Years® Series are guided by developmental theory on the role of multiple interacting risk and protective factors in the development of conduct problems. The programs are designed to work jointly **to** promote emotional, social, and academic competence and to prevent, reduce, and treat behavioral and emotional problems in young children" (Webster-Stratton, 2013)(retrieved from:* http://www.incredibleyears.com/programs/*)*

The IY series of programmes is implemented worldwide, and across education and health sectors. The programmes are purported to work effectively across cultures and socioeconomic groups. Incredible Years parent and teacher programmes have been available in New Zealand since 2001 and have been offered nationally by the Ministry of Education since 2010. The programmes, including the more recently available Incredible Years Autism (IYA) Programme, are delivered under the 'Positive Behaviour for Learning' (PB4L) (Ministry of Education) initiative, which focuses on enhancing children's behaviour and wellbeing.

Incredible Years programmes consist of intensive group learning lead by trained group leaders/facilitators (two per course) using a well-articulated and supported multi-modal training package. Parent courses are longer in duration than teacher courses and are usually held at weekly intervals. Typically, parent courses constitute 14-18 sessions (2-2.5 hours in duration) with 10-14 participants. Group sessions draw on a range of active and experiential learning strategies, including role play, coaching, reviewing vignettes, and opportunities for collaborative group discussion and group support (Webster-Stratton et al., 2018). The content focuses on social communication, language development, positive relationships and social skills, emotions and self-regulation, and positive behaviour management with the aim of bringing about changes in either teaching or parenting practices, leading to positive changes in children's development and behaviour.

From its inception, a parallel programme of research has been undertaken to evaluate the effectiveness of the programme and inform ongoing development in a range of contexts, including implementation in different countries (e.g., http://www.incredibleyears.com/category/research-library/key-research-library/). The Incredible Years *(IY-BASIC)* parent programme has been evaluated more than 50 times in randomized control group studies (Webster-Stratton et al., 2018). In 2013, Sturrock and Gray carried out a pilot study on the implementation of the IY Parent programme within the New Zealand sociocultural context. A long-term follow-up (30 months post-programme) of the pilot was subsequently carried out (Sturrock, Gray, Fergusson, Horwood, & Smits, 2014) Both studies concluded that the IY parent programme was sufficiently effective to warrant ongoing use in

this country. Of particular note is the finding that the IY programme is effective for both Māori and non-Māori participants.

The Incredible Years Autism programme

The Incredible Years Autism (IYA) programme is derived from the original IY programmes (Webster-Stratton et al., 2018). Webster-Stratton et al. report that parents of children on the autism spectrum reported some benefits of attending *IY-BASIC* programmes, given the flexibility to individualise that programme; however aspects did not sufficiently meet the needs of these caregivers (e.g, dated nature of some video material, time-out strategies, parent self-care content); hence the recent development of the Incredible Years Parent Program for Preschool Children with Autism Spectrum Disorder and Language Delays (ages 2-5)(Webster-Stratton et al., 2018). The focus of this programme is on enhancing the skills and confidence of key adults in children's lives. The IYA programme specifically supports teachers and caregivers to understand and implement tools and strategies that create an enabling environment for children on the autism spectrum. Group leaders for the IYA programme must be trained in the delivery of the *IY-BASIC* programme. In addition, group leaders take part in 23 days of training and practice with the *IYA* programme. Experience working with children on the autism spectrum and their families and a broad understanding of autism are also considered important qualities of IYA group leaders (see Webster-Stratton et al., 2018, p. 264). As for the IY programmes, IYA has separate parent and teacher programmes. The aim of these programmes is "to promote children's emotional regulation, positive social interactions and language development" (see https://pb4l.tki.org.nz/Incredible-Years-Autism). Each programme focuses on children aged 2-5 years who demonstrate characteristics typical of children on the autism spectrum such as language delay and social and emotional difficulties.

The *IYA* programme follows the *IY-BASIC* approach, with a focus on developing positive parent-child relationships, building responsive parenting skills, and promoting appropriate child behaviour (Webster-Stratton et al. (2018). In addition, a significant feature of the parent programme is group discussion and support, which provide opportunities to share experiences, problems and solutions with caregivers in similar situations. The *IYA* programme for caregivers includes a set of supportive features that aim to reduce parent stress and barriers to participating in the programme such as the provision of childcare, meals and transportation (Webster-Stratton et al. 2018).

In Aotearoa New Zealand, the IYA parent programme is being delivered across 14 sessions and the IY Helping Children with Autism is a separate 6-session programme for teachers of children aged 2-5 who are on the autism spectrum. A one-day follow-up session is also offered for teachers, three months post-completion of the main programme. Together, the programmes aim to promote children's emotional regulation, positive social interactions and language development. The teacher programme also provides teachers with strategies to create a positive learning environment and promote prosocial child behaviour.

Programme Delivery in Aotearoa New Zealand

The Ministry of Education (MoE) began delivery of the IYA programmes in March 2018. These programmes were modified for the Aotearoa New Zealand context. The first group of programmes was offered in eight regions, across 15 different providers (i.e., regional non-government organisations(NGOs), the MoE, or a combination of both). The MoE aimed to deliver parent and teacher IYA programmes in the same region in an attempt to allow caregivers/whānau and teachers/kaiako of children showing autism symptoms to engage in training simultaneously. In order to maximise the effects of the programme for the child, priority was given to teachers/kaiako who work with a child whose caregivers/whānau were on the Incredible Years Autism Parent (IYA-P) course.

The IYA-P programme is a 2.5 hour, 14 session, group-based programme delivered weekly for caregivers and whanau who have a child who has either been diagnosed with or shows typical symptoms related to autism. The maximum group size for the IYA-P programme is 12 caregivers/whanau participants with a minimum of seven. The Incredible Years Autism Teacher (IYA-T) programme is a 2.5 hour, six session, group based programme delivered fortnightly, targeted at teachers/kaiako working with children aged 2-5 years who have either been diagnosed with or shows typical symptoms related to autism. The group size for IYA-T programmes is targeted at 10 to 12

teacher/kaiako. Each programme (IYA-P and IYA-T) is delivered by two accredited group leaders, in accordance with the guidelines and standards approved by the Incredible Years organisation

The Programme Theory

The theory behind the IYA programme is that participants attending either programme (IYA-P or IYA-T) will develop an understanding of tools and strategies that support children on the autism spectrum by building an enabling environment around them. For caregivers, the newly acquired coping skills and practices will promote and increase engagement with their child as well as improve self-confidence and personal wellbeing. Consequently, this will support their child's participation and engagement, emotional regulation and communication skills. Similarly, teachers will learn tools and teaching strategies to increase children's participation in the learning environment. Having acquired new knowledge, both caregivers/whānau and teachers will share their understanding with others around the child, thus building capacity to enable success for children on the autism spectrum.

Appendix B

IYA Evalution Rubric

Outcome levels	Excellent	Very good	Adequate	Poor
Caregiver and teacher outcomes	Moderate or large (significant) effects identified.	Moderate (significant) effects identified.	Small to moderate (significant) effects identified.	Few if any positive effects identified.
	Consistent evidence demonstrating relationships between outcomes and programme.	Consistent evidence demonstrating relationships between outcomes and programme.	Some consistent evidence demonstrating relationships between outcomes and programme.	Inconsistent evidence demonstrating relationships between outcomes and programme.
Child outcomes[3]	Moderate to large (significant) effects identified.	Small to moderate (significant) effects identified.	Some positive effects identified.	Few if any positive effects identified.
	Consistent evidence demonstrating relationships between outcomes and programme.	Consistent evidence demonstrating relationships between outcomes and programme.	Some evidence demonstrating relationships between outcomes and programme.	Inconsistent evidence demonstrating relationships between outcomes and programme.

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[3] It was not possible to collect data about children through teachers at pre or post periods given ethical considerations.

Appendix C
Participant Consent Form – Ex-Post-Training Evaluation

Consent to take part in the final evaluation project

Note - we will complete this consent process with you over the phone as it is noted that you have previously provided consent to participation in this evaluation. You are also able to complete this form online via the link to questionnaires.

I have read the project information sheet and I agree to take part in the final evaluation project
Yes / No

I understand that participation in this project involves: (1) the completion of a set of online assessments, and (2) taking part in an interview with a member of the evaluation project team

Yes / No

I understand that my participation is voluntary and that I may withdraw from the final evaluation project at any stage

Yes /No

I understand that my name or that of any related child will not be used in any documentation relating to the project and that both anonymity and confidentiality of my identity and that of the child/ren is ensured

Yes / No

I consent to the interview being audio recorded

Yes / No

If you have any questions relating to your participation or any aspect of the evaluation processes please contact Laurie. Her contact details are included below.

Thank you for agreeing to participate in this evaluation.

Ass/Prof. Laurie McLay

School of Health Science, University of Canterbury

Private bag, 4800

Christchurch 814-

Email: laurie.mclay@canterbury.ac.nz

Phone: (03) 369 3522

Lead Research Assistant

Dr Kate Ord

Email: kate.ord@canterbury.ac.nz

Appendix D

Consent and recruitment

A phased approach to participant recruitment and data collection was adopted to maximise response rates. Initially, the IYA training providers were sent an email to distribute to IYA-P/T participants who had consented to be involved in the ex-post evaluation, to inform them that the evaluation team would be initiating contact with them. Following email notification, all participants were emailed information about the evaluation, a link to the online information sheet, consent form, and questionnaires/assessments, and a request to establish a time for a face-to-face or online interview. If participants indicated a preference to be contacted via phone, then a member of the evaluation team called the participants. If participants completed the survey but had not indicated an interview time, a follow-up email was sent requesting an interview. If participants did not complete the survey or indicate an interview time, a reminder email was sent. Participants were also asked to indicate their preferred method for administering the assessments (i.e., over the phone, via Zoom, face-to-face, by post accompanied by written instructions, or an online version of the form). Participants who completed an interview were provided with a koha to acknowledge their involvement.

Given the limited number of potential participants, we did not restrict the number of interviews conducted. It was important to strive to maximise representation across ethnicity, region and participation rates to ensure diverse voices were captured. The number of survey responses and interviews completed across phases according to attendance rates, ethnicity, and region, for teachers and caregivers is presented in Tables 1 and 2 respectively. Attrition rates reflect the percentage of participants who participated in the pre-training evaluation but did not participate in the ex-post evaluation.

Appendix E

Quantitative outcome measures

Child outcome measures

The Young Children's Participation & Environment Measure (YC-PEM).

The YC-PEM (Khetani et al., 2015) is a caregiver-report questionnaire that asks respondents to rate their perception of the frequency, level, and variety of activities that their child participates and engages in. Caregivers provide ratings across five domains representing the home environment section of the YC-PEM: Basic Care Routines, Household Chores, Interactive and Organised Play, Socialising with Friends and Family, and the Home Environment. The first four areas are organised around three foci; frequency of participation for the child (using an 8-point scale from 'never' to 'once or more a day'); involvement level of the child (using a 5-point scale from 'not involved' to 'very involved'); and whether the caregiver would like to see a change in the child (using a 6-point scale from 'No change desired' to 'Yes, participate in a broader variety of activities'). The fifth area, Home Environment, assesses two aspects. The first assesses the impact of environmental features that help or hinder the child's participation in home life and the second assesses the availability of aspects that support children's participation at home (e.g., services in the home such as therapists, supplies, time, and money). Each of these dimensions is measured using a 4-point scale. The YC-PEM has been used with children who demonstrate behaviours consistent with Autism and has generally good internal consistency (participation 0.68 to 0.96) and test-retest reliability (participation scales 0.31-0.93; environment scales 0.91 to 0.94). However, it has not been normed on an Aotearoa New Zealand sample. The YC-PEM primarily provided data pertaining to children's participation in the home environment.

Strengths and Difficulties Questionnaire Parent and Teacher Versions (SDQ-P; SDQ-T).

The SDQ (Goodman, 1997) is a behavioural screening questionnaire that has been used widely in education and health. Teacher, child, and parent-report versions are available. Caregivers completed the SDQ and impact supplement for caregivers of 2-4 year olds and teachers completed the SDQ and impact supplement for educators of 2-4 year olds. Each version consists of 25 questions designed to assess emotional symptoms, conduct problems, hyperactivity, peer relationships, and prosocial behaviour. Section one includes items that are rated on a 3-point scale: 0 (not true), 1 (somewhat true), and 2 (certainly true). A second section comprising five questions, each with aligned rating scales, asks respondents to rate the presence, level, or impact of difficulties regarding emotions, concentration, behaviour, and/or getting on with others. The SDQ has satisfactory internal reliability (e.g., 0.73) and test re-test reliability (e.g., 0.62) (Goodman, 1997; Hawes & Dadds, 2004). The SDQ was selected as it provides a measure of emotional behaviour which was not able to be analysed using the YC-PEM, along with a number of additional outcomes that relate to children's engagement. Furthermore, there are Australian norms available for this data (Hawes & Dadd, 2004) and it has been recommended for use in Aotearoa New Zealand (Harvey, Evans, Barry, Fitzgerald, & Bennett, 2007). It is also widely used in research that includes children with ASD. For the purpose of this evaluation, the 2-4 year old version was selected as the majority of children were in this age range, and we did not have information about which caregivers/teachers cared for children who were over 4 years of age. Teacher respondents completed the evaluation based on a child with with autism, within their centre. A copy of the SDQ is provided in Appendix M.

Caregiver outcome measures

Autism Parenting Stress Index (APSI)

The APSI (Silva & Schalock, 2012) is a 13-item rating scale that measures parental stress. Stress levels are rated by caregivers using a five-point scale: 0 (not stressful) to 5 (so stressful sometimes we feel we can't cope). The tool was developed to identify areas in which parents need additional support with parenting skills and to assess the impact of an intervention on parental stress levels (Silva & Schalock, 2012). The APSI was administered during pre-, post-, and ex-post phases. The

APSI has acceptable internal consistency (α = 0.732-0.834) and test-retest stability (0.882; Silva & Schalock, 2012). A copy of the APSI is provided in Appendix N.

The Incredible Years Parent Strategies Questionnaire for Children with Autism 2–5 years (IYPSQ).

The IYPSQ is a 60-item parent-report questionnaire consisting of seven sections. Section one asks caregivers to rate their confidence in promoting their child's social, emotional, language and academic development using a five-point scale: 1 (very unconfident) to 5 (very confident). Sections 2-5 ask caregivers to rate the frequency with which they use teaching techniques to enhance their child's social and emotional development, language development, and behaviour management strategies: 1 (rarely/never) to 5 (very often). Section 6 asks caregivers to rate the frequency with which they use strategies for working with teachers and school: 1 (never) to 5 (daily). The final section (Section 7) asks caregivers to rate the frequency of their planning and support strategies: 0 (never) to 4 (daily). The psychometric properties of the IYPSQ do not appear to have been reported in the literature. A copy of the IYPSQ is provided in Appendix O.

The Depression, Anxiety, and Stress Scales (DASS-21)

The DASS-21 (Lovibond & Lovibond, 1995) is a 21-item self-report measure that is used to assess features of depression, anxiety, and stress in adults. Respondents are asked to rate the extent to which specific statements apply to them over the past week, using a four-point scale: 0 (never) to 3 (almost always). The DASS-21 provides a score for each subscale and related cut-off scores that indicate symptom severity, viz 'Normal', 'Mild', 'Moderate', 'Severe', or 'Extremely Severe'. The DASS-21 has good psychometric properties (Henry & Crawford, 2005), including adequate reliability (α = .82-.90 for the subscales), and good convergent and discriminative validity. The DASS-21 was used in this evaluation in addition to the APSI, as it provides a more comprehensive measure of caregiver wellbeing and coping (i.e., it assesses caregiver-reported depression and anxiety, in addition to stress levels). The DASS-21 has been used extensively with caregivers of children with autism for this purpose (e.g., (Giallo, Rose, & Vittorino, 2011). A copy of the DASS-21 is provided in Appendix P.

Caregiver and child outcome measures

Parent Programme Satisfaction Questionnaire: Autism Spectrum and Language Delays Programme (PSQ-P).

The PSQ-P assesses caregivers' experiences with the IYA-P training. This tool consists of 37 items, 33 of which require participants to respond using a seven-point scale, with higher ratings reflecting greater progress or satisfaction. One item uses a YES/NO format (i.e., would you like to keep meeting as a group?), and the remaining three items ask caregivers to provide descriptive open-ended answers. The questionnaire consists of six primary categories relating to The Overall Programme; Teaching Format (usefulness); Specific Teaching Techniques (usefulness); Children's progress (change); Evaluation of Parent Group Leaders; Parent Group, and their Opinion. A copy of the PSQ-P is provided in Appendix Q.

Teacher outcome measures

Incredible Years Teacher Strategies Questionnaire for Children with Autism (IYTSQ)

The IYTSQ is a 52-item teacher-report questionnaire that consists of six sections. The first section asks teachers to rate their confidence in promoting social, emotional, language, and academic development of children with ASD on a five-point scale: very unconfident – very confident. Sections 2-4 ask teachers to rate the frequency with which they use teaching techniques to support children's language, social, and emotional development respectively, on a five-point scale: rarely – very often. The final section asks teachers to rate the frequency of their planning and support strategies according to a five-point scale: never – daily. The IYTSQ has been used with teachers who teach children who demonstrate behaviours that are consistent with ASD. No normative data was available for the IYTSQ. A copy of the IYTSQ is provided in Appendix R.

Teacher and child outcome measures

Incredible Years Participant Satisfaction Questionnaire – Helping Preschool Children with Autism Programme (PSQ-T).

The PSQ-T is designed to gather information about participant's experiences with the IYA-T programme. The PSQ-T consists of 36 items, 32 of which require participants to respond using a seven-point scale. Three questions ask participants to provide descriptive open-ended answers, and one item is presented in a Yes/No format (i.e., would you like to keep meeting as a group). The PSQ-T consists of six core categories relating to The Overall Programme; Teaching Format (usefulness); Specific Teaching Techniques (usefulness); Children's progress (change); Evaluation of Group Leaders, Parent/Teacher Group, and Their Opinion. A copy of the PSQ-T is provided in Appendix S.

Long-term outcomes of programme participation

Pediatric Quality of Life Inventory – Generic Core Scales™ (PedsQL; (Varni, 1998).

The PedsQL™ Parent-report for Toddlers (2-4 years) is a parent-report measure of children's quality of life and wellbeing. Caregivers are asked to rate the extent to which behaviours were problematic over the previous month using a five-point Likert scale ranging from 0 (never a problem), 1 (almost never a problem), 2 (sometimes a problem), 3 (often a problem), or 4 (almost always a problem). Items are categorised according to physical (e.g., participating in active play), emotional (e.g., feeling afraid or scared), social (e.g., playing with other children), and school functioning (e.g., doing the same preschool/daycare/kindergarten activities as other children his or her age). These ratings are used to calculate subscale and total scores for each domain. The PedsQL™ Generic Core Scales have been shown to have good internal consistency (Varni, Burwinkle, Seid, & Skarr, 2003) The PedsQL™ was used as it enabled the evaluation team to assess emotional functioning; an intended outcome of programme participation. It also provided an overall measure of child wellbeing which, according to the IYA theory, is a potential long-term benefit of programme participation. A copy of the PedsQL™ is provided in Appendix T**.**

Appendix F

Quantitative data analysis

Descriptive data

Descriptive data is presented for each of the child, caregiver and teacher outcome measures. This includes mean, median, standard deviation (SD), and minimum and maximum possible scores (computed using Jamovi – see Jamovi.com). Frequency distributions have been provided for the PSQ-P/T post-training scores, the SDQ, PedsQL™, and DASS-21 (Cohort 1 only) ex-post training scores, and the APSI and IYTSQ pre-, post-, and ex-post training scores. Frequency distributions provide information about data skews, outliers, multi-modal distribution, and evidence of non-normality of data.

Modified Brinley Plots

The YC-PEM, APSI, and IYTSQ data were analysed using modified Brinley Plots and by calculating effect size estimates. Modified Brinley Plots are a type of scatterplot that displays individuals' response to treatment within the context of information about the group response (Blampied, 2017). For this report, modified Brinley Plots have been used to display individual change over time to identify the systematic effects of programme participation. Each respondent's score at time 2 (e.g., their post-score) is plotted against their score at a previous time (time 1, e.g., their pre-training score). Little or no therapeutic change is shown when individuals' data points lie on or near the 45^0 diagonal line, the line of no change (i.e., X = Y) (Blampied, 2017). Depending on the direction of therapeutic change (i.e., whether a score decrease or increase reflects improvement) data points above and below the diagonal line indicate varying degrees of change for each case.

The pre-to-post Effect Size (ES) was calculated using Cohen's *d* (calculated using ESCI software developed by Cumming, 2012; see also Lakens, 2013). Negative *d* values indicate a change in a clinically desirable direction if decreases in scores reflect improvement on a measure, and vice versa. Interpretation of effect sizes were based on guidelines presented by Cohen (1988); small *d* ≤ 0.2-.3), medium *d* = ~0.5, and large *d* ≥ 0.8). In addition to reporting *d* we also report the 95% Confidence Interval (95%CI) on *d*. This interval indicates the precision with which *d* is estimated, in that it is the range of values within which *d* would fall 95% of the time were the study to be repeated a large number of times. The 95% CI is given after *d* in [ ]. Unlike *d*, which is an estimate that is independent of sample size, the 95% CI is influenced by sample size, with the precision of the estimate of *d* increasing as sample size increases. Thus, in this report, the 95% CIs are affected by attrition from pre- to post-, and from post- to ex-post phases. Note that where the lower and upper boundaries of the 95% CI include 0, we cannot reject the hypothesis that the ES = zero (i.e., there is no effect). If that were observed, a *t*-test on the means would not be statistically significant at alpha = .05, however, if the CI does not cross zero then the test would be statistically significant at that alpha level.

Correlational analyses

The relationship among several variables, such as the number of sessions attended, region, ethnicity, and outcome variables such as the use of teacher or caregiver strategies was explored for Cohort 1 and 2 by calculating Pearson Product Moment Correlation Coefficients, *r*, (using Jamovi). This data has not been presented, as due to the small sample size and lack of variation, very few statistically significant non-zero correlations were detected. This data is, however, available upon request. For some data we calculated the point-biserial *r*, where one of the variables is a dummy coding variable (e.g., 1 = female, 2 = male). These correlations may be used to evaluate the influence of the coding variable (e.g, gender) on the second continuous variable (such as a gain score on some outcome measure).

Appendix G

Qualitative measures and data analysis procedures

Before organising interviews with the participants, the evaluation team consulted with the Kaiārahi Māori and Kaiārahi Pasifika in the College of Education, Health, and Human Development at the University of Canterbury regarding culturally responsive interview practices.

The semi-structured interview consisted of 10 and 14 open-ended questions for Cohort 1 and 2, respectively. Interviews ranged between 9.07.02 and 48.12 minutes with an average interview length of 21.57 and 23.80 minutes respectively, for teachers and caregivers. All participants responded to each of the interview questions and prompts were provided, where needed, to ensure the participants understood what was being asked of them. One caregiver from Cohort 1 had some difficulty responding to the interview questions in English, indicating that she would have liked the option to speak in her first language, Arabic. One teacher from Cohort 2 did not consent to her interview being audio-recorded. Handwritten notes were taken instead. Four participants were interviewed via Skype/Zoom, two face-to-face, and the remaining 57 participants completed their interview via phone.

Before starting each interview, the researcher confirmed that the participant consented to their interview being recorded for transcription purposes, and assured them that their interviews would not be shared with anyone outside of the evaluation team. All participants from cohort 1 agreed to have their interviews recorded. One teacher from cohort 2 did not consent to her interview being audio-recorded. Handwritten notes were taken instead. During each interview, interviewers recorded notes on the main themes that were important to each participant. Upon completion, the interview was transcribed verbatim by a trained researcher. These notes informed the qualitative analysis.

All transcripts were imported into NVivo 12 (QSR International, 1999) and were auto-coded according to each of the interview questions. The interview data was analysed using inductive thematic analysis (Guest, MacQueen, & Namey, 2012). Given the lack of research currently available on the impact of IYA on teachers and caregivers in Aotearoa New Zealand, it was not possible to use past research to inform the themes and codes used to analyse the interview data. As such, grounded theory (Strauss & Corbin, 1990), an inductive methodological approach, was used to gather, analyse and interpret the qualitative data collected from participants in this study. An inductive approach was used to identify key themes that were relevant to the participants in this study. Thematic analysis is the process of searching and identifying key themes that emerge from each of the interviews and to identify common themes across all participants (Braun & Clarke, 2006), and Braun and Clarke's (2006) six-step guide to conducting qualitative analysis was used for the analysis of all the interviews. This approach provides a systematic structure for categorising participants' responses to each of the interview questions. First, each interview was read and re-read by two members of the evaluation team to ensure they were familiar with the data before conducting the analysis. In this study, 100% of the interviews, codes, and key themes were reviewed by a second researcher trained in using NVivo to assess inter-coder reliability. Inter-coder reliability measures the extent to which two or more coders agree on the coding of the data. It is an important stage in qualitative analysis as it increases objectivity and validity in the interpretation of the data (Lavrakas, 2008). Inter-coder reliability for this study was high (ICCs > .89).

Next, initial codes for each interview question were generated by re-reading participant's responses for the interview question. At a broad level, initial codes (i.e., labels used to identify themes; Wong, 2008) emerged as the researchers read each participant's responses. Once the researchers had established initial codes for each interview question, each code was closely examined to ensure that the responses coded were consistent and reflective of that code across the participants. Where there was disagreement between coders, a discussion about the responses and codes took place until a consensus was reached. The evaluation team then reviewed, defined and named the key themes that emerged from teacher and caregiver interviews. A comparison between and within teachers and caregivers was also conducted to identify similarities, differences and relationships between participants' experience of IYA. Each of the key themes that emerged from teacher and caregiver interviews, as they relate to each of the evaluation aims, has been summarised below. Similarities and differences between cohort 1 and cohort 2 interview responses are provided in the following sections.

Finally, an inductive qualitative content analysis (Neuendorf, 2019) was used to highlight the proportion of teachers and caregivers (as a percentage of those who participated in the interview for each cohort) who are still using communication, social and emotional regulation, and engagement strategies that were learnt while participating in the IYA programme. This quantifiable qualitative data allows the reader to identify the specific IYA strategies that teachers and caregivers have found most useful and are still using during the ex-post phase.

Appendix H
Interview Questions for Parents/Caregivers – Cohort 1

1. What interested you in participating in the IYA programme?

2. Can you tell me about what it was like to participate in the IYA programme – what was your experience?

3. Were there any barriers to participation and engagement in the programme?

4. Were there any factors that supported your participation and engagement in the programme?

5. Did you learn any new strategies as a result of your participation in the IYA programme, relating to:

   Communication

   - *If so, what were these strategies?*
   - *Are you still using them - why or why not?*
   - *Were they effective?*

   Social and emotional regulation

   - *If so, what were these strategies?*
   - *Are you still using them - why or why not?*
   - *Were they effective?*

   Engagement

   - *If so, what were these strategies?*
   - *Are you still using them - why or why not?*
   - *Were they effective?*

6. Have you shared any of what you learnt through participating in the IYA programme, with others? If yes,

   - *Who have you shared this learning/strategies with?*
   - *What have you shared?*
   - *Do you know if they have used any of these strategies? If so, what?*

7. Has your participation in the programme had any impact of your own wellbeing?

8. Has your participation in the programme had any impact of your own sense of parenting confidence and competence?

9. Has your participation in the IYA programme, had any impact on the home-pre-school relationship and communication?

10. How does your child feel about going to preschool? Have you observed any changes in your child's participation, inclusion, and attendance?

Appendix I
Interview Questions for Parents/Caregivers – Cohort 2

1. What interested you in participating in the IYA programme?

2. Have you noticed any changes in your child's communication since you completed the IYA programme? If so, what have been some of the developments?

3. Are there any specific strategies that you learnt during the IYA programme that you think have supported these changes in your child's communication? If so, what are these strategies?

4. Have you noticed any changes in your child's emotional regulation (relating to helping your child control their emotionsand to problem solve) since you completed the IYA programme? If so, what have been some of the developments?

5. Are there specific strategies that you learnt during the IYA programme that you think have supported these changes in your child's emotional regulation? If so, what are these strategies?

6. Have you noticed any changes in your child's engagement (relating to your child's participation in different family activities, social activities etc) since you completed the IYA programme? If so, what have been some of the developments?

7. Are there any specific strategies that you learnt during the IYA programme that you think havesupported these changes in your child's engagement? If so, what are these strategies?

8. Have you shared any of what you learnt through participating in the IYA programme, with others? If yes,

   - *Who have you shared this learning/strategies with?*
   - *What have you shared?*
   - *Do you know if they have used any of these strategies? If so, what?*

9. Has your participation in the programme had any impact of your own wellbeing?

10. Has your participation in the programme had any impact of your own sense of parenting confidence and competence?

11. Has your participation in the IYA programme, had any impact on the home-pre-school relationship and communication?

12. How does your child feel about going to preschool? Have you observed any changes in your child's participation, inclusion, and attendance?

13. Are you continuing to see benefits as a result of the programme, six month on? If so, what?

14. Have there been any unexpected outcomes for you, your child, whānau, or wider community?

Appendix J
Interview Questions for Kaiako/Teachers – Cohort 1

1. What was your motivation for participating in the IYA programme?

2. Can you tell me about what it was like to participate in the IYA programme – what was your experience?

3. Were there any barriers to participation and engagement in the programme?

4. Were there any factors that supported your participation and engagement in the programme?

5. Did you learn any new strategies as a result of your participation in the IYA programme, relating to:

   Communication

   - *If so, what were these strategies?*
   - *Are you still using them - why or why not?*
   - *Were they effective?*

   Social and emotional regulation

   - *If so, what were these strategies?*
   - *Are you still using them - why or why not?*
   - *Were they effective?*

   Engagement

   - *If so, what were these strategies?*
   - *Are you still using them - why or why not?*
   - *Were they effective?*

6. Have you shared any of what you learnt through participating in the IYA programme, with others? If yes,

   - *Who have you shared this learning/strategies with?*
   - *What have you shared?*
   - *Do you know if they have used any of these strategies? If so, what?*

7. Have you applied any of the strategies that you learnt, to other tamariki in your school/centre? Please explain.

8. Has your participation in the programme had any impact of your own sense of confidence and competence as a teacher?

9. Has your participation in the IYA programme, had any impact on the pre-school/school-home relationship and communication?

10. Have you observed any changes in participation, inclusion, and attendance, for the child in your centre/school?

Appendix K
Interview Questions for Kaiako/Teachers – Cohort 2

1. What interested you in participating in the IYA programme?

2. Have you noticed any changes in the target child's (or children's) communication since you completed the IYA programme? If so, what have been some of the developments?

3. Are there any specific strategies that have supported these changes in children's communication? If so, what are these strategies?

4. Have you noticed any changes in the target child's (or children's) emotional regulation (relating to helping children control their emotions and to problem solve) since you completed the IYA programme? If so, what have been some of the developments?

5. Are there any specific strategies that have supported these changes in children's emotional regulation? If so, what are these strategies?

6. Have you noticed any changes in the target child's (or children's) engagement (relating to your child's participation in different family activities, social activities etc) since you completed the IYA programme? If so, what have been some of the developments?

7. Are there any specific strategies that have been supported these changes in children's engagement? If so, what are these strategies?

8. Have you shared any of what you learnt through participating in the IYA programme, with others? If yes,

   - *Who have you shared this learning/strategies with?*
   - *What have you shared?*
   - *Do you know if they have used any of these strategies? If so, what?*

9. Have you applied any of the strategies that you learnt, to other tamariki in your school/centre? Please explain.

10. Has your participation in the programme had any impact of your own sense of confidence and competence as a teacher?

11. Has your participation in the IYA programme, had any impact on the pre-school/school-home relationship/partnership and communication?

12. Have you observed any changes in participation, inclusion, and attendance, for the child in your centre/school?

13. Are you continuing to see benefits as a result of the programme, six month on? If so, what?

14. Have there been any unexpected outcomes for you, the target child (or children), whānau, your service or wider community?

Appendix L

Summary of Approach to Data Collection and Analysis

Evaluation question	Quantitative measures	Proposed analysis	Qualitative measures
To what extent have the IYA programmes contributed to increased engagement, emotional regulation and communication skills of young children demonstrating behaviours associated with autism?	YC-PEM (pre-, post-, and ex-post data) including: • percentage of activities child participates in • frequency of child's participation at home • average involvement of child in home activities • percentage of activities where caregivers would like to see change in participation	Modified Brinley Plots assessing change across phases Effect size measures	Cohort 1 - Teacher and Parent interview questions 5 and 10 (see Appendices L and N). Cohort 2 – caregiver and teacher interview questions 2-7 (see Appendices M and O).
	Incredible Years Parent Programme Satisfaction Questionnaire (post-data only; items 1-3)	Descriptive data and frequency distributions **Note -** data presented according to ethnicity, region, and attendance rates available upon request though not presented in report or analysed further due to low N, or insufficient variance.	
	Incredible Years Teacher Programme Satisfaction Questionnaire (post-data only; items 4-6)	Descriptive data and frequency distributions **Note -** data presented according to ethnicity, region, and attendance rates available upon request though not	

		presented in report or analysed further due to low N, or insufficient variance.	
	Strengths and Difficulties Questionnaire – Parent and Teacher Report (ex-post data only). Subscale and total scores.	Descriptive data and frequency distributions **Note -** data presented according to ethnicity, region, and attendance rates available upon request though not presented in report due to low N, or insufficient variance.	
To what extent have the IYA programmes contributed to increased wellbeing and coping skills of caregivers enabling them to better support their child?	Autism Parent Stress Index total scores (pre, post-, and ex-post data)	Modified Brinley Plots assessing change Effect size measures	Cohort 1 - Parent interview questions 5, 7, and 8 (see Appendix P) Cohort 2 - Parent interview questions 9 and 10 (see Appendix Q)
	Incredible Years Parenting Strategies Questionnaire total scores (ex-post data only; total scores)	Descriptive data and frequency distributions **Note -** data presented according to ethnicity, region, and attendance rates available upon request though not presented in report due to low N, or insufficient variance.	
	Incredible Years Parent Programme Satisfaction Questionnaire (post-data; items 4 and 7).	Descriptive data and frequency distributions **Note -** data presented according to ethnicity, region, and attendance rates available upon request though not presented in report due to low N, or insufficient variance.	

	Depression, Anxiety, and Stress Scale subscale and total scores (ex-post data only)	Descriptive data and frequency distributions **Note -** data presented according to ethnicity, region, and attendance rates available upon request though not presented in report due to low N, or insufficient variance.	
To what extent have the IYA programmes contributed to increased teacher capability to help children demonstrating behaviours associated with autism?	Incredible Years Teacher Strategies Questionnaire (pre-, post-, and ex-post data; total scores).	Modified Brinley Plots assessing change Effect size measures	Cohort 1 - teacher interview questions 5, 7, and 8 (see Appendix R). Cohort 2 – teacher interview question 10 (see Appendix S).
	Incredible Years Teacher Programme Satisfaction Questionnaire (post-data only; items 2 and 3)	Descriptive data and frequency distributions **Note -** data presented according to ethnicity, region, and attendance rates available upon request though not presented in report due to low N, or insufficient variance.	
	Pediatric Quality of Life Inventory™ (ex-post data only). Subscale and total scores.	Descriptive data and frequency distributions **Note -** data presented according to ethnicity, region, and attendance rates available upon request though not presented in report due to low N, or insufficient variance.	
To what extent have the IYA programmes contributed to longer term and unintended benefits for those involved		Correlation between participation rates and child outcomes: • YC-PEM variables • Incredible Years Parent	Cohort 1 - parent and teacher interview questions 6 and 9 (see Appendices L and N). Cohort 2 – parent and teacher

and the wider communities?	Programme Satisfaction Questionnaire (post- data; items 1-3) • Incredible Years Teacher Programme Satisfaction Questionnaire (items 4-6) • PedsQL™ items and total • SDQ items and total Correlation between participation rates and parent outcomes: • APSI scores • DASS-21 scores – items and total • Incredible Years Parent Programme Satisfaction Questionnaire (post- data; items 4 and 7). • Incredible Years Parenting Strategies Questionnaire total scores Correlation between participation rates and teacher outcomes: • Incredible Years Teacher Strategies Questionnaire (pre-, post-, and ex-post data; total scores). • Incredible Years Teacher Programme Satisfaction Questionnaire (post- data only; items 2 and 3) Data not reported in body of report due in most cases to the absence of	questions 11-14 (see Appendices M and O).

correlations resulting
from limitations in the
data.

Appendix M
Strengths and Difficulties Questionnaire (SDQ-P2-4)

Strengths and Difficulties Questionnaire   P 2-4

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of your child's behaviour over the last six months.

Your child's name ....   Male/Female

Date of birth...

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children, for example toys, treats, pencils	☐	☐	☐
Often loses temper	☐	☐	☐
Rather solitary, prefers to play alone	☐	☐	☐
Generally well behaved, usually does what adults request	☐	☐	☐
Many worries or often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, depressed or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often argumentative with adults	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Can stop and think things out before acting	☐	☐	☐
Can be spiteful to others	☐	☐	☐
Gets along better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Good attention span, sees chores or homework through to the end	☐	☐	☐

Do you have any other comments or concerns?

Overall, do you think that your child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

	No	Yes- minor difficulties	Yes- definite difficulties	Yes- severe difficulties
	☐	☐	☐	☐

If you have answered "Yes", please answer the following questions about these difficulties:

• How long have these difficulties been present?

	Less than a month	1-5 months	6-12 months	Over a year
	☐	☐	☐	☐

• Do the difficulties upset or distress your child?

	Not at all	Only a little	Quite a lot	A great deal
	☐	☐	☐	☐

• Do the difficulties interfere with your child's everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
HOME LIFE	☐	☐	☐	☐
FRIENDSHIPS	☐	☐	☐	☐
LEARNING	☐	☐	☐	☐
LEISURE ACTIVITIES	☐	☐	☐	☐

• Do the difficulties put a burden on you or the family as a whole?

	Not at all	Only a little	Quite a lot	A great deal
	☐	☐	☐	☐

Signature .... Date ....

Mother/Father/Other (please specify:)

Thank you very much for your help

Appendix N
Autism Parenting Stress Index

This form should be completed by individuals at the beginning of the programme, and will be used by your provider to track progress, and the Ministry of Education for reporting statistics for and evaluating the IY programme. Your answers will be aggregated and be kept anonymous in any reporting.

Please rate the following aspects of your child's health according to how much stress it causes you and/or your family by placing an X in the box that best describes your situation.	Stress Ratings				
	Not stressful	Sometimes creates stress	Often creates stress	Very stressful on a daily basis	So stressful sometimes we feel we can't cope
Your child's social development	0	1	2	3	5
Your child's ability to communicate	0	1	2	3	5
Tantrums/meltdowns	0	1	2	3	5
Aggressive behavior (siblings, peers)	0	1	2	3	5
Self-injurious behavior	0	1	2	3	5
Difficulty making transitions from one activity to another	0	1	2	3	5
Sleep problems	0	1	2	3	5
Your child's diet	0	1	2	3	5
Bowel problems (diarrhea, constipation)	0	1	2	3	5
Potty training	0	1	2	3	5
Not feeling close to your child	0	1	2	3	5
Concern for the future of your child being accepted by others	0	1	2	3	5
Concern for the future of your child living independently	0	1	2	3	5
	Subtotal				
				Total	

Appendix O
Incredible Years Parent Strategies Questionnaire for Children with Autism (2-5 years)

Incredible Years®
Parent Strategies Questionnaire
for Children with Autism (2-5 years)

Teacher/Childcare Provider (name): _____

Promoting Social, Emotional, Language and Academic Development in Children with Autism	Very Unconfident	Somewhat Unconfident	Neutral	Confident	Very Confident
1. How confident are you in simplifying and tailoring your language according to your child's individual language development?					
2. How confident are you in identifying the specific ABCs: antecedents (A) that will motivate and prompt your child's target behaviors or words (B) and rewarding its occurrence with positive consequences (C).					
3. How confident are you in being able to get in your child's attention spotlight to engage him or her in social and emotional learning opportunities?					
4. How confident are you in being able to ignore and redirect your child's unwanted behaviors, giving your attention back when she or he behaves in the targeted way?					
5. How confident are you in helping your child regulate his or her emotions?					
6. How confident are you in using puppets and pretend play to teach your child social and emotional skills and to enhance communication?					
7. How confident are you in using your child's sensory likes and dislikes such as auditory, tactile, visual, smell, taste/oral, proprioception (body space/balance/need for movement or stillness) to enhance his or her learning opportunities?					
8. How confident are you in adapting teaching and materials to use your child's most effective learning mode (visual, auditory, motoric, sensory/tactile)?					
9. How confident are you in managing your child's challenging behavior and following through with behavior plans and goals?					
10. How confident are you in working with your child's classroom/early childhood teachers?					
11. How confident are you in setting up structured play dates to help your child practice specific social skills?					
12. How confident are you in developing and using visual supports (e.g., choice boards, command cards) to enhance your child's social, emotional and language learning?					

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A. Specific Teaching Techniques to Enhance Language Development

In this section we'd like to get your idea of how often you use the following strategies to promote your child's language learning.

	Rarely/Never	Sometimes	Half the Time	Often	Very Often
1. Participate in child-directed, narrated play to increase interactive involvement and joint attention from my child.					
2. Use enthusiastic voice tone, songs, imitation, modeling, simple language, repetition and commenting using the "one up rule" to increase my child's verbal communications.					
3. Use descriptive academic coaching language to promote language skills (e.g., colors, shapes, positions, names of objects).					
4. Use visual prompts, gestures, preferred objects, books, and sensory likes, to strengthen language communication and joint interaction.					
5. Use verbal prompts, partial prompts, and pauses to wait for my child to look, gesture, or respond verbally before continuing.					
6. Use puppets to model and engage children in social communication.					

B. Specific Teaching Techniques to Enhance Social Development

In this section we'd like to get your idea of how often you use the following strategies to promote your child's social learning.

	Rarely/Never	Sometimes	Half the Time	Often	Very Often
1. Use social coaching to model, prompt practice, label, and praise social behaviors such as sharing, waiting, eye contact, helping, listening, asking, turn taking, and initiating an interaction.					
2. Use puppets to model, prompt, label, and practice social behaviors.					
3. Praise and reward my child for using appropriate social friendship skills.					
4. Identify specific social behavior goals for my child according to his/her play stage.					
5. Use books, games, and visual pictures to prompt, signal, and practice targeted social behaviors with my child.					
6. Use sensory social routines to enhance my child's arousal for learning.					
7. Comment on and praise prosocial peer models to increase my child's focus on appropriate social behavior					
8. Use intentional communication to help my child be aware of other children and their needs, interactions and to promote their joint attention and empathy during play activities.					
9. Set up peer playdates to promote my child's interactions with others and provide social coaching during these interactions.					

C. Specific Teaching Techniques to Enhance Emotional Development and Self-regulation

In this section we'd like to get your idea of how often you use the following strategies to promote your child's emotional development.

	Rarely/Never	Sometimes	Half the Time	Often	Very Often
1. Use emotion coaching to model, prompt, and label emotion language in my child.					
2. Model emotion language through words and facial expressions for my child.					
3. Use persistence coaching language to encourage my child's continuous effort to do a task. (e.g., "that's hard, but you keep trying!")					
4. Use pictures cards and photographs that portray people in various feeling states to teach my child emotion vocabulary and prompt his or her to use these visuals to express emotions.					

continued on next page

C. Specific Teaching Techniques to Enhance Emotional Development and Self-regulation (continued)

In this section we'd like to get your idea of how often you use the following strategies to promote your child's emotional development.

	Rarely/Never	Sometimes	Half the Time	Often	Very Often
5. Help my child understand how others feel through modeling, acknowledgement, mirroring back, labeling feelings, voice tone, and intentional communication.					
6. Recognize early cues of emotional dysregulation in my child and prompt his or her use of calm down strategies.					
7. Focus more of my attention on positive emotions than on negative emotions.					
8. When coaching negative emotions, also coach appropriate coping strategies (e.g , you are feeling mad but you are taking three deep breaths to calm your body down).					
9. Use story books to teach my child emotion words and promote empathy and guided practice.					
10. Use puppets that share their feelings to prompt my child's emotional language, social responses and empathy for others.					
11. Use visual self-regulation cards such as calm down thermometer, breathing, or turtle picture with my child.					

D. Specific Teaching to Enhance Behavior Management Strategies

In this section we'd like to get your idea of how often you use the following strategies to promote your child's positive behaviors and decrease their inappropriate behaviors.

	Rarely/Never	Sometimes	Half the Time	Often	Very Often
1. Give my child choices when possible.					
2. Use visual prompts, verbal and nonverbal signals and/or command cards to remind my child of our household rules, schedule, and appropriate behavior.					
3. Prepare my child for transitions with a predictable and visual routine.					
4. Give face-to-face praise paired with smiles, eye contact, enthusiastic tone of voice, and sensory likes to reward desired behavior.					
5. Reward self-regulation, joint attention, and responses to instructions with child's sensory likes.					
6. Wait for my child's response when asking a question about his or her wants.					
7. Use visual cues, gestures, and simple words to distract and redirect when my child is angry or frustrated.					
8. Ignore misbehavior that is not dangerous to my child or another child.					
9. Help other siblings or peers to understand my child's misbehavior and to respond to it with understanding and without reinforcing its occurrence.					
10. Set up problem solving scenarios with puppets to practice appropriate social responses to situations that are difficult for my child. (e.g., ask a friend to play, going to a birthday party)					

E. Strategies for Working with Teachers and School

	Never	1–2 Times a Year	Once a Month	Once a Week	Daily
1. Use a system for regular school communication about my child (face-to-face communication, texts, notes, calls, meetings).					
2. Ask my child's teacher to tell me about how I can help support my child's school learning goals at home.					
3. Set up opportunities for to participate in classroom activities.					

E. Strategies for Working with Teachers and School *(continued)*	Never	1–2 Times a Year	Once a Month	Once a Week	Daily
4. Partner with teachers to provide ideas, materials, and support for classroom activities.					
5. Share with teachers my awareness of my child's sensory likes and dislikes and how these can be used to help motivate my child's learning.					
6. Share with teachers the ABC of behavior change in my child.					
7. Collaborate with teachers on a home-school behavior plan and share goals for my child.					
8. Becoming more aware of local opportunities to attend parent groups specifically for parents of children with autism.					

F. Planning and Support	Never	1–2 Times a Year	Once a Month	Once a Week	Daily
1. Review my progress in achieving the goals for my child and myself.					
2. Collaborate with other parents for solutions and support.					
3. Read the *Incredible Years Parent Book*.					
4. Manage my stress level utilizing positive cognitive strategies and gaining support from friends, family and teachers when needed.					

Appendix P
DASS-21

DASS 21   NAME _____ DATE _____

BLACK DOG INSTITUTE

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you
over the past week. There are no right or wrong answers. Do not spend too much time on any statement.
The rating scale is as follows:

0 Did not apply to me at all - NEVER

1 Applied to me to some degree, or some of the time - SOMETIMES

2 Applied to me to a considerable degree, or a good part of time - OFTEN

3 Applied to me very much, or most of the time - ALMOST ALWAYS

FOR OFFICE USE

		N	S	O	AA	D	A	S
1	I found it hard to wind down	0	1	2	3	■	■	
2	I was aware of dryness of my mouth	0	1	2	3	■		■
3	I couldn't seem to experience any positive feeling at all	0	1	2	3		■	■
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3	■		■
5	I found it difficult to work up the initiative to do things	0	1	2	3		■	
6	I tended to over-react to situations	0	1	2	3	■	■	
7	I experienced trembling (eg, in the hands)	0	1	2	3	■		■
8	I felt that I was using a lot of nervous energy	0	1	2	3	■	■	
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3	■		■
10	I felt that I had nothing to look forward to	0	1	2	3		■	■
11	I found myself getting agitated	0	1	2	3	■	■	
12	I found it difficult to relax	0	1	2	3	■	■	
13	I felt down-hearted and blue	0	1	2	3		■	■
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3	■	■	
15	I felt I was close to panic	0	1	2	3	■		■
16	I was unable to become enthusiastic about anything	0	1	2	3		■	■
17	I felt I wasn't worth much as a person	0	1	2	3		■	■
18	I felt that I was rather touchy	0	1	2	3	■	■	
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3	■		■
20	I felt scared without any good reason	0	1	2	3	■		■
21	I felt that life was meaningless	0	1	2	3		■	■
	TOTALS							

Appendix Q
Parent Programme Satisfaction Questionnaire (PSQ-P)

The Incredible Years®

Parent Program Satisfaction Questionnaire
Autism Spectrum & Language Delays Program

(Hand out at end of the program)

Participant's Name _____ Date_____

The following questionnaire is part of our evaluation of the Autism Spectrum & Language Delays Parenting Program that you have participated in. It is important that you answer as honestly as possible. The information obtained will help us to evaluate and continually improve the program we offer. Your cooperation is greatly appreciated. All responses will be strictly confidential.

A. The Overall Program

Please circle the response that best expresses how you honestly feel at this point as a result of participating in this program.

1. My child's social and emotional skills are

considerably worse	worse	slightly worse	the same	slightly improved	improved	greatly improved

2. My child's pre-academic skills for language, reading readiness, and persistence at a task are

considerably worse	worse	slightly worse	the same	slightly improved	improved	greatly improved

3. My child's self-regulation and imaginary play skills are

considerably worse	worse	slightly worse	the same	slightly improved	improved	greatly improved

4. My overall feelings about my personal progress at using the autism spectrum/language delays parenting skills are that I am

very pessimistic	pessimistic	slightly pessimistic	neutral	slightly optimistic	optimistic	very optimistic

5. I feel that the approach used to strengthen my child's social and emotional behaviors in this program is

very inappropriate	inappropriate	slightly inappropriate	neutral	slightly appropriate	appropriate	greatly appropriate

6. Would you recommend the program to a friend or relative?

strongly not recommend	not recommend	slightly not recommend	neutral	slightly recommend	recommend	strongly recommend

7. My overall feeling about achieving my goals for my child and family in this program is

very negative	negative	slightly negative	neutral	slightly positive	positive	very positive

B. Teaching Format

Usefulness

In this section, we would like you to indicate how useful each of the following types of teaching is for you now. Please circle the response that most clearly describes your opinion.

1. Content of information presented was

extremely useless	useless	slightly useless	neutral	somewhat useful	useful	extremely useful

2. Demonstration of parenting skills through the use of video vignettes was

extremely useless	useless	slightly useless	neutral	somewhat useful	useful	extremely useful

3. Group discussion of parenting skills was

extremely useless	useless	slightly useless	neutral	somewhat useful	useful	extremely useful

4. Practice of coaching and pretend play skills at home with your child was

extremely useless	useless	slightly useless	neutral	somewhat useful	useful	extremely useful

5. Reading chapters from the *Incredible Years* or *Incredible Toddlers* book was

extremely useless	useless	slightly useless	neutral	somewhat useful	useful	extremely useful

6. Weekly handouts (e.g., spotlighting tips & others) were

extremely useless	useless	slightly useless	neutral	somewhat useful	useful	extremely useful

7. Use of practice or role plays during group sessions were

extremely useless	useless	slightly useless	neutral	somewhat useful	useful	extremely useful

C. Specific Parenting Techniques
Usefulness

In this section, we would like to get your ideas of how useful each of the following techniques is in improving your interactions with your child. Please circle the response that most accurately describes the usefulness of the technique.

1. Narrated child-directed play

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

2. Academic and persistence coaching

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

3. Social coaching

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

4. Emotion coaching

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

5. Using pretend play and puppets

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

6. Using emotional self-regulation skills

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

7. Using praise and rewards

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

8. Limit setting and managing misbehavior

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

D. Evaluation of Parent Group Leaders

In this section we would like you to express your opinions about your parent group leader(s). Please circle the response to each question that best describes how you feel.

Group Leader #1_____

<center>(name)</center>

1. I feel that the leader's teaching was

very poor	poor	slightly below average	average	slightly above average	high	superior

2. The leader's preparation was

very poor	poor	slightly below average	average	slightly above average	high	superior

3. Concerning the leader's interest and concern in me and my child, I was

extremely dissatisfied	dissatisfied	slightly dissatisfied	neutral	slightly satisfied	satisfied	extremely satisfied

4. At this point, I feel that the leader in the program was

extremely unhelpful	unhelpful	slightly unhelpful	neutral	slightly helpful	helpful	extremely helpful

If more than one group leader was involved in your program, please fill in the following. (Go to Section E if only one leader was involved.)

Group Leader #2_____

<center>(name)</center>

1. I feel that the leader's teaching was

very poor	poor	slightly below average	average	slightly above average	high	superior

2. The leader's preparation was

very poor	poor	slightly below average	average	slightly above average	high	superior

3. Concerning the leader's interest and concern in me and my child, I was

extremely dissatisfied	dissatisfied	slightly dissatisfied	neutral	slightly satisfied	satisfied	extremely satisfied

4. At this point, I feel that the leader in the program was

extremely unhelpful	unhelpful	slightly unhelpful	neutral	slightly helpful	helpful	extremely helpful

E. Parent Group

In this section, we'd like to get your ideas about your group. Please circle the response that describes how you feel.

1. I feel the group was

very unsupportive	unsupportive	somewhat unsupportive	neutral	somewhat supportive	supportive	very supportive

2. Concerning other group members' interest in me and my child, I felt they were

very uninterested	uninterested	somewhat uninterested	neutral	somewhat interested	interested	very interested

3. I would like to keep meeting as a group

    YES   NO

4. How likely is it that you will continue meeting with one or more of the parents in your group?

highly unlikely	unlikely	somewhat unlikely	neutral	somewhat likely	likely	very likely

F. Your Opinion

1. How could the program have been improved to help you more?

2. At this time do you feel the need for additional parenting assistance? Please elaborate.

3. What did you see as the main benefit of the Autism Spectrum and Language Delays program?

Thank you for your patience in filling out all of these questionnaires. Your input is very much appreciated, and really helps us to plan future programs.

Appendix R
Incredible Years Teacher Strategies Questionnaire for Children with Autism (2-5 years; IYTSQ)

This form should be completed by individuals at the beginning of the programme, and will be used by your provider to track progress, and the Ministry of Education for reporting statistics for and evaluating the IY programme. Your answers will be aggregated and be kept anonymous in any reporting.

	Very unconfident	Somewhat unconfident	Neutral	Confident	Very confident
Promoting Social, Emotional, Language and Academic Development in Children with Autism					
1. How confident are you in supporting language development for students with autism?					
2. How confident are you in simplifying and tailoring your language according to each student's individual language development?					
3. How confident are you in identifying the specific ABCs: antecedents (A) that will motivate and prompt an individual child's learning of specific target behaviours or words (B) and rewarding its occurrence with positive consequences (C)?					
4. How confident are you in being able to get in your student's attention spotlight to engage him or her in social and emotional learning opportunities?					
5. How confident are you in being able to ignore and redirect unwanted behaviours, giving your attention back when the student behaves in the targeted way?					
6. How confident are you in helping students with autism regulate their emotions?					
7. How confident are you in using puppets and pretend play to teach your students social and emotional skills and to enhance communication?					
8. How confident are you in using students' sensory likes and dislikes such as auditory, tactile, visual, smell, taste/oral, proprioception (body space/balance/need for movement or stillness) to enhance learning opportunities?					
9. How confident are you in adapting instruction and materials through using children's most effective learning mode (visual, auditory, motoric, sensory/tactile)?					

	Rarely / Never	Sometimes	Half the time	Often	Very often
10. How confident are you in managing challenging behaviour of children with autism and following through with behaviour plans?					
11. How confident are you in working with parents of students with autism in your classroom or early childhood centre?					
12. How confident are you in setting up structured opportunities to help students with autism practice and develop specific social skills?					
13. How confident are you in developing and using visual supports, choice boards and sequenced pictures to enhance the student's learning of social, emotional and language development?					

	Rarely / Never	Sometimes	Half the time	Often	Very often
Specific teaching technique to enhance language development					
1. Participated in student-directed, narrated play to increase interactive involvement and joint attention.					
2. Use enthusiastic voice tone, songs, imitation, modelling, simple language, repetition and commenting using the "one up rule" to increase the students' verbal communications.					
3. Use descriptive academic coaching language to promote language skills (e.g., colours, shapes, positions, names of objects).					
4. Use visual prompts, gestures, preferred objects, books, and sensory likes, to strengthen language communication and joint interaction.					
5. Use verbal prompts, partial prompts, and pauses to wait for the student to look, gesture or respond verbally before continuing.					
6. Use puppets to model and engage children in social communication.					
Specific teaching technique to enhance social development					

1. Use social coaching to model, prompt practice, label, and praise social behaviours such as sharing, waiting, eye contact, helping, listening, asking and initiating an interaction.					
2. Use puppets to model, prompt, label, and practice social behaviours.					
3. Praise and reward children for using appropriate social friendship skills.					
4. Individualise and identify specific social behaviour goals to be taught for each child according to his/her play stage.					
5. Use books, games, and visual pictures to prompt, signal, and practice targeted social behaviours.					
6. Use prosocial peer models to increase child's focus on appropriate social behaviour.					
7. Use normal social routines such as circle time, snack time, beginning and end of day rituals to promote and practice targeted social behaviours.					

	Rarely / Never	Sometimes	Half the time	Often	Very often
Specific teaching techniques to enhance emotional development and self-regulation					
1. Use emotion coaching to model, prompt, and label emotion language.					
2. Use persistence coaching language to encourage a child's continuous effort to do a task. (e.g., "That's hard, but you keep trying!")					
3. Use pictures and photographs that portray people in various feeling states to teach emotion vocabulary and prompt children to use these visuals to express their emotions.					
4. Help students understand how others feel through modelling, acknowledgment, mirroring back, labelling feelings, voice tone, and intentional communication.					
5. Recognise early cues of emotional dysregulation and prompt student's use of calm down strategies.					
6. Focus more teacher attention on positive emotions than on negative emotions.					
7. When coaching negative emotions, also coach appropriate coping strategies (e.g., you are feeling mad, but you are taking three deep breaths to calm your body down).					
8. Use story books to teach emotion words and promote empathy and guided practice.					
9. Use puppets that share their feelings to prompt student's emotional language, social responses and empathy for others.					
10. Use visual self-regulation cards such as calm down thermometer, breathing or turtle picture.					

	Never	1-2 Times a Year	Once a Month	Once a Week	Daily
Strategies for promoting parent involvement					
1. Use a system for regular communication with parents (face-to-face communication, texts, notes home, telephone hours, bulletin board, newsletters).					
2. Focus on giving positive feedback to parents about their child's achievements and progress, however small.					
3. Ask parents how they want to be involved.					
4. Ask parents to tell you about their child and his or her sensory likes and dislikes.					
5. Set up opportunities for parents to observe in the classroom and participate in classroom activities.					
6. Teach parents how to do academic, social, persistence, and emotional coaching at home to reinforce their child's learning in the classroom or early childhood centre.					
7. Involve parents as a source for ideas, materials, and support for early childhood centre.					
8. Share with parents your awareness of the child's sensory likes and dislikes and how these can be used to help motivate their child's learning.					
9. Teach parents the ABC of behaviour change.					
10. Collaborate with parents on a home-school behaviour plan and share goals for student.					
11. Make home visits.					
12. Make parents aware of local opportunities to attend parent groups specifically for parents of children with autism.					
Planning and Support					
1. Review my progress in achieving goals for individual student behaviour plans.					

2. Collaborate with other teachers for solutions and support.					
3. Read the Incredible Years Teacher Book and Parent book.					
4. Manage my stress level utilizing positive cognitive strategies and gaining support when needed.					

Appendix S
Teacher Programme Satisfaction Questionnaire (PSQ-T)

Final Participant Satisfaction Questionnaire
Helping Preschool Children with Autism Program

(To be completed at end of the program)

Participant's Name _____ Date_____

The following questionnaire is part of our evaluation of the *Helping Preschool Children with Autism: Teachers and Parents as Partners* Program that you have participated in. It is important that you answer as honestly as possible. The information obtained will help us to evaluate and continually improve the program we offer. Your cooperation is greatly appreciated. All responses will be strictly confidential.

A. The Overall Program

Please circle the response that best expresses how you honestly feel at this point as a result of participating in this program.

1. I feel that the approach used to strengthen children's social and emotional behaviors in this program is

| very inappropriate | inappropriate | slightly inappropriate | neutral | slightly appropriate | appropriate | greatly appropriate |

2. My overall feelings about my personal progress using social coaching strategies are

| very pessimistic | pessimistic | slightly pessimistic | neutral | slightly optimistic | optimistic | very optimistic |

3. My overall feelings about my personal progress using the emotion coaching strategies are

| very pessimistic | pessimistic | slightly pessimistic | neutral | slightly optimistic | optimistic | very optimistic |

4. The effects of using the self-regulation strategies and imaginary pretend play skills with the children are

| considerably worse | worse | slightly worse | the same | slightly improved | improved | greatly improved |

5. The children's social and emotional skills are

| considerably worse | worse | slightly worse | the same | slightly improved | improved | greatly improved |

6. The children's pre-academic skills for language, reading readiness, and persistence at a task are

| considerably worse | worse | slightly worse | the same | slightly improved | improved | greatly improved |

7. Would you recommend the program to another teacher or parent?

| strongly not recommend | not recommend | slightly not recommend | neutral | slightly recommend | recommend | strongly recommend |

8. My overall feeling about achieving my goals is

| very negative | negative | slightly negative | neutral | slightly positive | positive | very positive |

B. Teaching Format

Usefulness

In this section, please indicate how useful each of the following types of teaching are for you now. Please circle the response that most clearly describes your opinion.

1. Content of information presented was

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

2. Using the video vignettes to demonstrate coaching skills was

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

3. Group discussion of behavior change and communication strategies was

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

4. Use of practice or role plays during group sessions was

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

5. Practicing social, emotion coaching and pretend play skills *between* sessions was

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

6. Weekly handouts (e.g., spotlighting tips & others) were

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

7. Reading chapters from the *Incredible Teachers, Incredible Toddlers* or *Incredible Years* book was

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

C. Specific Teaching Techniques

Usefulness

In this section, please provide your ideas of how useful each of the following techniques is in improving your interactions with children. Please circle the response that most accurately describes the usefulness of the technique.

1. Narrated child-directed play

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

2. Pre-academic coaching

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

3.Social coaching

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

4. Emotion coaching

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

5. Using pretend play and puppets

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

6. Using emotional self-regulation skills

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

7. Using praise and rewards

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

8. Using nonverbal communication strategies

| extremely useless | useless | slightly useless | neutral | somewhat useful | useful | extremely useful |

D. Evaluation of Group Leaders

Please answer the following questions about your group leader(s). Please circle the response to each question that best describes how you feel.

Group Leader #1_____

<div align="center">(name)</div>

1. The leader's teaching was

very poor	poor	slightly below average	average	slightly above average	high	superior

2. The leader's preparation was

very poor	poor	slightly below average	average	slightly above average	high	superior

3. At this point, I feel that the leader in the program was

extremely unhelpful	unhelpful	slightly unhelpful	neutral	slightly helpful	helpful	extremely helpful

If more than one group leader was involved in your program, please fill in the following. (Go to Section E if only one leader was involved.)

Group Leader #2_____

<div align="center">(name)</div>

1. The leader's teaching was

very poor	poor	slightly below average	average	slightly above average	high	superior

2. The leader's preparation was

very poor	poor	slightly below average	average	slightly above average	high	superior

3. At this point, I feel that the leader in the program was

extremely unhelpful	unhelpful	slightly unhelpful	neutral	slightly helpful	helpful	extremely helpful

E. Parent/Teacher Group

In this section, please answer the following questions about your group. Please circle the response that describes how you feel.

1. I feel the group was

| very unsupportive | unsupportive | somewhat unsupportive | neutral | somewhat supportive | supportive | very supportive |

2. Concerning other group members' interest in my situation, I felt they were

| very uninterested | uninterested | somewhat uninterested | neutral | somewhat interested | interested | very interested |

3. I would like to keep meeting as a group

YES   NO

4. How likely is it that you will continue meeting with one or more of the participants in your group?

| highly unlikely | unlikely | somewhat unlikely | neutral | somewhat likely | likely | very likely |

F. Your Opinion

1. How could the program have been improved to help you more?

2. At this time do you feel the need for additional assistance? Please elaborate.

3. What did you see as the main benefit of the *Helping Preschool Children with Autism: Teachers and Parents as Partners* program?

Thank you for your patience in filling out all of these questionnaires. Your input is very much appreciated, and really helps us to plan future programs.

Appendix T
Pediatric Quality of Life Inventory

ID No.:_____

Date:_____

PedsQL ™
Paediatric Quality of Life
Inventory

Version 4.0 – English (Australia)

PARENT REPORT for **TODDLERS** (ages **2-4**)

DIRECTIONS

On the following page is a list of things that might be a problem for **your child**.
Please tell us **how much of a problem** each one has been for **your child** during the **past ONE month** by circling:

0 if it is **never** a problem
1 if it is **almost never** a problem
2 if it is **sometimes** a problem
3 if it is **often** a problem
4 if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

*In the past **ONE month**, how much of a **problem** has your child had with…*

PHYSICAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Walking	0	1	2	3	4
2. Running	0	1	2	3	4
3. Participating in active play or exercise	0	1	2	3	4
4. Lifting something heavy	0	1	2	3	4
5. Bathing	0	1	2	3	4
6. Helping to pick up his or her toys	0	1	2	3	4
7. Getting aches and pains	0	1	2	3	4
8. Having a low energy level	0	1	2	3	4

EMOTIONAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Feeling afraid or scared	0	1	2	3	4
2. Feeling sad	0	1	2	3	4
3. Feeling angry	0	1	2	3	4
4. Having trouble sleeping	0	1	2	3	4
5. Worrying	0	1	2	3	4

SOCIAL FUNCTIONING *(problems with…)*	Never	Almost Never	Some-times	Often	Almost Always
1. Playing with other children	0	1	2	3	4
2. Other children not wanting to play with him or her	0	1	2	3	4
3. Getting teased by other children	0	1	2	3	4

	Never	Almost Never	Some-times	Often	Almost Always
4. Not being able to do things that other children his or her age can do	0	1	2	3	4
5. Keeping up when playing with other children	0	1	2	3	4

Please complete this section if your child attends daycare, preschool/kindergarten or school

SCHOOL FUNCTIONING (problems with…)	Never	Almost Never	Some-times	Often	Almost Always
1. Doing the same daycare/preschool/kindergarten/school activities as other children his or her age	0	1	2	3	4
2. Missing daycare/preschool/kindergarten/school because of not feeling well	0	1	2	3	4
3. Missing daycare/preschool/kindergarten/school to go to the doctor or hospital	0	1	2	3	4