Technical Review of Published Research on Applied Behaviour Analysis Interventions for People with Autism Spectrum Disorder

Final Report for New Zealand Ministry of Education
and Ministry of Health

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CONFLICT OF INTEREST: STATEMENT

All the authors of this report are to some degree involved in the practice of behaviour analysis, teaching behaviour analysis, or research in behaviour analysis. No authors who contributed significantly to the review have any proprietary or pecuniary interest in any service or product involving behaviour analysis and autism spectrum disorders, other than as employees of public tertiary education institutions engaged in teaching, research, and community service.

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Phillips	✓	✓			Databases, trainer
Jeffrey	✓	✓			Organised reviews
Arnold-Saritepe	✓	✓			
Rose	✓	✓			
Foster	✓	✓	✓		
McEwan	✓				
Messick	✓	✓			
Sumpter	✓				
Blampied			✓	✓	
Church				✓	
Prochnow	✓	✓			
Hunt	✓	✓	✓		WoS search
Harper			✓	✓	
Lie	✓	✓			
Peters	✓	✓			
Wilczynski	✓			✓	NSP Liaison, review consultant
Palairet					Contract Manager

CONFIDENTIALITY STATEMENT

All National Standards Project (NSP) methods that have not otherwise been published in Wilczynski and Christian (2008) are copyright protected by NSP and are copied in this report with the permission of NSP, provided that this version of the report is not circulated or distributed beyond those directly involved in the reviews sponsored by the Ministry of Education and Ministry of Health. No NSP data have been published at this time and, again, the authors have NSP's consent to report on their findings provided that this draft review is kept confidential to the New Zealand review team and Ministry personnel directly involved. NSP predict that their final report will be released by June 2009.

The NSP's principal researcher (Dr Susan Wilczynski) has asked that we note that the NSP has made modifications to their procedures since the Wilczynski and Christian (2008) chapter was written for publication. The New Zealand authors have included updated definitions from NSP where they have changed from the Wilczynski and Christian (2008) chapter. Since NSP provided us with data from their preliminary analysis, and following review of their findings by their Expert and Consumers' Review Panels, the final report from NSP will differ from our report with changes to the categorisation of interventions (Table 2, p. 16 et ff) and the Strength of Evidence Classification System [SECS] (p. 63). NSP's amendments will result in fewer categories in both Tables. The changes to the SECS have been made in the NSP to add clarity to the results for the general public. Nevertheless, the findings we report for ABA interventions are likely to be a close approximation to those that will be reported by NSP.

EXECUTIVE SUMMARY

Preamble

Applied Behaviour Analysis (ABA) is defined as *a scientific approach for discovering environmental variables that reliably influence socially significant behavior and for developing a technology of behavior change that takes practical advantage of those discoveries* (Cooper et al., 2007, p. 3). As a means to produce meaningful changes to behaviour ABA has demonstrated its effectiveness at the level of the individual, group or community. This effectiveness has been highlighted by the large number of publications, spanning back five decades, illustrating significant behavioural change that can be maintained after the intervention has ceased across a range of settings and behaviours (including educational, health, animal welfare, sporting performance, and psychological well being).

As outlined in the 'New Zealand Context' section, New Zealand has access to high quality training programmes that carry international recognition in the areas of ABA and the Experimental Analysis of Behaviour. As such, we are fortunate in this country to have people with the sufficient depth of skill required to successfully develop ABA interventions as well as conduct the comprehensive and internationally-credible review reported in this document.

Purpose and Scope of the Review

The attached report consists of a comprehensive review of the evidence concerning the effectiveness of applied behaviour analytic intervention methods for people with Autism Spectrum Disorders (ASD). The review was in response to a call by the New Zealand Ministries of Health and Education for an assessment of the effectiveness of behaviourally-based interventions as determined by studies published between 1998 and 2007. The data used for this review was gained from two main sources:

- from existing analyses of peer-reviewed publications previously collected by the National Autism Center National Standards Project (NSP) based in the USA; and
- from additional publications that met the appropriate criteria laid out by the Ministries of Health and Education that had not been included in the NSP.

Method

Studies included for analysis (irrespective of whether they were sourced from the NSP or by NZ-based reviewers) had to meet a range of criteria (as outlined in the 'Review Method' section). In addition to restricting articles to those published between 1998 and 2007, studies were only included if they met, or exceeded a score of 2.0 on the Scientific Merit Rating Scale (SMRS). In total 463 items[1] were retained from the NSP database along with 45 New Zealand unique items (that met inclusion criteria but had not formed part of the NSP database).

Articles were also analysed to determine the specific components of the behavioural intervention package (see Table 2), the type of behaviours assessed (as per Ministry of Education

[1] Many articles reviewed reported more than one independent variable and/or dependent variable and/or two or more studies within the article. Every variation can be viewed as a discrete study, or research "item", where the simplest case (or item) is one study with one dependent variable and one independent variable. Each article was scored as many times as there were variations within it. Hence, in reporting findings, numbers of items rather than numbers of articles are counted.

supplied classifications identified on Table 5), as well as the impact of the interventions utilised (using the Strength of Evidence Classification System – SECS). Note that the 13 New Zealand based reviewers underwent extensive training in the coding schemes (as did their NSP counterparts) and national and international checks of inter-rater reliability were determined to be generally high.

Main Findings

Overall, there is strong evidence that behavioural interventions result in beneficial outcomes for individuals with ASD. Figure 1 shows the percentage of outcome type ('beneficial', 'ineffective', harmful', or 'unknown') averaged across the range of specific behaviours assessed (ranging across a variety of social and cognitive domains). Although the efficacy of approximately one quarter of the items examined was unable to be clearly determined, the vast majority of outcomes were beneficial in the remaining cases, and thus a meaningful and desirable change in behaviour occurred as a specific result of that intervention. Only 2% of 508 items that contributed to our results were rated to show that a behavioural intervention was ineffective in a particular case. However, no behavioural interventions were rated overall as ineffective. In no case was harm reported as a result of behavioural intervention.[2]

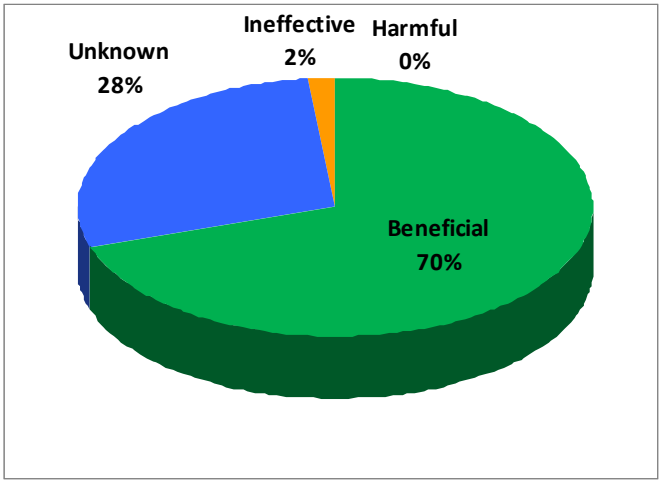

Figure 1. *Overall efficacy of behavioural treatment across all behavioural categories assessed*

In addition to the overall findings it should be noted that this same overall pattern of beneficial effects was also observed across specific individual behavioural categories. Figures 2 to 9 illustrate this for each of the relevant behavioural categories identified in Table 5 (refer to Results sections 1 to 9 for details). Specifically, the overall evidence for beneficial outcomes was rated as 'strong' in the areas of social development, cognitive development, communication, play / vocational engagement, development of organisational skills, and prevention and replacement of challenging behaviours. There was strong evidence for the benefits of comprehensive early intervention programmes for some areas of development.

[2] Although the vast majority of articles reviewed reported on the results of 'intervention packages' (i.e. where more than one specific behaviourally-based intervention was applied within the study) a range of specific features can be identified in those packages. Those features are illustrated in Tables 2 and 6.

Efficacy of ABA interventions by specific behavioural categories

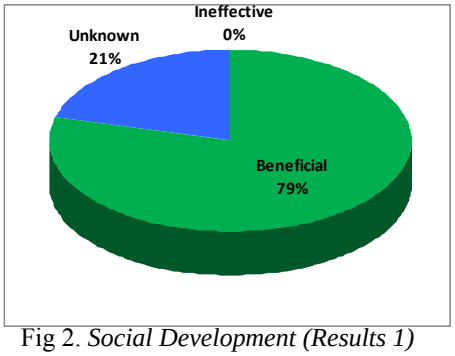

Fig 2. *Social Development (Results 1)*

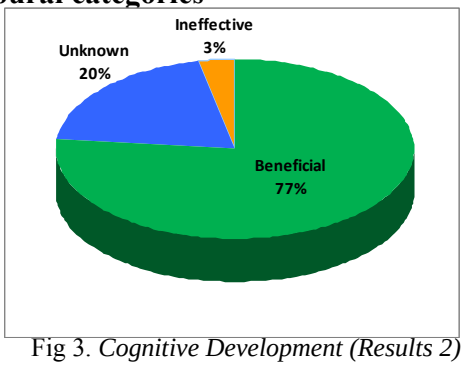

Fig 3. *Cognitive Development (Results 2)*

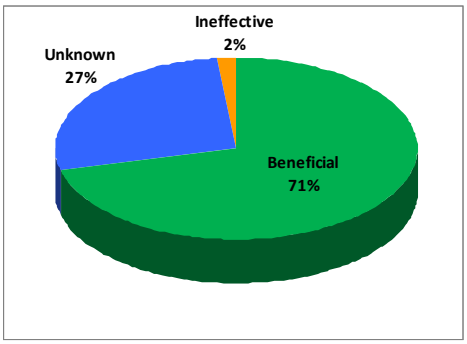

Fig 4. *Communication (Results 3)*

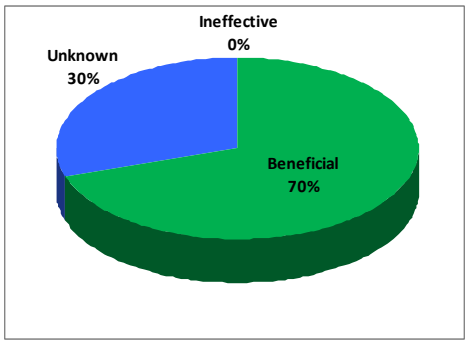

Fig 5. *Play / Vocation Engagement (Results 4)*

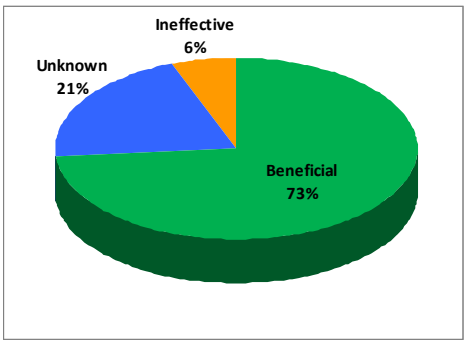

Fig 6. *Independent Organisation (Results 5)*

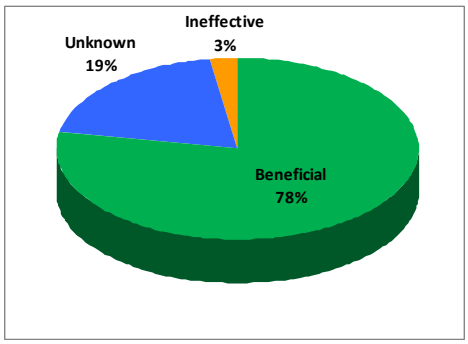

Fig 7. *Prevention of Challenging Behaviours (Results 6)*

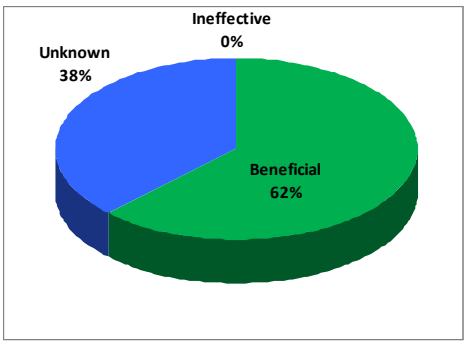

Fig 8. *Reducing challenging behaviours (Results 7)*

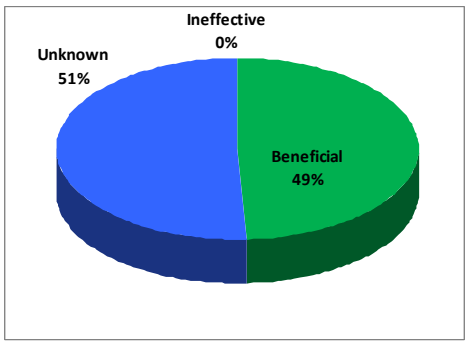

Fig 9. *Comprehensive Interventions (Results 8)*

Comments on generalisation and maintenance

Greater utility of an intervention (irrespective of how effective it is in changing a specific behaviour in a specific setting) often depends on whether desirable changes go beyond initial settings and can be maintained beyond the initial intervention period. 'Generalisation' is concerned with the spreading of an intervention's effects beyond initial settings to novel naturalistic ones; whereas 'maintenance' is concerned with ongoing intervention effectiveness after formal intervention has ceased to be applied.

Because the relevant data was not able to be obtained from the NSP study, generalisation and maintenance were only assessed for 169 research items reviewed by New Zealand reviewers. This analysis (outlined in Results 9) revealed that close to two thirds of ABA interventions displayed strong evidence that main intervention effects generalised beyond their initial training environments. There did not appear to be any particular relationship between type of intervention, level of intervention efficacy, and the behaviours targeted and whether generalisation was displayed or not. Similarly, maintenance of main effects was demonstrated in 75% of studies that reported the appropriate data. Maintenance, also, was observed irrespective of intervention type and behavioural category. Therefore, there is convincing evidence that ABA treatments generalised beyond their initial settings and their effectiveness could be maintained for the majority of ASD participants beyond the initial intervention period.

Scope of Current Research and Future Opportunities

One of the strengths of the current review was the utilisation of a large number of independent reviewers and the incorporation of a large international data base. Despite the number of individuals involved there was generally high inter-observer agreement and the pattern of findings was remarkably consistent across reviewers charged with analysing separate behavioural categories (compare Figs 2 to 9). However, lower levels of inter-observer reliability were observed for the analyses of generalisation and maintenance effect sections; so these results may need to be treated with caution until a larger database is obtained or further work can be conducted.

Several other observations to emerge during the review also indicate the need for further research in the area of ABA treatments of ASD, specifically:

- A number of items had to be excluded from further analysis because they failed to meet an adequate level of scientific rigour (defined as an SMRS score of less than 2.0). A number of reasons for this are identified in Results 12. One important factor is the common use of single-participant research designs. However, the implication is that researchers in this area need to take in to account various design features if their studies are to be included in reviews such as the NSP and the current one.
- The extent of evidence concerning beneficial outcomes is lacking (that is, either emerging or unknown) for persons with an Asperger Syndrome diagnosis. Strong evidence exists for benefits for children up to the age of 15 years. However, across the ASD spectrum, there is, to date, insufficient evidence to provide strong support for ABA interventions for participants aged 15-21 years, and in the target categories of academic skills, learning readiness, and problem behaviours of all types. The New Zealand review data (see Appendix C) may be seen as providing emerging evidence for benefits for adults > 21 years in some target areas, but clearly there is more scope for research in these specific areas.

Final Comment

The current review demonstrated that ABA interventions can produce meaningful and desirable behavioural change in individuals with ASD, and taken as a whole, there is strong support for the effectiveness of ABA interventions in the treatment of ASD. Significant benefit was also consistently illustrated at the level of specific behavioural categories; with evidence at this level either meeting the criterion of 'emerging evidence' or 'strong support' for the conclusion of intervention effectiveness. It is important that agencies charged with providing resources for the treatment and education of people with ASD take notice of these findings. Fortunately, New Zealand has two internationally-recognised ABA training programs that lead to qualifications recognised by the Behavior Analyst Certification Board that can potentially produce skilled practitioners able to implement the types of skilled interventions outlined in the current review.

INTRODUCTION

New Zealand Ministries of Education and of Health requested a technical review of the evidence base on the effectiveness of Applied Behaviour Analysis (ABA) for people with Autism Spectrum Disorders (ASD). All data presented in this report were from review of original research articles using the methods developed by the National Autism Center National Standards Project (NSP; see Wilczynski & Christian, 2008[3]). The New Zealand ABA Review Group operated within an affiliation agreement between NSP and Auckland UniServices Ltd enabling cooperation between the review team and NSP. NSP recruited approximately 80 reviewers across the US and internationally to conduct their reviews. The New Zealand review team included 13 reviewers, of whom approximately half had been trained and provided reviews for NSP before the New Zealand review project commenced.

The NSP review covers peer-reviewed scientific publications investigating the effects of interventions for children and young people (ages 0-21 years). The interventions include all those that could realistically be replicated in educational and/or clinical settings. The New Zealand Ministries of Health and of Education called for behaviour analytic intervention studies, published from 1998-2007, to be reviewed without any participant age limits. The New Zealand review scope is, for the most part, a subset of the NSP review's scope. The NSP did not include studies in which all the participants were >21 years old, nor participants' data if they had medical complications or psychotic disorders.

The aim of the NSP was to determine the interventions that are best supported by the scientific evidence concerning their benefits. The basic process adopted by NSP was to identify likely relevant articles from the scientific literature, measure the scientific merit and treatment benefits from each article, group research articles by categories, and calculate the overall strength of evidence from consideration of all articles in each category. Strength of evidence for benefits was rated by NSP as (A) strongest, (B) strong, (E) emerging, (U) unestablished, (I) ineffective, and (H) harmful. Two points relevant to the present report arise. First, the New Zealand reviewers are reviewing only behavioural interventions and therefore no direct comparison is possible with the strength of evidence concerning other approaches (e.g., "developmental-pragmatic"). Readers will need to consult the NSP's report to enable that. Wilczynski and Christian (2008) predicted that the NSP report would be published in the (northern) Spring of 2008. The most recent estimate is "by June 2009" (Susan Wilczynski, personal communication, 10th February, 2009). Second, it is not obvious how the NSP's A, B, E, etc. ratings map onto those employed by the Ministries in the New Zealand Autism Spectrum Disorder Guideline (2008, p. 14). Wilczynski and Christian (2008) concluded that "Those interventions that hold strong or the strongest levels of research support after the completion of the National Standards Project should be given greatest consideration when selecting treatments". As of January 2009, NSP have now eliminated the distinction between Strong and Strongest levels of support to avoid confusion for their readers. We acknowledge that this may create confusion for readers of both our reports. NSP findings contained in our report that are rated as providing Strong evidence will be categorised by NSP as indicating "Established Treatments" in line with the wider evidence-based practice movement in human services. Further discussion in New Zealand concerning these issues in the light of the reviews' findings is to be encouraged.

[3] References to sources other than articles included or excluded in the Review are given in a Reference list below.

NSP provided the New Zealand team with coding manuals; coding forms; algorithms for determining the scientific merit of research articles, treatment effects, and strength of evidence; and evidence tables containing their data from behavioural intervention studies. In the NSP, scientific merit was assessed by the Scientific Merit Rating Scale (SMRS), a copy of which is appended (Table 1, Appendix A). The factors rated 0-5 for scientific merit were: Research design (.30), measurement of the dependent variable (.25), measurement of the independent variable (.15), quality of diagnosis (.20), and the extent to which generalization and maintenance effects could be determined (.10). The scores were multiplied by the number in brackets and added to obtain a "composite SMRS" score from 0 – 5.

The NSP's method for rating of "treatment effects", i.e., whether a particular study demonstrated beneficial, unknown, ineffective, or adverse effects for the participants with ASD, is copied as Table 2, Appendix A. The NSP method for summarising the strength of evidence across groups of studies that reported similar independent variables (e.g., ABA methods) and similar dependent variables (e.g., communication skills, problem behaviours), the Strength of Evidence Classification System (SECS) is copied in Table 3, Appendix A.

REVIEW METHOD

Literature search procedure

A detailed description of search and article inclusion and exclusion criteria is included in Appendix B. Briefly:

1. A comprehensive search for the ASD treatment literature was conducted;
2. Titles of articles were examined to apply exclusion criteria;
3. Abstracts were scrutinised and exclusion criteria applied;
4. Articles excluded from this point are noted in Appendix D3, along with the reason for exclusion;
4. References remaining were compared with NSP's lists of included and excluded articles;
5. Three references were retained from a list provided by the Ministry of Education;
6. A New Zealand-unique list of references was retained that appeared to report research on ABA for ASD;
7. One hundred and twenty-nine references were sent to NSP that had been neither included nor excluded by them at that time;
8. Original articles from that list were examined and further exclusions were made;
9. One hundred and twelve articles were reviewed by members of our review team.

New Zealand reviewers' methods

NZ-unique articles that reported on comprehensive early intensive behavioural intervention programmes (N=8) were coded partially in NZ, and completed by NSP reviewers with expertise with reviewing this type of research report using NSP criteria. NZ-unique articles that reported on focussed interventions (N = 112) were coded using NSP methods by New Zealand reviewers. It can be noted here that nine further articles were excluded because, on closer examination by New Zealand or NSP reviewers, they were found not to have met inclusion criteria.

Reviewer training had been conducted for six of the 13 New Zealand reviewers early in 2008 by NSP. This involved using the National Autism Center's *Coding Manual for Focussed*

Interventions for the NSP (2007) to code one or more training articles onto an interactive standard coding form which, when complete, was electronically transmitted to the NSP's data-analysis team in the US. Reviewers were considered trained provided their coding exceeded 80% agreement with a pre-established criterion

Despite this initial training, feedback from reviewers to the technical manager of the New Zealand team indicated that reviewers found the NSP coding forms difficult to use and prone to creating errors. All the New Zealand reviewers were then retrained to enter their data directly into locally designed evidence tables (customised Excel spreadsheets), which were later merged. Retraining was conducted in Auckland, Hamilton and Dunedin one-on-one by two University of Auckland team members. Each reviewer and trainer spent two hours working together, coding three or four articles from the reviewer's allocation according to the NSP coding manual and applying the Scientific Merit Rating Scale (SMRS) scoring criteria.

The 112 articles were distributed quasi-randomly but equally among NZ reviewers. Fourteen duplicates were also distributed for the purpose of establishing reliability (assessed as inter-observer agreement, explained below) among the New Zealand review team. In most cases articles were distributed as .pdf versions of the original article, although some articles that were available only from paper journals were distributed among University of Auckland reviewers. When each reviewer had completed their allocated reviews, their evidence tables were checked for obvious errors before being collated into a single evidence table.

Inter-observer agreement

Every reviewer had coded a randomly allocated article also reviewed by another reviewer, so all reviewers' coding was subjected to at least two reliability checks. Interobserver agreement was calculated for every variable using procedures common in ABA research. Exact agreement percentage was used for some variables, and mean smaller/larger calculations for others. See Table 1 for variables, calculation methods, and results concerning interobserver agreement.

Table 1. *Interobserver agreement among New Zealand reviewers' codings of original research articles.*

	Variable	Method	% Agreement
Participant demographics	N with ASD	Exact agreement	95
	Diagnostic categories		91
	Sex		100
	Race		95
	Co-morbidities		100
	Ages		95
Dependent variable	NSP category		86
Scientific merit	SMRS score	Mean S/L	89
Effects of treatment	Main benefits	Exact agreement	86
	Generalisation effects		68
	Maintenance effects		64

Interobserver agreement exceeded the conventional 80% criterion for "acceptable" for 10 of the 12 variables in Table 1. The problematic variables concerned whether generalisation and maintenance effects had been demonstrated with agreement values of 68% and 64% respectively.

Databases (evidence files) from NSP and New Zealand reviewers' codings

Many articles reviewed reported more than one independent variable and/or dependent variable and/or two or more studies within the article. Every variation can be viewed as a discrete study, or research "item", where the simplest case (or item) is one study with one dependent variable and one independent variable. Each article was scored as many times as there were variations within it; therefore, the Excel evidence files from both the New Zealand database and the NSP database have more rows (items) than articles. Henceforth, numbers of items rather than numbers of articles will be reported.

The vast majority of behavioural intervention studies reported using a range of behavioural procedures that have been found individually to be empirically-supported in previous more experimental research. Interventions employing multiple strategies can be called "treatment packages", "multi-component behavioural interventions" or "behavioural intervention packages". For brevity, NSP use the term "package" and their reviewers noted the predominant features of the package as identified by the authors of the relevant research articles. NSP's description of the packages is copied in Table 2. It can be noted here that NSP did not consider "Social Stories" packages as being in the realm of ABA. Consequently they did not provide review data for us to include review of that intervention approach.

Table 2. *NSP's categorisation of behavioural interventions* ()

Package	**NSP description**
Antecedent	These interventions involve the modification of situational events prior to the occurrence of a target behavior as a means of reducing the likelihood an individual will face difficulties in the future. Examples include but are not restricted to: habit reversal, noncontingent access, incorporating echolalia or ritualistic/obsessional activities into tasks, prompting procedures, Power Card strategy, presence/absence of others, maintenance interspersal, choice, behavioral momentum, and varied task difficulty.
Behavioural	These interventions are designed to reduce problem behavior and teach functional alternative behaviors or skills through the application of basic principles of behavior change. Treatments falling into this category emanate from the fields of applied behavior analysis and positive behavior supports. Examples include but are not restricted to: environmental arrangement, shaping, chaining, task analysis, discrete trial teaching, and reinforcement.

Early IBI [intensive behavioural intervention]	This treatment reflects research from comprehensive treatment programs that involve a combination of applied behavior analytic procedures (e.g., discrete trial, incidental teaching, etc.) which is delivered to young children (generally under the age of 8). These treatments may be delivered in a variety of settings (e.g., home, self-contained classroom, inclusive classroom, community), involve a low student-to-teacher ratio (e.g., 1:1). All of the studies falling into this category met the strict criteria of: (a) targeting the defining symptoms of ASD, (b) have treatment manuals, (c) providing treatment with a high degree of intensity, and (d) measuring the overall effectiveness of the program [i.e., studies that measure subcomponents of the program are listed elsewhere in this report]. These treatment programs may also be referred to as ABA programs or behavioral inclusive classrooms.
Exposure	These interventions require that the individual with ASD increasingly face anxiety-provoking situations while preventing the use of maladaptive strategies used in the past under these conditions.
FCT [functional communication training]	These interventions involve substituting an appropriate method of communicating in lieu of a maladaptive strategy used in the past.
Joint attention (e.g., behavioural definitions from Rocha et al., 2007)	"Coordinated joint attention was defined as the child is actively involved with a person and object and alternates gaze between the adult and an object. Joint attention responding occurred when the child responded appropriately and without prompting to the joint attention bid of another person within 3 sec (i.e. engages with object). Joint attention initiation occurred when an adult initiated with the child to communicate about an object (i.e., initiated towards the child with an object by placing the child's hand on the object, tapping the object, showing the object, or gaze shifting towards an object with or without a point)."
Modelling	These interventions rely on demonstrations of the target behavior that should result in an imitation of the target behavior by the individual with ASD. Examples include live and video modeling.
Naturalistic teaching	These interventions involve using primarily child-directed interactions to teach functional skills in the natural environment. Examples of this type of approach include but are not limited to, focused stimulation, incidental teaching, milieu teaching, embedded teaching, and responsive education and prelinguistic milieu teaching.

Peer training	These interventions involve teaching children without disabilities strategies for facilitating their play and interactions with children on the autism spectrum.
PECS [picture exchange communication system]	This treatment involves the application of a specific augmentative and alternative communication system based on behavioral principles that is designed to teach functional communication to children with limited verbal and/or communication skills.
PRT [pivotal response training]	Pivotal Response Training focuses on targeting 'pivotal' behavioral areas—such as motivation to engage in social communication, self-initiation, self-management, and responsiveness to multiple cues, with the development of these areas having the goal of very widespread and fluently integrated collateral improvements. Key aspects of PRT intervention delivery also focus on parent involvement in the intervention delivery, and on intervention in the natural environment such as homes and schools with the goal of producing naturalized behavioral improvements. This treatment is an expansion of Natural Language Paradigm, one of the naturalistic teaching strategies.
Reductive	These interventions rely on strategies designed to reduce problem behaviors in the absence of increasing alternate appropriate behaviors. Examples include but are not restricted to: water mist, behavior chain interruption, protective equipment, ammonia.
Schedules	These interventions involve the presentation of a task list that communicates a series of activities or the steps required to complete a specific activity. Schedules can take several forms including written words, pictures, or photographs.
Scripting	These interventions involve developing a verbal and/or written script about a specific skill or situation which serves as a model for the child with ASD. Scripts are usually practised repeatedly before the skill is used in the actual situation.
Self-management	These interventions involve promoting independence by teaching individuals with ASD to regulate their behavior by recording the occurrence/nonoccurrence of the target behavior and securing reinforcement for doing so.
Social skills	These interventions seek to build social interaction skills in children with ASD by targeting basic (e.g., eye contact, name response) to complex (e.g., how to initiate or maintain a conversation) social skills.

Verbal behaviour	These interventions are based on Skinner's book 'Verbal Behavior' and the principles of applied behavior analysis to guide teaching interactions. Interventions included here are much broader than the single approach sometimes referred to as 'Verbal Behavior Analysis' or 'Analysis of Verbal Behavior.' Examples include but are not restricted to use of multiple discriminative stimuli, intraverbal training, mand training, mand-model training, matrix training, and tact training.

The reviewers' codings of research articles was further categorised in the NSP database according to the behavioural skill deficits or behavioural excesses targeted for amelioration. Table 3 provides an abbreviated description of the categories.

Table 3. *NSP's categorisation of behaviours targeted for change (i.e., dependent variables) in research articles reporting on behaviour analytic interventions.*

Target category	**Abbreviated Description**
Skills increased	
Academic	This category represents tasks that are precursors to or required in order to succeed with school activities. Dependent measures associated with these tasks include but are not restricted to preschool activities (e.g., sequencing, color, letter, number identification, etc.), fluency, latency, reading, writing, mathematics, science, history or skills required to study or perform well on exams.
Communication	The communication tasks involve verbal or nonverbal signaling to a social partner regarding content of sharing of experiences, emotions, information, or affecting the partner's behavior and behaviors that involve understanding a partner's intentional signals for the same purposes. This systematic means of communication involves the use of sounds or symbols. Dependent measures associated with these tasks include but are not restricted to requesting, labeling, receptive, conversation, greetings, nonverbal, expressive, syntax, speech, articulation, discourse, vocabulary, and pragmatics.
Higher Cognitive Functions	These tasks require complex problem-solving skills outside the social domain. Dependent measures associated with these tasks include but are not restricted to critical thinking, IQ, problem-solving, working memory, executive functions, organizational skills, and theory of mind tasks.

Interpersonal	The tasks comprising this category require social interaction with one or more individuals. Dependent measures associated with these tasks include but are not limited to joint attention, friendship, social and pretend play, social skills, social engagement, social problem-solving, and appropriate participation in group activities. The area of pragmatics is not included in this list because it is addressed in the communication section.
Learning readiness	Learning readiness tasks serve as the foundation for successful mastery of complex skills in other domains identified. Dependent measures associated with these tasks include but are not restricted to imitation, following instructions, sitting skills, or attending to environmental sounds.
Personal responsibility	This category targets tasks that involve activities which are embedded in everyday routines. Dependent measures associated with these tasks include but are not restricted to feeding, sleeping, dressing, toileting, motor skills, cleaning, family and/or community activities, health and fitness, phone skills, time and money management, and self advocacy.
Placement	The dependent measure involves level of placement in school, home, or community settings. Examples include but are not restricted to: (a) placement in general education classroom, (b) placement back into the home setting.
Play	Tasks that involve non-academic and non-work related activities that do not involve self-stimulatory behavior or require interaction with other persons. Dependent measures associated with these tasks may include but are not restricted to: functional independent play (i.e., manipulation of toys to determine how they 'work' or appropriate use of toys, games). Whenever social play is targeted (independently or in conjunction with make believe play), it is best to provide the 'interpersonal' code. Each of these descriptors may be further broken down into subcomponents, which may serve as the dependent variable.
Self-regulation	Tasks that involve the management of one's own behaviors in order to meet a goal. Dependent measures associated with these tasks include but are not limited to: persistence, effort, task fluency, transfer of attention, being 'on schedule,' self-management, self-monitoring, self-advocacy, remaining in seat (or its opposite of 'out of seat'), time management, or adapting to changes in the environment.

Vocational (Wilczynski & Christian, 2008)	The tasks in this category are those required to execute semi-independent or independent work. Dependent measures associated with these tasks may include but are not restricted to using a timecard, computer skills, monitoring work quality, accepting feedback, safety in the workplace, securing assistance or requesting a break in the workplace (do not code in communication), adhering to dress code.
Behaviours decreased	
Problems	These behaviors can harm the individual or others OR result in damage to objects OR interfere with the expected routines in the community. Problem behaviors may include but are not restricted to: self-injury, aggression, disruption, destruction of property, hazardous, or sexually inappropriate behaviors.
Restrictive/repetitive	This category is reserved for limited, frequently repeated, maladaptive patterns of motor, speech, and thoughts. The following is a list of representative behaviors: stereotypic and compulsive behaviors, inappropriate speech, or restricted interest.
Sensory/emotional	Sensory and emotional regulation involves the extent to which an individual can flexibly modify his or her level of arousal or response to function effectively in the environment. Examples of behaviors that fall into this category include: stimulus refusal, sleep disturbance, anxiety, and depression.

The New Zealand reviewers' evidence table contained 169 items. NSP had expanded its own review following receipt of our original NZ-unique list to include 81 of the items we had reviewed already. The references for all articles that were identified by our literature searches and that had already been, or were subsequently, reviewed by NSP are contained in Appendix D2. The other 88 items, from 57 original research articles, remained as unique to the New Zealand database.

NSP provided us with sections of their draft database that included their pre-publication results[4]. The extent of data to which we had access is shown in Table 4. The overall strength of evidence, as rated by the Strength of Evidence Classification System (SECS), for the intervention packages was provided to us. The packages were defined in Table 2. The number of items related to each package is shown in Table 4, with the number of items with a Scientific Merit Rating Scale (SMRS) composite score of ≥ 2.0 shown in brackets. Also, NSP provided the Strength of Evidence (SECS) rating concerning research on each of the intervention packages for every target category (Table 3). As well, we had SECS ratings for intervention packages for three diagnostic categories (Autistic Disorder, Asperger's Syndrome, and Pervasive Developmental Disorder) and for the following age ranges (0-3, 4-5, 6-9, 10-14, 15-18, 19-21 years). For example, we had access to the SECS rating for antecedent packages overall,

[4] We have permission from NSP to *review* their pre-publication results. We did not seek NSP's consent to pre-empt their publication by presenting every detail of their results.

antecedent packages for academic skills, antecedent packages for children aged 0-3, and antecedent packages for research participants with an AD diagnosis.

Table 4. *Sub-divisions of the NSP database as provided for this report [SMRS = Scientific Merit Rating Scale].*

Intervention Package	**Number of items (SMRS ≥ 2.0)**
Antecedent	221 (85)
Behavioural	398 (162)
Early IBI	154 (133)
Exposure	8 (7)
FCT	65 (26)
Joint attention	22 (22)
Modelling	80 (62)
Naturalistic teaching	62 (45)
Peer training	71 (44)
PECS	45 (27)
PRT	20 (18)
Reductive	56 (18)
Schedules	14 (9)
Scripting	14 (13)
Self-management	28 (18)
Social skills	48 (23)
Verbal behaviour	26 (15)
Total	1332 (727)

Database of completed reviews

It should be noted that 1332 items were located by NSP reviewers whose literature search was not constrained to the same 10-year block as ours (1998-2007): 823 of the NSP items (i.e., 62%) were published in those years. With the 88 NZ-unique items, the total number of items in the databases which we review in the results sections sub-headed "Evidence from studies published from 1998-2007" was 911.

Final item exclusion criterion introduced. The SECS does not take account of articles (or items) with a SMRS score of < 2.0. Consequently, we report only on reviews of items which scored 2.0 or greater on the SMRS. Applying this last inclusion criterion, 45 items from the original NZ-unique list were retained and the rest moved to our exclusion list. For the same reason, we report on the findings from only 463 items from the NSP database. Hence the database for items from 1998-2007 with SMRS≥2.0 was 508.

See Figure 10 (next page) for flow chart showing origin of numbers of items in the final database.

NSP/NZ inter-site agreement between reviewers

We used the data from duplicated reviews to calculate interobserver agreement between NSP and New Zealand reviewers. The duplications occurred because NSP chose to review independently 55 articles (81 items) from our original NZ-unique list. Agreement on composite

SMRS score between NSP and New Zealand reviewers was calculated for the first 70 items for which we had both datasets. Allowing 0.5 variation in SMRS scores between reviewers, inter-site agreement was 84%. NSP SMRS scores were higher on 59% of items where there was a difference in scores between sites. For only three items (4% of items) there was a difference >1 SMRS score. Hence, agreement between sites was satisfactory and not notably biased by either site's particular methods of scoring. This is an encouraging finding since New Zealand reviewers' SMRS data were scored directly into evidence tables whereas NSP review data was scored to electronic forms and then converted into their evidence tables.

Agreement on rating of main effect, i.e., whether the item showed beneficial, unknown, ineffective, or adverse effects for participants with ASD, was calculated between sites for the same 70 items that had been reviewed independently by both teams. Agreement on category (e.g., both teams reported "beneficial") was 74%. All cases of disagreement were between the categories of beneficial and unknown. For all but one of the items with disagreement, the NSP reviewers were more conservative in their ratings. It is for this reason that we decided to report NSP findings for items that both teams of reviewers rated.

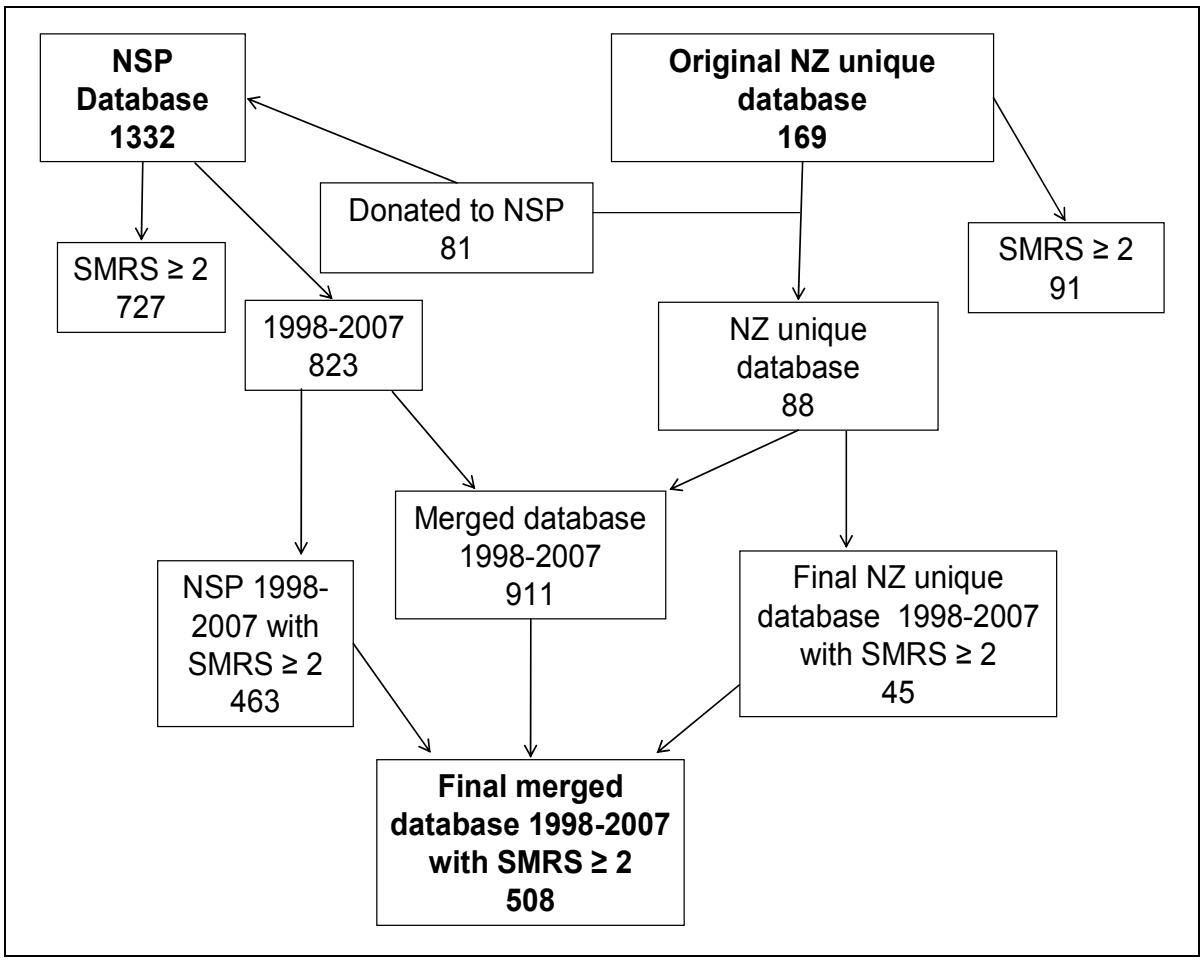

Figure 10. *Flow chart showing origins of ABA research items in databases*

RESULTS

Reporting on results of our review by Ministry of Education target categories

Table 5 shows the required organisation of the review as specified by the Ministry of Education and the equivalent (or best fit) National Standards Project (NSP) classifications of the evidence divided by targeted areas for intervention. The extent to which NSP and Ministry categories match is discussed at the start of each section of the results and in the Discussion section.

Table 5. *Ministry of Education and corresponding NSP categories of behaviours targeted for intervention.*

Section	Ministry of Education categories	Equivalent NSP categories (from Table 3)
1	Social development and relating to others	Interpersonal
2	Development of cognitive (thinking) skills	Learning readiness Academic Higher cognitive functions
3	Development of functional and spontaneous communication which is used in natural environments	Communication
4	Engagement and flexibility in developmentally appropriate tasks and play and later engagement in vocational activities	Independent play/leisure Vocational
5	Development of independent organisational skills and other behaviours	Personal responsibility Self-regulation
6	Prevention of challenging behaviours and substitution with more appropriate and conventional behaviours	Includes all problem behaviours that have been changed using antecedent manipulations, and those changed using methods that increase incompatible or alternative behaviours
7	Reducing challenging behaviours Replaces "Improvement in behaviours considered non-core ASD behaviours, such as sleep disturbance, self mutilation, aggression, attention and concentration problems."	Includes all problem behaviours changed by behavioural methods other than those defined for the "prevention" category
8	Comprehensive behavioural programmes	Early intensive behavioural intervention

9	Generalisation of abilities across multiple natural environments outside the treatment setting	Included in SMRS coding, and can be extracted therefrom
10	Maintenance of effects after conclusion of intervention	Included in SMRS coding, and can be extracted therefrom
	Development of fine and gross motor skills (not addressed in this review – see below for explanation)	

The writers of Result Sections 1 to 8 (Table 5) were supplied with the NSP Strength of Evidence Classification System (SECS) tables (described in Table 4) and Excel spreadsheets containing evidence tables with NSP and NZ-unique data for their particular category. These evidence tables contained data only on items published from 1998-2007 with Scientific Merit Rating Scale (SMRS) scores ≥ 2.0. Each produced a succinct report using the standardised headings and methods, as follows.

1. *Introduction*: Explained how the Ministry of Education category was addressed by one or more NSP categories.

2. *Evidence from NSP review*: Described evidence from SECS ratings across different behavioural intervention categories (Table 2) relevant to the section.

3. *Additional evidence from New Zealand reviewers*: Included description of additional data provided from New Zealand-unique items, i.e., the extent to which additional data may have changed NSP's findings. (See Appendix C for data and Appendix D1 for references)

4. *Evidence from studies published from 1998-2007*: Data contained in section writers' spreadsheets were reviewed and indications given for strength of evidence concerning the use of behavioural methods to alleviate behavioural deficits (sections 1 – 5) or reduce behavioural excesses (sections 6 & 7) or both excesses and deficits (section 8) when only 1998 – 2007 articles were included.

5. *Brief summary of section*.

The writers of Results Sections 9 and 10 took a different approach since the data they reviewed derived from all of the items in the NSP and NZ-unique evidence tables, across all categories of intervention type and intervention targets. They were instructed to report on the extent to which generalisation (or maintenance) had been addressed by experimental design and method and to review generalisation and maintenance effects for the items recorded in the original NZ-unique database of 91 items with SMRS >2.0. This represents 18% (91/508) of the SMRS composite > 2.0 of NSP and NZ databases combined. The reason for non-inclusion of review of generalization and maintenance effects from the NSP database is explained at the beginning of these sections.

Motor skills were assessed in only four items with SMRS > 2.0 published in 1998-2007. In no case were motor skills specifically targeted for change, but were assessed routinely as part of comprehensive Vineland assessments. Since the vast majority of behaviours (the subject matter of ABA) involve fine and/or gross physical movement, most categories of behaviour targeted for improvement could be viewed as motor behaviours. We believe that interventions that aim to target these skills directly have not used ABA methods or, if they have, none of the research studies met our inclusion criteria. Possibly, since motor skills deficits are not defining features of ASD, there has been little research interest in addressing them. For these reasons, and with prior agreement from the Ministry of Education (7th October, 2008), we have not produced a review of ABA interventions targeting motor skills specifically.

Results 1. Social Development and Relating to Others

The classification of 'Social development and relating to others', as defined by the Ministry of Education, fits closely with the definition of 'Interpersonal skills' as given by Wilczynski and Christian (2008, p.52):

> *Interpersonal.* The tasks comprising this category require social interaction with one or more individuals. Dependent measures associated with these tasks include but are not limited to joint attention, perspective-taking, friendship, social and pretend play, social skills, social engagement, social problem-solving, and appropriate participation in group activities. The area of pragmatics is not included in this list because it will be addressed in the communication section.

Evidence from NSP review

There is strong evidence for the efficacy of behavioural interventions implemented to improve interpersonal skills. There were 78 items with composite SMRS ≥ 2.0 reviewed by the NSP that pertained to the acquisition of interpersonal skills. These items show that the specific behavioural intervention methods that met the criteria for 'strong evidence' are: Behavioural package, joint attention, modelling, naturalistic teaching strategies and peer training package. Behavioural intervention methods that met the criteria for 'emerging evidence' for improving social development are: Antecedent package, pivotal response treatment, scripting, self-management and social skills package.

Additional evidence from New Zealand reviewers

Seven additional items were reviewed in New Zealand. Five items showed beneficial effects among the nine participants. One item obtained an SMRS score of 4.0, another scored 3.0, and the remaining three scored 2.0. These data support the overall NSP SECS outcome that behavioural intervention methods are beneficial for improving interpersonal skills.

Evidence from studies published from 1998-2007

Of the 85 reviewed items, seven obtained SMRS scores ≥ 4.0. Three of these show beneficial effects and the efficacy of the remaining four are unknown. Thirty-one items obtained SMRS scores between 3 and 3.9, and 26 of these show beneficial effects while the remaining five are unknown. Forty-seven items obtained SMRS scores between 2 and 2.9. Thirty-nine of these show beneficial effects and the remaining eight are unknown. None of the 85 items showed ineffective or harmful effects. Considering this decade of research alone, there is still strong evidence for the benefits of behavioural interventions for improving social skills.

Summary of this section

Overall, there is strong evidence that behavioural intervention methods are beneficial for improving interpersonal skills. There were twice as many articles published from 2005 to 2007 than there are from 1998 to 2004. This shows a considerable increase in research in this area. A wide range of different behavioural intervention methods was used.

Results 2. Development of Cognitive Skills

The Ministry of Education classification of the development of cognitive skills is best represented in this review by the NSP classifications of learning readiness, academic, and higher cognitive functions skills. The NSP has defined learning readiness as tasks which "serve as the foundation for successful mastery of complex skills …, dependent measures associated with these tasks include but are not restricted to imitation, following instructions, sitting skills, attending to environmental sounds [and] attention to tasks" (Wilczynski & Christian, 2008, p. 52). Academic tasks are defined by the NSP as "tasks that are precursors to or required in order to succeed with school activities. Dependent measures associated with these tasks include … preschool activities (e.g., sequencing, color, letter number identification, etc.), fluency, latency, reading, writing, mathematics, science, history or skills required to study or perform well on exams" (Wilczynski & Christian, 2008, p. 51). Higher cognitive functions have been defined as tasks which "require complex problem-solving outside the social domain… including … critical thinking, IQ, problem-solving, working memory, executive functions, organizational skills, and theory of mind tasks" (Wilczynski & Christian, 2008, p. 52). These NSP classifications and definitions seem to cover the Ministry of Education classification of development of cognitive skills quite well.

Evidence from the NSP review

There is emerging evidence that antecedent package interventions were useful for the development of academic skills. Behavioural packages demonstrated emerging evidence for the development of both academic and learning readiness skills. Emerging evidence was demonstrated by modelling on higher cognitive function skills. Finally, there is emerging evidence that pivotal response treatment interventions were useful for the development of learning readiness.

Additional evidence from New Zealand reviewers

Three items published between 1998 and 2007 had not been included by NSP as they excluded people with ASD who were older than 21 years and/or had additional psychiatric or medical diagnoses A further seven studies were published in 2007 after the closing date for the NSP study. Of these 10 items, three items received SMRS scores of 3.0 showing beneficial effects among 8 participants. The other seven items received SMRS scores of 2.0 and showed beneficial effects for nine participants in six of the items. The final item with three adult participants was rated as ineffective.

Three studies looked at academic skills for 11 to 16 year olds for whom beneficial effects were found for behavioural interventions. Six studies looked at 13 children ages 2 to 8 for whom beneficial effects in the area of learning readiness were demonstrated. Overall the additional evidence indicated further beneficial effects in the areas of learning readiness and academic skills from behavioural interventions.

Evidence from studies published from 1998 – 2007

Thirty items in the period from 1998 to 2007 received an SMRS coding above 2. Of these, two items looked at higher cognitive skills, 16 examined learning readiness, and 12 studies investigated academic skills. In these categories five items received an SMRS rating of 3 and one item was rated 4, all of which reported beneficial effects of behavioural interventions. The

remaining 24 items reviewed by NSP and/or NZ reviewers received a SMRS rating of 2. Of these items, seventeen indicated effective interventions, the results of six items were unknown or difficult to interpret, and one item was rated ineffective with learning readiness for adult participants.

Summary of this section

Overall, the 30 items reviewed in the cognitive skills area certainly meet the criterion of emerging evidence and could be classified as heading towards demonstrating strong evidence for the interventions. There were a relatively small number of studies in the area of cognitive skills. This would indicate that in the past academic and cognitive skills were not targeted for intervention with ASD participants. Nevertheless, this appears to be a growing research focus as noted by the fact that 13 of the 30 items in this area were published in 2007.

Results 3. Development of Functional and Spontaneous Communication which is Used in Natural Environments

Research reviewed in this section addressed communication skills as defined by Wilczynski and Christian (2008, p.52):

> *… verbal or nonverbal signaling to a social partner regarding content of sharing of experiences, emotions, information, or affecting the partner's behavior and behaviors that involve understanding a partner's intentional signals for the same purposes. This systematic means of communication involves the use of sounds or symbols. Dependent measures associated with these tasks include but are not restricted to requesting, labeling, receptive, conversation, greetings, nonverbal, expressive, syntax, speech, articulation, discourse, vocabulary, and pragmatics. Behaviours measured in research reviewed included as examples labelling, use of syntax, conversation, requests, and pragmatics*.

Communication as defined above may be viewed as prerequisite to the development of functional and spontaneous communication in natural environments.

Evidence from the NSP review

Based on the systematic evaluation of the evidence the NSP review reported that there was strong evidence that behavioural treatments using naturalistic teaching strategies were beneficial to developing communication skills with children. Additional behavioural treatments identified in the review as having emerging evidence of their success included treatments specifically developed to facilitate communication skills as well as more general treatments. Communication targeted programmes classified as having emerging evidence of a beneficial effect included: Verbal Behaviour interventions, Scripting, Picture Exchange Communication System, Peer Training Packages and Functional Communication Training packages. Evidence of the success of these treatments typically involved studies with children between the ages of three and nine years. More general behavioural techniques found to have emerging evidence of success in developing language included Behavioural Packages, Joint Attention and Modelling.

Additional evidence from New Zealand reviewers

Between 1998 and 2007 there were five items identified by NZ reviewers targeting communication skills that were not included in the NSP review. Except for one article scored at SMRS of 3, these articles received SMRS scores of 2. These additional items support conclusions that can be drawn from the data included in the NSP review.

Evidence from studies published from 1998-2007

Of the 123 items reviewed by the NSP and/or New Zealand reviewers that assessed communication skills, three were given an SMRS composite score of 4. Of these, two provided evidence of a beneficial effect with the remaining article providing insufficient evidence to confirm a beneficial effect. Twenty four items reviewed obtained a score of 3 and, of these, 17 provided evidence of a beneficial effect while the evidence from the remaining seven items was

insufficient to draw a conclusion. The majority of items examining communication obtained a SMRS score of 2. Of these 67 provided evidence of a positive effect, 25 do not provide sufficient evidence to draw a conclusion and two provided evidence that the intervention was ineffective. Considering all items obtaining a composite score of 2 or more on the SMRS, 70% showed evidence of a beneficial effect of a behavioural intervention for improving communication while 2% found a behavioural treatment ineffective.

Summary of this section

The review provides considerable evidence of a positive effect of a range of behavioural treatments on communication skills. The behavioural studies examined tended to address and measure specific aspects of communication that may be viewed as necessary prerequisites of spontaneous communication in naturalistic environments. However the behavioural interventions and the measurement of the effects of these of necessity lead to somewhat artificial environments. Thus the studies do not specifically address the use of language spontaneously in natural environments. The majority of the studies reviewed examined the effectiveness of communication programmes with preschool or primary school aged children. The effectiveness of behavioural programmes at facilitating communication in older children and young adults is unclear.

Results 4. Engagement and Flexibility in Developmentally Appropriate Tasks and Play and Later Engagement in Vocational Activities

This category includes articles that NSP had categorised as either Independent Play/Leisure or Vocational. Articles were coded as focusing on "Independent Play/Leisure" if they involved increasing skills in activities that were "non-academic and non-work related activities that [did not] involve self-stimulatory behavior or require interaction with other persons" (Wilczynski & Christian, 2008, p. 53). Examples of dependent variables that may have been included in this category are "functional independent play (i.e., manipulation of toys to determine how they 'work' or appropriate use of toys that do not involve pretense) and use of media (e.g., television, computer, radio, games)" (Wilczynski & Christian, 2008. p. 53). Articles were coded as Vocational if they involved increasing skills that allowed a person to "execute semi-independent or independent work" (Wilczynski & Christian, 2008, p. 53). Examples of dependent variables that may have been included in this category include "using a timecard, computer skills, monitoring work quality, accepting feedback, safety in the workplace, securing assistance or requesting a break in the workplace (do not code in communication), and adhering to dress code" (Wilczynski & Christian, 2008, p. 53).

These two NSP categories seem to correspond well with the Ministries' category, with three possible limitations. The first limitation is the Ministries' requirement for the focus of the interventions to be on teaching engagement *and* flexibility. Although a subset of articles will have focused on increasing variation in play skills, this information can not be directly accessed without reviewing every article. The second limitation is that the NSP definitions for the play/leisure and vocational tasks do not require that the targeted skill be developmentally appropriate. However, one of the key characteristics of ABA is the focus on socially significant behaviours. As such, one may reasonably assume that the behaviours that were targeted were of importance to the person and/or their significant others and, therefore, developmentally and/or socially appropriate. The final limitation is that it is unclear if the Ministries required the inclusion of social play in this category. As shown by the definition above, this type of interaction has not been coded in this category; rather articles of this nature are included in the interpersonal category and as such are included in the Ministries' category of "social development and relating to others".

Evidence from NSP review

The evidence from the NSP review found that behavioural packages have strong evidence supporting their effectiveness in increasing independent play and leisure skills. ABA interventions that have emerging evidence that they are effective at increasing independent play and leisure skills are peer training packages, naturalistic teaching strategies, modelling, antecedent packages, and pivotal response training.

Additional evidence from New Zealand reviewers

Within this category, between 1998-2007, six research items were published that had been excluded by NSP as they included people with ASD who were older than 21 years, had additional psychiatric or medical diagnoses, and/or were published after their cut-off date. Five of these research items were coded by New Zealand reviewers as having beneficial effects. Of the five beneficial items, four had a SMRS score of 2 and one a SMRS score of 3. Thus these results support NSP findings. Of interest are the two studies that had participants over the age of

21. Both studies showed beneficial effects. One study, focusing on vocational skills, had a SMRS score of 3, while the second study, focusing on leisure skills, had a SMRS score of 2. These results suggest that there is some evidence that ABA interventions are effective for this older age group, however, there is insufficient research to allow for a SECS classification above *unestablished*.

Evidence from studies published from 1998-2007

Forty research items reviewed by NSP and/or New Zealand reviewers were published during this period and coded for this category. Examination of the SMRS scores for the articles that were shown to have beneficial effects, found that 16 had a SMRS score of 2, and 12 had a SMRS score of 3. There were 12 articles that showed unknown effects, seven had a SMRS score of 2, four had a SMRS score of 3, and one had a SMRS score of 4. None of the articles reviewed for this time period were shown to be ineffective or harmful. It is likely that the strength of evidence for the effects of behavioural interventions for play based on evidence published during these years would be rated as strong.

Summary of this section

This review shows that behavioural packages have strong evidence and a number of other ABA interventions have emerging evidence to support their use in increasing play and leisure skills for children with autism. Even though there is considerable research focused on increasing play and leisure skills, there appears to be very limited research on the application of ABA interventions focused on increasing vocational skills.

Results 5. Development of Independent Organisational Skills and Other Behaviours

We defined this category by combining two separate categories from the NSP: personal responsibility and self regulation. Personal responsibility was defined by Wilcynzski and Christian (2008, p. 52) as "tasks that involve activities which are embedded in everyday routines. Dependent measures associated with these tasks include but are not restricted to feeding, sleeping, dressing, toileting, motor skills, cleaning, family and/or community activities, health and fitness, phone skills, time and money management, and self advocacy". Self regulation was defined as "tasks that involve the management of one's own behaviors in order to meet a goal. Dependent measures associated with these tasks include but are not limited to: persistence, effort, task fluency, transfer of attention, being 'on schedule,' self-management, self-monitoring, self-advocacy, remaining in seat (or its opposite of 'out of seat'), time management, or adapting to changes in the environment" (Wilczynski, personal communication). The merged categories appear to fit well into the Ministry of Education's classification of "development of independent organisational skills and other behaviours."

Evidence from the NSP review

The NSP review found emerging support for antecedent package, behavioural package, modelling, and pivotal research treatment interventions for improving performance on tasks involving personal responsibility. Strong support was found for behavioural package interventions for improving self-regulation skills, while emerging support was also found for antecedent package, schedules, and self-management interventions for improving self-regulation skills.

Additional evidence from New Zealand reviewers

Only two items published between 1998 and 2007 were excluded by NSP as they included people with ASD who were older than 21. Both items received SMRS scores of 2 and showed beneficial effects of ABA interventions on personal responsibility for the nine participants. An additional study reviewed by NZ reviewers only had an SMRS score of 3, but effects were rated as unknown. When combined with the evidence from the NSP review, the two additional items concerning adults support NSP's finding on emerging evidence for the beneficial effects of ABA interventions on tasks involving personal responsibility.

Evidence from studies published from 1998-2007

Thirty-five items reviewed by NSP and/or NZ reviewers were published during the 1998 - 2007 period. An examination of the SMRS scores for this sub-sample found eight items with a SMRS score of 3, and 26 articles with a SMRS score of 2. Six of the eight items that scored 3 found beneficial effects of ABA interventions on personal responsibility and self-regulation, while the effects of two items were classified as "unknown". Of the remaining 26 items that obtained a SMRS score of 2, 19 found beneficial effects of ABA interventions, five found unknown effects, and the effects of only two were rated as "ineffective". Overall, the data from the 35 items reviewed here appear to fit into the "emerging support" category on the Strength of Evidence Classification System (SECS) scale.

Summary of this section

In summary, there appears to be strong support for behavioural interventions for the development of independent organisational skills and other behaviours (as defined as "personal responsibility" and "self regulation") for people with ASD. However, it may be worth noting that although around 71% (25/35) of the reviewed items found beneficial effects of different behavioural interventions on personal responsibility and self-regulation, some interventions were more studied than others. Further research on some of the lesser studied interventions (e.g., self-management, modelling, schedules) may yield stronger overall support for the beneficial effects of behavioural interventions on personal responsibility and self-regulation.

Results 6. Prevention of Challenging Behaviours and Substitution with More Appropriate and Conventional Behaviours

This category includes all problem behaviours (i.e., challenging behaviours) that have been changed using antecedent manipulations, and those changed using methods that increase incompatible or alternative behaviours. Antecedent manipulations are manipulations intended to prevent challenging behaviours. Incompatible and alternative behaviours are behaviours that are incompatible with or alternative to challenging behaviours and are thus more appropriate and conventional then challenging behaviours. The NSP's categories of behavioural intervention methods relevant to this section are: Antecedent, behavioural, functional communication training, joint attention training, modelling, and self-management packages. Challenging behaviours were subcategorised (based on Wilczynski and Christian, 2008) as follows: problem behaviours; restricted, repetitive, non-functional patterns of behaviour, interests, or activity; and sensory or emotional regulation (see Table 3).

Evidence from NSP review

There was strong evidence overall in the review for the benefits of antecedent and behavioural treatment packages. However, when items were divided among the three subcategories of challenging behaviour, emerging evidence was found for problem behaviours and sensory and emotional regulation. There was emerging evidence that Functional Communication Training (FCT) and self-management packages produced beneficial results for changing problem behaviours. Considered across NSP categories of challenging behaviour, there was emerging evidence for problem behaviours from antecedent, behavioural, functional communication training, modelling, and self-management packages. Restricted and repetitive behaviours responded to behavioural, joint attention, and peer training interventions at the emerging level of evidence. Likewise, behaviours categorised as difficulties with sensory and emotional regulation responded to antecedent, behavioural, and modelling interventions at the emerging level of evidence.

Additional evidence from New Zealand reviewers

The NZ review added 12 more items. Five of these items would have been excluded from the NSP due to participant ages of 22 years or over and two due to diagnoses of excluded co-morbid conditions. There were 19 participants across these items and all had diagnoses of autism. All items received an SMRS score of 2 and all showed beneficial effects (i.e., they decreased challenging behaviour). The NZ data corroborate the NSP data for those under age 22. Additionally, NZ data for the eight participants aged 22 and over suggest that evidence for the effectiveness of these interventions for those aged > 21 is emerging.

Evidence from studies published from 1998-2007

A total of 75 items that were published between 1998 and 2007 were reviewed by NSP and NZ reviewers. Two items received a SMRS score of 4, seven items received a score of 3, and the remainder scored 2. Both of the items that scored 4 were beneficial. Five of the seven items that scored 3 were beneficial while two of these items involved data that did not allow a firm conclusion to be drawn regarding whether they were beneficial, effective, or adverse. Fifty-one of the items receiving a score of 2 were beneficial while 13 were inconclusive and two were

ineffective. Across all 75 items, then, 58 (77%) were beneficial, 15 (20%) were inconclusive, and two (3%) were ineffective. Taking account only of research published during this ten-year period, the evidence that behavioural interventions reviewed in this section are beneficial in reducing challenging behaviours, in general, appears to be strong.

Summary of this section

Overall, there is strong evidence for the benefits of ABA interventions in this section. More fine-grained analysis shows a mix of strong and emerging evidence depending on the type of treatment package reviewed and the ages and diagnostic classification of the research participants. For example, there is stronger evidence for children in the 3-9 years age range and the evidence concerning those diagnosed with autism is stronger than for PDD, with Asperger's Syndrome findings being weak through limitations in the number of studies. Nevertheless, the NSP review found at least emerging evidence for interventions targeting individuals up to age 21. The few studies reviewed for adults suggest similar (emerging) evidence.

Results 7. Reducing Challenging Behaviours using Reductive Methods

This category includes reductive interventions for challenging behaviours (i.e., those not included in Results 6). Challenging behaviours "can harm the individual or others OR result in damage to objects OR interfere with the expected routines in the community. Problem behaviours also may be associated with difficulties with emotional or sensory regulation" (Wilczynski & Christian, 2008, p. 56). Problem behaviours can be treated using exposure and reductive intervention packages. Exposure packages "require that the individual with ASD increasingly face anxiety-provoking situations while preventing the use of maladaptive strategies used in the past" (NSP definition). Reductive packages "rely on strategies designed to reduce problem behaviours in the absence of increasing alternate appropriate behaviours" (NSP definition).

Evidence from NSP review

The NSP review found emerging evidence that exposure packages are effective in 3 to 5 year-old autistic children. There is emerging evidence that reductive packages are effective at decreasing restricted, repetitive, non-functional patterns of behaviour (RRN) in 6 to 14 year-old autistic children.

Additional evidence from New Zealand review

The New Zealand review adds two studies to this category that were excluded from the NSP review, one because the participant was 43 years old and the other because the participant had a medical complication. Each study received an SMRS score of 2 and had beneficial effects for the participants. These data do not change the finding of emerging evidence that exposure and reductive interventions can be effective at improving problem behaviours.

Evidence from studies published from 1998 – 2007

Only eight research items from six studies were published during the 1998 – 2007 period. Seven items received an SMRS score of 2 and the other item received a score of 3. The evidence shows that the interventions were beneficial for five items and the outcome for the remaining three was unknown.

Summary of this section

This review suggests that there is emerging evidence for the effectiveness of reductive methods. The increased use of functional behavioural assessment to identify antecedents and consequences that maintain behaviour has led to new treatment methods. Current interventions seldom focus on only eliminating the problem behaviour. Thus, it is likely that these treatment packages are 'disappearing' rather than 'emerging'. It is notable that very few studies using this approach were published between 1998 and 2007.

Results 8. Comprehensive Programmes: Early Intensive Behavioural Intervention

Early Intensive Behavioural Intervention is defined as *comprehensive treatment programs that involve a combination of applied behavior analytic procedures (e.g., discrete trial, incidental teaching, etc.) which is delivered to young children (generally under the age of 8). These treatments may be delivered in a variety of settings (e.g., home, self-contained classroom, inclusive classroom, community), involve a low student-to-teacher ratio (e.g., 1:1). All of the studies falling into this category met the strict criteria of: (a) targeting the defining symptoms of ASD, (b) have treatment manuals, (c) providing treatment with a high degree of intensity, and (d) measuring the overall effectiveness of the program [i.e., studies that measure subcomponents of the program are listed elsewhere in this report]. These treatment programs may also be referred to as ABA programs or behavioral inclusive classrooms.*" (NSP definition, Wilczynski, Personal Communication)

Studies in this category are comprehensive programmes that target behaviours that span the Ministry of Education and NSP categories of behaviours for intervention. Some programmes target general symptoms, others target many of the defining symptoms of ASD.

Evidence from NSP review

The scientific evidence reviewed by the NSP provides strong evidence for the effectiveness of these programmes. Across all years, 128 items received SMRS scores of ≥ 2.0, and 42 of these items scored 3. The NSP review found strong evidence for increases in skills in the outcomes it categorized as communication, higher cognitive functions, interpersonal, personal responsibility, and more regular school placement, and that there was emerging evidence for increases in learning readiness. The review reports that there was no established scientific evidence of effects from EIBI programmes for the play, self-regulation and academic categories, but that there was emerging evidence for decreases in behaviours classified as behaviour problems and general symptoms of ASD. The NSP review found strong scientific evidence for the effects of EIBIs for children with diagnoses of Autistic Disorder (AD) and Pervasive Developmental disorder (PDD). There was also strong scientific evidence found for children in the 3-5 year age range, and emerging evidence for ages 0-3 and 6-9 years.

In summary, the NSP review found that there was strong scientific evidence or emerging scientific evidence for the use of EIBI to increase some skills and to decrease some problem behaviours with children with diagnoses of AD or PDD in the 0-9 year old range, with the strongest evidence for increasing higher cognitive, personal responsibility, and interpersonal skills and for improving school placement for those between 3 to 5 years old. All items were classified as demonstrating either beneficial or unknown effects.

Additional evidence from New Zealand reviewers

There was no additional evidence on the effectives of early intensive behavioural interventions from New Zealand reviewers.

Evidence from studies published from 1998-2007

Among all items reviewed by NSP, 76% were published during this time. Of the 112 items examined (from twelve studies), 33 (from three studies) received SMRS scores of 3 for all targeted categories. Nineteen of these items showed beneficial effects. All other items received

scientific merit rating scores of 2 for all targeted categories, including the four items from the one single-subject design study. Beneficial treatment effects were reported for 36 of the SMRS = 2 items in the NSP database and the rest were classified as having unknown treatment effects. No items were classified as showing ineffective treatments or adverse treatment effects. The majority of the studies resulted in some beneficial effects. Ten of the twelve studies had 50% or more of their effects classified as beneficial, the remaining two had all 36 of their items classified as having unknown effects (4 from one and 32 from the other study). The 1998-2207 findings can be interpreted as being similar to the 24% larger set that contributed data to the "Evidence from NSP review" summarised above.

Summary of EIBI

The effectiveness of comprehensive programmes such as EIBI is difficult to research. It is not easy to use the randomised control studies seen as desirable for such evaluations particularly not when participation is required over a number of years. It is hard to keep observers or those providing the intervention 'blind' as to which participant is getting which treatment. In addition the design of placebo treatments is difficult and, in fact, it may not be ethical or desirable to use a placebo once there is some evidence as to the positive effects of some aspects of the package. To carry out such studies is a very time consuming and expensive exercise. Given this, it is not surprising that there are not many studies in this area, and that none of those found received SMRS score of 4 or 5.

The research reviewed provides some strong scientific evidence for the use of EIBI in the development of some cognitive (thinking) skills, in social development and relating to others, in the development of some independent organisational skills and in increasing engagement and flexibility in some developmentally appropriate tasks and play and later engagement in some vocational activities. Strong evidence for the benefits of EIBI on the school placement variable was found. The research reviewed also provides emerging scientific evidence for increasing other skill areas. The studies show strong evidence of effectiveness with children with diagnoses of AD or PDD who are in the 0-9 year old range. Given this is <u>early</u> intervention, it is not surprising that the research focuses on the 0-9 year old range. The strongest evidence found of beneficial effects was for those between 3 to 5 years old in the development of cognitive (thinking) skills and in social development and relating to others. It is clear more research is needed, particularly with 0-3 and 6-9 year olds and with both these and other skills.

There appears to be enough evidence of beneficial effects of EIBI that it could be time for a study comparing EIBI with other early interventions that also have some strong evidence of effectiveness.

Sources of information for evaluating generalisation and maintenance effects in Sections 9 and 10

The degree to which generalisation (i.e., the transfer of treatment effects from target to non-target behaviours or to non-treatment settings) and maintenance (i.e., the durability of treatment effects over time, post-treatment) effects were reported by NSP reviewers was unavailable. The reason for this was that NSP did not compute generalisation and maintenance effects unless the type of behavioural intervention (Table 2) reached the "strongest evidence" criterion for multiple studies showing beneficial effects with SMRS scores of 4 or 5 (see Appendix A Table 3, left hand column). As can be determined from previous sections (1 to 8), there were no "Strongest evidence" ratings. Hence, NSP did not report on effects, except the main effects. Nevertheless, we reviewed the NSP database to determine the quality of experimental design and method for determining whether generalisation and/or maintenance had been assessed. That was achieved by examination of SMRS ratings for "Generalization of Tx (Treatment) Effect(s)" (see right hand column in Appendix A Table 1: SMRS).

Among the items in the NSP database (and original NZ-unique database), 12% (21%) objectively measured for both generalisation and maintenance, 31% (25%) objectively measured either generalisation or maintenance, 3% (6%) reported subjective generalisation and/or maintenance effects, and 53% (48%) did not have a sufficient experimental method to report on either generalisation or maintenance. A possible reason for the NZ database showing higher percentages of studies with designs enabling objective generalisation and maintenance effects to be reported was that studies published after 1997 were more likely to have assessed these effects than studies published before then.

We can report on the obtained generalisation and maintenance effects from the original NZ-unique database of 169 items. New Zealand reviewers had originally coded effects as "strong support" for generalisation or maintenance if ≥ 67% of the research item showed positive effects in other settings, or with other people, or across materials (generalisation) or at follow up (maintenance). "Limited support" was noted if effects were noted for between 50% and 66% of items.

The summary of generalization and maintenance effects must be interpreted with caution since interobserver agreement for these categories of review was 68% and 64% respectively. Thus, these results should be considered indicative rather than accurate.

Results 9. Generalisation of Abilities across Multiple Natural Environments

Generalization of effects to natural environments is difficult to assess. Tracking individuals to a range of environments is expensive and may produce a reactive effect (as individuals in the environment become aware of the observations taking place), thus making the generalization setting "unnatural". Despite these limitations, a large number of studies provided an assessment of whether main effects were generalized.

Ninety one (53.8%) of the 169 items were selected for further analysis because they gained SMRS scores of 2.0. Forty-five of these (49.4%) assessed whether the main effects had generalized. These studies were of high quality with 31 of them achieving an SMRS rating of 3 or higher for design and 42 receiving a rating of 3 or higher for measurement of the dependent variable. Almost all of the studies receiving lower scores for design did so because of a small sample size rather than any design flaw.

1. Three of the 45 items (6.7%) did not find evidence of generalized main effects. Two of them addressed interpersonal skills while the third concerned problem behaviour. The interventions used traditional generalization tactics such as thinning schedules of reinforcement and programming common stimuli. Two of these studies also reported limited support for the main effects.
2. Fourteen items (31.1%) reported limited support for generalized effects and all but one of them also reported strong support for the main effect. The skills studied included communication and interpersonal skills, and reduction of problem behaviour was also studied. The interventions employed were prompt-based procedures (5), video modelling (4), and functional communication training (2). Social stories were components of two of the prompt studies.
3. Twenty eight items (62.2%) reported strong support for generalized main effects. All but two of them reported strong support for the main effect. The skills that generalized included academic and communication skills, interpersonal skills and personal responsibility, and reductions in problem behaviour. The majority of interventions were composite strategies with various forms of prompting and/or reinforcement strategies being used along with a range of other ABA methods (e.g., fading, scripts, task analysis, self-management, extinction, imitation).

In conclusion, almost two thirds of the 45 analyses reported strong support for generalized main effects. Studies reporting limited support for main effects were less likely to report generalization of those effects. No single intervention strategy stood out as superior in producing generalized effects across a range of targeted behaviours. All of the strategies used appeared to be successful, although composite strategies show the greatest promise. Note that these were composites of ABA approaches; none of the composite strategies combined ABA strategies with non-ABA strategies (e.g., prompts and facilitated communication). There does not appear to be a relationship between the level of support reported (i.e., none, limited, or strong), the strategies used, and the skills being generalized.

Results 10. Review of Maintenance of Effects after Conclusion of Intervention

Data on the maintenance of effects after the conclusion of the intervention was collected in 71 of the 169 (42%) items in the New Zealand database. Of these, 23 (32%) were excluded from the following review as they obtained composite SMRS scores of < 2.0. The maintenance of effect from 48 items is, therefore, reviewed in this section.

Maintenance was reported to be strong for 75% (36/48) of main effects, i.e., more than two thirds of the treatment effects detected were maintained over time. Interventions demonstrating maintenance addressed the full range of the eleven NSP behaviour target categories, with 25% (9/36) addressing problem behaviours. Communication was the target category for 17% (6/36) of items with strong support of maintenance, and 14% (5/36) in academic and interpersonal categories. A wide range of interventions were utilised including, though not limited to, various prompting strategies, non-contingent reinforcement, task analyses, video modelling and multi-component packages.

Limited support for maintenance of treatment was recorded for 21% (10/48) of items. Limited support indicates that data indicating a skill had been maintained was reported for between half and two-thirds of the participants of the study. The NSP target category studied was limited to six areas (interpersonal, three studies; learning readiness, personal responsibility, two studies each; communication, restrictive and repetitive patterns of behaviour, independent play and leisure, one study each). The interventions used were video modelling, social stories, reciprocal imitation training and differential reinforcement.

No support for maintenance of treatment was observed in 4% (2/48) of the reviewed items. These studies targeted behaviours in the independent play and leisure, and problem behaviour categories, with the interventions being social stories and differential reinforcement respectively.

In summary, maintenance of treatment following conclusion of the intervention was reported in 42% of studies. Where maintenance data was collected and reported it was most often (on 75% of occasions) shown that the treatment effect was maintained and reported for the majority of participants. Maintenance of treatment effect occurred in all NSP behaviour categories with a wide range of intervention procedures. Problem behaviour, communication, academic skills and interpersonal skills were well represented in the targeted behaviours that demonstrated maintenance. Interventions with limited support of maintenance of effect included video modelling, social stories, reciprocal imitation training, and differential reinforcement.

Results 11. Evidence for Effects of Behaviour Analytic Methods across Ministry of Education Target Behaviour Classifications

This section summarises the evidence concerning behaviour analytic methods for changing behaviours and teaching new skills.

All of the various behaviour analytic intervention types were found to have some measure of scientific support for their effectiveness. The NSP review classifies these methods into 16 intervention types (Table 2) and reports strong scientific evidence for nine and emerging evidence for the remaining seven of these.

It should be noted that although Reductive Packages were classified as having emerging support it is becoming less and less frequent to find such strategies used alone. If they are used then other strategies that promote positive behaviour change would normally be used alongside them. Thus "emerging" might not be the appropriate term to use for these.

The intervention types included in the review cover a wide breadth of behaviour analytic methodology. To illustrate at least some of the behavioural methods a practitioner should know about and should be able to use in order to adopt evidence-based practice, the New Zealand data were examined in more detail.

Interventions with a score or of 2 or more on the SMRS were selected and sorted according to the degree of support for that intervention (*strong support for beneficial effects, limited support, unknown, does not support*). The reviewers' descriptions of the procedures involved for those with strong support for beneficial effects were used to summarise the interventions and these are given in Table 6 below. This table illustrates the range of procedures found to be supported in this sub-set of the reviewed studies.

Table 6 shows that a wide range of behaviour analytic procedures needs to be used for evidence-base practice. It should be noted that these summary descriptions do not include mention of every behavioural principle involved in the interventions. For example, reinforcers of some type (e.g., social, tangible, tokens, and/or access to activities) are an integral part of teaching new skills and helping behaviour change but are not always listed in the summary description of the procedure. Also motivating (or establishing) operations are an important aspect of using reinforcers effectively but are also not mentioned in the summary descriptions.

Table 6 shows that effective practice requires the use of appropriate combinations of procedures and that one "intervention" frequently involves the combination of several different procedures. For example, antecedent procedures, such as the use of physical or video prompts, often form only part of an intervention and so are combined with other maintenance procedures and, when they are used, they are also normally combined with some form of reinforcement and often with a fading procedure to be maximally effective.

Table 6. *Examples of behaviour analytically evaluated strategies that have contributed to "strong" evidence of efficacy from the NZ reviews.*

Interventions with a SMRS score of 2 and above from the subset of reviews carried out in NZ
Examples with Strong Support for beneficial effects
Communication training e.g., o Composite training (tact training, verbal praise, handshakes) Differential reinforcement (DR), e.g., o Differential reinforcement of alternative behaviour (DRA) combined with extinction of escape behaviour o DRA plus sensory extinction o DR in favour of playing with another rather than alone o Differential reinforcement of other behaviour (DRO) with stimulus fading o DRO with response cost and with prompted relaxation and use of peers Differential observing responses to increase accuracy on Matching To Sample (MTS) task with words Direct Instruction Extinction e.g., o Extinction through non-contingent exposure to kinaesthetic stimuli o Extinction with stimulus fading Function based intervention package including replacement behaviour training (using picture communication), response modification and environment change with verbal and physical prompts Functional Communication Training using scripts and response cost Imitation, e.g., o Reciprocal Imitation Training (imitation plus reinforcement) o Imitation training (using modelling, prompting, differential reinforcement using tokens and error correction) Learn units plus multiple example instruction Naturalistic Teaching Strategies, e.g., o Natural language paradigm o Incidental teaching and social conditioning o Enhanced milieu teaching (EMT) plus voice output communication aid (VOCA) Non-contingent reinforcement (NCR), e.g., o NCR and prompts o Staff training in NCR use with staff rapport building and prompts and feedback o Non-contingent attention

Prompts, e.g.,
- Video prompting
- Prompting incompatible behaviour
- Prompts plus social stories plus praise
- Social stories plus prompts
- Prompts with praise and other reinforcers and extra opportunities to complete task
- Prompts combined with social and/or other reinforcers
- Prompts combined with social and/or other reinforcers with the prompts then faded
- Prompts with fading, and with social and/or other reinforcers plus a correction procedure
- Simultaneous prompting
- Physical Prompts plus training of common mands (requests)

Reductive procedures, e.g.,
- Stopping behaviour occurring by interruption of the behaviour chain

Reinforcement plus non-contingent access to preferred stimuli and with no consequences for target behaviour [followed by fading in interruptions (do requests)]

Schedules, e.g.,
- Photo activity schedule with prompts and tokens and reinforcers

Scripts, e.g.,
- Scripts and then script fading with embedded textual stimuli

Self management, e.g.,
- Self management through self reinforcement procedures
- Self-Regulated Strategy Development
- Stop-Observe-Deliberate-Act (Social-behavioural learning strategy)

Social stories

Stimulus control, e.g.,
- Stimulus superimposition and background fading
- Cues with prompting, feedback, and positive consequences

Task analysis plus backward chaining plus prompting and prompt fading plus reinforcement

Teaching communication e.g.,
- Composite-spontaneous communication (discrete-trial teaching, prompts, error correction and natural consequences)

Teaching social-behaviour to replace problem behaviours

Using peers as an establishing (motivating) operation

Video modelling, e.g.,
- Video modelling plus prompting
- Video modelling combined with self management training
- Video modelling plus praise and/or other reinforcers
- Video modelling plus prompts, praise and/or other reinforcers combined with short periods of timeout

Video rehearsal, e.g.,
- Video rehearsal of task combined with the use of video or photo prompts when doing task
- Video rehearsal plus praise and/or other reinforcers

Work systems

These examples of skills are, to a large extent, a subset of the general skills that behaviour analytic practitioners (e.g., teachers, carers) need for increasing or decreasing behaviours effectively if evidence-based practices are to be adopted. A fuller range of knowledge, skills and abilities (KSAs) would be expected of those training and supervising practitioners (see Behavior Analyst Certification Board Tasklist – 3rd ed. (2005) – www.BACB.com. Specialist extra KSAs recommended for behaviour analytic practitioners specialising with ASD populations can be found at http://www.bacb.com/Downloadfiles/AutismTaskList/708AutismTaskListF.pdf

DISCUSSION

Overall, there was strong evidence that behavioural interventions result in beneficial outcomes for individuals with ASD. Although the efficacy of approximately one quarter of the items examined was unable to be clearly determined, the vast majority of outcomes were beneficial in the remaining cases, and thus a meaningful and desirable change in behaviour occurred as a specific result of that intervention. Only 2% of 508 items that contributed to our results were rated to show that a behavioural intervention was ineffective in a particular case. However, no behavioural interventions were rated overall as ineffective. In no case was there harm reported as a result of behavioural intervention

Despite there being strong evidence overall for many of the categories of behavioural interventions reviewed, the strength of evidence is necessarily diluted as the unit of analysis of the evidence is reduced. To illustrate with one detailed example, in excess of 350 items were rated by National Standards Project (NSP) for the "behavioural package" category of interventions. Only 140 contributed to the results as others did not obtain a Scientific Merit Rating Scale (SMRS) composite score ≥ 2. Possible reasons for this are discussed below. Although the overall evidence level (Strength of Evidence Classification System: SECS rating) for behavioural package category was strong, this was true only for (a) the autistic disorder diagnostic classification; (b) children between the ages of 3 and 6 years; and (c) for interpersonal, learning readiness, play, and self-regulation target behaviour categories. Effects for other diagnostic classes, age groups, and target behaviours were either emerging (12 sub-samples) or unknown (two sub-samples).

The following two paragraphs summarise evidence of the type presented in the illustration with "behavioural packages" across all categories of intervention. It is important to note at the outset that there were no conclusions that suggested the interventions included in this package were ineffective or harmful, and that applies to all categories of intervention (Table 2).

Strengths in the evidence

There is strong evidence that behavioural interventions can have beneficial effects for individuals with diagnoses of autistic disorder and pervasive developmental disorder. Strong evidence exists for benefits for children up to the age of 15 years. There is strong evidence for benefits in the areas of communication, higher cognitive functions, interpersonal skills, personal responsibility, play, and self-regulation (NSP categories), i.e., social development, cognitive development, communication, play / vocational engagement, and development of organisational skills (Ministry of Education categories). This is not to say that the evidence is strong for all age groups up to 15 in all areas targeted for change for both autism and PDD, but that there is at least one area of development for which there is strong evidence for the benefits of ABA.

Weaknesses in the evidence

Evidence is lacking (that is, either emerging or unknown) for persons with an Asperger Syndrome diagnosis. Across the ASD spectrum, there is, to date, insufficient evidence to provide strong support for ABA interventions for participants aged 15-21 years, and in the target categories of academic skills, learning readiness, and problem behaviours of all types. The New Zealand review data (see Appendix C) may be seen as providing emerging evidence for benefits for adults > 21 years in some target areas.

Comments on the quality of ABA research for the purposes of determining evidence-based practices that can be strongly recommended for widespread adoption.

We applied fairly stringent exclusion criteria to the literature before we started to examine research articles to rate with the SMRS (Appendix B). Nevertheless, we had to exclude 78/169 items (46%) following SMRS rating because their composite SMRS score was <2.0. The mean composite SMRS score was 2.17 out of a maximum of 5 across all the items we reviewed. Does this suggest that ABA research is generally of low quality?

Further examination of the SMRS scores that made up the composite score showed that the mean scores for design, measurement of the dependent variables, measurement of the independent variable, diagnosis, and generalisation/maintenance (all with a maximum of 5) were: 2.00, 3.81, 1.85, 0.69, and 1.77 respectively. Clearly, the quality of diagnosis was poorest. The extent to which studies were designed to assess generalisation and maintenance and treatment fidelity was, on average, low. Design appears barely acceptable, and only measurement of the behaviours of interest (target behaviours) was more than adequate. However, the studies were rated by NSP criteria, which are not the general scientific criteria employed by researchers, authors, editors and journal reviewers.

Reports of participants' diagnosis and classification according to DSM or similar criteria are vanishingly rare in the ABA literature. The likely reason for that is that behaviour analysts work with behaviours, not hypothesised underlying disorders (e.g., Autism), and apply functional analyses to these behaviours, rather than prescriptions based on diagnoses. Diagnosis is usually seen as irrelevant, however, it has more importance when a research study is being assessed for its potential for generalisation to other people with the same diagnosis, as is the case in the NSP and New Zealand reviews.

The extra resources required for direct observational measurement of the implementation of the intervention, and of behaviour change in other settings (generalization) and beyond the conclusion of the treatment (maintenance) may be a factor that prohibits the routine assessment of these variables. If behaviour analysts aim to have their research considered for its generality across individuals with, say ASD, we will need to find the resources to do that.

Regarding experimental design, by NSP criteria, no research study with one participant could score more than 1 out of 5 on the SMRS design factor. These true N=1 studies comprised 56% of the 169 items we reviewed.

The conclusion must be that ABA researchers who would prefer to design their research so that it has influence in quantitative reviews using methods like NSP should aim to score 5 in all factors in the SMRS. An implication of this is that ABA ASD research may become more expensive if research teams need to buy independent diagnostic services and extra observation time, and include larger numbers of participants. We can only hope that resources will be made available to cover the additional costs of producing high quality, generalisable research.

Limitations of review

Literature search methods

The initial literature searches were conducted using two databases (PsycINFO and Web of Science) using search terms that should have detected all research articles that included ASD or its diagnostic sub-groups provided that one of the search terms appeared in the title, abstract, or keyword fields for the article (see Appendix B). Despite considering more than 16000 titles located during these initial searches, it is likely that reliance on these search methods will have

missed relevant articles for two reasons. First, not all potentially relevant research journals are indexed on either PI or WoS. Second, although one or more participants in a study may have been reported to have an ASD in the Method section of an article, that may not have been mentioned in any of the fields searched. Hence, we believe that we will have underestimated the amount of ASD-relevant ABA research that has been conducted. A hand-search of ten volumes of *all* potentially relevant journals could have been conducted. We ruled this out for the present review when we stopped counting potentially relevant journals when the tally reached 70.

As a result of two factors, the limited literature search and the generally lax approach to reporting diagnostic methods by behaviour analytic researchers (mentioned above), the articles reviewed by NSP and our New Zealand reviewers can be seen as a sample of the relevant literature. Nevertheless, the sample was large enough to draw conclusions about the benefits and deficiencies shown by research on ABA for ASD.

Definition of ABA

Following identification of research articles on interventions for ASD and its subgroups, Appendix B described our methods for identifying research articles as being ABA-relevant. Scrutiny of titles, abstracts and method sections of publications sought to identify types of articles as specified in the Ministries' Request for Tender (RfT): "The relevant interventions are any interventions or combined approaches using the principles of applied behaviour analysis for the purpose of treating individuals with ASD" (RfT, p.21, in Appendix 2). The principles of ABA were defined by Baer, Wolf, and Risley (1968) and are still generally accepted by behaviour analysts. Briefly, Baer et al. (1968) listed the dimensions of ABA as: Applied, Behavioural, Analytic, Technological, Conceptually Systematic, Effective, and demonstrating Generality. One of the defining features of ABA is that procedures are described in a manner conceptually systematic with the Experimental Analysis of Behaviour (EAB), the basic science of behaviour. Hence, we searched for conceptually systematic terms and, if they appeared in the Method sections, we reviewed those articles as ABA-relevant, provided that no exclusionary criteria were met.

This approach may be questioned by those who are misinformed concerning the definition of Baer et al. (1968). For example, there is a common and incorrect belief in the ASD-interested community of families, carers, and non-behaviourally oriented professionals and paraprofessionals that ABA for ASD equates to discrete trial training (e.g., Lovaas, 1987). There is an erroneous implication in other descriptions of ABA that intervention procedures that can be studied in ABA, and therefore become part of the body of scientific evidence from applications of ABA, can include *only* discoveries from EAB. An interesting clarifying example was provided by Baer et al. (1968) when they considered "play therapy". Play therapy may have been justified by play therapists by resorting to the principles of psychodynamic theory, not EAB. However, if the behaviours of the play therapist under study are clearly described so they can be replicated by others *and* related conceptually to EAB principles, then the therapeutic behaviours studied can conform to the technological dimension of ABA and the study of the play therapist's behaviour can become part of the knowledge-base for ABA, provided all other dimensions of ABA are satisfied. This does not, however, mean that all activities of any "play therapist" can be justified as being part of the empirically-derived knowledge base of ABA. Another example that arose in our review concerned research publications on training joint attention. Some may be confused because joint attention is conceptually related to cognitive, social and developmental psychology, not EAB. However joint attention (like play) is widely acknowledged to be a

socially significant behaviour to improve for children with ASD, i.e., joint attention meets the criteria for "applied" in the sense of Baer et al.. Hence, if joint attention was trained using technologically described procedures conceptually related to EAB principles, we viewed the study as a relevant intervention.

Despite our review team sharing commitment to the Baer et al. (1968) definition of ABA, this did not always allow for complete agreement on whether a study could be included as ABA. For example, the NSP did not provide data from their review of some studies we had located that they considered non-behavioural. Social stories interventions and the use of alternative and augmentative communication devices were two categories that we had to exclude for that reason even if the research had been conducted by behaviour analysts according to the Baer et al. (1968) criteria.

Answering all RfT questions

Table 5 showed how we attempted to provide a best fit between the Ministry of Education's RfT classifications and the NSP classifications of intervention targets. Anonymous reviewers agreed that we had addressed the RfT questions, although one requested clarification concerning the most obvious mismatch which was between the Ministry's division of problem behaviours into two categories: (a) "prevention of challenging behaviours and substitution with more appropriate and conventional behaviours"; and (b) "improvement in behaviours considered non-core ASD behaviours, such as sleep disturbance, self mutilation, aggression, attention and concentration problems" (RfT, p. 4). We did not wish to question the Ministry about how to divide particular research articles among these two categories as this would have been laborious for all concerned: for one example, how to decide whether a report on repetitive self-injurious behaviour counted as (a) "challenging behaviour", or (b) "self mutilation"; and for another, what if aggression were treated functionally by (a) "substitution with more appropriate . . .", or (b) "improved" by substitution. Hence we proposed the division between categories as shown in Table 5 between (a) "prevention and substitution", and (b) "reducing challenging behaviours" by other methods. This alteration of the RfT questions was accepted by the Ministry and the subsequent match with NSP categories can be considered as "close".

Assessing generalisation and maintenance

Results sections 9 and 10 reviewed our findings concerning generalisation and maintenance of the main effects of behaviour change interventions. Although we had concluded that the majority of studies reviewed for these outcome variables showed that generalisation and maintenance had been successfully demonstrated, the findings need to be viewed with some caution. First, agreement between reviewers on the presence and quality of generalisation and maintenance data was relatively low at 68% and 64% for generalisation and maintenance, respectively. From post hoc discussion with New Zealand reviewers and NSP it became clear that there were differences in interpretation of the NSP coding manual concerning generalisation and maintenance. The view of NSP and some of the New Zealand reviewers was that generalisation and/or maintenance could only be coded as being demonstrated if the specific words "generalisation" and/or "maintenance" were used as descriptors for observational sessions that reported on generalisation and maintenance. Other New Zealand reviewers did not apply that rule and noted generalisation as having been assessed in multiple baseline across settings experimental designs where generalisation effects could be detected from close examination of the data-paths for untreated settings. Similar confusion arose for maintenance in studies which

faded out treatment or reported "follow-up" data without specifying the term "maintenance". Incomplete reversion of levels of behaviour to baseline in ABAB withdrawal designs also was viewed as maintenance by some reviewers, but not others. All these views are legitimate, but prior failure to agree on criteria for assessing generalisation and maintenance by reviewers inevitably led to lack of agreement between them.

A second reason for treating generalisation and maintenance data with caution was that NSP did not provide data on generalisation and maintenance effects because, as stated earlier, they did not consider that warranted unless multiple studies were rated with SMRS scores of ≥4. Consequently we were able to report on generalisation and maintenance for 169 of 911 1998-2007 items (18.6%). However, we can report that 45.4% of 616 NSP-reviewed ABA studies from which NSP provided any data on generalisation or maintenance assessed generalisation and/or maintenance.

The New Zealand Context

Behaviour analysis

The term *behaviour analysis* refers to a scientific discipline conventionally regarded as falling within the behavioural and psychological sciences, but also found in education and some other social sciences (Morris, 1992). Behaviour analysis is both a basic, experimental science (the experimental analysis of behaviour; EAB), and an applied science and technology (applied behaviour analysis; ABA). For behaviour analysis, *Science is a systematic approach to the understanding of natural phenomena … that relies on determinism as its fundamental assumption, empiricism as its prime directive, experimentation as its basic strategy, replication as its necessary requirement for believability, parsimony as its conservative value, and philosophic doubt as its guiding conscience*. (Cooper, Heron, & Heward, 2007, p 7).

Consistent with this conception of science, EAB studies the behaviour of individuals (both human and non-human) using experimental functional analysis to understand the relationships between environment and behaviour (Delprato & Midgley, 1992; Skinner, 1966). ABA shares this commitment, but specifically is devoted to the understanding and improvement of human behaviour. ABA is defined as *a scientific approach for discovering environmental variables that reliably influence socially significant behavior and for developing a technology of behavior change that takes practical advantage of those discoveries.* (Cooper, et al., 2007, p 3.).

Behaviour Analysis in New Zealand

EAB began to be established in New Zealand universities in the late 1960's, with the setting up of laboratories at the University of Auckland and the University of Canterbury. By the late 1970's EAB research was being actively pursued at the Universities of Auckland, Waikato, Victoria, Canterbury, and Otago. New Zealand researchers have published extensively in the EAB field. For instance, in the period 1968 – 2008, authors with an affiliation in New Zealand have contributed 183 articles (an average rate of six per year) to the *Journal of the Experimental Analysis of Behavior*, the leading international journal [from a PsycINFO database search, 28 October, 2008, using descriptors "Journal of the Experimental Analysis of Behavior" (journal title) and "New Zealand" (affiliation)].

Given that there have been numbers of university academic staff with research expertise in the field for the past 30 years or more in all NZ universities (except AUT and Lincoln), there have been opportunities throughout that time for university students to take courses in behaviour analysis at both undergraduate and postgraduate levels. This instruction has typically been

incorporated as part of wider courses in learning and behaviour change, particularly at the undergraduate level.

From the 1970's onward there was also growing interest in ABA in New Zealand. Significant catalysts for this were the return of several New Zealanders who had studied ABA in the USA to academic positions in New Zealand (Blampied, 1978). These individuals were successful both in recruiting postgraduate students to do ABA research, many of whom later went on to academic appointments in New Zealand, and also in inspiring colleagues in EAB to collaborate in ABA research and teaching. By the 1980's there were academic staff in a majority of New Zealand universities teaching and researching in ABA (Blampied, 1999a; Singh & Blampied, 1983). These were found in both Departments/Schools of Psychology, and in Education. Two universities in New Zealand now have postgraduate courses in applied behaviour analysis approved by the Behavior Analysis Certification Board. Graduates of these programmes become Registered Psychologists in New Zealand and may become certified as behaviour analysts, an internationally recognised qualification, but as yet there are only a few such graduates. Many either work or would like to work with ASD populations.

Informal conferences on behaviour analysis had been held in New Zealand from the 1970's onwards, but in 2004 the New Zealand Chapter of the Association for Behavior Analysis International (NZABA) was established. Current membership is approximately 70 (Leland, L, personal communication, 28 October, 2008), including a substantial number of students as well as individuals who have completed postgraduate training in behaviour analysis, a majority of whom are likely to be interested in EAB rather than ABA. In short, estimating the number of behaviour analysts, or individuals with sufficient knowledge of behaviour analysis, available in New Zealand to provide evidence-based support for services for persons with ASD is hard to do. As a guess, in addition to university staff, the number of behaviour analysis practitioners in New Zealand is probably less than 30, including a small number of New Zealand graduates working in various non-academic settings who have received additional training in New Zealand and overseas specifically in the treatment of ASD primarily using early intensive behavioural interventions (see Keenan, 2006, for more information about ABA and ASD in New Zealand).

There are, however, a much larger number of graduates in psychology and education who are not experts in ABA but have some familiarity with and understanding of applied behaviour analysis, at least at a basic level. Without postgraduate training in ABA, however, they would be unable to design, supervise, and evaluate intervention programmes such as those listed in Results section 11. In fact, it could be considered irresponsible and unethical to encourage people with some basic knowledge of ABA to develop and conduct behaviour reduction programmes based on functional assessment unless they first received additional ABA training. Given opportunities for such training, however, these individuals are a resource that might be deployed to meet the need for ABA treatment in New Zealand.

Research on Applied Behaviour Analysis in New Zealand

Reviews of ABA and related research in New Zealand from the 1970's onward may be found in Blampied (1978; 1999a) and Singh and Blampied (1983). There appears to have been a small, but reasonably steady rate of publication of ABA research by New-Zealand resident researchers over the past four decades, but much less than for EAB (see above). A feature of much of the published research has been its focus on infants and children. There has been relatively little research on adolescents and adults. How much of this research has been about ASD is somewhat hard to say, both because in many cases reliable diagnoses of participants have

not been available (sometimes because privacy law has restricted researchers' access to diagnostic information) and sometimes because participants with ASD have been included in groups with other diagnostic conditions (e.g., intellectual disabilities).

Interrogation of the PsycINFO database using the descriptors "autism" and "autism spectrum disorder" (as keywords) and "New Zealand" or "NZ" (in author affiliation), and limited to the period 1997 – 2008 yielded 128 journal articles. Inspection of the titles and abstracts (with no attempt made to systematically check the New Zealand association of any authors) permitted 41 (22%) of the articles to be rejected as irrelevant to the search (e.g., they were articles considering general questions of developmental psychology, cognitive psychology, or psychopathology). Of the remainder (where the diagnosis or psychopathology was clearly stated), an almost even number (21 and 18 respectively) were concerned with ASD and Intellectual and/or Learning Disabilities (ID/LD). These were overshadowed by the 42 articles on attention deficit hyperactivity disorder (ADHD) and related conditions. Six articles were in the area of ABA (but not ASD, ADHD, or ID/LD), several featuring methodological issues such as functional analysis.

Behaviour Analysis and the New Zealand Autism Spectrum Disorder Guideline

The Zealand Autism Spectrum Disorder Guideline (NZASDG; Ministries of Health & Education, 2008) was produced for the purpose of *providing evidence-based information for health, disability, and education professionals and social service agencies for the provision of services for people with ASD, their families and whanau.* (NZASDG, p 12). The Guideline is divided into eight parts: Diagnosis and initial assessment of ASD; Support for individuals, families and carers; Education for learners with ASD; Treatment and management of ASD; Living in the community; Professional learning and development; Maori perspectives; and Pacific people's perspectives.

With respect to Part 1 of the *Guideline,* experts in ABA may be, but are unlikely, to be found in any of the settings where children, adolescents, or adults will receive diagnostic services leading to a diagnosis of ASD (or some alternative diagnosis). Experts in ABA, if they are found in such settings at all, are likely to be employed in tertiary health services serving children and families, or in specialist education services (e.g., Group Special Education). There are some private practitioners with ABA expertise who may provide diagnostic services, prior to providing behavioural therapies of one kind or another, generally supplied directly to the family/whanau.

ABA is, in principle, devoted to solving applied problems, and might well, therefore, be applied to problems experienced by any person (e.g., parents) affected by ASD (NZASDG, Part 2). Furthermore, since early intensive behavioural intervention for ASD was developed initially to be delivered in family settings (Lovaas, 1987) extensive practical experience has been developed within ABA for dealing with the manifold problems associated with working in family and community settings (e.g., Jacobson, 2000; Keenan, 2006; Maurice, Green, & Luce, 1996). Nevertheless, the focus of ABA research has been on the individual with the diagnosis of ASD, rather than on caregivers, teachers, or family members.

The science and practice of ABA has, therefore, both internationally and in New Zealand been focussed on those areas covered in Parts 3 – 6 of the NZASDG, especially on education, treatment, and management of ASD. While the majority of research in New Zealand (and probably elsewhere) has been focussed on children, ABA is in principle applicable throughout the lifespan, and might be applied to solve problems for any age group, with any class of

behaviour, and in any context or setting. It is potentially applicable to all the areas covered by the *Guideline*.

In several places the NZASDG identifies the need for research, and makes recommendations that research on various matters be carried out. A highly relevant contribution that ABA can make to help fulfil these recommendations is through the provision of single-case research designs that were developed within behaviour analysis (Church, 1996; Hersen & Barlow, 1976). ABA practitioners are uniquely qualified to design and conduct such research. Note that these research designs are not limited to evaluation of behavioural interventions. Any kind of intervention (including those without any pretensions of being based on scientific principles) may be evaluated, with the advantage that the evaluation is scientifically rigorous, and permits the drawing of causal inferences about the outcome of the interventions, but without requiring the recruitment of large numbers of participants, something that is often impractical or very difficult (Blampied, 1999b). Experts in ABA are a resource for professional learning and development in understanding and using single case designs. Further, it is in the context of providing research at the level of individuals and their whanau that ABA can probably make the greatest contribution to Maori and Pacific Peoples in the context of ASD.

REFERENCES

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*, 91-97.

Blampied, N. M. (1978). Comments on the current status of applied behaviour analysis in New Zealand. In T. Glynn & N. McNaughton (Eds.) *Behaviour Analysis in New Zealand - 1978*. Auckland, NZ: University of Auckland.

Blampied, N. M. (1999a). Cognitive-Behaviour Therapy in Aotearoa/New Zealand. *The Behavior Therapist*, 22, 173 - 178.

Blampied, N. M. (1999b). A legacy neglected: Restating the case for single-case research in cognitive-behaviour therapy. *Behaviour Change*, 16, 89 – 104.

Church, J. (1996). *Within-subject Experimental Analysis: A Guide for Students of Education*. State of the Art Monograph #5. Palmerston North, NZ: New Zealand Association for Research in Education.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied Behavior Analysis* (2nd ed.). Upper Saddle River, NJ: Pearson.

Delprato, D. J., & Midgley, B. D. (1992). Some fundamentals of B. F. Skinner's behaviorism. *American Psychologist*, 47, 1507 – 1520.

Hersen, M, & Barlow, D. H. (1976). *Single-case Experimental Designs: Strategies for Studying Behavior Change.* Oxford, UK: Pergamon.

Jacobson, J. W. (2000). Early intensive behavioral intervention: Emergence of a new consumer-driven service model. *The Behavior Analyst*, 23, 149 – 171.

Keenan, M. (2006). *Applied Behaviour Analysis and Autism: Building a Future Together.* Philadelphia, PA: Jessica Kingsley.

Lovaas, O. I. (1987). Behavioral treatment and normal intellectual functioning in autistic children. *Journal of Consulting and Clinical Psychology*, 55, 3 – 9.

Maurice, C., Green, G., & Luce, S. C. (1996). *Behavioral Intervention for Young children with Autism: A Manual for Parents and Professionals.* Austin, TX: ProEd.

Ministries of Health and Education. (2008). *New Zealand Autism Spectrum Disorder Guideline*. Wellington, NZ: Ministry of Health.

Morris, E. K. (1992). The aim, progress, and evolution of behavior analysis. *The Behavior Analyst,* 15, 3 – 29.

Rocha, M. L., Schreibman, L., & Stahmer, A. C. (2007). Effectiveness of training parents to teach joint attention in children with autism. *Journal of Early Intervention, 29*, 154-172

Singh, N. N., & Blampied, N. M. (1983). Behavior modification in New Zealand. In M. Hersen, R. M. Eiser, & P. M. Miller (Eds.). *Progress in Behavior Modification*, vol 14, (p173 - 218). New York, NY: Academic Press.

Skinner, B. F. (1966). What is the experimental analysis of behavior? *Journal of the Experimental Analysis of Behavior*, 9, 213 – 218.

Wilczynski, S. M., & Christian, L. (2008). The National Standards Project: Promoting evidence-based practice in autism spectrum disorders. In J. K. Luiselli, D. C. Russo, W. P. Christian, & S. M. Wilcyznski (Eds.). *Effective Practices for Children with Autism: Educational and Behavior Support Interventions that Work* (pp. 37- 60). New York: Oxford University Press.

Appendix A: Table 1. *Scientific Merit Rating Scale (SMRS)*

	Design		Measurement of Dependent Variable		Measurement of Independent Variable	Participant Ascertainment	Generalization of Tx Effect(s)
Rating	**Group**	**Single-case[1]**	**Test, scale, checklist, etc.**	**Direct behavioral observation**	**(procedural integrity or treatment fidelity)**		
5	Number of groups: 2 or more Design: Random assignment and/or no significant differences pre-Tx Participants: n ≥ 10 per group or sufficient power for lower number of participants Data Loss: No data loss	A minimum of three comparisons of control and treatment conditions Number of data points per condition: ≥ 5 Number of participants: ≥ 3 Data loss: no data loss possible	Type of measurement: Observation-based Protocol: standardized Psychometric properties solid instrument Evaluators: blind and independent	Type of measurement: continuous or discontinuous with calibration data showing low levels of error Reliability: IOA ≥90% or kappa ≥ .75 Percentage of sessions: Reliability collected in ≥25% Type of conditions in which data were collected: all sessions	Implementation accuracy measured at ≥80% Implementation accuracy measured in 25% of total sessions IOA for treatment fidelity ≥80%.	Diagnosed by a qualified professional Diagnosis confirmed by independent and blind evaluators for research purposes using at least one psychometrically solid instrument DSM or ICD criteria or commonly accepted criteria during the identified time period reported to be met	Focused interventions Objective data Maintenance data collected AND Generalization data collected across at least 2 of the following: setting, stimuli, persons Comprehensive programs Objective data Maintenance data collected ≥3 dependent variables representing different outcome targets

Appendix A: Table 1. *continued*

	Design		Measurement of Dependent Variable		Measurement of Independent Variable	Participant Ascertainment	Generalization of Tx Effect(s)
Rating	**Group**	**Single-case[1]**	**Test, scale, checklist, etc.**	**Direct behavioral observation**	**(procedural integrity or treatment fidelity)**		
4	Number of groups: 2 or more Design: Matched groups; No significant differences pre-Tx; or better design Participants: n ≥ 10 per group or sufficient power for lower number of participants Data Loss: some data loss possible	A minimum of three comparisons of control and treatment conditions Number of data points per condition: ≥ 5 Number of participants: ≥ 3 Data loss: some data loss possible	Type of measurement: Observation-based measurement Protocol: standardized Psychometric properties sufficient Evaluators: blind OR independent	Type of measurement: continuous or discontinuous with no calibration data Reliability: IOA ≥80% or kappa ≥ .75 Percentage of sessions: Reliability collected in ≥25% Type of conditions in which data were collected: all sessions	Implementation accuracy measured at ≥ 80% Implementation accuracy measured in 20% of total session for focused interventions only IOA for treatment fidelity: Not reported	Diagnosis provided/confirmed by independent and blind evaluators for research purposes using at least one psychometrically sufficient instrument	Focused interventions Objective data Maintenance data collected AND Generalization data collected across at least 1 of the following: setting, stimuli, persons Comprehensive programs Objective data Maintenance data collected for 2 dependent variables representing different outcome targets

Appendix A: Table 1. *continued*

	Design		Measurement of Dependent Variable		Measurement of Independent Variable	Participant Ascertainment	Generalization of Tx Effect(s)
Rating	**Group**	**Single-case[1]**	**Test, scale, checklist, etc.**	**Direct behavioral observation**	**(procedural integrity or treatment fidelity)**		
3	Number of groups: 2 or more Design: Pre-treatment differences controlled statistically or better design Data loss: Some data loss possible	A minimum of two comparisons of control and treatment conditions Number of data points per condition: ≥ 3 Number of participants: ≥ 2 Data loss: some data loss possible	Type of measurement: Observation-based measurement Protocol: non-standardized or standardized Psychometric properties adequate Evaluators: Neither blind nor independent required	Type of measurement: continuous or discontinuous with no calibration data Reliability: IOA ≥80% or kappa ≥ .4 Percentage of sessions: Reliability collected in ≥20% Type of conditions in which data were collected: all or experimental sessions only	Implementation accuracy measured at ≥ 80% Implementation accuracy measured in 20% of partial session for focused interventions only IOA for treatment fidelity: Not reported	Diagnosis provided/confirmed by independent OR blind evaluator for research purposes using at least one psychometrically adequate instrument OR DSM criteria confirmed by a qualified diagnostician or independent and/or blind evaluator.	Focused interventions Objective data Maintenance data collected OR Generalization data collected across at least 1 of the following: setting, stimuli, persons Comprehensive programs Objective data Maintenance data collected for 1 dependent variable

Appendix A: Table 1. *continued*

	Design		Measurement of Dependent Variable		Measurement of Independent Variable	Participant Ascertainment	Generalization of Tx Effect(s)
Rating	**Group**	**Single-case[1]**	**Test, scale, checklist, etc.**	**Direct behavioral observation**	**(procedural integrity or treatment fidelity)**		
2	Number of groups and Design: If 2 groups, pre-Tx difference not controlled or better research design OR a 1 group repeated measures pre-test/post-test design Data Loss: significant data loss possible	A minimum of two comparisons of control and treatment conditions Number of data points per tx condition: ≥ 3 Number of participants: ≥ 2 Data loss: significant data loss possible	Type of measurement: Observation-based or subjective Protocol: non-standardized or standardized Psychometric properties modest Evaluators: Neither blind nor independent required	Type of measurement: continuous or discontinuous with no calibration data Reliability: IOA ≥80% or kappa ≥ .4 Percentage of sessions: Not reported Type of conditions in which data were collected: not necessarily reported Operational definitions are extensive or rudimentary	Control condition is operationally defined at an inadequate level or better Experimental (Tx) procedures are operationally defined at a rudimentary level or better Implementation accuracy measured at ≥ 80% Implementation accuracy regarding percentage of total or partial sessions: Not reported IOA for treatment fidelity: Not reported	Diagnosis with at least one psychometrically modest instrument OR diagnosis provided by a qualified diagnostician or blind and/or independent evaluator with no reference to psychometric properties of instrument.	Focused interventions Subjective data Maintenance data collected AND Generalization data collected across at least 1 of the following: setting, stimuli, persons Comprehensive programs Subjective data Maintenance data collected ≥2 dependent variables representing different outcome targets

Appendix A: Table 1. *continued*

	Design		Measurement of Dependent Variable		Measurement of Independent Variable	Participant Ascertainment	Generalization of Tx Effect(s)
Rating	**Group**	**Single-case[1]**	**Test, scale, checklist, etc.**	**Direct behavioral observation**	**(procedural integrity or treatment fidelity)**		
1	Number of groups and Design: 2 group, post-test only or better research design OR retrospective comparison of 1 or more matched groups Data Loss: significant data loss possible	A minimum of two comparisons of control and treatment conditions Number of participants: ≥ 1 Data loss: significant data loss possible	Type of measurement: Observation-based or subjective Protocol: non-standardized or standardized Psychometric properties weak Evaluators: Neither blind nor independent required	Type of measurement: continuous or discontinuous with no calibration data Type of conditions in which data were collected: not necessarily reported Operational definitions are extensive or rudimentary	Control condition is operationally defined at an inadequate level or better Experimental (Tx) procedures are operationally defined at a rudimentary level or better IOA and procedural fidelity data are unreported	Diagnosis provided by (a) review of records OR (b) instrument with weak psychometric support.	<u>Focused interventions</u> Subjective or subjective supplemented with objective data Maintenance data collected OR Generalization data collected across at least 1 of the following: setting, stimuli, persons <u>Comprehensive programs</u> Maintenance data collected for 1 dependent variable
0	Does not meet criterion for a score of 1	Does not meet criterion for a score of 1	Does not meet criterion for a score of 1	Does not meet criterion for a score of 1	Does not meet criterion for a score of 1	Does not meet criterion for a score of 1	Does not meet criterion for a score of 1

[1]For all designs except alternating treatments design (ATD). For an ATD, the following rules apply:
(5) Comparison of baseline and experimental condition; ≥ 5 data points per experimental condition, follow-up data collected, carryover effects minimized through counterbalancing of key variables (e.g., time of day), and condition discriminability; n ≥ 3; no data loss
(4) Comparison of baseline and experimental condition; ≥ 5 data points per experimental condition;, carryover effects minimized through counterbalancing of key variables (e.g., time of day), OR condition discriminability; n ≥ 3; some data loss possible
(3) ≥ 5 data points per condition, carryover effects minimized counterbalancing of key variables OR condition discriminability; n ≥ 2; some data loss possible
(2) ≥ 5 data points per condition; n ≥ 2; significant data loss possible
(1) ≥ 5 data points per condition; n ≥ 1; significant data loss possible
(0) Does not meet criterion for 1.

Appendix A: Table 2. *Treatment Effects*

Beneficial Treatment Effects Reported	Unknown Treatment Effects Reported	Ineffective Treatment Effects Reported	Adverse Treatment Effects Reported
Single: A functional relation is established and is replicated at least 2 times Applies to at least one dependent variable	The nature of the data do not allow for firm conclusion about whether the treatment effects are beneficial, ineffective, or adverse.	Single: A functional relation was not established as a result of (a) inadequate design or (b) results were not replicated	Single: A functional relation is established and is replicated at least 2 times The magnitude of change is inconsistent or better or N/A The treatment resulted in greater deficit or harm on any of the dependent variables based on a comparison to baseline conditions
ATD: Moderate separation between at least 2 data series for most participants Applies to at least one dependent variables		ATD No separation was reported or separation was reported and, for one or more treatments, baseline data show a stable pattern of responding during treatment conditions	ATD Strong separation between at least 2 data series for most participants The treatment resulted in greater deficit or harm on any of the dependent variables based on a comparison of baseline and treatment conditions.
Group: statistically significant effects reported in favor of the treatment Applies to at least one multiple dependent variables		Group: No statistically significant effects were reported with sufficient evidence an effect would likely have been found*	Group: statistically significant finding reported indicating a treatment resulted in greater deficit or harm on any of the dependent variables.
		*The criterion includes: (a) there was sufficient power to detect a small effect (b) the type I error rate was liberal, (c) no efforts were made to control for experiment-wise Type I error rate, and (d) participants were engaged in treatment.	

Appendix A: Table 3. *Strength of Evidence Classification System (SECS)*[5]

Strongest Evidence (A)	**Strong Evidence (B)**	**Emerging (E)**	**Unestablished (U)**	**Ineffective (D)**	**Harmful (F)**
Multiple[1] published, peer-reviewed studies • Scientific Merit Rating Scales scores of 4 or 5 • Beneficial treatment effects for a specific target • Must have evidence the treatment has been maintained and/or generalized. • May be supplemented by studies with lower scores on the Scientific Merit Rating Scale.	Several[2] published, peer-reviewed studies • Scientific Merit Rating Scales scores of 3 • Beneficial treatment effects for a specific target May be supplemented by studies with lower scores on the Scientific Merit Rating Scale.	Few[3] published, peer-reviewed studies • Scientific Merit Rating Scale scores of 2 • Beneficial treatment effects reported for one dependent measure for a specific target These may be supplemented by studies with higher or lower scores on the Scientific Merit Rating Scale.	May or may not be based on research: • Beneficial treatment effects reported based on very poorly controlled studies (scores of 0 or 1 on the Scientific Merit Rating Scale) • Claims based on testimonials, unverified clinical observations, opinions, or speculation • Ineffective, mixed, or adverse treatment effects reported based on poorly controlled studies (scores of 0, 1, or 2 on the Scientific Merit Rating Scale)	Several[2] published, peer-reviewed studies • Scientific Merit Rating Scales scores of 3 • No beneficial treatment effects reported for one dependent measure for a specific target	Several[2] published, peer-reviewed studies • Scientific Merit Rating Scale scores of 3 • Adverse treatment effects reported for one dependent measure for a specific target

[1]Multiple is defined as 2 group-design or 6 single-case design studies with a minimum of 18 participants for which no conflicting results are reported* OR at least 3 group design or 9 single-case design studies with a minimum of 27 participants with no more than 1 study reporting conflicting results*. Group and single-case design methodologies may be combined (e.g., 1 group design study and 3 single case design studies with a minimum of 9 participants for which no conflicting results are reported).
[2]Several is defined as 2 group-design or 4 single-case design studies with a minimum of 12 participants for which there are no conflicting results or at least 3 group design or 6 single-case design studies with a minimum of 18 participants with no more than 1 study reporting conflicting results. Group and single-case design methodologies may be combined.
[3]Few is defined as a minimum of 1 group-design study or 2 single-case design studies with a minimum of 6 participants for which no conflicting results are reported*. Group and single-case design methodologies may be combined.

*Conflicting results are reported when a better or equally controlled study that is assigned a score of at least 3 reports either (a) no beneficial treatment effects or (b) adverse treatment effects.

[5] NSP's initial classification system is shown here. Since our report was written, NSP have reduced their SECS to include four (not six) categories to make the document more user-friendly for the general public. Categories A and B have been merged (to be labelled *Established*). Categories D and F have been coalesced also (Susan Wilczynski, personal communication, 11th February, 2009)

APPENDIX B: Detailed search, inclusion and exclusion criteria for NZ reviews

Two initial literature searches were conducted independently on June 30th 2008, with a PsycINFO search conducted at the University of Auckland, and a Web of Science (WoS) search at Victoria University, Wellington. Search results were saved to EndNote Library (.enl) files.

PsycINFO search terms were: autis* or asperger* or pervasive developmental disorder* or PDD* or ASD*, limited to publication years 1998-2007, English language, human subjects, peer reviewed journals. This yielded 6783 hits. WoS advanced search terms were: TS=(autis* or asperger* or pervasive developmental disorder* or pdd* or asd*) and PY=1998-2007. WoS search produced 9704 references.

Titles were searched, again independently. We erased records from .enl files if the title included: PDD when not an abbreviation for pervasive developmental disorders, "case study", cognitive concepts (e.g. executive functioning, theory of mind) unless training thereof was involved, Rett Syndrome, names of known alternative and clearly non-behavioral treatments; or, the title showed the article to concern biological variables (e.g., genetics, vaccines, neurophysiology, neuro-imaging, medical and dietary interventions), prevalence, comparison of behavioral phenotypes, screening, diagnosis or assessment study; or theoretical papers.

Abstracts were scrutinised and records erased from .enl files if the abstract included: any of the content outlined above, or the abstract showed the article as being: editorial or author's opinion, book review, conceptual frameworks, qualitative-only, comments, no mention of evaluation of any intervention, service provision (except if potentially ABA service provision, specifically). If the abstract was from a behavioural journal, e.g., *Behavior Modification, Child & Family Behavior Therapy, Journal of Applied Behavior Analysis, Journal of the Experimental Analysis of Behavior, Analysis of Verbal Behavior, European Journal of Behavior Analysis, Journal of Positive Behavior Support, Behavioral Interventions, Behavior Therapy, Journal of Behavior Therapy & Experimental Psychiatry, Behavior Change, Behavior Research and Therapy, Journal of Behavioral Education, Behavioral Disorders*, or if it contained terms conceptually systematic with behavior analysis, e.g., ABA behavioral interventions, modification, support, or treatment; or behavioral concepts, e.g., reinforcement, prompting, modelling, token economy, punishment, contingencies, stimulus control, fading, discrimination training, generalization, operant, functional assessment or analysis (or escape, avoidance attention, tangible, etc), establishing or motivation operation, verbal behavior, etc. then the article was examined further.

From this point on we moved articles that we excluded from further review by our team to an "exclusion" .enl file, along with the reason for exclusion. Exclusions were made where appropriate at all further stages of the review process.

After applying exclusion criteria on titles and abstracts, we merged the WoS and PsycINFO .enl files of articles not excluded by the processes above. We excluded all references that were on the NSP exclusion list for reasons other than age >21 or dual psychiatric/medical diagnoses. We set aside 249 articles that had been reviewed already by NSP, and 78 review articles. Reviews were not examined further for two reasons: (a) We were permitted by Ministry of Education (7th October, 2008) to include the findings of the NSP comprehensive review so that evidence from before 1998 could be included, therefore other reviews were redundant, and,

(b) A parallel review team (New Zealand Guidelines Group) had been awarded a contract that included reviewing reviews.

Next, we examined an .enl file of 151 references provided by responders to the consultative process on the draft ASD Guidelines which had been compiled and edited by the Ministry of Education. After taking out those that we had identified already or were on NSP's list, three further references were included for the next phase of the review.

The remaining original articles were obtained and examined. More papers were excluded if the method and/or results sections showed that: participants did not have a diagnosis of ASD, or its sub-types, or were described as having 'autistic characteristics' or similar descriptor; it included participants with multiple disorders and the effects for individuals on the autism spectrum were not analysed separately; or the study was of parent, educator, or caregiver training in which data were not collected on individuals with ASD; or did not focus on educational or behavioural targets; or study was an experimental demonstration, i.e., not functional for participants; or if no research design was evident; or, for small-N design studies, the individual participant data were not presented as linear graphs.

By this stage, we had identified 378 articles that could be included in a comprehensive review of peer-reviewed journal articles on ABA for ASD from 1998-2007. Two hundred and forty-nine of the identified empirical treatment research articles had been reviewed already by the National Standards Project (NSP), and 129 we described as "NZ-unique", in that they had not already been reviewed by NSP. The NZ-unique list was sent to NSP for their perusal because the CEO of that project (Dr Susan Wilczynski) is a member of our review team.

Appendix C: Table 1. *Evidence Table for New Zealand Unique Articles SMRS 2 and Above*

Social development and relating to others

Article reference	Demographics					NSP category	SMRS Total	Main Effect	Generalisation Effect	Maintenance Effect
	N	population	sex	co-morbidity	ages of ASD S's					
Bock_2007b	4	AS	M		9, 9, 9, 10	Interpersonal	4	Beneficial	n/a	strong support
Crozier_2007	1	ASD	M		3	Interpersonal	3	Beneficial	n/a	limited support
Vismara_2001 DV1	3	Autism	M		2	Interpersonal	3	Unknown	n/a	n/a
Bock_2007a	1	AS	M		12	Interpersonal	2	Beneficial	n/a	Strong support
Jones_2007	2	PDD	M	expressive language delay	3,3	Interpersonal	2	Beneficial	Strong support	Strong support
Petursdottir_2007	1	ASD	M	developmental delay	5	Interpersonal	2	Beneficial	No support	n/a
Vismara_2001 DV2	3	Autism	M		2	Interpersonal	2	Unknown	n/a	n/a

Development of cognitive skills

Article reference	Demographics					NSP category	SMRS Total	Main Effect	Generalisation Effect	Maintenance Effect
	N	population	sex	co-morbidity	ages of ASD S's					
Ingersoll_2007	5	Autism	M		3, 4, 3, 3, 2	Learning readiness	3	Beneficial	Strong support	limited support
Flores_2007	2	Autism	both		14, 11	Academic	3	Beneficial	n/a	Strong support
Crozier_2007	1	ASD	M		3	Learning readiness	3	Beneficial	n/a	Strong support
Watanabe_2003	3	Autism	M		22, 40, 30	Learning readiness	2	Ineffective	n/a	Strong support
Wallace_2007	1	Autism	F	MR	16	Academic	2	Beneficial	Strong support	n/a
Reed_2005	1	Autism	M	MR, Seizure Disorder	8	Learning readiness	2	Beneficial	n/a	n/a
DeQuinzio_2007	3	Autism	M		3 to 6	Learning readiness	2	Beneficial	Limited support	n/a
Delano_2007	1	AS	M		12	Academic	2	Beneficial	n/a	Strong support
Blair_2007	1	Autism	M	MR	6	Learning readiness	2	Beneficial	n/a	Strong support
Barry_2004	2	Autism	both		7, 8	Learning readiness	2	Beneficial	Limited support	limited support

Appendix C: Table 1. ***continued***

Development of functional and spontaneous communication which is used in natural environments

Article reference	Demographics					NSP category	SMRS Total	Main Effect	Generalisation Effect	Maintenance Effect
	N	population	sex	co-morbidity	ages of ASD S's					
Ingersoll_2007	5	Autism	M		3, 4, 3, 3, 2	Communication	3	Beneficial	Strong support	limited support
Blair_2007	1	Autism	M	MR	6	Communication	2	Beneficial	n/a	Strong support
Foxx_2004	2	Autism	M		5, 6	Communication	2	Beneficial	Strong support	Strong support
Stahmer_2001	11	ASD			1 to 4	Communication	2	Ineffective	n/a	n/a
Tada_2005	1	ASD	M	MR	4	Communication	2	Beneficial	Strong support	Strong support

Engagement and flexibility in developmentally appropriate tasks and play and later engagement in vocational activities

Article reference	Demographics					NSP category	SMRS Total	Main Effect	Generalisation Effect	Maintenance Effect
	N	population	sex	co-morbidity	ages of ASD S's					
Barry_2004	2	Autism	both		7, 8	play/leisure	2	Beneficial	limited support	limited support
Crozier_2007	1	Autism	M		5	play/leisure	2	Beneficial	n/a	no
Jerome_2007	2	Autism	M	MR	24, 32	play/leisure	2	Beneficial	Strong support	Strong support
Paterson_2007	2	Autism	M		6, 7	play/leisure	2	Beneficial	limited support	Strong support
Ward_2006	2	Autism, ASD	M		8,8	play/leisure	2	Unknown	n/a	n/a
Lattimore_2006	4	Autism	M	MR, Fragile X, severe hearing loss	29, 30, 32, 40	Vocational	3	Beneficial	n/a	Strong support

Development of independent organisational skills and other behaviours

Article reference	Demographics					NSP category	SMRS Total	Main Effect	Generalisation Effect	Maintenance Effect
	N	population	sex	co-morbidity	ages of ASD S's					
Taylor_2004	3	Autism	both		13, 14, 17	Personal responsibility	3	Unknown	Strong support	n/a
Cannela-Malone_2006	6	Multiple populations	both	MR, mood disorder	27 to 41	Personal responsibility	2	Beneficial	n/a	n/a
McLaughlin_2005	3	Autism	both	MR	28, 36, 39	Personal responsibility	2	Beneficial	n/a	n/a

Appendix C: Table 1. ***continued***

Challenging behaviour- Prevention

Article reference	Demographics					NSP category	SMRS Total	Main Effect	Generalisation Effect	Maintenance Effect
	N	population	sex	co-morbidity	ages of ASD S's					
Adelinis_1999	1	Autism	M	MR	27	Problem behaviour	2	Beneficial	Strong support	Strong support
Blair_2007	1	Autism	M	MR	6	Problem behaviour	2	Beneficial	n/a	Strong support
Crozier_2007	1	Autism	M		5	Problem behaviour	2	Beneficial	n/a	Strong support
McLaughlin_2005	3	Autism	both	MR	28, 36, 39	Problem behaviour	2	Beneficial	n/a	n/a
Piazza_1998	2	Autism	both	severe MR, Cornelia de Lange syndrome; ADHD, Moderate MR, severe esophagitis	17, 5	Problem behaviour	2	Beneficial	n/a	n/a
Reed_2005	1	Autism	M	MR, Seizure Disorder	8	Problem behaviour	2	Beneficial	n/a	n/a
Reese 1998	1	Autism	M	MR	26	Problem behaviour	2	Beneficial	n/a	Strong support
Richman_1998	1	Autism	F	MR	27	Problem behaviour	2	Beneficial	n/a	Strong support
Roberts-Gwinn_2001	1	Autism	M		11	Problem behaviour	2	Beneficial	n/a	Strong support
Britton_2002	1	Autism	F	MR	26	Restrictive, repetitive, patterns of behaviour, interest, or activity	2	Beneficial	n/a	n/a
Foxx_2004	2	Autism	M		5, 6	Restrictive, repetitive, patterns of behaviour, interest, or activity	2	Beneficial	Strong support	Strong support
Paterson_2007	2	Autism	M		6, 7	Restrictive, repetitive, patterns of behaviour, interest, or activity	2	Beneficial	limited support	limited support

Appendix C: Table 1. ***continued***

Challenging behaviour- Reduction

Article reference	Demographics					NSP category	SMRS Total	Main Effect	Generalisation Effect	Maintenance effect
	N	population	sex	co-morbidity	ages of ASD S's					
Shabani_2006	1	Autism	M	MR & Type 2 Diabetes	18	Sensory or emotional regulation	2	Beneficial	Strong support	Strong support
McCord_2001	1	Autism	F	profound MR	43	Problem behaviour	2	Beneficial	Strong support	Strong support

Appendix D, Table 1. New Zealand Unique Final Reference List

REFERENCES
U1. Adelinis, J. D., & Hagopian, L. P. (1999). The use of symmetrical "do" and "don't" requests to interrupt ongoing activities. *Journal of Applied Behavior Analysis, 32*(4), 519-523.
U2. Barry, L. M., & Burlew, S. B. (2004). Using Social Stories to Teach Choice and Play Skills to Children with Autism. *Focus on Autism and Other Developmental Disabilities, 19*(1), 45-51.
U3. Blair, K.-S. C., Umbreit, J., Dunlap, G., & Jung, G. (2007). Promoting inclusion and peer participation through assessment-based intervention. *Topics in Early Childhood Special Education, 27*(3), 134-147.
U4. Bock, M. A. (2007a). The impact of social-behavioral learning strategy training on the social interaction skills of four students with Asperger syndrome. *Focus on Autism and Other Developmental Disabilities, 22*(2), 88-95.
U5. Bock, M. A. (2007b). A social-behavioral learning strategy intervention for a child with Asperger syndrome: Brief report. *Remedial and Special Education, 28*(5), 258-265.
U6. Britton, L. N., Carr, J. E., Landaburu, H. J., & Romick, K. S. (2002). The efficacy of non-contingent reinforcement as treatment for automatically reinforced stereotypy. *Behavioral Interventions, 17*(2), 93-103.
U7. Cannella-Malone, H., Sigafoos, J., O'Reilly, M., de la Cruz, B., Edrisinha, C., & Lancioni, G. E. (2006). Comparing video prompting to video modeling for teaching daily living skills to six adults with developmental disabilities. *Education and Training in Developmental Disabilities, 41*(4), 344-356.
U8. Crozier, S., & Tincani, M. (2007). Effects of Social Stories on prosocial behavior of preschool children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 37*(9), 1803-1814.
U9. Delano, M. E. (2007). Use of strategy instruction to improve the story writing skills of a student with Asperger syndrome. *Focus on Autism and Other Developmental Disabilities, 22*(4), 252-258.
U10. DeQuinzio, J. A., Townsend, D. B., Sturmey, P., & Poulson, C. L. (2007). Generalized imitation of facial models by children with autism. *Journal of Applied Behavior Analysis, 40*(4), 755-759.
U11. Flores, M. M., & Ganz, J. B. (2007). Effectiveness of direct instruction for teaching statement inference, use of facts, and analogies to students with developmental disabilities and reading delays. *Focus on Autism and Other Developmental Disabilities, 22*(4), 244-251.
U12. Foxx, R. M., Schreck, K. A., Garito, J., Smith, A., & Weisenberger, S. (2004). Replacing the Echolalia of Children With Autism With Functional Use of Verbal Labeling. *Journal of Developmental and Physical Disabilities, 16*(4), 307-320.
U13. Ingersoll, B., Lewis, E., & Kroman, E. (2007). Teaching the imitation and spontaneous use of descriptive gestures in young children with autism using a naturalistic behavioral intervention. *Journal of Autism and Developmental Disorders, 37*(8), 1446-1456.

U14. Jerome, J., Frantino, E. P., & Sturmey, P. (2007). The effects of errorless learning and backward chaining on the acquisition of internet skills in adults with developmental disabilities. *Journal of Applied Behavior Analysis, 40*(1), 185-189.
U15. Jones, E. A., Feeley, K. M., & Takacs, J. (2007). Teaching spontaneous responses to young children with autism. *Journal of Applied Behavior Analysis, 40*(3), 565-570.
U16. Lattimore, L. P., Parsons, M. B., & Reid, D. H. (2006). Enhancing job-site training of supported workers with autism: A reemphasis on simulation. *Journal of Applied Behavior Analysis, 39*(1), 91-102.
U17. McCord, B. E., Iwata, B. A., Galensky, T. L., Ellingson, S. A., & Thomson, R. J. (2001). Functional analysis and treatment of problem behavior evoked by noise. *Journal of Applied Behavior Analysis, 34*(4), 447-462.
U18. McLaughlin, D. M., & Carr, E. G. (2005). Quality of Rapport as a setting event for problem behavior: Assessment and intervention. *Journal of Positive Behavior Interventions, 7*(2), 68-91.
U19. Paterson, C. R., & Arco, L. (2007). Using video modeling for generalizing toy play in children with autism. *Behavior Modification, 31*(5), 660-681.
U20. Petursdottir, A. L., McComas, J., McMaster, K., & Horner, K. (2007). The effects of scripted peer tutoring and programming common stimuli on social interactions of a student with autism spectrum disorder. *Journal of Applied Behavior Analysis, 40*(2), 353-357.
U21. Piazza, C. C., Fisher, W. W., Hanley, G. P., LeBlanc, L. A., Worsdell, A. S., Lindauer, S. E., et al. (1998). Treatment of pica through multiple analyses of its reinforcing functions. *Journal of Applied Behavior Analysis, 31*(2), 165-189.
U22. Reed, G. K., Ringdahl, J. E., Wacker, D. P., Barretto, A., & Andelman, M. S. (2005). The effects of fixed-time and contingent schedules of negative reinforcement on compliance and aberrant behavior. *Research in Developmental Disabilities, 26*(3), 281-295.
U23. Reese, R. M., Sherman, J. A., & Sheldon, J. B. (1998). Reducing disruptive behavior of a group-home resident with autism and mental retardation. *Journal of Autism and Developmental Disorders, 28*(2), 159-165.
U24. Richman, D. M., Wacker, D. P., Asmus, J. M., & Casey, S. D. (1998). Functional analysis and extinction of different behavior problems exhibited by the same individual. *Journal of Applied Behavior Analysis, 31*(3), 475-478.
U25. Roberts-Gwinn, M. M., Luiten, L., Derby, K. M., Johnson, T. A., & Weber, K. (2001). Identification of competing reinforcers for behavior maintained by automatic reinforcement. *Journal of Positive Behavior Interventions, 3*(2), 83-87.
U26. Shabani, D. B., & Fisher, W. W. (2006). Stimulus fading and differential reinforcement for the treatment of needle phobia in a youth with autism. *Journal of Applied Behavior Analysis, 39*(4), 449-452.
U27. Stahmer, A. C., & Gist, K. (2001). The effects of an accelerated parent education program on technique mastery and child outcome. *Journal of Positive Behavior Interventions, 3*(2), 75-82.
U28. Tada, M. & M. Kato (2005). Acquisition of Mands Through a Behavior Chain Interruption Strategy: Task Preference and Occurrence of Verbal Requests by a Child With Autistic Spectrum Disorders. *Japanese Journal of Special Education 42*(6), 513-524.

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U29. Taylor, B. A., Hughes, C. E., Richard, E., Hoch, H., & Coello, A. R. (2004). Teaching teenagers with autism to seek assistance when lost. *Journal of Applied Behavior Analysis, 37*(1), 79-82.
U30. Vismara, L. A., & Lyons, G. L. (2007). Using perseverative interests to elicit joint attention behaviors in young children with autism: Theoretical and clinical implications for understanding motivation. *Journal of Positive Behavior Interventions, 9*(4), 214-228.
U31. Wallace, C., Roscoe, E. M., & Dube, W. V. (2007). Use of a differential observing response to expand restricted stimulus control. *Journal of Applied Behavior Analysis, 40*(4), 707-712.
U32. Watanabe, M., & Sturmey, P. (2003). The effect of choice-making opportunities during activity schedules on task engagement of adults with autism. *Journal of Autism and Developmental Disorders, 33*(5), 535-538.

Appendix D, Table 1

Appendix D, Table 2. New Zealand-NSP Reference List

REFERENCE		Comments	
N1.	Adams, L., Gouvousis, A., VanLue, M., & Waldron, C. (2004). Social Story Intervention: Improving Communication Skills in a Child with an Autism Spectrum Disorder. *Focus on Autism and Other Developmental Disabilities, 19*(2), 87-94.	N1.	SS data not provided by NSP
N2.	Adelinis, J. D., Piazza, C. C., & Goh, H.-L. (2001). Treatment of multiply controlled destructive behavior with food reinforcement. *Journal of Applied Behavior Analysis, 34*(1), 97-100.	N2.	Data received from NSP
N3.	Ahearn, W. H. (2003). Using simultaneous presentation to increase vegetables consumption in a mildly selective child with autism. *Journal of Applied Behavior Analysis, 36*(3), 361-365.	N3.	Data received from NSP
N4.	Ahearn, W. H., Clark, K. M., MacDonald, R. P. F., & Chung, B. I. (2007). Assessing and treating vocal stereotypy in children with autism. *Journal of Applied Behavior Analysis, 40*(2), 263-275.	N4.	Data received from NSP
N5.	Akmanoglu, N., & Batu, S. (2004). Teaching Pointing to Numerals to Individuals with Autism Using Simultaneous Prompting. *Education and Training in Developmental Disabilities, 39*(4), 326-336.	N5.	Data from NSP (originally in NZ list)
N6.	Akmanoglu-Uludag, N., & Batu, S. (2005). Teaching naming relatives to individuals with autism using simultaneous prompting. *Education and Training in Developmental Disabilities, 40*(4), 401-410.	N6.	Data from NSP (originally in NZ list)
N7.	Anderson, C. M., & Long, E. S. (2002). Use of a structured descriptive assessment methodology to identify variables affecting problem behavior. *Journal of Applied Behavior Analysis, 35*(2), 137-154.	N7.	Data from NSP (originally in NZ list)
N8.	Anderson, C. M., & McMillan, K. (2001). Parental use of escape extinction and differential reinforcement to treat food selectivity. *Journal of Applied Behavior Analysis, 34*(4), 511-515.	N8.	Data received from NSP
N9.	Apple, A. L., Billingsley, F., & Schwartz, I. S. (2005). Effects of Video Modeling Alone and With Self-Management on Compliment-Giving Behaviors of Children with High-Functioning ASD. *Journal of Positive Behavior Interventions, 7*(1), 33-46.	N9.	Data from NSP (originally in NZ list)
N10.	Arntzen, E., Gilde, K., & Pedersen, E. (1998). Generalized schedule following in a youth with autism. *Scandinavian Journal of Behaviour Therapy, 27*(3), 135-141.	N10.	Data from NSP (originally in NZ list)

N11.	Bainbridge, N., & Myles, B. S. (1999). The use of priming to introduce toilet training to a child with autism. *Focus on Autism and Other Developmental Disabilities, 14*(2), 106-109.	N11.	Data received from NSP
N12.	Baker, M. J. (2000). Incorporating the thematic ritualistic behaviors of children with autism into games: Increasing social play interactions with siblings. *Journal of Positive Behavior Interventions, 2*(2), 66-84.	N12.	Data received from NSP
N13.	Baker, M. J., Koegel, R. L., & Koegel, L. K. (1998). Increasing the social behavior of young children with autism using their obsessive behaviors. *Journal of the Association for Persons with Severe Handicaps, 23*(4), 300-308.	N13.	Data received from NSP
N14.	Banda, D. R., & Kubina, R. M., Jr. (2006). The Effects of a High-Probability Request Sequencing Technique in Enhancing Transition Behaviors. *Education & Treatment of Children, 29*(3), 507-516.	N14.	Data received from NSP
N15.	Barry, L. M., & Singer, G. H. S. (2001). A family in crisis: Replacing the aggressive behavior of a child with autism toward an infant sibling. *Journal of Positive Behavior Interventions, 3*(1), 28-38.	N15.	Data received from NSP
N16.	Barry, T. D., Klinger, L. G., Lee, J. M., Palardy, N., Gilmore, T., & Bodin, S. D. (2003). Examining the effectiveness of an outpatient clinic-based social skills group for high-functioning children with autism. *Journal of Autism and Developmental Disorders, 33*(6), 685-701.	N16.	Data received from NSP
N17.	Beck, M. H., Cataldo, M., Slifer, K. J., Pulbrook, V., & Guhman, J. K. (2005). Teaching Children with Attention Deficit Hyperactivity Disorder (ADHD) and Autistic Disorder (AD) How to Swallow Pills. *Clinical Pediatrics, 44*(6), 515-526.	N17.	Data received from NSP
N18.	Bellini, S., Akullian, J., & Hopf, A. (2007). Increasing social engagement in young children with autism spectrum disorders using video self-modeling. *School Psychology Review, 36*(1), 80-90.	N18.	Data received from NSP
N19.	Ben-Itzchak, E., & Zachor, D. A. (2007). The effects of intellectual functioning and autism severity on outcome of early behavioral intervention for children with autism. *Research in Developmental Disabilities, 28*(3), 287-303.	N19.	Data received from NSP
N20.	Bernard-Opitz, V., Sriram, N., & Nakhoda-Sapuan, S. (2001). Enhancing social problem solving in children with autism and normal children through computer-assisted instruction. *Journal of Autism and Developmental Disorders, 31*(4), 377-398.	N20.	Data received from NSP

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N21.	Birkan, B., McClannahan, L. E., & Krantz, P. J. (2007). Effects of superimposition and background fading on the sight-word reading of a boy with autism. *Research in Autism Spectrum Disorders, 1*(2), 117-125.	N21.	Data from NSP(originally in NZ list)
N22.	Bledsoe, R., Myles, B. S., & Simpson, R. (2003). Use of a Social Story intervention to improve mealtime skills of an adolescent with Asperger syndrome. *Autism, 7*(3), 289-295.	N22.	SS data not provided by NSP
N23.	Bock, M. A. (1999). Sorting laundry: Categorization strategy application to an authentic learning activity by children with autism. *Focus on Autism and Other Developmental Disabilities, 14*(4), 220-230.	N23.	Data received from NSP
N24.	Braithwaite, K. L., & Richdale, A. L. (2000). Functional communication training to replace challenging behaviors across two behavioral outcomes. *Behavioral Interventions, 15*(1), 21-36.	N24.	Data received from NSP
N25.	Britton, L. N., Carr, J. E., Kellum, K. K., Dozier, C. L., & Weil, T. M. (2000). A variation of noncontingent reinforcement in the treatment of aberrant behavior. *Research in Developmental Disabilities, 21*(6), 425-435.	N25.	Data received from NSP
N26.	Brown, K. E., & Mirenda, P. (2006). Contingency Mapping: Use of a Novel Visual Support Strategy as an Adjunct to Functional Equivalence Training. *Journal of Positive Behavior Interventions, 8*(3), 155-164.	N26.	Data received from NSP
N27.	Bryan, L. C., & Gast, D. L. (2000). Teaching on-task and on-schedule behaviors to high-functioning children with autism via picture activity schedules. *Journal of Autism and Developmental Disorders, 30*(6), 553-567.	N27.	Data received from NSP
N28.	Buckley, S. D., & Newchok, D. K. (2005). An evaluation of simultaneous presentation and differential reinforcement with response cost to reduce packing. *Journal of Applied Behavior Analysis, 38*(3), 405-409.	N28.	Data received from NSP
N29.	Buckley, S. D., & Newchok, D. K. (2006). Analysis and treatment of problem behavior evoked by music. *Journal of Applied Behavior Analysis, 39*(1), 141-144.	N29.	Data received from NSP
N30.	Buffington, D. M., Krantz, P. J., McClannahan, L. E., & Poulson, C. L. (1998). Procedures for teaching appropriate gestural communication skills to children with autism. *Journal of Autism and Developmental Disorders, 28*(6), 535-545.	N30.	Data received from NSP
N31.	Buggey, T. (2005). Video Self-Modeling Applications With Students With Autism Spectrum Disorder in a Small Private School Setting. *Focus on Autism and Other Developmental Disabilities, 20*(1), 52-63.	N31.	Data received from NSP

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N32.	Buggey, T., Toombs, K., Gardener, P., & Cervetti, M. (1999). Training responding behaviors in students with autism: Using videotaped self-modeling. *Journal of Positive Behavior Interventions, 1*(4), 205-214.	N32. Data received from NSP
N33.	Callahan, K., & Rademacher, J. A. (1999). Using self-management strategies to increase the on-task behavior of a student with autism. *Journal of Positive Behavior Interventions, 1*(2), 117-122.	N33. Data received from NSP
N34.	Cameron, M. J., Shapiro, R. L., & Ainsleigh, S. A. (2005). Bicycle Riding: Pedaling Made Possible Through Positive Behavioral Interventions. *Journal of Positive Behavior Interventions, 7*(3), 153-158.	N34. Data received from NSP
N35.	Carr, D. (2003). Effects of exemplar training in exclusion responding on auditory-visual discrimination tasks with children with autism. *Journal of Applied Behavior Analysis, 36*(4), 507-524.	N35. NSP rated as non behavioural
N36.	Carr, D., & Felce, J. (2007). The effects of PECS teaching to Phase III on the communicative interactions between children with autism and their teachers. *Journal of Autism and Developmental Disorders, 37*(4), 724-737.	N36. Data received from NSP
N37.	Carter, C. M. (2001). Using choice with game play to increase language skills and interactive behaviors in children with autism. *Journal of Positive Behavior Interventions, 3*(3), 131-151.	N37. Data received from NSP
N38.	Casey, S. D., & Merical, C. L. (2006). The use of functional communication training without additional treatment procedures in an inclusive school setting. *Behavioral Disorders, 32*(1), 46-54.	N38. Data received from NSP
N39.	Charlop-Christy, M. H., Carpenter, M., Le, L., LeBlanc, L. A., & Kellet, K. (2002). Using the picture exchange communication system (PECS) with children with autism: Assessment of PECS acquisition, speech, social-communicative behavior, and problem behavior. *Journal of Applied Behavior Analysis, 35*(3), 213-231.	N39. Data received from NSP
N40.	Charlop-Christy, M. H., & Carpenter, M. H. (2000). Modified incidental teaching sessions: A procedure for parents to increase spontaneous speech in their children with autism. *Journal of Positive Behavior Interventions, 2*(2), 98-112.	N40. Data received from NSP
N41.	Charlop-Christy, M. H., & Haymes, L. K. (1998). Using objects of obsession as token reinforcers for children with autism. *Journal of Autism and Developmental Disorders, 28*(3), 189-198.	N41. Data received from NSP

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N42.	Charlop-Christy, M. H., & Kelso, S. E. (2003). Teaching children with autism conversational speech using a cue card/written script program. *Education & Treatment of Children, 26*(2), 108-127.	N42.	Data received from NSP
N43.	Charlop-Christy, M. H., Le, L., & Freeman, K. A. (2000). A comparison of video modeling with in vivo modeling for teaching children with autism. *Journal of Autism and Developmental Disorders, 30*(6), 537-552.	N43.	Data received from NSP
N44.	Chin, H. Y., & Bernard-Opitz, V. (2000). Teaching conversational skills to children with autism: Effect on the development of a theory of mind. *Journal of Autism and Developmental Disorders, 30*(6), 569-583.	N44.	Data not received from NSP
N45.	Cicero, F. R., & Pfadt, A. (2002). Investigation of a reinforcement-based toilet training procedure for children with autism. *Research in Developmental Disabilities, 23*(5), 319-331.	N45.	Data received from NSP
N46.	Clark, K. M., & Green, G. (2004). Comparison of two procedures for teaching dictated-word/symbol relations to learners with autism. *Journal of Applied Behavior Analysis, 37*(4), 503-507.	N46.	Data received from NSP
N47.	Cohen, H., Amerine-Dickens, M., & Smith, T. (2006). Early Intensive Behavioral Treatment: Replication of the UCLA Model in a Community Setting. *Journal of Developmental & Behavioral Pediatrics, 27*(Suppl2), S145-S155.	N47.	Data received from NSP
N48.	Conroy, M. A., Asmus, J. M., Sellers, J. A., & Ladwig, C. N. (2005). The Use of an Antecedent-Based Intervention to Decrease Stereotypic Behavior in a General Education Classroom: A Case Study. *Focus on Autism and Other Developmental Disabilities, 20*(4), 223-230.	N48.	Data received from NSP
N49.	Coyle, C., & Cole, P. (2004). A videotaped self-modelling and self-monitoring treatment program to decrease off-task behaviour in children with autism. *Journal of Intellectual & Developmental Disability, 29*(1), 3-15.	N49.	Data received from NSP
N50.	Crozier, S., & Tincani, M. J. (2005). Using a Modified Social Story to Decrease Disruptive Behavior of a Child With Autism. *Focus on Autism and Other Developmental Disabilities, 20*(3), 150-157.	N50.	SS data not provided by NSP
N51.	D'Ateno, P., Mangiapanello, K., & Taylor, B. A. (2003). Using video modeling to teach complex play sequences to a preschooler with autism. *Journal of Positive Behavior Interventions, 5*(1), 5-11.	N51.	Data received from NSP

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N52.	Delano, M., & Snell, M. E. (2006). The effects of social stories on the social engagement of children with autism. *Journal of Positive Behavior Interventions, 8*(1), 29-42.	N52.	SS data not provided by NSP
N53.	Delano, M. E. (2007). Improving written language performance of adolescents with Asperger syndrome. *Journal of Applied Behavior Analysis, 40*(2), 345-351.	N53.	Data received from NSP
N54.	DeLeon, I. G., Fisher, W. W., Herman, K. M., & Crosland, K. C. (2000). Assessment of a response bias for aggression over functionally equivalent appropriate behavior. *Journal of Applied Behavior Analysis, 33*(1), 73-77.	N54.	Data received from NSP
N55.	DeLeon, I. G., Fisher, W. W., & Marhefka, J.-M. (2004). Decreasing Self-Injurious Behavior Associated with Awakening in a Child with Autism and Developmental Delays. *Behavioral Interventions, 19*(2), 111-119.	N55.	Data received from NSP
N56.	DeLeon, I. G., Neidert, P. L., Anders, B. M., & Rodriguez-Catter, V. (2001). Choices between positive and negative reinforcement during treatment for escape-maintained behavior. *Journal of Applied Behavior Analysis, 34*(4), 521-525.	N56.	Data received from NSP
N57.	Dettmer, S., Simpson, R. L., Myles, B. S., & Ganz, J. B. (2000). The use of visual supports to facilitate transitions of students with autism. *Focus on Autism and Other Developmental Disabilities, 15*(3), 163-169.	N57.	Data received from NSP
N58.	Dib, N., & Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trail teaching. *Journal of Applied Behavior Analysis, 40*(2), 339-343.	N58.	Data received from NSP
N59.	Dozier, C. L., Carr, J. E., Enloe, K., Landaburu, H., Eastridge, D., & Kellum, K. K. (2001). Using fixed-time schedules to maintain behavior: A preliminary investigation. *Journal of Applied Behavior Analysis, 34*(3), 337-340.	N59.	Data received from NSP
N60.	Drasgow, E., Halle, J. W., & Ostrosky, M. M. (1998). Effects of differential reinforcement on the generalization of a replacement mand in three children with severe language delays. *Journal of Applied Behavior Analysis, 31*(3), 357-374.	N60.	Data received from NSP
N61.	Ducharme, J. M., & Drain, T. L. (2004). Errorless Academic Compliance Training: Improving Generalized Cooperation With Parental Requests in Children With Autism. *Journal of the American Academy of Child & Adolescent Psychiatry, 43*(2), 163-171.	N61.	Data received from NSP
N62.	Ducharme, J. M., Sanjuan, E., & Drain, T. (2007). Errorless compliance training: Success-focused behavioral treatment of children with Asperger syndrome. *Behavior Modification, 31*(3), 329-344.	N62.	Data received from NSP

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N63.	Dudley, L. L., Johnson, C., & Barnes, R. S. (2002). Decreasing rumination using a starchy food satiation procedure. *Behavioral Interventions, 17*(1), 21-29.	N63.	Data received from NSP
N64.	Dunlap, G., & Fox, L. (1999). A demonstration of behavioral support for young children with autism. *Journal of Positive Behavior Interventions, 1*(2), 77-87.	N64.	Data received from NSP
N65.	Durand, V. M. (2002). Treating sleep terrors in children with autism. *Journal of Positive Behavior Interventions, 4*(2), 66-72.	N65.	Data received from NSP
N66.	Durand, V. M., Christodulu, K. V., & Koegel, R. L. (2004). Description of a sleep-restriction program to reduce bedtime disturbances and night waking. *Journal of Positive Behavior Interventions, 6*(2), 83-91.	N66.	Data received from NSP
N67.	Dyches, T. T. (1998). Effects of switch training on the communication of children with autism and severe disabilities. *Focus on Autism and Other Developmental Disabilities, 13*(3), 151-162.	N67.	Data received from NSP
N68.	Eikeseth, S., Smith, T., Jahr, E., & Eldevik, S. (2002). Intensive behavioral treatment at school for 4- to 7-year-old children with autism: A 1-year comparison controlled study. *Behavior Modification, 26*(1), 49-68.	N68.	Data received from NSP
N69.	Eikeseth, S., Smith, T., Jahr, E., & Eldevik, S. (2007). Outcome for children with autism who began intensive behavioral treatment between ages 4 and 7 - A comparison controlled study. *Behavior Modification, 31*(3), 264-278.	N69.	Data received from NSP
N70.	Eikeseth, S., Smith, T., Jahr, E., & Eldevik, S. (2007). Outcome for children with autism who began intensive behavioral treatment between ages 4 and 7: A comparison controlled study. *Behavior Modification, 31*(3), 264-278.	N70.	Data received from NSP
N71.	Eldevik, S., Eikeseth, S., Jahr, E., & Smith, T. (2006). Effects of Low-Intensity Behavioral Treatment for Children with Autism and Mental Retardation. *Journal of Autism and Developmental Disorders, 36*(2), 211-224.	N71.	Data received from NSP
N72.	Ellis, E. M., Ala'i-Rosales, S. S., Glenn, S. S., Rosales-Ruiz, J., & Greenspoon, J. (2006). The effects of graduated exposure, modeling, and contingent social attention on tolerance to skin care products with two children with autism. *Research in Developmental Disabilities, 27*(6), 585-598.	N72.	Data received from NSP
N73.	Endicott, K., & Higbee, T. S. (2007). Contriving motivating operations to evoke mands for information in preschoolers with autism. *Research in Autism Spectrum Disorders, 1*(3), 210-217.	N73.	Data from NSP (originally in NZ list)

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N74.	Falcomata, T. S., Roane, H. S., Hovanetz, A. N., Kettering, T. L., & Keeney, K. M. (2004). An evaluation of response cost in the treatment of inappropriate vocalizations maintained by automatic reinforcement. *Journal of Applied Behavior Analysis, 37*(1), 83-87.	N74.	Data received from NSP
N75.	Ferreri, S. J., Tamm, L., & Wier, K. G. (2006). Using Food Aversion to Decrease Severe Pica by a Child With Autism. *Behavior Modification, 30*(4), 456-471.	N75.	Data received from NSP
N76.	Finkel, A. S., & Williams, R. L. (2001). A comparison of textual and echoic prompts on the acquisition of intraverbal behavior in a six-year-old boy with autism. *Analysis of Verbal Behavior, 18*, 61-70.	N76.	Data from NSP (originally in NZ list)
N77.	Fossett, B., & Mirenda, P. (2006). Sight word reading in children with developmental disabilities: A comparison of paired associate and picture-to-text matching instruction. *Research in Developmental Disabilities, 27*(4), 411-429.	N77.	NSP rated as non behavioural
N78.	Foxx, R. M., & Garito, J. (2007). The long term successful treatment of the very severe behaviors of a preadolescent with autism. *Behavioral Interventions, 22*(1), 69-82.	N78.	Data received from NSP
N79.	Foxx, R. M., & Meindl, J. (2007). The long term successful treatment of the aggressive/destructive behaviors of a preadolescent with autism. *Behavioral Interventions, 22*(1), 83-97.	N79.	Data received from NSP
N80.	Frea, W. D., Arnold, C. L., & Vittimberga, G. L. (2001). A demonstration of the effects of augmentative communication on the extreme aggressive behavior of a child with autism within an integrated preschool setting. *Journal of Positive Behavior Interventions, 3*(4), 194-198.	N80.	AAC data not provided by NSP
N81.	Ganz, J. B., & Simpson, R. L. (2004). Effects on Communicative Requesting and Speech Development of the Picture Exchange Communication System in Children With Characteristics of Autism. *Journal of Autism and Developmental Disorders, 34*(4), 395-409.	N81.	Data received from NSP
N82.	Gena, A. (2006). The effects of prompting and social reinforcement on establishing social interactions with peers during the inclusion of four children with autism in preschool. *International Journal of Psychology, 41*(6), 541-554.	N82.	Data from NSP (originally in NZ list)
N83.	Gena, A., Couloura, S., & Kymissis, E. (2005). Modifying the Affective Behavior of Preschoolers with Autism Using In-Vivo or Video Modeling and Reinforcement Contingencies. *Journal of Autism and Developmental Disorders, 35*(5), 545-556.	N83.	Data received from NSP
N84.	Gerdtz, J. (2000). Evaluating behavioral treatment of disruptive classroom behaviors of an adolescent with autism. *Research on Social Work Practice, 10*(1), 98-110.	N84.	Data received from NSP

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N85.	Gillett, J. N., & LeBlanc, L. A. (2007). Parent-implemented natural language paradigm to increase language and play in children with autism. *Research in Autism Spectrum Disorders, 1*(3), 247-255.	N85.	Data from NSP (originally in NZ list)
N86.	Goldsmith, T. R., LeBlanc, L. A., & Sautter, R. A. (2007). Teaching intraverbal behavior to children with autism. *Research in Autism Spectrum Disorders, 1*(1), 1-13.	N86.	Data received from NSP
N87.	Graff, R. B., Lineman, G. T., Libby, M. E., & Ahearn, W. H. (1999). Functional analysis and treatment of screaming in a young girl with severe disabilities. *Behavioral Interventions, 14*(4), 233-239.	N87.	Data received from NSP
N88.	Greer, R. D., Yaun, L., & Gautreaux, G. (2005). Novel dictation and intraverbal responses as a function of a multiple exemplar instructional history. *Analysis of Verbal Behavior, 21*, 99-116.	N88.	Data from NSP (originally in NZ list)
N89.	Grela, B. G., & McLaughlin, K. S. (2006). Focused Stimulation for a Child with Autism Spectrum Disorder: A Treatment Study. *Journal of Autism and Developmental Disorders, 36*(6), 753-756.	N89.	Data received from NSP
N90.	Grindle, C. F., & Remington, B. (2002). Discrete-trial training for autistic children when reward is delayed: A comparison of conditioned cue value and response marking. *Journal of Applied Behavior Analysis, 35*(2), 187-190.	N90.	Data received from NSP
N91.	Grindle, C. F., & Remington, B. (2004). Teaching children with autism using conditioned cue-value and response-marking procedures: A socially valid procedure. *Research in Developmental Disabilities, 25*(5), 413-429.	N91.	NSP rated as non behavioural
N92.	Grindle, C. F., & Remington, B. (2005). Teaching Children with Autism when Reward is Delayed. The Effects of Two Kinds of Marking Stimuli. *Journal of Autism and Developmental Disorders, 35*(6), 839-850.	N92.	Data received from NSP
N93.	Hagopian, L., Kuhn, S. A. C., Long, E. S., & Rush, K. S. (2005). Schedule Thinning Following Communication Training: Using Competing Stimuli To Enhance Tolerance To Decrements In Reinforcer Density. *Journal of Applied Behavior Analysis, 38*(2), 177-193.	N93.	Data received from NSP
N94.	Hagopian, L. P., Bruzek, J. L., Bowman, L. G., & Jennett, H. K. (2007). Assessment and treatment of problem behavior occasioned by interruption of free-operant behavior. *Journal of Applied Behavior Analysis, 40*(1), 89-103.	N94.	Data from NSP (originally in NZ list)
N95.	Hancock, T. B., & Kaiser, A. P. (2002). The effects of trainer-implemented Enhanced Milieu Teaching on the social communication of children with autism. *Topics in Early Childhood Special Education, 22*(1), 39-54.	N95.	Data received from NSP

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N96.	Harding, J. W., Wacker, D. P., Berg, W. K., Barretto, A., & Rankin, B. (2002). Assessment and treatment of severe behavior problems using choice-making procedures. *Education & Treatment of Children, 25*(1), 26-46.	N96. Data received from NSP
N97.	Heckaman, K. A., Alber, S., Hooper, S., & Heward, W. L. (1998). A comparison of least-to-most prompts and progressive time delay on the disruptive behavior of students with autism. *Journal of Behavioral Education, 8*(2), 171-201.	N97. Data received from NSP
N98.	Heering, P. W., Wilder, D. A., & Ladd, C. (2003). Liquid rescheduling for the treatment of rumination. *Behavioral Interventions, 18*(3), 199-207.	N98. Data received from NSP
N99.	Hine, J. F., & Wolery, M. (2006). Using Point-of-View Video Modeling to Teach Play to Preschoolers With Autism. *Topics in Early Childhood Special Education, 26*(2), 83-93.	N99. Data received from NSP
N100.	Hoch, H., McComas, J. J., Johnson, L., Faranda, N., & Guenther, S. (2002). The effects of magnitude and quality of reinforcement on choice responding during play activities. *Journal of Applied Behavior Analysis, 35*(2), 171-181.	N100. Data from NSP (originally in NZ list)
N101.	Hoch, H., McComas, J. J., Thompson, A. L., & Paone, D. (2002). Concurrent reinforcement schedules: Behavior change and maintenance without extinction. *Journal of Applied Behavior Analysis, 35*(2), 155-169.	N101. Data received from NSP
N102.	Howard, J. S., Sparkman, C. R., Cohen, H. G., Green, G., & Stanislaw, H. (2005). A comparison of intensive behavior analytic and eclectic treatments for young children with autism. *Research in Developmental Disabilities, 26*(4), 359-383.	N102. Data received from NSP
N103.	Howlin, P., Gordon, R. K., Pasco, G., Wade, A., & Charman, T. (2007). The effectiveness of Picture Exchange Communication System (PECS) training for teachers of children with autism: A pragmatic, group randomised controlled trial. *Journal of Child Psychology and Psychiatry, 48*(5), 473-481.	N103. Data received from NSP
N104.	Hume, K., & Odom, S. (2007). Effects of an individual work system on the independent functioning of students with autism. *Journal of Autism and Developmental Disorders, 37*(6), 1166-1180.	N104. Data from NSP (originally in NZ list)
N105.	Hupp, S. D. A., & Reitman, D. (2000). Parent-assisted modification of pivotal social skills for a child diagnosed with PDD: A clinical replication. *Journal of Positive Behavior Interventions, 2*(3), 183-187.	N105. Data received from NSP
N106.	Hutchins, T. L., & Prelock, P. A. (2005). Using social stories and comic strip conversations to promote socially valid outcomes for children with autism. *Seminars in Speech & Language, 27*(1), 47-59.	N106. SS data not provided by NSP

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N107. Hwang, B., & Hughes, C. (2000). Increasing early social-communicative skills of preverbal preschool children with autism through social interactive training. *Journal of the Association for Persons with Severe Handicaps, 25*(1), 18-28.	N107. Data received from NSP
N108. Ingersoll, B., & Schreibman, L. (2006). Teaching Reciprocal Imitation Skills to Young Children with Autism Using a Naturalistic Behavioral Approach: Effects on Language, Pretend Play, and Joint Attention. *Journal of Autism and Developmental Disorders, 36*(4), 487-505.	N108. Data received from NSP
N109. Ivey, M. L., Heflin, L. J., & Alberto, P. (2004). The Use of Social Stories to Promote Independent Behaviors in Novel Events for Children with PDD-NOS. *Focus on Autism and Other Developmental Disabilities, 19*(3), 164-176.	N109. Data received from NSP
N110. Jahr, E. (2001). Teaching children with autism to answer novel wh-questions by utilizing a multiple exemplar strategy. *Research in Developmental Disabilities, 22*(5), 407-423.	N110. Data received from NSP
N111. Jahr, E., Eldevik, S., & Eikeseth, S. (2000). Teaching children with autism to initiate and sustain cooperative play. *Research in Developmental Disabilities, 21*(2), 151-169.	N111. Data received from NSP
N112. Jocelyn, L. J., Casiro, O. G., Beattie, D., Bow, J., & Kneisz, J. (1998). Treatment of children with autism: A randomized controlled trial to evaluate a caregiver-based intervention program in community day-care centers. *Journal of Developmental & Behavioral Pediatrics, 19*(5), 326-334.	N112. NSP rated as non behavioural
N113. Johnson, L., McComas, J., Thompson, A., & Symons, F. J. (2004). Obtained versus programmed reinforcement: Practical considerations in the treatment of escape-reinforced aggression. *Journal of Applied Behavior Analysis, 37*(2), 239-242.	N113. Data received from NSP
N114. Johnston, S., Nelson, C., Evans, J., & Palazolo, K. (2003). The use of visual supports in teaching young children with autism spectrum disorder to initiate interactions. *AAC: Augmentative and Alternative Communication, 19*(2), 86-103.	N114. Data received from NSP
N115. Kaiser, A. P., Hancock, T. B., & Nietfeld, J. P. (2000). The effects of parent-implemented Enhanced Milieu Teaching on the social communication of children who have autism. *Early Education and Development, 11*(4), 423-446.	N115. Data received from NSP
N116. Kamps, D., Royer, J., Dugan, E., Kravits, T., Gonzalez-Lopez, A., Garcia, J., et al. (2002). Peer training to facilitate social interaction for elementary students with autism and their peers. *Exceptional Children, 68*(2), 173-187.	N116. Data received from NSP

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N117. Kamps, D. M., Dugan, E., Potucek, J., & Collins, A. (1999). Effects of cross-age peer tutoring networks among students with autism and general education students. *Journal of Behavioral Education, 9*(2), 97-115.	N117. Data received from NSP
N118. Karmali, I., Greer, R. D., Nuzzolo-Gomez, R., Ross, D. E., & Rivera-Valdes, C. (2005). Reducing palilalia by presenting tact corrections to young children with autism. *Analysis of Verbal Behavior, 21*, 145-153.	N118. Data received from NSP
N119. Kasari, C., Freeman, S., & Paparella, T. (2006). Joint attention and symbolic play in young children with autism: a randomized controlled intervention study. *Journal of Child Psychology and Psychiatry, 47*(6), 611-620.	N119. Data received from NSP
N120. Kashinath, S., Woods, J., & Goldstein, H. (2006). Enhancing generalized teaching strategy use in daily routines by parents of children with autism. *Journal of Speech, Language, and Hearing Research, 49*(3), 466-485.	N120. Data received from NSP
N121. Kay, S., Harchik, A. F., & Luiselli, J. K. (2006). Elimination of drooling by an adolescent student with autism attending public high school. *Journal of Positive Behavior Interventions, 8*(1), 24-28.	N121. Data received from NSP
N122. Keen, D., Rodger, S., Doussin, K., & Braithwaite, M. (2007). A pilot study of the effects of a social-pragmatic intervention on the communication and symbolic play of children with autism. *Autism, 11*(1), 63-71.	N122. Data received from NSP
N123. Keen, D., Sigafoos, J., & Woodyatt, G. (2001). Replacing prelinguistic behaviors with functional communication. *Journal of Autism and Developmental Disorders, 31*(4), 385-398.	N123. Data received from NSP
N124. Kennedy, C. H., Meyer, K. A., Knowles, T., & Shukla, S. (2000). Analyzing the multiple functions of stereotypical behavior for students with autism: Implications for assessment and treatment. *Journal of Applied Behavior Analysis, 33*(4), 559-571.	N124. Data received from NSP
N125. Kodak, T., Miltenberger, R. G., & Romaniuk, C. (2003). The effects of differential negative reinforcement of other behavior and noncontingent escape on compliance. *Journal of Applied Behavior Analysis, 36*(3), 379-382.	N125. Data received from NSP
N126. Koegel, L. K., Camarata, S. M., Valdez-Menchaca, M., & Koegel, R. L. (1998). Setting generalization of question-asking by children with autism. *American Journal on Mental Retardation, 102*(4), 346-357.	N126. Data received from NSP
N127. Koegel, L. K., Carter, C. M., & Koegel, R. L. (2003). Teaching children with autism self-initiations as a pivotal response. *Topics in Language Disorders, 23*(2), 134-145.	N127. Data received from NSP

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N128. Koegel, L. K., Stiebel, D., & Koegel, R. L. (1998). Reducing aggression in children with autism toward infant or toddler siblings. *Journal of the Association for Persons with Severe Handicaps, 23*(2), 111-118.	N128. Data received from NSP
N129. Koegel, R. L., Camarata, S., Koegel, L. K., Ben-Tall, A., & Smith, A. E. (1998). Increasing speech intelligibility in children with autism. *Journal of Autism and Developmental Disorders, 28*(3), 241-251.	N129. Data received from NSP
N130. Koegel, R. L., Openden, D., & Koegel, L. K. (2004). A systematic desensitization paradigm to treat hypersensitivity to auditory stimuli in children with autism in family contexts. *Research and Practice for Persons with Severe Disabilities, 29*(2), 122-134.	N130. Data received from NSP
N131. Koegel, R. L., Werner, G. A., Vismara, L. A., & Koegel, L. K. (2005). The Effectiveness of Contextually Supported Play Date Interactions Between Children With Autism and Typically Developing Peers. *Research and Practice for Persons with Severe Disabilities, 30*(2), 93-102.	N131. Data received from NSP
N132. Kohler, F. W., Anthony, L. J., Steighner, S. A., & Hoyson, M. (2001). Teaching social interaction skills in the integrated preschool: An examination of naturalistic tactics. *Topics in Early Childhood Special Education, 21*(2), 93-103.	N132. Data received from NSP
N133. Krantz, P. J., & McClannahan, L. E. (1998). Social interaction skills for children with autism: A script-fading procedure for beginning readers. *Journal of Applied Behavior Analysis, 31*(2), 191-202.	N133. Data received from NSP
N134. Kravits, T. R., Kamps, D. M., Kemmerer, K., & Potucek, J. (2002). Brief report: Increasing communication skills for an elementary-aged student with autism using the picture exchange communication system. *Journal of Autism and Developmental Disorders, 32*(3), 225-230.	N134. Data received from NSP
N135. Kroeger, K. A., Schultz, J. R., & Newsom, C. (2007). A comparison of two group-delivered social skills programs for young children with autism. *Journal of Autism and Developmental Disorders, 37*(5), 808-817.	N135. Data from NSP (originally in NZ list)
N136. Kuoch, H., & Mirenda, P. (2003). Social Story Interventions for Young Children with Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities, 18*(4), 219-227.	N136. SS data not provided by NSP
N137. LeBlanc, L. A., Carr, J. E., Crossett, S. E., Bennett, C. M., & Detweiler, D. D. (2005). Intensive Outpatient Behavioral Treatment of Primary Urinary Incontinence of Children With Autism. *Focus on Autism and Other Developmental Disabilities, 20*(2), 98-105.	N137. Data received from NSP

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N138. LeBlanc, L. A., Coates, A. M., Daneshvar, S., Charlop-Christy, M. H., Morris, C., & Lancaster, B. M. (2003). Using video modeling and reinforcement to teach perspective-taking skills to children with autism. *Journal of Applied Behavior Analysis, 36*(2), 253-257.	N138. Data received from NSP
N139. Lee, R., McComas, J. J., & Jawor, J. (2002). The effects of differential and lag reinforcement schedules on varied verbal responding by individuals with autism. *Journal of Applied Behavior Analysis, 35*(4), 391-402.	N139. Data received from NSP
N140. Lee, R., & Sturmey, P. (2006). The Effects of Lag Schedules and Preferred Materials on Variable Responding in Students with Autism. *Journal of Autism and Developmental Disorders, 36*(3), 421-428.	N140. Data received from NSP
N141. Lee, S., Odom, S. L., & Loftin, R. (2007). Social engagement with peers and stereotypic behavior of children with autism. *Journal of Positive Behavior Interventions, 9*(2), 67-79.	N141. Data not received from NSP
N142. LeGoff, D. B. (2004). Use of LEGO (c) as a therapeutic medium for improving social competence. *Journal of Autism and Developmental Disorders, 34*(5), 557-571.	N142. Data received from NSP
N143. Legoff, D. B., & Sherman, M. (2006). Long-term outcome of social skills intervention based on interactive LEGO (c) play. *Autism, 10*(4), 317-329.	N143. Data received from NSP
N144. Lerman, D. C., Kelley, M. E., Vorndran, C. M., & Van Camp, C. M. (2003). Collateral effects of response blocking during the treatment of stereotypic behavior. *Journal of Applied Behavior Analysis, 36*(1), 119-123.	N144. Data received from NSP
N145. Lifter, K., Ellis, J., Cannon, B., & Anderson, S. R. (2005). Developmental Specificity in Targeting and Teaching Play Activities to Children with Pervasive Developmental Disorders. *Journal of Early Intervention, 27*(4), 247-267.	N145. Data received from NSP
N146. Loncola, J. A., & Craig-Unkefer, L. (2005). Teaching Social Communication Skills to Young Urban Children with Autism. *Education and Training in Developmental Disabilities, 40*(3), 243-263.	N146. SS data not provided by NSP
N147. Lorimer, P. A., Simpson, R. L., Myles, B. S., & Ganz, J. B. (2002). The use of social stories as a preventative behavioral intervention in a home setting with a child with autism. *Journal of Positive Behavior Interventions, 4*(1), 53-60.	N147. SS data not provided by NSP
N148. Luiselli, J. K., Cannon, B. O. M., Ellis, J. T., & Sisson, R. W. (2000). Home-based behavioral interventions for young children with autism/pervasive developmental disorder: A preliminary evaluation of outcome in relation to child age and intensity of service delivery. *Autism, 4*(4), 426-438.	N148. Data received from NSP

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N149. Luiselli, J. K., Ricciardi, J. N., & Gilligan, K. (2005). Liquid Fading To Establish Milk Consumption By A Child With Autism. *Behavioral Interventions, 20*(2), 155-163.	N149. Data received from NSP
N150. Luiselli, J. K., Ricciardi, J. N., Schmidt, S., & Tarr, M. (2004). Brief Functional Analysis and Intervention Evaluation for Treatment of Saliva-Play. *Child & Family Behavior Therapy, 26*(3), 53-61.	N150. Data received from NSP
N151. MacDonald, R., Clark, M., Garrigan, E., & Vangala, M. (2005). Using video modeling to teach pretend play to children with autism. *Behavioral Interventions, 20*(4), 225-238.	N151. Data received from NSP
N152. Mace, A. B., Shapiro, E. S., & Mace, F. C. (1998). Effects of warning stimuli for reinforcer withdrawal and task onset on self-injury. *Journal of Applied Behavior Analysis, 31*(4), 679-682.	N152. Data received from NSP
N153. Magiati, I., & Howlin, P. (2003). A pilot evaluation study of the Picture Exchange Communication System (PECS) for children with autistic spectrum disorders. *Autism, 7*(3), 297-320.	N153. Data received from NSP
N154. Magnusson, A. F., & Gould, D. D. (2007). Reduction of automatically-maintained self-injury using contingent equipment removal. *Behavioral Interventions, 22*(1), 57-68.	N154. Data received from NSP
N155. Maione, L., & Mirenda, P. (2006). Effects of video modeling and video feedback on peer-directed social language skills of a child with autism. *Journal of Positive Behavior Interventions, 8*(2), 106-118.	N155. Data received from NSP
N156. Mancina, C., Tankersley, M., Kamps, D., Kravits, T., & Parrett, J. (2000). Reduction of inappropriate vocalizations for a child with autism using a self-management treatment program. *Journal of Autism and Developmental Disorders, 30*(6), 599-606.	N156. Data received from NSP
N157. Marckel, J. M., Neff, N. A., & Ferreri, S. J. (2006). A preliminary analysis of teaching improvisation with the picture exchange communication system to children with autism. *Journal of Applied Behavior Analysis, 39*(1), 109-115.	N157. Data received from NSP
N158. Martin, C. A., Drasgow, E., Halle, J. W., & Brucker, J. M. (2005). Teaching a Child with Autism and Severe Language Delays to Reject: Direct and indirect effects of functional communication training. *Educational Psychology, 25*(2-3), 287-304.	N158. Data received from NSP
N159. Martins, M. P., & Harris, S. L. (2006). Teaching Children with Autism to Respond to Joint Attention Initiations. *Child & Family Behavior Therapy, 28*(1), 51-68.	N159. Data received from NSP
N160. McDonald, M. E., & Hemmes, N. S. (2003). Increases in social initiation toward an adolescent with autism: reciprocity effects. *Research in Developmental Disabilities, 24*(6), 453-465.	N160. Data received from NSP

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N161. McGee, G. G., & Daly, T. (2007). Incidental teaching of age-appropriate social phrases to children with autism. *Research and Practice for Persons with Severe Disabilities, 32*(2), 112-123.	N161. Data from NSP (originally in NZ list)
N162. Mechling, L. C., Gast, D. L., & Cronin, B. A. (2006). The effects of presenting high-preference items, paired with choice, via computer-based video programming on task completion of students with autism. *Focus on Autism and Other Developmental Disabilities, 21*(1), 7-13.	N162. Data received from NSP
N163. Mechling, L. C., Pridgen, L. S., & Cronin, B. A. (2005). Computer-based video instruction to teach students with intellectual disabilities to verbally respond to questions and make purchases in fast food restaurants. *Education and Training in Developmental Disabilities, 40*(1), 47-59.	N163. NSP rated as non behavioural
N164. Mithaug, D. K., & Mithaug, D. E. (2003). Effects of teacher-directed versus student-directed instruction on self-management of young children with disabilities. *Journal of Applied Behavior Analysis, 36*(1), 133-136.	N164. Data received from NSP
N165. Moes, D. R. (1998). Integrating choice-making opportunities within teacher-assigned academic tasks to facilitate the performance of children with autism. *Journal of the Association for Persons with Severe Handicaps, 23*(4), 319-328.	N165. Data received from NSP
N166. Moes, D. R., & Frea, W. D. (2000). Using family context to inform intervention planning for the treatment of a child with autism. *Journal of Positive Behavior Interventions, 2*(1), 40-46.	N166. Data received from NSP
N167. Moes, D. R., & Frea, W. D. (2002). Contextualized behavioral support in early intervention for children with autism and their families. *Journal of Autism and Developmental Disorders, 32*(6), 519-533.	N167. Data received from NSP
N168. Morrison, L., Kamps, D., Garcia, J., & Parker, D. (2001). Peer mediation and monitoring strategies to improve initiations and social skills for students with autism. *Journal of Positive Behavior Interventions, 3*(4), 237-250.	N168. Data received from NSP
N169. Morrison, R. S., Sainato, D. M., Benchaaban, D., & Endo, S. (2002). Increasing play skills of children with autism using activity schedules and correspondence training. *Journal of Early Intervention, 25*(1), 58-72.	N169. Data received from NSP
N170. Mullins, J. L., & Christian, L. (2001). The effects of progressive relaxation training on the disruptive behavior of a boy with autism. *Research in Developmental Disabilities, 22*(6), 449-462.	N170. Data received from NSP

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N171. Murzynski, N. T., & Bourret, J. C. (2007). Combining video modeling and least-to-most prompting for establishing response chains. *Behavioral Interventions, 22*(2), 147-152.	N171. Data from NSP (originally in NZ list)
N172. Najdowski, A. C., Wallace, M. D., Doney, J. K., & Ghezzi, P. M. (2003). Parental assessment and treatments of food selectivity in natural settings. *Journal of Applied Behavior Analysis, 36*(3), 383-386.	N172. Data received from NSP
N173. Naoi, N., Yokoyama, K., & Yamamoto, J.-i. (2007). Intervention for tact as reporting in children with autism. *Research in Autism Spectrum Disorders, 1*(2), 174-184.	N173. Data from NSP (originally in NZ list)
N174. Napolitano, D. A., Tessing, J. L., McAdam, D. B., Dunleavy, J. J., III, & Cifuni, N. M. (2006). The Influence of Idiosyncratic Antecedent Variables on Problem Behavior Displayed by a Person with PDD. *Journal of Developmental and Physical Disabilities, 18*(3), 295-305.	N174. Data received from NSP
N175. Neidert, P. L., Iwata, B. A., & Dozier, C. L. (2005). Treatment of Multiply Controlled Problem Behavior With Procedural Variations of Differential Reinforcement. *Exceptionality, 13*(1), 45-53.	N175. Data received from NSP
N176. Nelson, C., McDonnell, A. P., Johnston, S. S., Crompton, A., & Nelson, A. R. (2007). Keys to play: A strategy to increase the social interactions of young children with autism and their typically developing peers. *Education and Training in Developmental Disabilities, 42*(2), 165-181.	N176. Data received from NSP
N177. Newman, B., Reinecke, D. R., & Meinberg, D. L. (2000). Self-management of varied responding in three students with autism. *Behavioral Interventions, 15*(2), 145-151.	N177. Data received from NSP
N178. Newman, B., & Ten Eyck, P. (2005). Self-management of initiations by students diagnosed with autism. *Analysis of Verbal Behavior, 21*, 117-122.	N178. Data received from NSP
N179. Nikopoulos, C. K., & Keenan, M. (2003). Promoting social initiation children with autism using video modeling. *Behavioral Interventions, 18*(2), 87-108.	N179. Data received from NSP
N180. Nikopoulos, C. K., & Keenan, M. (2007). Using video modeling to teach complex social sequences to children with autism. *Journal of Autism and Developmental Disorders, 37*(4), 678-693.	N180. Data received from NSP
N181. Nikopoulous, C. K., & Keenan, M. (2004). Effects of video modeling on social initiations by children with autism. *Journal of Applied Behavior Analysis, 37*(1), 93-96.	N181. NSP data insufficient
N182. Norris, C., & Dattilo, J. (1999). Evaluating effects of a social story intervention on a young girl with autism. *Focus on Autism and Other Developmental Disabilities, 14*(3), 180-186.	N182. SS data not provided by NSP

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N183. Nuzzolo-Gomez, R., Leonard, M. A., Ortiz, E., Rivera, C. M., & Greer, R. D. (2002). Teaching children with autism to prefer books or toys over stereotypy or passivity. *Journal of Positive Behavior Interventions, 4*(2), 80-87.	N183. Data from NSP (originally in NZ list)
N184. Olive, M. L., de la Cruz, B., Davis, T. N., Chan, J. M., Lang, R. B., O'Reilly, M. F., et al. (2007). The effects of enhanced milieu teaching and a voice output communication aid on the requesting of three children with autism. *Journal of Autism and Developmental Disorders, 37*(8), 1505-1513.	N184. Data from NSP (originally in NZ list)
N185. O'Neill, R. E., & Sweetland-Baker, M. (2001). Brief report: An assessment of stimulus generalization and contingency effects in functional communication training with two students with autism. *Journal of Autism and Developmental Disorders, 31*(2), 235-240.	N185. Data received from NSP
N186. O'Reilly, M., Sigafoos, J., Lancioni, G., Edrisinha, C., & Andrews, A. (2005). An Examination of the Effects of a Classroom Activity Schedule on Levels of Self-Injury and Engagement for a Child with Severe Autism. *Journal of Autism and Developmental Disorders, 35*(3), 305-311.	N186. Data received from NSP
N187. Patel, M. R., Carr, J. E., Kim, C., Robles, A., & Eastridge, D. (2000). Functional analysis of aberrant behavior maintained by automatic reinforcement: Assessments of specific sensory reinforcers. *Research in Developmental Disabilities, 21*(5), 393-407.	N187. Data received from NSP
N188. Pelios, L. V., MacDuff, G. S., & Axelrod, S. (2003). The effects of a treatment package in establishing independent academic work skills in children with autism. *Education & Treatment of Children, 26*(1), 1-21.	N188. Data received from NSP
N189. Perez-Gonzalez, L. A., & Williams, G. (2002). Multicomponent procedure to teach conditional discriminations to children with autism. *American Journal on Mental Retardation, 107*(4), 293-301.	N189. Data received from NSP
N190. Peterson, S. M. P., Caniglia, C., & Royster, A. J. (2001). Application of choice-making intervention for a student with multiply maintained problem behavior. *Focus on Autism and Other Developmental Disabilities, 16*(4), 240-246.	N190. Data received from NSP
N191. Peyton, R. T., Lindauer, S. E., & Richman, D. M. (2005). The Effects of Directive and Nondirective Prompts on Noncompliant Vocal Behavior Exhibited by a Child with Autism. *Journal of Applied Behavior Analysis, 38*(2), 251-255.	N191. Data received from NSP
N192. Progar, P. R., North, S. T., Bruce, S. S., DiNovi, B. J., Nau, P. A., Eberman, E. M., et al. (2001). Putative behavioral history effects and aggression maintained by escape from therapists. *Journal of Applied Behavior Analysis, 34*(1), 69-72.	N192. Data received from NSP

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N193. Rapp, J. T. (2006). Toward an empirical method for identifying matched stimulation for automatically reinforced behavior: A preliminary investigation. *Journal of Applied Behavior Analysis, 39*(1), 137-140.	N193. Data received from NSP
N194. Rapp, J. T., Dozier, C. L., & Carr, J. E. (2001). Functional assessment and treatment of pica: A single-case experiment. *Behavioral Interventions, 16*(2), 111-125.	N194. Data received from NSP
N195. Rapp, J. T., Dozier, C. L., Carr, J. E., Patel, M. R., & Enloe, K. A. (2000). Functional analysis of hair manipulation: A replication and extension. *Behavioral Interventions, 15*(2), 121-133.	N195. Data received from NSP
N196. Rapp, J. T., Vollmer, T. R., & Hovanetz, A. N. (2005). Evaluation and Treatment of Swimming Pool Avoidance Exhibited by an Adolescent Girl With Autism. *Behavior Therapy, 36*(1), 101-105.	N196. Data received from NSP
N197. Ray, K. P., Skinner, C. H., & Watson, T. S. (1999). Transferring stimulus control via momentum to increase compliance in a student with autism: A demonstration of collaborative consultation. *School Psychology Review, 28*(4), 622-628.	N197. Data received from NSP
N198. Reagon, K. A., Higbee, T. S., & Endicott, K. (2006). Teaching Pretend Play Skills to a Student with Autism Using Video Modeling with a Sibling as Model and Play Partner. *Education & Treatment of Children, 29*(3), 517-528.	N198. Data received from NSP
N199. Reeve, S. A., Reeve, K. F., Townsend, D. B., & Poulson, C. L. (2007). Establishing a generalized repertoire of helping behavior in children with autism. *Journal of Applied Behavior Analysis, 40*(1), 123-136.	N199. Data received from NSP
N200. Reinecke, D. R., Newman, B., & Meinberg, D. L. (1999). Self-management of sharing in three pre-schoolers with autism. *Education and Training in Mental Retardation and Developmental Disabilities, 34*(3), 312-317.	N200. Data from NSP(originally in NZ list)
N201. Reinhartsen, D. B., Garfinkle, A. N., & Wolery, M. (2002). Engagement with toys in two-year-old children with autism: Teacher selection versus child choice. *Research and Practice for Persons with Severe Disabilities, 27*(3), 175-187.	N201. Data received from NSP
N202. Ricciardi, J. N., & Luiselli, J. K. (2003). Behavioral intervention to eliminate socially mediated urinary incontinence in a child with autism. *Child & Family Behavior Therapy, 25*(4), 53-63.	N202. Data received from NSP
N203. Ricciardi, J. N., Luiselli, J. K., & Camare, M. (2006). Shaping approach responses as intervention for specific phobia in a child with autism. *Journal of Applied Behavior Analysis, 39*(4), 445-448.	N203. Data received from NSP

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N204. Ricciardi, J. N., Luiselli, J. K., Terrill, S., & Reardon, K. (2003). Alternative response training with contingent practice as intervention for pica in a school setting. *Behavioral Interventions, 18*(3), 219-226.	N204. Data received from NSP
N205. Richman, D. M., Wacker, D. P., & Winborn, L. (2001). Response efficiency during functional communication training: Effects of effort on response allocation. *Journal of Applied Behavior Analysis, 34*(1), 73-76.	N205. Data received from NSP
N206. Ringdahl, J. E., Vollmer, T. R., Borrero, J. C., & Connell, J. E. (2001). Fixed-time schedule effects as a function of baseline reinforcement rate. *Journal of Applied Behavior Analysis, 34*(1), 1-15.	N206. Data received from NSP
N207. Roane, H. S., Fisher, W. W., Sgro, G. M., Falcomata, T. S., & Pabico, R. R. (2004). An alternative method of thinning reinforcer delivery during differential reinforcement. *Journal of Applied Behavior Analysis, 37*(2), 213-218.	N207. Data from NSP (originally in NZ list)
N208. Romano, J. P., & Roll, D. (2000). Expanding the utility of behavioral momentum for youth with developmental disabilities. *Behavioral Interventions, 15*(2), 99-111.	N208. Data from NSP (originally in NZ list)
N209. Ross, D. E. (2002). Replacing faulty conversational exchanges for children with autism by establishing a functionally equivalent alternative response. *Education and Training in Mental Retardation and Developmental Disabilities, 37*(4), 343-362.	N209. Data from NSP (originally in NZ list)
N210. Ross, D. E., & Greer, R. D. (2003). Generalized imitation and the mand: Inducing first instances of speech in young children with autism. *Research in Developmental Disabilities, 24*(1), 58-74.	N210. Data not received from NSP
N211. Sallows, G. O., & Graupner, T. D. (2005). Intensive behavioral treatment for children with autism: Four-year outcome and predictors. *American Journal on Mental Retardation, 110*(6), 417-438.	N211. Data received from NSP
N212. Saloviita, T. (2002). Dry bed training method in the elimination of bed-wetting in two adults with autism and severe mental retardation. *Cognitive Behaviour Therapy, 31*(3), 135-140.	N212. Data received from NSP
N213. Sansosti, F. J., & Powell-Smith, K. A. (2006). Using social stories to improve the social behavior of children with Asperger syndrome. *Journal of Positive Behavior Interventions, 8*(1), 43-57.	N213. SS data not provided by NSP
N214. Sarokoff, R. A., Taylor, B. A., & Poulson, C. L. (2001). Teaching children with autism to engage in conversational exchanges: Script fading with embedded textual stimuli. *Journal of Applied Behavior Analysis, 34*(1), 81-84.	N214. Data from NSP (originally in NZ list)

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N215. Sawyer, L. M., Luiselli, J. K., Ricciardi, J. N., & Gower, J. L. (2005). Teaching a Child with Autism to Share Among Peers in an Integrated Preschool Classroom: Acquisition, Maintenance, and Social Validation. *Education & Treatment of Children, 28*(1), 1-10.	N215. Data received from NSP
N216. Scattone, D., Tingstrom, D. H., & Wilczynski, S. M. (2006). Increasing Appropriate Social Interactions of Children With Autism Spectrum Disorders Using Social Stories. *Focus on Autism and Other Developmental Disabilities, 21*(4), 211-222.	N216. SS data not provided by NSP
N217. Scattone, D., Wilczynski, S. M., Edwards, R. P., & Rabian, B. (2002). Decreasing disruptive behaviors of children with autism using social stories. *Journal of Autism and Developmental Disorders, 32*(6), 535-543.	N217. SS data not provided by NSP
N218. Schepis, M. M., Reid, D. H., Behrmann, M. M., & Sutton, K. A. (1998). Increasing communicative interactions of young children with autism using a voice output communication aid and naturalistic teaching. *Journal of Applied Behavior Analysis, 31*(4), 561-578.	N218. Data received from NSP
N219. Schindler, H. R., & Horner, R. H. (2005). Generalized Reduction of Problem Behavior of Young Children With Autism: Building Trans-Situational Interventions. *American Journal on Mental Retardation, 110*(1), 36-47.	N219. Data received from NSP
N220. Schmit, J., Alper, S., Raschke, D., & Ryndak, D. (2000). Effects of using a photographic cueing package during routine school transitions with a child who has autism. *Mental Retardation, 38*(2), 131-137.	N220. Data received from NSP
N221. Schreibman, L., Whalen, C., & Stahmer, A. C. (2000). The use of video priming to reduce disruptive transition behavior in children with autism. *Journal of Positive Behavior Interventions, 2*(1), 3-11.	N221. Data received from NSP
N222. Shabani, D. B., Katz, R. C., Wilder, D. A., Beauchamp, K., Taylor, C. R., & Fischer, K. J. (2002). Increasing social initiations in children with autism: Effects of a tactile prompt. *Journal of Applied Behavior Analysis, 35*(1), 79-83.	N222. Data received from NSP
N223. Shabani, D. B., Wilder, D. A., & Flood, W. A. (2001). Reducing stereotypic behavior through discrimination training, differential reinforcement of other behavior, and self monitoring. *Behavioral Interventions, 16*(4), 279-286.	N223. Data received from NSP
N224. Sheinkopf, S. J., & Siegel, B. (1998). Home based behavioral treatment of young children with autism. *Journal of Autism and Developmental Disorders, 28*(1), 15-23.	N224. Data received from NSP
N225. Sherer, M., Pierce, K. L., Paredes, S., Kisacky, K. L., Ingersoll, B., & Schreibman, L. (2001). Enhancing conversation skills in children with autism via video technology: Which is better, "Self" or "Other" as a model? *Behavior Modification, 25*(1), 140-158.	N225. Data received from NSP

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N226. Shipley-Benamou, R., Lutzker, J. R., & Taubman, M. (2002). Teaching daily living skills to children with autism through instructional video modeling. *Journal of Positive Behavior Interventions, 4*(3), 165-+.	N226. Data received from NSP
N227. Sidener, T. M., Carr, J. E., & Firth, A. M. (2005). Superimposition And Withholding Of Edible Consequences As Treatment For Automatically Reinforced Stereotypy. *Journal of Applied Behavior Analysis, 38*(1), 121-124.	N227. Data received from NSP
N228. Sidener, T. M., Shabani, D. B., Carr, J. E., & Roland, J. P. (2006). An evaluation of strategies to maintain mands at practical levels. *Research in Developmental Disabilities, 27*(6), 632-644.	N228. Data received from NSP
N229. Sigafoos, J. (1998). Assessing conditional use of graphic mode requesting in a young boy with autism. *Journal of Developmental and Physical Disabilities, 10*(2), 133-151.	N229. Data received from NSP
N230. Sigafoos, J., Drasgow, E., Halle, J. W., O'Reilly, M., Seely-York, S., Edrisinha, C., et al. (2004). Teaching VOCA use as a communicative repair strategy. *Journal of Autism and Developmental Disorders, 34*(4), 411-422.	N230. AAC data not provided by NSP
N231. Sigafoos, J., Ganz, J. B., O'Reilly, M., Lancioni, G. E., & Schlosser, R. W. (2007). Assessing correspondence following acquisition of an exchange-based communication system. *Research in Developmental Disabilities, 28*(1), 71-83.	N231. AAC data not provided by NSP
N232. Sigafoos, J., & Littlewood, R. (1999). Communication intervention on the playground: A case study on teaching requesting to a young child with autism. *International Journal of Disability, Development and Education, 46*(3), 421-429.	N232. Data received from NSP
N233. Sigafoos, J., O'Reilly, M., Seely-York, S., & Edrisinha, C. (2004). Teaching students with developmental disabilities to locate their AAC device. *Research in Developmental Disabilities, 25*(4), 371-383.	N233. AAC data not provided by NSP
N234. Sigafoos, J., O'Reilly, M. F., Seely-York, S., Weru, J., Son, S. H., Green, V. A., et al. (2004). Transferring AAC intervention to the home. *Disability and Rehabilitation: An International, Multidisciplinary Journal, 26*(21-22), 1330-1334.	N234. AAC data not provided by NSP
N235. Simpson, A., Langone, J., & Ayres, K. M. (2004). Embedded Video and Computer Based Instruction to Improve Social Skills for Students with Autism. *Education and Training in Developmental Disabilities, 39*(3), 240-252.	N235. Data received from NSP
N236. Smith, A. E., & Camarata, S. (1999). Using teacher-implemented instruction to increase language intelligibility of children with autism. *Journal of Positive Behavior Interventions, 1*(3), 141-151.	N236. Data received from NSP

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N237. Smith, M. R., & Lerman, D. C. (1999). A preliminary comparison of guided compliance and high-probability instructional sequences as treatment for noncompliance in children with developmental disabilities. *Research in Developmental Disabilities, 20*(3), 183-195.	N237. Data received from NSP
N238. Smith, T., Buch, G. A., & Gamby, T. E. (2000). Parent-directed, intensive early intervention for children with pervasive developmental disorder. *Research in Developmental Disabilities, 21*(4), 297-309.	N238. Data received from NSP
N239. Smith, T., Groen, A. D., & Wynn, J. W. (2000). Randomized trial of intensive early intervention for children with pervasive developmental disorder. *American Journal on Mental Retardation, 105*(4), 269-285.	N239. Data received from NSP
N240. Smith, T., Groen, A. D., & Wynn, J. W. (2001). "Randomized trial of intensive early intervention for children with pervasive developmental disorder." Errata. *American Journal on Mental Retardation, 106*(3), 208.	N240. Data not received from NSP
N241. Smith, T., Lovaas, N. W., & Lovaas, O. I. (2002). Behaviors of children with high-functioning autism when paired with typically developing versus delayed peers: A preliminary study. *Behavioral Interventions, 17*(3), 129-143.	N241. Data received from NSP
N242. Sofronoff, K., Leslie, A., & Brown, W. (2004). Parent management training and Asperger syndrome: A randomized controlled trial to evaluate a parent based intervention. *Autism, 8*(3), 301-317.	N242. NSP rated as non behavioural
N243. Son, S.-H., Sigafoos, J., O'Reilly, M., & Lancioni, G. E. (2006). Comparing two types of augmentative and alternative communication systems for children with autism. *Pediatric Rehabilitation, 9*(4), 389-395.	N243. AAC data not provided by NSP
N244. Stahmer, A. C., Ingersoll, B., & Koegel, R. L. (2004). Inclusive programming for toddlers autism spectrum disorders: Outcomes from the Children's Toddler School. *Journal of Positive Behavior Interventions, 6*(2), 67-82.	N244. Data received from NSP
N245. Stevenson, C. L., Krantz, P. J., & McClannahan, L. E. (2000). Social interaction skills for children with autism: A script-fading procedure for nonreaders. *Behavioral Interventions, 15*(1), 1-20.	N245. Data received from NSP
N246. Sundberg, M. L., Endicott, K., & Eigenheer, P. (2000). Using intraverbal prompts to establish tacts for children with autism. *Analysis of Verbal Behavior, 17*, 89-104.	N246. Data received from NSP
N247. Tarbox, J., Wallace, M. D., & Tarbox, R. S. F. (2002). Successful generalized parent training and failed schedule thinning of response blocking for automatically maintained object mouthing. *Behavioral Interventions, 17*(3), 169-178.	N247. Data received from NSP

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N248. Tarbox, R. S. F., Ghezzi, P. M., & Wilson, G. (2006). The effects of token reinforcement on attending in a young child with autism. *Behavioral Interventions, 21*(3), 155-164.	N248. Data received from NSP
N249. Tarbox, R. S. F., Wallace, M. D., & Williams, L. (2003). Assessment and treatment of elopement: A replication and extension. *Journal of Applied Behavior Analysis, 36*(2), 239-244.	N249. Data received from NSP
N250. Taylor, B. A., Hoch, H., Potter, B., Rodriguez, A., Spinnato, D., & Kalaigian, M. (2005). Manipulating establishing operations to promote initiations toward peers in children with autism. *Research in Developmental Disabilities, 26*(4), 385-392.	N250. Data from NSP (originally in NZ list)
N251. Taylor, B. A., Hoch, H., & Weissman, M. (2005). The analysis and treatment of vocal stereotypy in a child with autism. *Behavioral Interventions, 20*(4), 239-253.	N251. Data received from NSP
N252. Taylor, B. A., Levin, L., & Jasper, S. (1999). Increasing play-related statements in children with autism toward their siblings: Effects of video modeling. *Journal of Developmental and Physical Disabilities, 11*(3), 253-264.	N252. Data received from NSP
N253. Thiemann, K. S., & Goldstein, H. (2001). Social stories, written text cues, and video feedback: Effects on social communication of children with autism. *Journal of Applied Behavior Analysis, 34*(4), 425-446.	N253. Data received from NSP
N254. Thiemann, K. S., & Goldstein, H. (2004). Effects of Peer Training and Written Text Cueing on Social Communication of School-Age Children With Pervasive Developmental Disorder. *Journal of Speech, Language, and Hearing Research, 47*(1), 126-144.	N254. Data received from NSP
N255. Thomas, N., & Smith, C. (2004). Developing Play Skills in Children with Autistic Spectrum Disorders. *Educational Psychology in Practice, 20*(3), 195-206.	N255. Data received from NSP
N256. Tincani, M. (2004). Comparing the Picture Exchange Communication System and Sign Language Training for Children with Autism. *Focus on Autism and Other Developmental Disabilities, 19*(3), 152-163.	N256. Data received from NSP
N257. Tincani, M., Crozier, S., & Alazetta, L. (2006). The Picture Exchange Communication System: Effects on Manding and Speech Development for School-Aged Children with Autism. *Education and Training in Developmental Disabilities, 41*(2), 177-184.	N257. Data received from NSP
N258. Todd, T., & Reid, G. (2006). Increasing Physical Activity in Individuals With Autism. *Focus on Autism and Other Developmental Disabilities, 21*(3), 167-176.	N258. Data received from NSP

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N259. Tsao, L. L., & Odom, S. L. (2006). Sibling-mediated social interaction intervention for young children with autism. *Topics in Early Childhood Special Education, 26*(2), 106-123.	N259. Data received from NSP
N260. Van Laarhoven, T., & Van Laarhoven-Myers, T. (2006). Comparison of three video-based instructional procedures for teaching daily living skills to persons with developmental disabilities. *Education and Training in Developmental Disabilities, 41*(4), 365-381.	N260. Data from NSP (originally in NZ list)
N261. Vaughn, B. J., Wilson, D., & Dunlap, G. (2002). Family-centered intervention to resolve problem behaviors in a fast-food restaurant. *Journal of Positive Behavior Interventions, 4*(1), 38-45.	N261. Data received from NSP
N262. Weiskop, S., Matthews, J., & Richdale, A. (2001). Treatment of sleep problems in a 5-year-old boy with autism using behavioural principles. *Autism, 5*(2), 209-221.	N262. Data received from NSP
N263. Wert, B. Y., & Neisworth, J. T. (2003). Effects of video self-modeling on spontaneous requesting in children with autism. *Journal of Positive Behavior Interventions, 5*(1), 30-34.	N263. Data received from NSP
N264. West, E. A., & Billingsley, F. (2005). Improving the System of Least Prompts: A Comparison of Procedural Variations. *Education and Training in Developmental Disabilities, 40*(2), 131-144.	N264. Data from NSP (originally in NZ list)
N265. Whalen, C., & Schreibman, L. (2003). Joint attention training for children with autism using behavior modification procedures. *Journal of Child Psychology and Psychiatry, 44*(3), 456-468.	N265. Data received from NSP
N266. Wilczynski, S. M., Fusilier, I., Dubard, M., & Elliott, A. (2005). Experimental Analysis of Proximity as a Social Stimulus: Increasing On-Task Behavior of an Adolescent With Autism. *Psychology in the Schools, 42*(2), 189-196.	N266. Data received from NSP
N267. Williams, G., Donley, C. R., & Keller, J. W. (2000). Teaching children with autism to ask questions about hidden objects. *Journal of Applied Behavior Analysis, 33*(4), 627-630.	N267. Data received from NSP
N268. Williams, G., Perez-Gonzalez, L. A., & Vogt, K. (2003). The role of specific consequences in the maintenance of three types of questions. *Journal of Applied Behavior Analysis, 36*(3), 285-296.	N268. Data received from NSP
N269. Yi, J. I., Christian, L., Vittimberga, G., & Lowenkron, B. (2006). Generalized Negatively Reinforced Manding in Children with Autism. *Analysis of Verbal Behavior, 22*, 21-33.	N269. Data from NSP (originally in NZ list)

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N270. Yilmaz, I., Birkan, B., Konukman, F., & Erkan, M. (2005). Using a Constant Time Delay Procedure to Teach Aquatic Play Skills to Children with Autism. *Education and Training in Developmental Disabilities, 40*(2), 171-182.	N270. Data received from NSP
N271. Yoder, P., & Stone, W. L. (2006). A randomized comparison of the effect of two prelinguistic communication interventions on the acquisition of spoken communication in preschoolers with ASD. *Journal of Speech, Language, and Hearing Research, 49*(4), 698-711.	N271. Data received from NSP
N272. Yoder, P., & Stone, W. L. (2006). Randomized Comparison of Two Communication Interventions for Preschoolers With Autism Spectrum Disorders. *Journal of Consulting and Clinical Psychology, 74*(3), 426-435.	N272. Data received from NSP
N273. Yokoyama, K., Naoi, N., & Yamamoto, J.-i. (2006). Teaching Verbal Behavior Using the Picture Exchange Communication System (PECS) With Children With Autistic Spectrum Disorders. *Japanese Journal of Special Education, 43*(6), 485-503.	N273. Data received from NSP
N274. Zanolli, K., & Daggett, J. (1998). The effects of reinforcement rate on the spontaneous social initiations of socially withdrawn preschoolers. *Journal of Applied Behavior Analysis, 31*(1), 117-125.	N274. Data received from NSP
N275. Zercher, C., Hunt, P., Schuler, A., & Webster, J. (2001). Increasing joint attention, play and language through peer supported play. *Autism, 5*(4), 374-398.	N275. NSP rated as non behavioural

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Appendix D: Table 3. New Zealand Exclusion Reference List

REFERENCE		Comments
E1.	Agosta, E., Graetz, J. E., Mastropieri, M. A., & Scruggs, T. E. (2004). Teacher researcher partnerships to improve social behavior through social stories. *Intervention in School and Clinic, 39*(5), 276-287.	E1. SMRS below 2
E2.	Ahearn, W. H., Clark, K. M., DeBar, R., & Florentino, C. (2005). On the Role of Preference in Response Competition. *Journal of Applied Behavior Analysis, 38*(2), 247-250.	E2. NSP excluded
E3.	Akande, A. (1999). Self monitoring of autistic behavior. *Psychology, 36*(3-4), 63-63.	E3. no data
E4.	Alberto, P. A., Cihak, D. F., & Gama, R. I. (2005). Use of static picture prompts versus video modeling during simulation instruction. *Research in Developmental Disabilities, 26*(4), 327-339.	E4. not ASD
E5.	Aldred, C., Green, J., & Adams, C. (2004). A new social communication intervention for children with autism: pilot randomised controlled treatment study suggesting effectiveness. *Journal of Child Psychology and Psychiatry, 45*(8), 1420-1430.	E5. Not ABA
E6.	Arntzen, E., Tonnessen, I. R., & Brouwer, G. (2006). Reducing aberrant verbal behavior by building a repertoire of rational verbal behavior. *Behavioral Interventions, 21*(3), 177-193.	E6. SMRS below 2
E7.	Banda, D. R., McAfee, J. K., Lee, D. L., & Kubina, R. M., Jr. (2007). Math preference and mastery relationship in middle school students with autism spectrum disorders. *Journal of Behavioral Education, 16*(3), 207-223.	E7. Demo project and no individual data paths
E8.	Barbera, M. L., & Kubina, R. M., Jr. (2005). Using transfer procedures to teach tacts to a child with autism. *Analysis of Verbal Behavior, 21*, 155-161.	E8. SMRS below 2
E9.	Barnhill, G. P., Cook, K. T., Tebbenkamp, K., & Myles, B. S. (2002). The effectiveness of social skills intervention targeting nonverbal communication for adolescents with Asperger syndrome and related pervasive developmental delays. *Focus on Autism and Other Developmental Disabilities, 17*(2), 112-118.	E9. not ABA
E10.	Bartman, S., & Freeman, N. (2003). Teaching language to a two-year-old with autism. *Journal on Developmental Disabilities, 10*(1), 47-53.	E10. NSP excluded
E11.	Basil, C., & Reyes, S. (2003). Acquisition of literacy skills by children with severe disability. *Child Language Teaching & Therapy, 19*(1), 27-45.	E11. not ABA

E12.	Bedrosian, J., Lasker, J., Speidel, K., & Politsch, A. (2003). Enhancing the written narrative skills of an AAC student with Autism: Evidence-based research issues. *Topics in Language Disorders, 23*(4), 305-324.	E12. NSP excluded
E13.	Bernad-Ripoll, S. (2007). Using a self-as-model video combined with social storiesTM to help a child with Asperger syndrome understand emotions. *Focus on Autism and Other Developmental Disabilities, 22*(2), 100-106.	E13. SMRS below 2
E14.	Bertone, A., Mottron, L., Jelenic, P., & Faubert, J. (2005). Enhanced and diminished visuo-spatial information processing in autism depends on stimulus complexity. *Brain, 128*(10), 2430-2441.	E14. not treatment
E15.	Bidwell, M. A., & Rehfeldt, R. A. (2004). Using video modeling to teach a domestic skill with an embedded social skill to adults with severe mental retardation. *Behavioral Interventions, 19*(4), 263-274.	E15. not ASD
E16.	Biederman, G. B., Stepaniuk, S., Davey, V. A., Raven, K., & Ahn, D. (1999). Observational learning in children with Down syndrome and developmental delays: the effect of presentation speed in videotaped modelling. *Down Syndrome: Research & Practice, 6*(1), 12-18.	E16. not ASD
E17.	Boettcher, M., Koegel, R. L., McNerney, E. K., & Koegel, L. K. (2003). A family-centered prevention approach to PBS in a time of crisis. *Journal of Positive Behavior Interventions, 5*(1), 55-59.	E17. no data
E18.	Bolte, S. (2006). Computer-based intervention in autism spectrum disorders. www.awares.org/conferences/home.asp?conferenceCode=00020002.	E18. not peer-reviewed journal
E19.	Bondy, A., & Frost, L. (2001). The picture exchange communication system. *Behavior Modification, 25*(5), 725-744.	E19. no data
E20.	Bondy, A. S., & Frost, L. A. (1998). The picture exchange communication system. *Seminars in Speech & Language, 19*(4), 373-388; quiz 389; 424.	E20. not a study
E21.	Bosch, S., & Fuqua, R. W. (2001). Behavioral cusps: a model for selecting target behaviors. *Journal of Applied Behavior Analysis, 34*(1), 123-125.	E21. not a study
E22.	Bosseler, A., & Massaro, D. W. (2003). Development and evaluation of a computer-animated tutor for vocabulary and language learning in children with autism. *Journal of Autism and Developmental Disorders, 33*(6), 653-672.	E22. eclectic
E23.	Boulware, G.-L., Schwartz, l. S., Sandall, S. R., & McBride, B. J. (2006). Project DATA for Toddlers: An Inclusive Approach to Very Young Children With Autism Spectrum Disorder. *Topics in Early Childhood Special Education, 26*(2), 94-105.	E23. not ABA eclectic no design

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E24.	Bourret, J., Vollmer, T. R., & Rapp, J. T. (2004). Evaluation of a vocal mand assessment and vocal mand training procedures. *Journal of Applied Behavior Analysis, 37*(2), 129-144	E24. NSP excluded
E25.	Boyd, R. D., & Corley, M. J. (2001). Outcome survey of early intensive behavioral intervention for young children with autism in a community setting. *Autism, 5*(4), 430-441.	E25. NSP excluded
E26.	Brady, N. C. (2000). Improved comprehension of object names following voice output communication aid use: Two case studies. *AAC: Augmentative and Alternative Communication, 16*(3), 197-204.	E26. NSP excluded
E27.	Braithwaite, M., & Sigafoos, J. (1998). Effects of social versus musical antecedents on communication responsiveness in five children with developmental disabilities. *Journal of Music Therapy, 35*(2), 88-104.	E27. not ASD
E28.	Broderick, C., Caswell, R., Gregory, S., Marzolini, S., & Wilson, O. (2002). 'Can I join the club?' - A social integration scheme for adolescents with Asperger syndrome. *Autism, 6*(4), 427-431.	E28. NSP-excluded
E29.	Brookman, L., Boettcher, M., Klein, E., Openden, D., Koegel, R. L., & Koegel, L. K. (2003). Facilitating Social Interactions in a Community Summer Camp Setting for Children with Autism. *Journal of Positive Behavior Interventions, 5*(4), 249-252.	E29. no data
E30.	Brownell, M. D. (2002). Musically adapted social stories to modify behaviors in students with autism: four case studies. *Journal of Music Therapy, 39*(2), 117-144.	E30. Not ABA
E31.	Buckley, S. D., & Newchok, D. K. (2005). Differential impact of response effort within a response chain on use of mands in a student with autism. *Research in Developmental Disabilities, 26*(1), 77-85.	E31. NSP excluded
E32.	Buckley, S. D., Strunck, P. G., & Newchok, D. K. (2005). A Comparison Of Two Multicomponent Procedures To Increase Food Consumption. *Behavioral Interventions, 20*(2), 139-146.	E32. SMRS below 2
E33.	Buschbacher, P., Fox, L., & Clarke, S. (2004). Recapturing desired family routines: A parent-professional behavioral collaboration. *Research and Practice for Persons with Severe Disabilities, 29*(1), 25-39.	E33. not ASD
E34.	Butler, L. R., & Luiselli, J. K. (2007). Escape-maintained problem behavior in a child with autism: Antecedent functional analysis and intervention evaluation of noncontingent escape and instructional fading. *Journal of Positive Behavior Interventions, 9*(4), 195-202.	E34. SMRS below 2

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E35.	Butter, E. M., Mulick, J. A., & Metz, B. (2006). Eight case reports of learning recovery in children with pervasive developmental disorders after early intervention. *Behavioral Interventions, 21*(4), 227-243.	E35. NSP excluded
E36.	Carminati, G. G., Gerber, F., Baud, M. A., & Baud, O. (2007). Evaluating the effects of a structured program for adults with autism spectrum disorders and intellectual disabilities. *Research in Autism Spectrum Disorders, 1*(3), 256-265.	E36. not ABA
E37.	Carminati, G. G., Gerber, F., Kempf-Constantin, N., & Baud, O. (2007). Evolution of adults with autism and proeffect intellectual disabilities living within a structured residential programme: A 21-month longitudinal study. *Schweizer Archiv fur Neurologie und Psychiatrie, 158*(5), 233-241.	E37. not ABA
E38.	Carr, D., & Felce, J. (2007). Brief report: Increase in production of spoken words in some children with autism after PECS teaching to Phase III. *Journal of Autism and Developmental Disorders, 37*(4), 780-787.	E38. NSP excluded
E39.	Carr, E. G., & Blakeley-Smith, A. (2006). Classroom intervention for illness-related problem behavior in children with developmental disabilities. *Behavior Modification, 30*(6), 901-924.	E39. ASD data mixed with non-ASD
E40.	Carr, E. G., Levin, L., McConnachie, G., Carlson, J. I., Kemp, D. C., Smith, C. E., et al. (1999). Comprehensive multisituational intervention for problem behavior in the community: Long-term maintenance and social validation. *Journal of Positive Behavior Interventions, 1*(1), 5-25.	E40. no "ASD" but "autistic features"
E41.	Carr, J. E., Dozier, C. L., Patel, M. R., Adams, A. N., & Martin, N. (2002). Treatment of automatically reinforced object mouthing with noncontingent reinforcement and response blocking: Experimental analysis and social validation. *Research in Developmental Disabilities, 23*(1), 37-44.	E41. SMRS below 2
E42.	Carr, J. E., & Firth, A. M. (2005). The verbal behavior approach to early and intensive behavioral intervention for autism: A call for additional empirical support. *Journal of Early and Intensive Behavioral Intervention, 2*, 18-27.	E42. not treatment study
E43.	Carr, J. E., Nicolson, A. C., & Higbee, T. S. (2000). Evaluation of a brief multiple-stimulus preference assessment in a naturalistic context. *Journal of Applied Behavior Analysis, 33*(3), 353-357.	E43. not treatment study
E44.	Carr, J. E., & Sidener, T. M. (2002). On the relation between applied behavior analysis and positive behavioral support. *The Behavior Analyst, 25*, 245-253.	E44. not a study

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E45.	Cauley, K. S., Brian, J. A., & Snider, J. (2003). Teaching children with autism to engage in play-related talk. *Journal of Precision Teaching & Celeration, 19*(2), 39-42.	E45. NSP excluded
E46.	Chambers, M., & Rehfeldt, R. A. (2003). Assessing the acquisition and generalization of two mand forms with adults with severe developmental disabilities. *Research in Developmental Disabilities, 24*(4), 265-280.	E46. not ASD
E47.	Chambless, D. L., Baker, M., Baucom, D. H., Beutler, L. E., Calhoun, K. S., Crits-Christoph, P., et al. (1998). Update on empirically validated theories, II. *The Clinical Psychologist, 51*, 3-16.	E47. not a study
E48.	Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: controversies and evidence. *Annual Review of Psychology, 52*, 685-716.	E48. not a study
E49.	Charlop-Christy, M. H., & Daneshvar, S. (2003). Using video modeling to teach perspective taking to children with autism. *Journal of Positive Behavior Interventions, 5*(1), 12-21.	E49. demonstration non-functional
E50.	Children's Mental Health Ontario. (2003). Evidence-based practices for children and adolescents with autism spectrum disorders: Review of literature and practice guide. Retrieved March 8, 2007, from http://www.kidsmentalhealth.ca/documents/PR_Evidence_based_practices_for_children	E50. not a study E51. not treatment
E51.	Chong, I. M., & Carr, J. E. (2005). An investigation of the potentially adverse effects of task interspersal. *Behavioral Interventions, 20*(4), 285-300.	
E52.	Chung, K.-M., Reavis, S., Mosconi, M., Drewry, J., Matthews, T., & Tasse, M. J. (2007). Peer-mediated social skills training program for young children with high-functioning autism. *Research in Developmental Disabilities, 28*(4), 423-436.	E52. not ABA
E53.	Church, J. (2003). The definition, diagnosis and treatment of children and youth with severe behaviour difficulties: A review of research. Wellington: Ministry of Education.	E53. not ASD
E54.	Clarke, S., Dunlap, G., & Vaughn, B. (1999). Family-centered, assessment-based intervention to improve behavior during an early morning routine. *Journal of Positive Behavior Interventions, 1*(4), 235-241.	E54. SMRS below 2
E55.	Connolly, S. D., Bernstein, G. A., & Work Group on Quality, I. (2007). Practice parameter for the assessment and treatment of children and adolescents with anxiety disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*(2), 267-283.	E55. not ASD

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E56.	Conyers, C., Miltenberger, R. G., Peterson, B., Gubin, A., Jurgens, M., Selders, A., et al. (2004). An evaluation of in vivo desensitization and video modeling to increase compliance with dental procedures in persons with mental retardation. *Journal of Applied Behavior Analysis, 37*(2), 233-238.	E56. not ASD
E57.	Cosbey, J. E., & Johnston, S. (2006). Using a single-switch voice output communication aid to increase social access for children with severe disabilities in inclusive classrooms. *Research and Practice for Persons with Severe Disabilities, 31*(2), 144-156.	E57. not ASD
E58.	Cummings, A. R., & Carr, J. E. (2005). Functional Analysis and Treatment of Joint Dislocation Associated with Hypermobility Syndrome: A Single-Case Analysis. *Journal of Developmental and Physical Disabilities, 17*(3), 225-236.	E58. SMRS below 2
E59.	Dauphin, M., Kinney, E. M., & Stromer, R. (2004). Using video-enhanced activity schedules and matrix training to teach sociodramatic play to a child with autism. *Journal of Positive Behavior Interventions, 6*(4), 238-250.	E59. NSP excluded
E60.	Davis, B. J., Smith, T., & Donahoe, P. (2002). Evaluating supervisors in the UCLA treatment model for children with autism: Validation of an assessment procedure. *Behavior Therapy, 31*, 601-614.	E60. therapist data only
E61.	DeLeon, I. G., Anders, B. M., Rodriguez-Catter, V., & Neidert, P. L. (2000). The effects of noncontingent access to single- versus multiple-stimulus sets on self-injurious behavior. *Journal of Applied Behavior Analysis, 33*(4), 623-626.	E61. not treatment study
E62.	Devlin, S. D., & Harber, M. M. (2004). Collaboration Among Parents and Professionals with Discrete Trial Training in the Treatment for Autism. *Education and Training in Developmental Disabilities, 39*(4), 291-300.	E62. NSP excluded
E63.	Dillenburger, K., Keenan, M., Gallagher, S., & McElhinney, M. (2004). Parent education and home-based behaviour analytic intervention: An examination of parents' perceptions of outcome. *Journal of Intellectual & Developmental Disability, 29*(2), 119-130.	E63. focus on families
E64.	Dooley, P., Wilczenski, F. L., & Torem, C. (2001). Using an activity schedule to smooth school transitions. *Journal of Positive Behavior Interventions, 3*(1), 57-61.	E64. SMRS below 2
E65.	Doughty, S. S., Anderson, C. M., Doughty, A. H., Williams, D. C., & Saunders, K. J. (2007). Discriminative control of punished stereotyped behavior in humans. *Journal of the Experimental Analysis of Behavior, 87*(3), 325-336.	E65. not ASD
E66.	Downs, A., Downs, R. C., Johansen, M., & Fossum, M. (2007). Using discrete trial teaching within a public preschool program to facilitate skill development in students with developmental disabilities. *Education & Treatment of Children, 30*(3), 1-27.	E66. Autism participants not analysed separately

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E67.	Dozier, C. L., Carr, J. E., Enlof, K., Landaburu, H., Eastridge, D., & Kellum, K. K. (2001). Using fixed-time schedules to maintain behavior: a preliminary investigation. *Journal of Applied Behavior Analysis, 34*(3), 337-340.	E67. demo only
E68.	Drager, K. D. R., Postal, V. J., Carrolus, L., Castellano, M., Gagliano, C., & Glynn, J. (2006). The effect of aided language modeling on symbol comprehension and production in 2 preschoolers with autism. *American Journal of Speech-Language Pathology, 15*(2), 112-125.	E68. not ABA
E69.	Drasgow, E., Halle, J. W., & Phillips, B. (2001). Effects of different social partners on the discriminated requesting of a young child with autism and severe language delays. *Research in Developmental Disabilities, 22*(2), 125-139.	E69. Not treatment
E70.	Drash, P. W., High, R. L., & Tudor, R. M. (1999). Using mand training to establish an echoic repertoire in young children with autism. *Analysis of Verbal Behavior, 16*, 29-44.	E70. no experimental design
E71.	Durand, V. M., & Merges, E. (2001). Functional communication training: A contemporary behavior analytic intervention for problem behaviors. *Focus on Autism and Other Developmental Disabilities, 16*(2), 110-119, 136.	E71. no data
E72.	Dyer, K., Martino, G. M., & Parvenski, T. (2006). The River Street Autism Program - A case study of a regional service center behavioral intervention program. *Behavior Modification, 30*(6), 925-943.	E72. case study
E73.	Easterbrooks, S. R., & Handley, C. M. (2005). Behavior change in an student with a dual diagnosis of deafness and pervasive developmental disorder: A case study. *American Annals of the Deaf, 150*(5), 401-407.	E73. case study diagnosis unspecific
E74.	Ebanks, M. E., & Fisher, W. W. (2003). Altering the timing of academic prompts to treat destructive behavior maintained by escape. *Journal of Applied Behavior Analysis, 36*(3), 355-359.	E74. SMRS below 2
E75.	Eikeseth, S. (2001). Recent critiques of the UCLA young autism project. *Behavioral Interventions, 16*(4), 249-264.	E75. not a study
E76.	Eikeseth, S., & Jahr, E. (2001). The UCLA reading and writing program: An evaluation of the beginning stages. *Research in Developmental Disabilities, 22*(4), 289-307.	E76. NSP excluded
E77.	Esbenshade, P. H., & Rosales-Ruiz, J. (2001). Programming common stimuli to promote generalized question-asking: A case demonstration in a child with autism. *Journal of Positive Behavior Interventions, 3*(4), 199-210.	E77. SMRS below 2

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E78.	Esch, B. E., Carr, J. E., & Michael, J. (2005). Evaluating stimulus-stimulus pairing and direct reinforcement in the establishment of an echoic repertoire of children diagnosed with autism. *Analysis of Verbal Behavior, 21*, 43-58.	E78. not treatment
E79.	Ewing, C. B., Magee, S. K., & Ellis, J. (2001). The functional analysis of problematic verbal behavior. *Analysis of Verbal Behavior, 18*, 51-60.	E79. not treatment
E80.	Fabrizio, M. A., Pahl, S., & Moors, A. (2002). Improving Speech Intelligibility through Precision Teaching. *Journal of Precision Teaching & Celeration, 18*(1), 25-27.	E80. Not available
E81.	Fabrizio, M. A., Schirmer, K., Vu, E., Diakite, A., & Yao, M. (2003). Analog Analysis of Two Variables Related to the Joint Attention of a Toddler with Autism. *Journal of Precision Teaching & Celeration, 19*(1), 41-44.	E81. NSP excluded
E82.	Facon, B., Beghin, M., & Riviere, V. (2007). The reinforcing effect of contingent attention on verbal perseverations of two children with severe visual impairment. *Journal of Behavior Therapy and Experimental Psychiatry, 38*(1), 23-28.	E82. not ASD
E83.	Farrell, P., Trigonaki, N., & Webster, D. (2005). An exploratory evaluation of two early intervention programmes for young children with autism. *Educational and Child Psychology, 22*(4), 29-40.	E83. NSP excluded
E84.	Ferguson, H., Myles, B. S., & Hagiwara, T. (2005). Using a Personal Digital Assistant to Enhance the Independence of an Adolescent with Asperger Syndrome. *Education and Training in Developmental Disabilities, 40*(1), 60-67.	E84. SMRS below 2
E85.	Fiorile, C. A., & Greer, R. D. (2007). The induction of naming in children with no prior tact responses as a function of multiple exemplar histories of instruction. *Analysis of Verbal Behavior, 23*, 71-87	E85. not treatment
E86.	Fisher, W. W., Adelinis, J. D., Volkert, V. M., Keeney, K. M., Neidert, P. L., & Hovanetz, A. (2005). Assessing preferences for positive and negative reinforcement during treatment of destructive behavior with functional communication training. *Research in Developmental Disabilities, 26*(2), 153-168.	E86. Demonstration analysis of treatment
E87.	Fisher, W. W., Kodak, T., & Moore, J. W. (2007). Embedding an identity-matching task within a prompting hierarchy to facilitate acquisition of conditional discriminations in children with autism. *Journal of Applied Behavior Analysis, 40*(3), 489-499.	E87. not treatment
E88.	Fisher, W. W., Kuhn, D. E., & Thompson, R. H. (1998). Establishing discriminative control of responding using functional and alternative reinforcers during functional communication training. *Journal of Applied Behavior Analysis, 31*(4), 543-560.	E88. SMRS below 2

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E89.	Fisher, W. W., Lindauer, S. E., Alterson, C. J., & Thompson, R. H. (1998). Assessment and treatment of destructive behavior maintained by stereotypic object manipulation. *Journal of Applied Behavior Analysis, 31*(4), 513-527.	E89. NSP excluded
E90.	Fisher, W. W., Thompson, R. H., Hagopian, L. P., Bowman, L. G., & Krug, A. (2000). Facilitating tolerance of delayed reinforcement during functional communication training. *Behavior Modification, 24*(1), 3-29.	E90. SMRS below 2
E91.	Foley, B. E., & Staples, A. H. (2003). Developing augmentative and alternative communication (AAC) and literacy interventions in a supported employment setting. *Topics in Language Disorders, 23*(4), 325-343.	E91. case studies no data
E92.	Frea, W. D., & Hepburn, S. L. (1999). Teaching parents of children with autism to perform functional assessments to plan interventions for extremely disruptive behaviors. *Journal of Positive Behavior Interventions, 1*(2), 112-116.	E92. case studies
E93.	Freeman, K. A., & Piazza, C. C. (1998). Combining stimulus fading, reinforcement, and extinction to treat food refusal. *Journal of Applied Behavior Analysis, 31*(4), 691-694.	E93. SMRS below 2
E94.	Galiatsatos, G. T., & Graff, R. B. (2003). Combining descriptive and functional analyses to assess and treat screaming. *Behavioral Interventions, 18*(2), 123-138.	E94. SMRS below 2
E95.	Garcia, R., & Turk, J. (2007). The applicability of Webster-Stratton Parenting Programmes to deaf children with emotional and behavioural problems, and autism, and their families: Annotation and case report of a child with autistic spectrum disorder. *Clinical Child Psychology and Psychiatry, 12*(1), 125-136.	E95. case study
E96.	Garfinkle, A. N., & Schwartz, I. S. (2002). Peer imitation: Increasing social interactions in children with autism and other developmental disabilities in inclusive preschool classrooms. *Topics in Early Childhood Special Education, 22*(1), 26-38.	E96. NSP excluded
E97.	Geckeler, A. S., Libby, M. E., Graff, R. B., & Ahearn, W. H. (2000). Effects of reinforcer choice measured in single-operant and concurrent-schedule procedures. *Journal of Applied Behavior Analysis, 33*(3), 347-351.	E97. not treatment study (demo)
E98.	Gerhardt, P. G., Weiss, M. J., & Delmolino, L. (2003). Treatment of severe aggression in an adolescent with autism: Non-contingent reinforcement and functional communication training. *Behavior Analyst Today, 4*, 386-394.	E98. SMRS below 2
E99.	Ghuman, J. K., Cataldo, M. D., Beck, M. H., & Slifer, K. J. (2004). Behavioral Training For Pill-Swallowing Difficulties In Young Children with Autistic Disorder. *Journal of Child and Adolescent Psychopharmacology, 14*(4), 601-611.	E99. NSP excluded

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E100. Girolametto, L., Weitzman, E., & Greenberg, J. (2004). The effects of verbal support strategies on small-group peer interactions. *Language Speech and Hearing Services in Schools, 35*(3), 254-268.	E100. not ASD
E101. Godfrey, R., Moore, D., Fletcher-Flinn, C., & Anderson, A. (2001). *An evaluation of some programmes for children with autistic spectrum disorder in Auckland: Opportunities, contingencies and illusions.* Wellington: Ministry of Education,.	E101. not treatment
E102. Goodson, J., Sigafoos, J., O' Reilly, M., Cannella, H., & Lancioni, G. E. (2007). Evaluation of a video-based error correction procedure for teaching a domestic skill to individuals with developmental disabilities. *Research in Developmental Disabilities, 28*(5), 458-467.	E102. not ASD
E103. Goodson, J., Sigafoos, J., O' Reilly, M., Cannella, H., & Lancioni, G. E. (2007). Evaluation of a video-based error correction procedure for teaching a domestic skill to individuals with developmental disabilities. *Research in Developmental Disabilities, 28*(5), 458-467.	E103. not AUT
E104. Gottschalk, J. M., Libby, M. E., & Graff, R. B. (2000). The effects of establishing operations on preference assessment outcomes. *Journal of Applied Behavior Analysis, 33*(1), 85-88.	E104. not treatment
E105. Graff, R. B., Green, G., & Libby, M. E. (1998). Effects of two levels of treatment intensity on a young child with severe disabilities. *Behavioral Interventions, 13*(1), 21-41.	E105. NSP excluded
E106. Green, G. (2001). Behavior analytic instruction for learners with autism: Advances in stimulus control technology. *Focus on Autism and Other Developmental Disabilities, 16*(2), 72-85.	E106. not a study
E107. Green, G., Brennan, L. C., & Fein, D. (2002). Intensive behavioral treatment for a toddler at high risk for autism. *Behavior Modification, 26*(1), 69-102.	E107. NSP excluded
E108. Grey, I. M., Bruton, C., Honan, R., McGuinness, R., & Daly, M. (2007). Co-operative learning for children with an Autistic Spectrum Disorder (ASD) in mainstream and special class settings: An exploratory study. *Educational Psychology in Practice, 23*(4), 317-327.	E108. not a treatment
E109. Griffin, H. C., Griffin, L. W., Fitch, C. W., Albera, V., & Gingras, H. (2006). Educational interventions for individuals with Asperger syndrome. *Intervention in School and Clinic, 41*(3), 150-155.	E109. practitioner review

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E110. Gutierrez, A., Vollmer, T. R., Dozier, C. L., Borrero, J. C., Rapp, J. T., Bourret, J. C., et al. (2007). Manipulating establishing operations to verify and establish stimulus control during mand training. *Journal of Applied Behavior Analysis, 40*(4), 645-658.	E110. not treatment
E111. Hagopian, L. P., & Thompson, R. H. (1999). Reinforcement of compliance with respiratory treatment in a child with cystic fibrosis. *Journal of Applied Behavior Analysis, 32*(2), 233-236.	E111. SMRS below 2
E112. Hagopian, L. P., Wilson, D. M., & Wilder, D. A. (2001). Assessment and treatment of problem behavior maintained by escape from attention and access to tangible items. *Journal of Applied Behavior Analysis, 34*(2), 229-232.	E112. SMRS below 2
E113. Hanley, G. P., Iwata, B. A., Thompson, R. H., & Lindberg, J. S. (2000). A component analysis of "stereotypy as reinforcement" for alternative behavior. *Journal of Applied Behavior Analysis, 33*(3), 285-297.	E113. not treatment
E114. Harding, J. W., Wacker, D. P., Berg, W. K., Barretto, A., Winborn, L., & Gardner, A. (2001). Analysis of response class hierarchies with attention-maintained problem behaviors. *Journal of Applied Behavior Analysis, 34*(1), 61-64.	E114. not a treatment study
E115. Harris, S. L., & Handleman, J. S. (2000). Age and IQ at intake as predictors of placement for young children with autism: A four- to six-year follow-up. *Journal of Autism and Developmental Disorders, 30*(2), 137-142.	E115. NSP excluded
E116. Harris, T. A., Peterson, S. L., Filliben, T. L., Glassberg, M., & Favell, J. E. (1998). Evaluating a more cost-efficient alternative to providing in-home feedback to parents: the use of spousal feedback. *Journal of Applied Behavior Analysis, 31*(1), 131-134.	E116. focus on families
E117. Harrower, J. K., Fox, L., Dunlap, G., & Kincaid, D. (1999). Functional assessment and comprehensive early intervention. *Exceptionality, 8*(3), 189-2040.	E117. case study no data
E118. Healey, J. J., Ahearn, W. H., Graff, R. B., & Libby, M. E. (2001). Extended analysis and treatment of self-injurious behavior. *Behavioral Interventions, 16*(3), 181-195.	E118. SMRS below 2
E119. Hilton, J. C., & Seal, B. C. (2007). Brief report: Comparative ABA and DIR trials in twin brothers with autism. *Journal of Autism and Developmental Disorders, 37*(6), 1197-1201.	E119. case study
E120. Howlin, P. (2003). Can early interventions alter the course of autism? In *Autism: Neural Basis and Treatment Possibilities* (Vol. 251, pp. 250-265).	E120. not peer reviewed journal
E121. Howlin, P. (2005). The effectiveness of interventions for children with autism. *Journal of Neural Transmission, Supplementum.*(69), 101-119.	E121. not a study

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E122. Howlin, P., Mawhood, L., & Rutter, M. (2000). Autism and developmental receptive language disorder--a follow-up comparison in early adult life. II: Social, behavioural, and psychiatric outcomes. *Journal of Child Psychology & Psychiatry & Allied Disciplines, 41*(5), 561-578.	E122. not a treatment study
E123. Hundert, J. P. (2007). Training classroom and resource preschool teachers to develop inclusive class interventions for children with disabilities: Generalization to new intervention targets. *Journal of Positive Behavior Interventions, 9*(3), 159-173.	E123. no datapath for the one child said to have ASD
E124. Hutchins, T. L., & Prelock, P. A. (2006). Using social stories and comic strip conversations to promote socially valid outcomes for children with autism. *Seminars in Speech & Language, 27*(1), 47-59.	E124. case studies
E125. Ingersoll, B., Schreibman, L., & Stahmer, A. (2001). Brief report: Differential treatment outcomes for children with Autistic Spectrum Disorder based on level of peer social avoidance. *Journal of Autism and Developmental Disorders, 31*(3), 343-349.	E125. NSP excluded
E126. Ingersoll, B., Schreibman, L., & Tran, Q. H. (2003). Effect of sensory feedback on immediate object imitation in children with autism. *Journal of Autism and Developmental Disorders, 33*(6), 673-683.	E126. not treatment
E127. Ingvarsson, E. T., Tiger, J. H., Hanley, G. P., & Stephenson, K. M. (2007). An evaluation of intraverbal training to generate socially appropriate responses to novel questions. *Journal of Applied Behavior Analysis, 40*(3), 411-429.	E127. not ASD
E128. Jacobson, J. W., Mulick, J. A., & Green, G. (1998). Cost-benefit estimates for early intensive behavioral intervention for young children with autism - general model and single state case. *Behavioral Interventions, 13*, 201-226.	E128. not treatment
E129. Jahr, E., & Eldevik, S. (2002). Teaching cooperative play to typical children utilizing a behavior modeling approach: A systematic replication. *Behavioral Interventions, 17*(3), 145-157.	E129. not ASD
E130. Jena, S. P. K. (1999). Treatment of self-injurious behaviour by differential reinforcement and physical restraint. *International Journal of Rehabilitation Research, 22*(3), 243-247.	E130. not ASD
E131. Jensen, C. C., McConnachie, G., & Pierson, T. (2001). Long-term multicomponent intervention to reduce severe problem behavior: A 63-month evaluation. *Journal of Positive Behavior Interventions, 3*(4), 225-236, 250.	E131. eclectic case study
E132. Jensen, V., & Sinclair, L. (2002). Treatment of autism in young children: behavioural intervention and applied analysis. *Infants & Young Children, 14*(4), 42-56.	E132. not treatment

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E133. Johnston, J. M., Foxx, R. M., Jacobson, J. W., Green, G., & Mulick, J. A. (2006). Positive behavior support and applied behavior analysis. *The Behavior Analyst, 29*, 51-74.	E133. not ASD or a study
E134. Kasari, C. (2002). Assessing change in early intervention programs for children with autism. *Journal of Autism and Developmental Disorders, 32*(5), 447-461.	E134. No treatment
E135. Kasari, C., Freeman, S. F. N., & Paparella, T. (2001). Early intervention in autism: Joint attention and symbolic play. In *International Review of Research in Mental Retardation, Vol 23* (Vol. 23, pp. 207-237).	E135. eclectic
E136. Keen, D., Brannigan, K. L., & Cuskelly, M. (2007). Toilet training for children with autism: The effects of video modeling category. *Journal of Developmental and Physical Disabilities, 19*(4), 291-303.	E136. SMRS below 2
E137. Kelley, M. E., Shillingsburg, M. A., Castro, M. J., Addison, L. R., & LaRue, R. H., Jr. (2007). Further evaluation of emerging speech in children with developmental disabilities: Training verbal behavior. *Journal of Applied Behavior Analysis, 40*(3), 431-445.	E137. not treatment really
E138. Kelley, M. E., Shillingsburg, M. A., Castro, M. J., Addison, L. R., Larue, R. H., & Martins, M. P. (2007). Assessment of the functions of vocal behavior in children with developmental disabilities: A replication. *Journal of Applied Behavior Analysis, 40*(3), 571-576.	E138. not treatment
E139. Kimball, J. W., Kinney, E. M., Taylor, B. A., & Stromer, R. (2004). Video Enhanced Activity Schedules for Children with Autism: A Promising Package for Teaching Social Skills. *Education & Treatment of Children, 27*(3), 280-298.	E139. no data
E140. King, A., Moors, A. L., & Fabrizio, M. A. (2003). Concurrently Teaching Multiple Verbal Operants Related to Preposition Use to a Child with Autism. *Journal of Precision Teaching & Celeration, 19*(1), 38-40.	E140. NSP excluded
E141. King-Sears, M. E. (1999). Teacher and researcher co-design self-management content for an inclusive setting: Research training, intervention, and generalization effects on student performance. *Education and Training in Mental Retardation and Developmental Disabilities, 34*(2), 134-156.	E141. not ASD
E142. Kinney, E. M., Vedora, J., & Stromer, R. (2003). Computer-presented video models to teach generative spelling to a child with an autism spectrum disorder. *Journal of Positive Behavior Interventions, 5*(1), 22-29.	E142. NSP excluded

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E143. Klin, A. (2000). Attributing social meaning to ambiguous visual stimuli in higher-functioning autism and Asperger syndrome: The Social Attribution Task. *Journal of Child Psychology & Psychiatry, 41*(7), 831-846.	E143. not ABA or treatment
E144. Koegel, L. K., Koegel, R. L., Shoshan, Y., & McNerney, E. (1999). Pivotal response intervention II: Preliminary long-term outcomes data. *Journal of the Association for Persons with Severe Handicaps, 24*(3), 186-198.	E144. NSP excluded
E145. Kohler, F. W., Greteman, C., Raschke, D., & Highnam, C. (2007). Using a buddy skills package to increase the social interactions between a preschooler with autism and her peers. *Topics in Early Childhood Special Education, 27*(3), 155-163.	E145. SMRS below 2
E146. Kok, A. J., Kong, T. Y., & Bernard-Opitz, V. (2002). A comparison of the effects of structured play and facilitated play approaches on preschoolers with autism: A case study. *Autism, 6*(2), 181-196.	E146. NSP excluded
E147. Kuhagen, J. A. (1998). Review of Cautela and Ishaq's Contemporary issues in behavior therapy: Improving the human condition. *Journal of Applied Behavior Analysis, 31*, 311-312.	E147. not a study
E148. Kuhn, D. E., DeLeon, I. G., Fisher, W. W., & Wilke, A. E. (1999). Clarifying an ambiguous functional analysis with matched and mismatched extinction procedures. *Journal of Applied Behavior Analysis, 32*(1), 99-102.	E148. SMRS below 2
E149. Kurtz, P. F., Chin, M. D., Huete, J. M., Tarbox, R. S. F., O'Connor, J. T., Paclawskyj, T. R., et al. (2003). Functional analysis and treatment of self injurious behavior in young children a summary of 30 cases. *Journal of Applied Behavior Analysis, 36*(2), 205-219.	E149. not ASD
E150. Kuttler, S., Myles, B. S., & Carlson, J. K. (1998). The use of social stories to reduce precursors to tantrum behavior in a student with autism. *Focus on Autism and Other Developmental Disabilities, 13*(3), 176-182.	E150. SMRS below 2
E151. Lacava, P. G., Golan, O., Baron-Cohen, S., & Myles, B. S. (2007). Using assistive technology to teach emotion recognition to students with Asperger syndrome - A pilot study. *Remedial and Special Education, 28*(3), 174-181.	E151. not ABA
E152. Lafasakis, M., & Sturmey, P. (2007). Training parent implementation of discrete-trial teaching effects on generalization of parent teaching and child correct responding. *Journal of Applied Behavior Analysis, 40*(4), 685-689.	E152. not treatment
E153. Lancioni, G. E., Markus, S., & Behrendt, M. (1998). A portable vibratory-feedback device for reducing excessive vocal loudness: A case study. *Behavioural and Cognitive Psychotherapy, 26*(4), 371-376.	E153. Autistic-like

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E154.	Lancioni, G. E., Singh, N. N., O'Reilly, M. F., Sigafoos, J., Chiapparino, C., Stasolla, F., et al. (2007). Using an optic sensor and a scanning keyboard emulator to facilitate writing by persons with pervasive motor disabilities. *Journal of Developmental and Physical Disabilities, 19*(6), 593-603.	E154. not ASD
E155.	Larkin, A. S., & Gurry, S. (1998). Brief report: Progress reported in three children with autism using daily life therapy. *Journal of Autism and Developmental Disorders, 28*(4), 339-342.	E155. NSP-excluded
E156.	Lattimore, L. P., Parsons, M. B., & Reid, D. H. (2002). A prework assessment of task preferences among adults with autism beginning a supported job. *Journal of Applied Behavior Analysis, 35*(1), 85-88.	E156. not treatment study
E157.	Lattimore, L. P., Parsons, M. B., & Reid, D. H. (2003). Assessing preferred work among adults with autism beginning supported jobs: Identification of constant and alternating task preferences. *Behavioral Interventions, 18*(3), 161-177.	E157. not treatment
E158.	LeBlanc, L. A., Miguel, C. F., Cummings, A. R., Goldsmith, T. R., & Carr, J. E. (2003). The Effects of Three Stimulus-Equivalence Testing Conditions on Emergent US Geography Relations of Children Diagnosed with Autism. *Behavioral Interventions, 18*(4), 279-289.	E158. not treatment
E159.	Lerman, D. C., Addison, L. R., & Kodak, T. (2006). A preliminary analysis of self-control with aversive events: the effects of task magnitude and delay on the choices of children with autism. *Journal of Applied Behavior Analysis, 39*(2), 227-232.	E159. not treatment
E160.	Lerman, D. C., Parten, M., Addison, L. R., Vorndran, C. M., Volkert, V. M., & Kodak, T. (2005). A methodology for assessing the functions of emerging speech in children with developmental disabilities. *Journal of Applied Behavior Analysis, 38*(3), 303-316.	E160. not treatment
E161.	Light, J. C., Roberts, B., Dimarco, R., & Greiner, N. (1998). Augmentative and alternative communication to support receptive and expressive communication for people with autism. *Journal of Communication Disorders, 31*(2), 153-180.	E161. not clearly ASD + case study
E162.	Lonigan, C. J., Elbert, J. C., & Johnson, S. B. (1998). Empirically supported psychosocial interventions for children: an overview. *Journal of Clinical Child Psychology, 27*(2), 138-145.	E162. not a study
E163.	Lucyshyn, J. M., Albin, R. W., Horner, R. H., Mann, J. C., Mann, J. A., & Wadsworth, G. (2007). Family implementation of positive behavior support for a child with autism: Longitudinal, single-case, experimental, and descriptive replication and extension. *Journal of Positive Behavior Interventions, 9*(3), 131-150.	E163. SMRS below 2

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E164. Luiselli, J. K. (2000). Case demonstration of a fading procedure to promote school attendance of a child with Asperger's disorder. *Journal of Positive Behavior Interventions, 2*(1), 47-52.	E164. Case study
E165. Luiselli, J. K., Kane, A., Treml, T., & Young, N. (2000). Behavioral intervention to reduce physical restraint of adolescents with developmental disabilities. *Behavioral Interventions, 15*(4), 317-330.	E165. SMRS below 2
E166. Lynch, S. (1998). Intensive behavioural intervention with a 7-year-old girl with autism. *Autism, 2*(2), 181-197.	E166. NSP excluded
E167. Mancil, G. R., Conroy, M. A., Nakao, T., & Alter, P. J. (2006). Functional Communication Training in the Natural Environment: A Pilot Investigation with a Young Child with Autism Spectrum Disorder. *Education & Treatment of Children, 29*(4), 615-633.	E167. SMRS below 2
E168. Mancina, C., Tankersley, M., Kamps, D., Kravits, T., & Parrett, J. (2000). Brief report: Reduction of inappropriate vocalizations for a child with autism using a self-management treatment program. *Journal of Autism and Developmental Disorders, 30*(6), 599-606.	E168. SMRS below 2
E169. Marr, D., Mika, H., Miraglia, J., Roerig, M., & Sinnott, R. (2006). The effect of sensory stories on targeted behaviors on preschool children with autism. *Physical and Occupational Therapy in Pediatrics, 27*(1), 63-79.	E169. not ABA
E170. Massaro, D. W., & Bosseler, A. (2006). Read my lips - The importance of the face in a computer-animated tutor for vocabulary learning by children with autism. *Autism, 10*(5), 495-510.	E170. NSP-excluded
E171. Maurice, C., Green, G., & Foxx, R. (Eds.). (2001). *Making a difference: Behavioral intervention for autism*. Austin: Pro-Ed.	E171. not a study
E172. McComas, J., Hoch, H., Paone, D., & El-Roy, D. (2000). Escape behavior during academic tasks: A preliminary analysis of idiosyncratic establishing conditions. *Journal of Applied Behavior Analysis, 33*(4), 479-493.	E172. NSP excluded
E173. McConachie, H., Randle, V., Hammal, D., & Le Couteur, A. (2005). A controlled trial of a training course for parents of children with suspected autism spectrum disorder. *Journal of Pediatrics, 147*(3), 335-340.	E173. NSP-excluded
E174. McConville, M. L., Hantula, D. A., & Axelrod, S. (1998). Matching training procedures to outcomes - A behavioral and quantitative analysis. *Behavior Modification, 22*(3), 391-414.	E174. not ASD

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E175.	McElwee, J., & Munson, S. (2002). Attaining Fluency by a Youngster with Autism for a Beginning Listener Skill. *Journal of Precision Teaching & Celeration, 18*(1), 30-32.	E175. NSP excluded
E176.	McGee, G. G., Morrier, M. J., & Daly, T. (1999). An incidental teaching approach to early intervention for toddlers with autism. *Journal of the Association for Persons with Severe Handicaps, 24*(3), 133-146.	E176. NSP excluded
E177.	McGrath, A. M., Bosch, S., Sullivan, C. L., & Fuqua, R. W. (2003). Training reciprocal social interactions between preschoolers and a child with autism. *Journal of Positive Behavior Interventions, 5*(1), 47-54.	E177. NSP excluded
E178.	Mechling, L. C., Gast, D. L., & Krupa, K. (2007). Impact of SMART board technology: An investigation of sight word reading and observational learning. *Journal of Autism and Developmental Disorders, 37*(10), 1869-1882.	E178. not ASD
E179.	Miguel, C. F., Carr, J. E., & Michael, J. (2001). The effects of a stimulus-stimulus pairing procedure on the vocal behavior of children diagnosed with autism. *Analysis of Verbal Behavior, 18*, 3-13.	E179. not a treatment study
E180.	Miller, C. (2005). Developing social skills with children with pervasive developmental disorders: A case study. *Dramatherapy, 27*(2).	E180. not ABA
E181.	Miller, C., Collins, B. C., & Hemmeter, M. L. (2002). Using a naturalistic time delay procedure to teach nonverbal adolescents with moderate-to-severe mental disabilities to initiate manual signs. *Journal of Developmental and Physical Disabilities, 14*(3), 247-261.	E181. SMRS below 2.
E182.	Miller, J. M., Singer, H. S., Bridges, D. D., & Waranch, H. R. (2006). Behavioral Therapy for Treatment of Stereotypic Movements in Nonautistic Children. *Journal of Child Neurology, 21*(2), 119-125.	E182. NSP excluded
E183.	Miller, N., & Neuringer, A. (2000). Reinforcing variability adolescents with autism. *Journal of Applied Behavior Analysis, 33*(2), 151-165.	E183. not treatment
E184.	Moore, M., & Calvert, S. (2000). Brief report: Vocabulary acquisition for children with autism: Teacher or computer instruction. *Journal of Autism and Developmental Disorders, 30*(4), 359-362.	E184. SMRS less than 2
E185.	Moore, J. W., Fisher, W. W., & Pennington, A. (2004). Systematic application and removal of protective equipment in the assessment of multiple topographies of self-injury. *Journal of Applied Behavior Analysis, 37*(1), 73-77.	E185. NSP excluded
E186.	Morse, T. E., & Schuster, J. W. (2000). Teaching elementary students with moderate intellectual disabilities how to shop for groceries. *Exceptional Children, 66*(2), 273-288.	E186. NSP excluded

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E187. Mruzek, D. W., Cohen, C., & Smith, T. (2007). Contingency contracting with students with autism spectrum disorders in a public school setting. *Journal of Developmental and Physical Disabilities, 19*(2), 103-114.	E187. SMRS below 2
E188. Mueller, M. M., Wilczynski, S. M., Moore, J. W., Fusilier, I., & Trahant, D. (2001). Antecedent manipulations in a tangible condition: Effects of stimulus preference on aggression. *Journal of Applied Behavior Analysis, 34*(2), 237-240.	E188. NSP excluded
E189. Murphy, C., Barnes-Holmes, D., & Barnes-Holmes, Y. (2005). Derived manding in children with autism: Synthesizing Skinner's Verbal Behaviour with relational frame theory. *Journal of Applied Behavior Analysis, 38*, 445-462.	E189. not a treatment study
E190. Murphy, G., Macdonald, S., Hall, S., & Oliver, C. (2000). Aggression and the termination of "rituals": A new variant of the escape function for challenging behavior? *Research in Developmental Disabilities, 21*(1), 43-59.	E190. not treatment.
E191. Murphy, G., Powell, S., Guzman, A. M., & Hays, S. J. (2007). Cognitive-behavioural treatment for men with intellectual disabilities and sexually abusive behaviour: a pilot study. *Journal of Intellectual Disability Research, 51*, 902-912.	E191. not ABA
E192. Myles, B. S., Ferguson, H., & Hagiwara, T. (2007). Using a personal digital assistant to improve the recording homework assignments by an adolescent with Asperger sydrome. *Focus on Autism and Other Developmental Disabilities, 22*(2), 96-99.	E192. not ABA
E193. Najdowski, A. C., Wallace, M. D., Penrod, B., & Cleveland, J. (2005). Using stimulus variation to increase reinforcer efficacy of low preference stimuli. *Behavioral Interventions, 20*(4), 313-328.	E193. not treatment
E194. Nakamura, B. J., Schiffman, J., Lam, C. W., Becker, K. D., & Chorpita, B. F. (2006). A modularized cognitive-behavioral intervention for water phobia in an adolescent with childhood-onset schizophrenia. *Child & Family Behavior Therapy, 28*(3), 29-41.	E194. not ASD
E195. Newman, B., Needelman, M., Reinecke, D. R., & Robek, A. (2002). The effect of providing choices on skill acquisition and competing behavior of children with autism during discrete trial instruction. *Behavioral Interventions, 17*(1), 31-41.	E195. not treatment
E196. Noro, F. (2005). Using Stimulus Equivalence Procedures to Teach Receptive Emotional Labeling to a Child With Autistic Disorder. *Japanese Journal of Special Education, 42*(6), 483-496.	E196. NSP excluded
E197. North, S. T., & Iwata, B. A. (2005). Motivational influences on performance maintained by food reinforcement. *Journal of Applied Behavior Analysis, 38*(3), 317-333.	E197. not treatment

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E198.	Noyes-Grosser, D. M., Holland, J. P., Lyons, D., Holland, C. L., Romanczyk, R. G., & Gillis, J. M. (2005). Rationale and methodology for developing guidelines for early intervention services for young children with developmental disabilities. *Infants & Young Children, 18*(2), 119-135.	E198. not a study
E199.	Nuzzolo-Gomez, R., & Greer, R. D. (2004). Emergence of Untaught Mands or Tacts of Novel Adjective-Object Pairs as a Function of Instructional History. *Analysis of Verbal Behavior, 20*, 63-76.	E199. not treatment
E200.	Odom, S. L., McConnell, S. R., McEvoy, M. A., Peterson, C., Ostrosky, M., Chandler, L. K., et al. (1999). Relative effects of interventions supporting the social competence of young children with disabilities. *Topics in Early Childhood Special Education, 19*(2), 75-91.	E200. not ASD
E201.	O'Reilly, M., Edrisinha, C., Sigafoos, J., Lancioni, G., Cannella, H., Machalicek, W., et al. (2007). Manipulating the evocative and abative effects of an establishing operation: Influences on challenging behavior during classroom instruction. *Behavioral Interventions, 22*(2), 137-145.	E201. not treatment
E202.	O'Reilly, M., Edrisinha, C., Sigafoos, J., Lancioni, G., Machalicek, W., & Antonucci, M. (2007). The effects of presession attention on subsequent a ttention-extinction and alone conditions. *Journal of Applied Behavior Analysis, 40*(4), 731-735.	E202. not treatment
E203.	O'Reilly, M. F., Edrisinha, C., Sigafoos, J., Lancioni, G., & Andrews, A. (2006). Isolating the evocative and abative effects of an establishing operation on challenging behavior. *Behavioral Interventions, 21*(3), 195-204.	E203. not treatment
E204.	O'Reilly, M. F., Sigafoos, J., Edrisinha, C., Lancioni, G., Cannella, H., Choi, H. Y., et al. (2006). A preliminary examination of the evocative effects of the establishing operation. *Journal of Applied Behavior Analysis, 39*(2), 239-242.	E204. not treatment
E205.	Patel, M. R., Carr, J. E., & Dozier, C. L. (1998). On the role of stimulus preference assessment in the evaluation of contingent access to stimuli associated with stereotypy during behavioral acquisition. *Behavioral Interventions, 13*(4), 269-274.	E205. not treatment
E206.	Patel, M. R., Piazza, C. C., Kelly, M. L., Ochsner, C. A., & Santana, C. M. (2001). Using a fading procedure to increase fluid consumption in a child with feeding problems. *Journal of Applied Behavior Analysis, 34*(3), 357-360.	E206. SMRS below 2
E207.	Paul, C., Williams, K. E., Riegel, K., & Gibbons, B. (2007). Combining repeated taste exposure and escape prevention: An intervention for the treatment of extreme food selectivity. *Appetite, 49*(3), 708-711.	E207. No individual data paths

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E208. Pepperberg, I. M., & Sherman, D. (2000). Proposed use of two-part interactive modeling as a means to increase functional skills in children with a variety of disabilities. *Teaching and Learning in Medicine, 12*(4), 213-220.	E208. no real data
E209. Perez-Gonzalez, L. A., Garcia-Asenjo, L., Williams, G., & Carnerero, J. J. (2007). Emergence of intraverbal antonyms in children with pervasive developmental disorder. *Journal of Applied Behavior Analysis, 40*(4), 697-701.	E209. not treatment
E210. Peterson, P., Carta, J. J., & Greenwood, C. (2005). Teaching enhanced milieu language teaching skills to parents in multiple risk families. *Journal of Early Intervention, 27*(2), 94-109.	E210. not ASD
E211. Peterson, P., Carta, J. J., & Greenwood, C. (2005). Teaching enhanced milieu language teaching skills to parents in multiple risk families. *Journal of Early Intervention, 27*(2), 94-109.	E211. not ASD
E212. Petty, J., & Oliver, C. (2005). Self-injurious behaviour in individuals with intellectual disabilities. *Current Opinion in Psychiatry, 18*(5), 484-489.	E212. not ASD specific
E213. Petursdottir, A. L., & Sigurdardottir, Z. G. (2006). Increasing the skills of children with developmental disabilities through staff training in behavioral teaching techniques. *Education and Training in Developmental Disabilities, 41*(3), 264-279.	E213. not ASD
E214. Piazza, C. C., Hagopian, L. P., Hughes, C. R., & Fisher, W. W. (1998). Using chronotherapy to treat severe sleep problems: A case study. *American Journal on Mental Retardation, 102*(4), 358-366.	E214. NSP excluded
E215. Pierson, M. R., & Glaeser, B. C. (2007). Using comic strip conversations to increase social satisfaction and decrease loneliness in students with autism spectrum disorder. *Education and Training in Developmental Disabilities, 42*(4), 460-466.	E215. case studies
E216. Pitetti, K. H., Rendoff, A. D., Grover, T., & Beets, M. W. (2007). The efficacy of a 9-month treadmill walking program on the exercise capacity and weight reduction for adolescents with severe autism. *Journal of Autism and Developmental Disorders, 37*(6), 997-1006.	E216. not aba
E217. Post, A. R., & Kirkpatrick, M. A. (2004). Toilet Training for a Young Boy with Pervasive Developmental Disorder. *Behavioral Interventions, 19*(1), 45-50.	E217. SMRS below 2
E218. Prupas, A., & Reid, G. (2001). Effects of exercise frequency on stereotypic behaviors of children with developmental disabilities. *Education and Training in Mental Retardation and Developmental Disabilities, 36*(2), 196-206.	E218. not ASD

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E219. Rapp, J. T. (2007). Further evaluation of methods to identify matched stimulation. *Journal of Applied Behavior Analysis, 40*(1), 73-88.	E219. not treatment
E220. Rapp, J. T., Dozier, C. L., Carr, J. E., Patel, M. R., & Enloe, K. A. (2004). Functional analysis of erratic body movement maintained by visual stimulation: Incorporating conjugate reinforcement into a paired-stimulus preference assessment. *Behavior Modification, 28*(1), 118-132.	E220. NSP excluded
E221. Rapp, J. T., Vollmer, T. R., St. Peter, C., Dozier, C. L., & Cotnoir, N. M. (2004). Analysis of response allocation in individuals with multiple forms of stereotyped behavior. *Journal of Applied Behavior Analysis, 37*(4), 481-501.	E221. not treatment
E222. Rehfeldt, R. A., & Chambers, M. R. (2003). Functional analysis and treatment of verbal perseverations displayed by an adult with autism. *Journal of Applied Behavior Analysis, 36*(2), 259-261.	E222. SMRS below 2
E223. Rehfeldt, R. A., Dahman, D., Young, A., Cherry, H., & Davis, P. (2003). Teaching a simple meal preparation skill to adults with moderate and severe mental retardation using video modeling. *Behavioral Interventions, 18*(3), 209-218.	E223. not ASD
E224. Rehfeldt, R. A., Dillen, J. E., Ziomek, M. M., & Kowalchuk, R. K. (2007). Assessing Relational Learning Deficits in Perspective-Taking in Children with High-Functioning Autism Spectrum Disorder. *Psychological Record, 57*(1), 23-47.	E224. not treatment
E225. Rehfeldt, R. A., Latimore, D., & Stromer, R. (2003). Observational learning and the formation of classes of reading skills by individuals with autism and other developmental disabilities. *Research in Developmental Disabilities, 24*(5), 333-358.	E225. not treatment
E226. Reichle, J., McComas, J., Dahl, N., Solberg, G., Pierce, S., & Smith, D. (2005). Teaching an Individual with Severe Intellectual Delay to Request Assistance Conditionally. *Educational Psychology, 25*(2-3), 275-286.	E226. SMRS below 2
E227. Reynhout, G., & Carter, M. (2007). Social storyTM efficacy with a child with autism spectrum disorder and moderate intellectual disability. *Child and Adolescent Psychiatric Clinics of North America, 22*(3), 173-182.	E227. SMRS below 2
E228. Richman, D. M., Wacker, D. P., Asmus, J. M., Casey, S. D., & Andelman, M. (1999). Further analysis of problem behavior in response class hierarchies. *Journal of Applied Behavior Analysis, 32*(3), 269-283.	E228. not treatment
E229. Ringdahl, J. E., Kitsukawa, K., Andelman, M. S., Call, N., Winborn, L., Barretto, A., et al. (2002). Differential reinforcement with and without instructional fading. *Journal of Applied Behavior Analysis, 35*(3), 291-294.	E229. not treatment

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E230. Roane, H. R., Kelly, M. L., & Fisher, W. W. (2003). The effects of noncontingent access to food on the rate of object mouthing across three settings. *Journal of Applied Behavior Analysis, 36*(4), 579-582.	E230. SMRS below 2
E231. Roane, H. S., Fisher, W. W., & McDonough, E. M. (2003). Progressing from programmatic to discovery research: a case example with the overjustification effect. *Journal of Applied Behavior Analysis, 36*(1), 35-46.	E231. not a treatment study
E232. Roane, H. S., Fisher, W. W., & Sgro, G. M. (2001). Effects of a fixed-time schedule on aberrant and adaptive behavior. *Journal of Applied Behavior Analysis, 34*(3), 333-336.	E232. SMRS below 2
E233. Roberts, J. (2004). *A review of the research to identify the most effective models of best pactice in the management of children with autistic spectrum disorders.* Sydney: Department of Ageing, Disability and Home Care.	E233. not peer-reviewed journal
E234. Roberts-Pennell, D., & Sigafoos, J. (1999). Teaching young children with developmental disabilities to request more play using the behaviour chain interruption strategy. *Journal of Applied Research in Intellectual Disabilities, 12*(2), 100-112.	E234. SMRS below 2
E235. Rogers, S. J., Hayden, D., Hepburn, S., Charlifue-Smith, R., Hall, T., & Hayes, A. (2006). Teaching young nonverbal children with autism useful speech: a pilot study of the Denver Model and PROMPT interventions. *Journal of Autism & Developmental Disorders, 36*(8), 1007-1024.	E235. not ABA
E236. Sansosti, F. J., Powell-Smith, K. A., & Kincaid, D. (2004). A Research Synthesis of Social Story Interventions for Children with Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities, 19*(4), 194-204	E236. Review
E237. Sarokoff, R. A., & Sturmey, P. (2004). The effects of behavioral skills training on staff implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis, 37*(4), 535-538.	E237. focus on therapists
E238. Sasso, G. M., Mundschenk, N. A., Melloy, K. J., & Casey, S. D. (1998). A comparison of the effects of organismic and setting variables on the social interaction behavior of children with developmental disabilities and autism. *Focus on Autism and Other Developmental Disabilities, 13*(1), 2-16.	E238. NSP excluded
E239. Sasso, G. M., Mundschenk, N. A., Melloy, K. J., & Casey, S. D. (1998). A comparison of the effects of organismic and setting variables on the social interaction behavior of children with developmental disabilities and autism. *Focus on Autism and Other Developmental Disabilities, 13*(1), 2-16.	E239. pdf with graphs unavailable

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E240.	Schneiter, R., & Devine, M. A. (2001). Reduction of self-injurious behaviors of an individual with autism: Use of a Leisure Communication Book. *Therapeutic Recreation Journal, 35*(3), 207-219.	E240. NSP excluded
E241.	Schreck, K. A. (2000). It can be done: An example of a behavioral individualized education program (IEP) for a child with autism. *Behavioral Interventions, 15*(4), 279-300.	E241. no data
E242.	Schwartz, I. S., Garfinkle, A. N., & Bauer, J. (1998). The Picture Exchange Communication System: Communicative outcomes for young children with disabilities. *Topics in Early Childhood Special Education, 18*(3), 144-159.	E242. NSP excluded
E243.	Self, T., Scudder, R. R., Weheba, G., & Crumrine, D. (2007). A virtual approach to teaching safety skills to children with autism spectrum disorder. *Topics in Language Disorders, 27*(3), 242-253.	E243. no design
E244.	Shea, V. (2004). A perspective on the research literature related to early intensive behavioral intervention (Lovaas) for young children with autism. *Autism, 8*(4), 349-367.	E244. not a study
E245.	Sigafoos, J., O'Reilly, M., Ma, C. H., Edrisinha, C., Cannella, H., & Lancioni, G. E. (2006). Effects of embedded instruction versus discrete-trial training on self-injury, correct responding, and mood in a child with autism. *Journal of Intellectual & Developmental Disability, 31*(4), 196-203.	E245. SMRS below 2
E246.	Simpson, R. L. (2005). Evidence-Based Practices and Students With Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities, 20*(3), 140-149.	E246. Review
E247.	Spriggs, A. D., Gast, D. L., & Ayres, K. M. (2007). Using picture activity schedule books to increase on-schedule and on-task behaviors. *Education and Training in Developmental Disabilities, 42*(2), 209-223.	E247. not ASD
E248.	Steege, M. W., Mace, F., Perry, L., & Longenecker, H. (2007). Applied Behavior Analysis: Beyond Discrete Trial Teaching. *Psychology in the Schools, 44*(1), 91-99.	E248. not a study
E249.	Stokes, J. V., Cameron, M. J., Dorsey, M. F., & Fleming, E. (2004). Task Analysis, Correspondence Training, and General Case Instruction for Teaching Personal Hygiene Skills. *Behavioral Interventions, 19*(2), 121-135.	E249. SMRS below 2
E250.	Sundberg, M. L., Loeb, M., Hale, L., & Eigenheer, P. (2002). Contriving establishing operations to teach mands for information. *Analysis of Verbal Behavior, 18*, 15-29.	E250. SMRS below 2
E251.	Sweeney-Kerwin, E. J., Carbone, V. J., O'Brien, L., Zecchin, G., & Janecky, M. N. (2007). Transferring control of the mand to the motivating operation in children with autism. *Analysis of Verbal Behavior, 23*, 89-102.	E251. SMRS below 2

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E252. Taber, T. A., Seltzer, A., Heflin, L. J., & Alberto, P. A. (1999). Use of self-operated auditory prompts to decrease off-task behavior for a student with autism and moderate mental retardation. *Focus on Autism and Other Developmental Disabilities, 14*(3), 159-166.	E252. SMRS below 2
E253. Takeuchi, K., Kubota, H., & Yamamoto, J.-i. (2002). Intensive supervision for families conducting home-based behavioral treatment for children with autism in Malaysia. *Japanese Journal of Special Education, 39*(6), 155-164.	E253. No outcomes for children
E254. Tang, J. C., Kennedy, C. H., Koppekin, A., & Caruso, M. (2002). Functional analysis of stereotypical ear covering in a child with autism. *Journal of Applied Behavior Analysis, 35*(1), 95-98.	E254. not treatment study
E255. Tarbox, R. S. F., Tarbox, J., Ghezzi, P. M., Wallace, M. D., & Yoo, J. H. (2007). The effects of blocking mouthing of leisure items on their effectiveness as reinforcers. *Journal of Applied Behavior Analysis, 40*(4), 761-765.	E255. not treatment
E256. Taubman, M., Brierley, S., Wishner, J., Baker, D., McEachin, J., & Leaf, R. B. (2001). The effectiveness of a group discrete trial instructional approach for preschoolers with developmental disabilities. *Research in Developmental Disabilities, 22*(3), 205-219.	E256. NSP excluded
E257. Taylor, B. A., & Levin, L. (1998). Teaching a student with autism to make verbal initiations: Effects of a tactile prompt. *Journal of Applied Behavior Analysis, 31*(4), 651-654.	E257. not a treatment
E258. Thackeray, E. J., & Richdale, A. L. (2002). The behavioural treatment of sleep difficulties in children with an intellectual disability. *Behavioral Interventions, 17*(4), 211-231.	E258. not ASD
E259. Thompson, A. R., & Beail, N. (2002). The treatment of auto-erotic asphyxiation in a man with severe intellectual disabilities: The effectiveness of a behavioural and educational programme. *Journal of Applied Research in Intellectual Disabilities, 15*(1), 36-47.	E259. not diagnosed ASD
E260. Thompson, R. H., Fisher, W. W., & Contrucci, S. A. (1998). Evaluating the reinforcing effects of choice in comparison to reinforcement rate. *Research in Developmental Disabilities, 19*(2), 181-187.	E260. not treatment
E261. Thompson, R. H., Fisher, W. W., Piazza, C. C., & Kuhn, D. E. (1998). The evaluation and treatment of aggression maintained by attention and automatic reinforcement. *Journal of Applied Behavior Analysis, 31*(1), 103-116.	E261. SMRS below 2

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E262. Thompson, R. H., & Iwata, B. A. (2000). Response acquisition under direct and indirect contingencies of reinforcement. *Journal of Applied Behavior Analysis, 33*(1), 1-11.	E262. not ASD
E263. Tiger, J. H., Bouxsein, K. J., & Fisher, W. W. (2007). Treating excessively slow responding of a young man with Asperger syndrome using differential reinforcement of short response latencies. *Journal of Applied Behavior Analysis, 40*(3), 559-563.	E263. SMRS below 2
E264. Tse, J., Strulovitch, J., Tagalakis, V., Meng, L., & Fombonne, E. (2007). Social skills training for adolescents with Asperger syndrome and high-functioning autism. *Journal of Autism and Developmental Disorders, 37*(10), 1960-1968.	E264. not ABA
E265. Volkert, V. M., Lerman, D. C., & Vorndran, C. (2005). The effects of reinforcement magnitude on functional analysis outcomes. *Journal of Applied Behavior Analysis, 38*(2), 147-162.	E265. not a treatment study
E266. Vollmer, T. R., Borrero, J. C., Lalli, J. S., & Daniel, D. (1999). Evaluating self-control and impulsivity in children with severe behavior disorders. *Journal of Applied Behavior Analysis, 32*(4), 451-466.	E266. not a treatment study
E267. Vorgraft, Y., Farbstein, I., Spiegel, R., & Apter, A. (2007). Retrospective evaluation of an intensive method of treatment for children with pervasive developmental disorder. *Autism, 11*(5), 413-424.	E267. not ABA
E268. Ward, S. J., Osnes, P. J., & Partington, J. W. (2007). The effects of a delay of noncontingent reinforcement during a pairing procedure in the development of stimulus control of automatically reinforced vocalization. *Analysis of Verbal Behavior, 23*, 103-111.	E268. not ASD
E269. Webb, B. J., Miller, S. P., Pierce, T. B., Strawser, S., & Jones, W. P. (2004). Effects of Social Skill Instruction for High-Functioning Adolescents with Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities, 19*(1), 53-62.	E269. not ABA
E270. Weiskop, S., Richdale, A., & Matthews, J. (2005). Behavioural Treatment to Reduce Sleep Problems in Children with Autism or Fragile X Syndrome. *Developmental Medicine & Child Neurology, 47*(2), 94-104.	E270. SMRS below 2
E271. Weiss, M., & Harris, S. (2002). Reaching out, joining in: Teaching social skills to young children with autism. *Journal of Intellectual & Developmental Disability, 27*(4), 346.	E271. book review
E272. Weiss, M. J. (1999). Differential rates of skill acquisition and outcomes of early intensive behavioral intervention for autism. *Behavioral Interventions, 14*(1), 3-22.	E272. NSP excluded

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E273. Weiss, M. J. (2005). Comprehensive ABA Programs: Integrating and evaluating the implementation of varied instructional approaches. *Behavior Analyst Today, 6*(4), 249-256.	E273. not a treatment study
E274. Weiss, M. J., & Harris, S. L. (2001). Teaching social skills to people with autism. *Behavior Modification, 25*(5), 785-802.	E274. no data
E275. Whalen, C., Schreibman, L., & Ingersoll, B. (2006). The Collateral Effects of Joint Attention Training on Social Initiations, Positive Affect, Imitation, and Spontaneous Speech for Young Children with Autism. *Journal of Autism and Developmental Disorders, 36*(5), 655-664.	E275. NSP excluded
E276. Wieder, S., & Greenspan, S. I. (2003). Climbing the symbolic ladder in the DIR model through floor time/interactive play. *Autism, 7*(4), 425-435.	E276. not ABA
E277. Williams, G., Carnerero, J. J., & Perez-Gonzalez, L. A. (2006). Generalization of tacting actions in children with autism. *Journal of Applied Behavior Analysis, 39*(2), 233-237.	E277. NSP excluded
E278. Williams, G., Perez-Gonzalez, L. A., & Queiroz, A. B. M. (2005). Using a combined blocking procedure to teach color discrimination to a child with autism. *Journal of Applied Behavior Analysis, 38*(4), 555-558.	E278. SMRS below 2
E279. Wong, C. S., Kasari, C., Freeman, S., & Paparella, T. (2007). The acquisition and generalization of joint attention and symbolic play skills in young children with autism. *Research and Practice for Persons with Severe Disabilities, 32*(2), 101-109.	E279. Inadequate design
E280. Worsdell, A. S., Iwata, B. A., Dozier, C. L., Johnson, A. D., Neidert, P. L., & Thomason, J. L. (2005). Analysis of response repetition as an error-correction strategy during sight-word reading. *Journal of Applied Behavior Analysis, 38*(4), 511-527.	E280. not ASD
E281. Yamamoto, J., Kakutani, A., & Terada, M. (2001). Establishing joint visual attention and pointing in autistic children with no functional language. *Perceptual and Motor Skills, 92*(3), 755-770.	E281. not treatment
E282. Yamamoto, J., & Miya, T. (1999). Acquisition and transfer of sentence construction in autistic students: Analysis by computer-based teaching. *Research in Developmental Disabilities, 20*(5), 355-377.	E282. no individual datapaths
E283. Zambolin, K., Fabrizio, M. A., & Isley, S. (2004). Teaching a Child with Autism to Answer Informational Questions Using Precision Teaching. *Journal of Precision Teaching & Celeration, 20*(1), 22-25.	E283. NSP excluded

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