Clinical Focus

Integrating Language, Pragmatics, and Social Intervention in a Single-Subject Case Study of a Child With a Developmental Social Communication Disorder

Catherine Adams,[a] Jacqueline Gaile,[a] Elaine Lockton,[a] and Jenny Freed[a]

Purpose: This clinical focus article presents an illustration of a complex communication intervention, the Social Communication Intervention Programme (SCIP), as delivered to a child who has a social communication disorder (SCD). The SCIP intervention combined language processing and pragmatic and social understanding therapies in a program of individualized therapy activities and in close liaison with families.

Method: The study used an enhanced AB single-subject design in which an 8-year-old child with an SCD participated in 20 therapy sessions with a specialist speech-language pathologist. A procedure of matching assessment findings to intervention choices was followed to construct an individualized treatment program. Examples of intervention content and the embedded structure of SCIP are illustrated. Observational and formal measurements of receptive and expressive language, conversation, and parent–teacher ratings of social communication were completed before therapy, after therapy, and at a 6-month follow-up session.

Results: Outcomes revealed change in total and receptive language scores but not in expressive language. Conversation showed marked improvement in responsiveness, appreciation of listener knowledge, turn taking, and adaptation of discourse style. Teacher-reported outcomes included improved classroom behavior and enhanced literacy skills. Parent-reported outcomes included improved verbal interactions with family members and personal narratives.

Conclusions: This clinical focus article demonstrates the complexity of needs in a child with an SCD and how these can be addressed in individualized intervention. Findings are discussed in relation to the essential nature of language support including pragmatic therapy for children with SCDs. Discussion of the role of formal and functional outcome measurement as well as the proximity of chosen outcomes to the intervention is included.

A *social communication disorder* (SCD) in childhood is defined in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM–5*; American Psychiatric Association, 2013) as a persistent deficit in pragmatic development that affects social functioning with additional persistent language difficulties but without restricted, repetitive behaviors. An SCD is present from early childhood, resulting in functional limitations of effective communication.

The nature of the pragmatic impairment in SCDs is similar to the pragmatic difficulties observed in high-functioning children with autism spectrum disorders (ASDs; Adams, 2013). This condition has also been referred to as a *pragmatic language impairment* (Bishop, 2000), but it is considered to be distinct from a *specific language impairment* (SLI; Bishop & Norbury, 2002).

Children who have an SCD present a considerable therapeutic challenge for the speech-language pathologist (SLP). They possess a range of pragmatic needs requiring substantive and often long-term intervention. These include conversational limitations, topic management problems, and poor management of reference for the listener. At the same time, they may have difficulty in understanding the subtleties of everyday social interactions, including reading social cues expressed through language forms. Some children

[a]School of Psychological Sciences, University of Manchester, United Kingdom

Correspondence to Catherine Adams: catherine.adams@manchester.ac.uk

with SCDs will have significant language needs requiring substantial language-directed therapies for understanding complex language forms and building vocabulary knowledge and/or expression at the within- and above-sentence levels (Adams, 2013). Thus, whereas there is a diagnostic distinction in terms of pragmatics between SCDs and SLIs, there may be overlap in language profiles (Adams, 2013; Bishop, 2000). That is, children who have SCDs may show some of the syntactic, semantic, and narrative difficulties exhibited by children who have SLIs.

Therapeutic Approaches for Children Who Have SCDs

The intervention literature provides multiple sources of therapy programs and practical resources for social communication interventions. Social skills training is the default choice of speech-language therapy for children with broad social communication problems arising from a number of etiologies. Social skills training studies have typically incorporated a small number of targets and mostly have included therapy for children who have ASDs. There is evidence to suggest that there are positive effects of social skills training for certain populations (e.g., Lopata et al., 2010; Owens, Granader, Humphrey, & Baron-Cohen, 2008). However, this research is still troubled by methodological weaknesses such as small sample sizes and limited descriptions of interventions (Reichow, Steiner, & Volkmar, 2013). The majority of social skills training studies have principally addressed social behavior and social acceptability in children with ASDs (see White, Keonig, & Scahill, 2007, for a review) and not children with significant SLI.

Practitioners have access to intervention resources that target pragmatics and that have a more language-oriented focus compared with social skills training. Examples of intervention resources are provided in Blank and Marquis (1987), Bowers and LoGiudice (2009), Kelly (2007), Kleiman (2011), Pugmire (2011), and Rinaldi (2004). Although these resources provide practical sources of therapeutic material, fundamental questions regarding effectiveness and theoretical models underlying the potential mechanisms of intervention remain. Is there a theoretical model of language and pragmatic development that can underpin a social communication intervention? Will the resultant intervention be appropriate and generalizable to the population of children who have an SCD?

A systematic review of treatments for pragmatic language needs (Gerber, Brice, Capone, Fujiki, & Timler, 2012) provided some support for the effectiveness of conversational or pragmatic treatments on language use in social interactions. Reviewed studies examined treatment goals that ranged from improving comprehension skills (including comprehension monitoring) to many aspects of language production, including improving conversation and narrative discourse skills (e.g., Adams, 2001; Adams, Lloyd, Aldred, & Baxendale, 2006; Merrison & Merrison, 2005; Richardson & Klecan-Aker, 2000; Timler, Olswang, & Coggins, 2005). These studies typically used a small number of specific

intervention targets within the pragmatics realm and applied these to a small number of participants with a variety of communication needs (including SLIs and ASDs). The review concluded that the body of evidence supporting pragmatic intervention is variable in its nature and quality. None of these studies included children with a diagnosis of SCD because of its recent emergence, although some clearly fit into this category (e.g., Adams, 2001).

Fujiki and Brinton have provided a large body of work on methods and principles of conversational intervention for children who have an SLI. Brinton, Robinson, and Fujiki (2004) described the Conversation Game as an intensive conversational program for children with language needs at the conversational level. The method includes the provision of strategies to support conversational reciprocity. Therapy is aimed at building up the child's own responsiveness in conversation and reactions to others' speech acts. The method is supported by Brinton and Fujiki's empirical studies of social communication, emotional development, and self-esteem in children with SLI (Brinton, Fujiki, & Robinson, 2005; Brinton, Spackman, Fujiki, & Ricks, 2007). Case studies (Fujiki, Brinton, McCleave, Anderson, & Chamberlain, 2013) have shown specific effects of this therapy on, for example, increasing the use of validating comments by children with SLI toward peers. Fujiki and Brinton (2009) summarized key developmental principles of pragmatics intervention. These include adjusting language input to suit the individual's level, integrating language and pragmatic therapies, planning long-term intervention, and using situations that are important to the child as practice contexts in therapy.

In a therapy designed specifically for children who have SCDs, Adams and Gaile (2015) proposed an underlying model of social communication and developed the Social Communication Intervention Programme (SCIP). In the SCIP model, social communication intervention is seen as the integration of work on social understanding, pragmatics, and language-processing (expressive and receptive) needs. SCIP intervention therefore has parallels with Brinton and Fujiki's identification of the need for integration of different therapy approaches where communication needs extend beyond language. Underlying this are the theoretical neuroconstructivist arguments put forward by Karmiloff-Smith (2009) in which cognitive development is conceptualized not as a collection of innate modules but rather as a process that emerges out of multidirectional interactions between cognitive, genetic, biological, behavioral, and environmental systems. Neuroconstructivism argues that where behaviors are impaired there may be different underlying causes. Even where behaviors appear to be intact, they may be achieved via different underlying cognitive processes or adaptive mechanisms in children with atypical development. This is further developed by Perkins (2007), who illustrated how pragmatic competence emerges as the product of an interaction in development between social cognition, language form, and contextual experiences.

SCIP intervention was evaluated in the first randomized controlled trial of speech-language intervention for

children with an SCD (Adams, Lockton, Gaile, Freed, et al., 2012). Fifty-seven children with an SCD received intensive SCIP intervention from two experienced SLPs and four assistants in elementary schools in the United Kingdom. Children in the control condition continued to receive support from their local SLPs. Evidence in favor of the intervention was found in measures of pragmatic competence (as rated by a parent or a caregiver), change in conversational skills, parent or caregiver opinion of changes in social communication and language skills, and teacher opinions of changes in classroom learning skills. The SCIP trial provided preliminary evidence that a social communication intervention can have positive effects on communication outcomes (Law et al., 2012). More primary trial-level evidence related to the SCIP program is required with respect to the treatment of SCD and pragmatics especially to test implementation in routine practice settings.

Case studies associated with clinical trials have the purpose of explaining the nature of the therapy to the SLP so that he or she might understand how the intervention could be implemented and adapted in local contexts. The case presented in this clinical focus article provides a forum for discussion of the therapeutic content of SCIP intervention among peer practitioners and illustrates key constructs of clinical management that were obscured in trial reporting. The study was prepared using TREND guidelines for the reporting of single-case designs (Des Jarlais, Lyles, Crepaz, & The TREND Group, 2004).[1]

Clinical Aims and Hypotheses

The aims of this clinical focus article are

1. to exemplify an intervention (SCIP) designed for children who have an SCD at a single-case level in order to demonstrate the intervention methodology for practitioners;

2. to illustrate a method of gathering language, pragmatic, and social communication outcomes of SCIP intervention for a child who has an SCD; and

3. to consider the implications of the intervention on broader social function for this child.

It is not the purpose of this clinical focus article to claim efficacy at the single-case level because evidence has already been reported at the trial level using the same intervention (Adams, Lockton, Gaile, Freed, et al., 2012). Rather, this is an illustrative study that indicates how intervention was planned and how individual outcomes were measured for one child. In line with good clinical practice at the individual case level, the following two clinical hypotheses were raised:

1. A period of SCIP intervention will result in clinically meaningful improvements at the level of impairment. This will be evidenced by an increase in formal language test scores and a decrease in atypical pragmatic behaviors within conversation sampling.

2. There will be a generalized effect of intervention at the functional level of social communication as measured by parent- and teacher-reported outcomes of language and social function at home and in school.

Method

Case Background and Selection

The case reported here (Connor) was a participant in the intervention arm of a randomized controlled trial of intervention for children with SCDs. The trial was a two-arm parallel group trial in which 83 children with SCDs were allocated to an SCIP intervention or a control condition, in which children received their regular speech-language therapy. Details of the trial are provided in Adams, Lockton, Gaile, Freed, et al. (2012) and Adams, Lockton, Gaile, Earl, and Freed (2012).

Connor was selected as a participant in this case study for three reasons: (a) He took part in the intervention arm of the SCIP randomized controlled trial (Adams, Lockton, Gaile, Freed, et al., 2012), (b) he completed the full number of sessions of intervention, and (c) he had communication needs that illustrated the full range of therapy included in the manual of intervention. Connor was representative of the group in terms of having long-standing language needs, including pragmatic deficits, and in receiving specialist speech and language therapy for a number of years as well as additional support for learning. It has been noted, however, that there is considerable variation in abilities within the SCD group (see Discussion also) and that it is difficult to define a prototype for this condition.

Connor was aged 8 years 4 months when he was referred to the SCIP trial by his local SLP in northwestern England. At the point of recruitment, Connor was in receipt of a speech-language intervention program delivered in school by a learning support assistant (LSA; a nonspecialist assistant whose role typically is to provide general classroom support for one child). The program was supported and reviewed during three visits by the local SLP over the course of an academic year. Connor had a history of delayed development of communication skills. There was no history of hearing loss in the preschool period or of any significant causal factors associated with language impairments, and his nonverbal intelligence was within normal limits at the time of school entry. From 5 years of age, Connor attended his local mainstream elementary school, where he received 20 hr/week of individual support time from an LSA (legally mandated in the United Kingdom through a Statement of Special Educational Needs). At the time of the first assessment for the SCIP, Connor was receiving support for literacy and mathematics in small groups

---

led by his LSA, who also provided individual support in the classroom to enable him to access whole-group teaching.

Case Study Design, Schedule of Assessments, and Blinding

The method chosen for this single-subject case study was an enhanced AB design with a 6-month follow up (reversal of treatment). Connor completed a screening assessment prior to inclusion in the trial and met the following inclusion criteria: scored in the "communication impaired" range (≤58) on the General Communication Composite of the Children's Communication Checklist–Second Edition (Bishop, 2003a; parent completed), and scored at or above the fifth percentile on the Coloured Progressive Matrices (Raven, 1979), a test of nonverbal perceptual and analogical reasoning skills (see Table 1 for individual scores).

Children in the SCIP trial intervention condition were assessed at Time 1 (immediately prior to intervention), Time 2 (immediately after intervention—12 weeks after Time 1), and Time 3 (6 months after Time 2). The intervention period was designed to take place within one U.K. school term (12 weeks). All data were collected in Connor's school in a separate quiet room with one parent in attendance during baseline assessment. (Parents were not present during outcome assessments.) Screening and baseline assessments were carried out by a research psychologist or a research SLP prior to randomization in the SCIP trial. Randomization to condition occurred after Time 1 and was independent of the intervention team. All outcome measures were carried out by a researcher blind to Connor's group status in the SCIP trial and his selection as a case study. Parent and teacher assessments could not be blinded. Questionnaires completed by parents or teachers were returned

Table 1. Connor's screening and Time 1 assessment findings (excluding outcome measures).

Assessment	Standard score or raw score	Percentile or explanatory note
TROG-2	85	16
CELF-4 CL	56	<1
CELF-4 RL	71	3
CELF-4 EL	55	<1
ERRNI-I	88	22
ERRNI-C	104	61
ACE 6-11 Naming	5	5
ACE 6-11 NLC subtest	3	1
BPVS-2	77	6
CCC-2 GCC	41 (raw score)	Scores ≤ 58 indicate communication impairment
RCPM	30 (raw score)	75–90
Parent SDQ total score	18 (raw score)	Higher scores show more impairment. Available range = 0–40. Mean for 5- to 15-year-old U.K. sample (*N* = 5,153) = 9.1.
TOPICC category scores		
Responsiveness and turn taking	3 (raw score)	No normative scores are available for the TOPICC.
Discourse style	3 (raw score)	Most typical children would achieve scores of 0 on all
Response problems	2 (raw score)	categories. The maximum total "error" score is 18.
Appreciation of listener knowledge	1 (raw score)	(See note for TOPICC scoring guide.)
TOPICC total Time 1	9 (raw score)	

MIPO subscales	Connor Time 1	SCD mean[a]
Prosocial	48	35
Conflict Management	25	32
Caregiving and Confiding	25	29

Note. TROG-2 = Test for Reception of Grammar–Second Edition (Bishop, 2003b); CELF-4 = Clinical Evaluation of Language Fundamentals–Fourth Edition; CL = Core Language; RL = Receptive Language; EL = Expressive Language; ERRNI = Expression, Reception and Recall of Narrative Instrument; I = Initial Story Telling; C = Comprehension; ACE 6-11 = Assessment of Comprehension and Expression 6-11; NLC = Nonliteral Comprehension; BPVS-2 = British Picture Vocabulary Test–Second Edition (Dunn, Dunn, Whetton, & Burley, 1997); CCC-2 GCC = Children's Communication Checklist–Second Edition General Communication Composite; RCPM = Raven's Coloured Progressive Matrices; SDQ = Strengths and Difficulties Questionnaire; TOPICC = Targeted Observation of Pragmatics in Children's Conversation (see text below for explanation of scores); MIPO = Manchester Inventory for Playground Observation; SCD = social communication disorder. The TOPICC topic management and verbosity categories are not recorded in baseline and outcome tables because they did not vary from 0 throughout the study. TOPICC rating scale: 3 = *marked evidence of that behavior across conversation, maybe very frequent or degree of abnormality tends to dominate the flavor of the conversation to the detriment of the interaction, makes a marked impact on the interaction*; 2 = *has a moderate but still significant effect on the interaction*; 1 = *is noticeable occasionally but has only a slight effect on the interaction*; 0 = *is never observed and the behavior is typical of mature interaction style of the interaction*. SCD mean MIPO scores are from Gibson et al. (2011) and are based on *N* = 22. Criteria for inclusion for SCD in Gibson et al. (2011) were identical to the Social Communication Intervention Programme study and the current case under consideration.

[a]Higher score shows more impairment.

by mail to a researcher who was not involved with the child's intervention.

Clinical Summary of Connor's Social Communication and Language Abilities at Time 1

Time 1 assessment and screening assessments are shown in Table 1. Findings from Time 1 assessments indicated that Connor's sentence and nonliteral comprehension, receptive vocabulary, and expressive language were all in the impaired range (defined as at or below the 16th percentile). In subsequent intervention activities, it became clear that a major source of comprehension difficulty was his inability to infer beyond stated information. Despite scoring within the average range on the Expression, Reception and Recall of Narrative Instrument (Bishop, 2004) on narration and comprehension of a short story, his narratives demonstrated a lack of coherence and difficulty with sentence construction. Connor showed considerable difficulty in formulating sentences even when a picture cue was provided. For example, he made three attempts to explain that the contents of the shopping bags had been swapped by the little girl in the Expression, Reception and Recall of Narrative Instrument Time 1 initial telling of story:

> "The boy went home to see the lady because something went terribly wrong."
> "The girl must have dropped the book because she made a mistake."
> "She thought that the doll was going to the yellow basket, but it went to the red basket."

On recalling the story 15 min later without use of pictures, he summarized this section as "Then the doll was in the bag because of the little girl drops it by the chair." On the Assessment of Comprehension and Expression (ACE 6-11; Adams, Cooke, Crutchley, Hesketh, & Reeves, 2001) Naming subtest, Connor tended to make semantic errors (e.g., *lobster → crab* and *flute → recorder*) and descriptive substitutions (e.g., *spanner →* "You fix things with screws"). On the diagnostic algorithm of the Autism Diagnostic Observation Schedule (Lord et al., 2000), he earned a score of 9, indicating the possible presence of an ASD but not core autism (the cutoff for autism is 10). The Strengths and Difficulties Questionnaire (Rutter, Bailey, & Lord, 2003), completed by Connor's parent, indicated significant functional behavioral impairment. Further exploration of social functioning was carried out using the Manchester Inventory for Playground Observation (MIPO; Gibson, Hussein, Holsgrove, Adams, & Green, 2011) in which observations of social behaviors on the playground are made on four subscales. Higher scores are indicative of greater difficulty. Group scores are available for MIPO for SCD samples (shown in Table 1). Connor's MIPO scores suggested a picture of significant difficulty in initiating peer interactions, sharing interactions, and managing conflict in groups.

Connor's pragmatic skills on conversation were assessed at Time 1 (and at outcome) using the Targeted Observation of Pragmatics in Children's Conversation (TOPICC;

Adams, Lockton, Gaile, & Freed, 2011). The TOPICC task is a video recording of conversation skills made using a semistructured task (identical to the one used in Bishop, Chan, Adams, Hartley, & Weir, 2000) in which the child and the researcher talk about three pictures of familiar social scenarios. The TOPICC rating procedure ascribes a severity score to each of six categories: responsiveness and turn taking, taking account of listener knowledge, verbosity, topic management, discourse style, and response problems. TOPICC scoring is described in the Table 1 note.

Connor's Time 1 TOPICC demonstrated marked difficulty with responsiveness and turn taking, moderate difficulty with adapting discourse style to context, and mild difficulty with appreciation of listener knowledge. He needed considerable prompting to give sufficient detail to keep the conversation going, gave literal descriptions of scenes without making inferences, and, although he could relate the scene to his own experience, his ability to verbalize this was compromised. There were no observable difficulties with topic management or verbosity. When an opportunity arose to talk about his favorite games, he was observed to be more fluent and coherent than when discussing topics not of his choosing.

The following is a sample of conversation with Connor at Time 1 (talking about Mother's Day):

> Researcher: It might be Mum's [pause] [no response from child] birthday.
> Connor: Sometimes, mum mum's day.
> Researcher: It might be Mother's Day, that's right, good thinking. Did you make a Mother's Day card?
> Connor: Yeah, but only Dad lets me know.
> Researcher: Dad lets you know when it is.
> Connor: Day is.
> Researcher: So what do we do on Mother's Day? We usually [pause] give our Mums … .
> Child: A somedays card and [unintelligible].

Information about initial social and classroom functioning was obtained using parent report of pragmatics and social communication items from the Children's Communication Checklist–Second Edition (Bishop, 2003a) and direct interviews with a parent and Connor's classroom teacher. Connor was reported to have persistent and obsessive topics of conversation, show a tendency toward social isolation, and play alongside his peers without obvious signs of enjoyment, with some observed anxiety and rigidity in applying and understanding rules.

Outcome Measures

The following measures were completed at all three time points: Clinical Evaluation of Language Fundamentals–Fourth Edition (CELF-4 U.K. version; Semel, Wiig, & Secord, 2006); Core Language, Receptive Language and Expressive Language Scales (a standardized test of language ability); and the TOPICC (described previously). At Times 2 and 3 only, parents completed an outcomes questionnaire to record their judgments about the current status of

Connor's language skills, social communication, social situations, and peer relationships and rated whether these had improved, stayed the same, or gotten worse since pre-intervention (or indicated "don't know"). At Time 3 only, Connor's class teacher (the same teacher as at Time 1) provided via a posted questionnaire her judgment of the same areas of communication skills. As an adjunct to ratings on parent and teacher questionnaires at Times 2 and 3, Connor's parents and teacher added narrative comments regarding his communication skills postintervention. The research SLP also provided a reflection on her work with Connor in the SCIP.

SCIP Intervention Content and Structure

SCIP intervention was delivered using a therapy manual that contains

- a method of linking assessment to intervention goals,

- therapy goal planning procedures,

- a hierarchically organized set of intervention components, and

- all therapy activities and procedures.

In the SCIP intervention plan, therapy was organized into three phases, as described in Connor's intervention plan below. The intervention is designed to be comprehensive enough to cover all the potential features of communication likely to be affected in children with SCDs. The content of SCIP intervention is described in the SCIP manual (Adams & Gaile, 2015). A detailed account of implementation, intervention components, individualization procedures, required level of practitioner expertise, and treatment fidelity measures is provided in Adams, Lockton, Gaile, Earl, et al. (2012).

SCIP Phase 1 Intervention

Phase 1 intervention (five sessions) began immediately after Connor's Time 1 assessment and served as a preparatory stage for the main phase of intervention. In Phase 1, a common set of skills that support speech-language therapy was developed and consolidated during five individual sessions with the research SLP. Phase 1 intervention targets are shown in Table 2. All children in the SCIP trial typically started intervention with identical Phase 1 content; some sections or objectives were omitted if the child was considered to already possess skills in that area. Phase 1 is, therefore, a universal phase.

Therapy session content followed the progression of difficulty described in the manual but also relied on clinical judgment of the SLP to confirm objectives that needed repetition or adjustment. Phase 1 therapy typically contained a set of three or four objectives (and their associated therapy activities) in each session. Therapy objectives could be repeated across sessions, or new objectives could be included. In general, no more than one repetition of each objective or activity was included. Therapy activities followed a prescribed format; examples are shown in the Appendix.

Each activity sheet contains the therapy objective (e.g., understanding social context), which is then further elaborated as a therapy purpose. A detailed procedure and materials and differentiation guidelines for changing level of difficulty are also described. During Phase 1, therapy activities had to be differentiated to just the right level in order to facilitate Connor's engagement with the task and had to be delivered at a pace that allowed for very explicit demonstration of the strategies used. Examples of Phase 1 therapy activities (in the Appendix) illustrate how the activity level can be adjusted to provide additional support for learning. Phase 1 continued until all objectives and activities were completed. During Phase 1, the SLP established a working relationship with the LSA and Connor's parents in which information about therapy and progress could be shared.

SCIP Phase 2 Intervention

For Phase 2 (12 sessions), an individualized plan containing components that matched Connor's communication profile was constructed using an assessment to intervention map (in the SCIP manual) and dynamic assessment results obtained during Phase 1. Table 3 shows the Phase 2 components that were selected from the mapping procedure and indicates which aspects of assessment triggered that part of the intervention. Multiple components of SCIP intervention were triggered for Connor. Prioritization was based on three factors:

1. Functional priority: Priority was given to components of the intervention that were expected to affect Connor's well-being and ability to function in a social group.

2. Parent–teacher priority: Parent priorities at Time 1 were for Connor to be able to listen to instructions and act on them, to be able to concentrate better, and to be more flexible about everyday routines and situations. Teacher priorities for intervention at Time 1 were for him to understand how to organize spoken and written language (especially time-related language), to work independently in the classroom, to be able to ask for help appropriately, and to be able to express his thoughts coherently.

3. Priority was given to targeting and supporting sentence-level and above-sentence-level comprehension and comprehension monitoring.

Prioritized intervention components in SCIP Phase 2 intervention were then elaborated into a set of intervention objectives scheduled to be introduced in three blocks of four sessions. Table 4 expands on the prioritized components (e.g., language-processing component 2) selected for Connor in Table 3 and shows the embedded objectives (e.g., language-processing component 2.1, understanding inferences in picture sequences) in each component. In the SCIP manual, each objective contains a series of Phase 2 therapy activities that were used in intervention sessions. Examples of two Phase 2 therapy activities are shown in the Appendix.

In addition to carrying out individual therapy activities, Connor's therapy sessions contained liaison time with his

Table 2. Connor's Phase 1 SCIP Intervention content.

Phase 1 section	Phase 1 objective and activity[a]
Comprehension monitoring (CM)	CM 1: Understanding the concept of knowing and not knowing[b]
	CM 2: Understanding the concepts of guessing and working out
	CM 3: Strategies to signal noncomprehension
	CM 4: Asking for repetition
Understanding social context (USC)	USC 1: Making simple inferences from familiar sequences
	USC 2: Identifying social context from behaviors and language[b]
	USC 3: Describing behaviors and language for social contexts
	USC 4: Identify and repair errors in behavior and language
Basic metapragmatic awareness (MPA)	MPA 1: Listening for content
	MPA 2: Understanding behaviors associated with listening
	(MPA 3 and 4 omitted)
Basic narrative (BN)	BN 1: Understanding vocabulary for sequencing
	BN 2: Making simple inferences from pictures
	BN 3: Simple sequencing
	BN 4: Simple personal stories
Introduction to emotions in context (EM)	(EM 1 and 2 omitted)
	EM 3: Emotions thermometer
	EM 4: Eye gaze, facial expression, and meaning

[a]In Phase 1, each objective has a single therapy activity written in the Social Communication Intervention Programme intervention manual. [b]The procedures for this therapy activity are shown in full in the Appendix.

Table 3. Completed Social Communication Intervention Programme (SCIP) intervention map for Connor.

SCIP Phase 2 intervention components	Standardized assessment criteria for inclusion in therapy	Observational and parent- or teacher-report criteria for inclusion in therapy
Language processing (LP)		
LP 1: **Vocabulary and word knowledge**	ACE 6-11 Naming, CELF-4 Word Structure	
LP 2: **Improving narrative construction**	CELF-4 Recalling Sentences and Formulating Sentences, ERRNI	Teacher report, TOPICC
LP 3: Nonliteral language	ACE 6-11 Nonliteral Comprehension subtest	Teacher report
LP 4: **Discourse comprehension**	CELF-4 Sentence Structure, Concepts and Following Directions, Understanding Spoken Paragraphs	TOPICC
LP 5: **Enhanced comprehension monitoring**	CELF-4 Concepts and Following Directions	Teacher report
Pragmatics (PRAG)		
PRAG 1: **Conversation and metapragmatic skills**	CCC-2	Teacher report, TOPICC
PRAG 2: **Understanding information requirements**		TOPICC
PRAG 3: Improving turn-taking skills		
PRAG 4: **Understanding and managing topic in conversation**		Parent report
PRAG 5: Understanding and improving discourse style		
Social understanding and social interpretation (SUSI)		
SUSI 1: **Understanding social context cues in interactions**		TOPICC, MIPO
SUSI 2: **Understanding emotion cues in interactions**		Parent report
SUSI 3: Understanding and practicing flexibility		Parent report, MIPO
SUSI 4: **Understanding thoughts and intentions of others**		Parent report, TOPICC
SUSI 5: Understanding friendships		MIPO, teacher report

Note. ACE 6-11 = Assessment of Comprehension and Expression 6-11; CELF-4 = Clinical Evaluation of Language Fundamentals–Fourth Edition (Revised U.K. version); ERRNI = Expression, Reception and Recall of Narrative Instrument; TOPICC = Targeted Observation of Pragmatics in Children's Conversation; CCC-2 = Children's Communication Checklist–Second Edition; MIPO = Manchester Inventory for Playground Observation. Assessments meeting inclusion criteria are shown in the two right-hand columns; prioritized components are in bold.

Table 4. Block plan for Connor's Social Communication Intervention Programme intervention.

Block 1	Block 2	Block 3
Language processing (LP)		
LP 2 Improving narrative construction	LP 1 Vocabulary and word knowledge	LP 2 Improving narrative construction
LP 2.1 Understanding inferences in picture sequences	LP 1.3 Vocabulary enrichment	LP 2.3 Constructing novel stories with plot
LP 1 Vocabulary and word knowledge	LP 2 Improving narrative construction	LP 4 Discourse comprehension
LP 1.1 Understanding semantic relationships between words	LP 2.2 Telling complex and personalized stories	LP 4.2 Understanding verbal inferences
LP 1.2 Consolidation and self-cueing	LP 2.3 Constructing novel stories with plot	LP 4.3 Understanding stories
	LP 4 Discourse comprehension	
	LP 4.1 Improving memory and listening	
	LP 4.2 Understanding verbal inferences	
	LP 5 Enhanced comprehension monitoring	
	LP 5.1 Text-level comprehension monitoring	
Pragmatics (PRAG)		
PRAG 1 Conversation and metapragmatic skills	PRAG 2 Understanding information requirements	PRAG 4 Understanding and managing topic in conversation
PRAG 1.1 Enhanced listening skills	PRAG 2.2 Understanding effect of excessive information	PRAG 4.1 Understanding topic in conversation
PRAG 1.2 Understanding speaker roles[a]	PRAG 2.3 Understanding relevant and irrelevant information	PRAG 4.2 Understanding topic change conventions
PRAG 1.3 Giving information	PRAG 2.4 Understanding information requirements in personal conversation	PRAG 4.3 Consolidating topic skills
PRAG 1.4 Understanding reciprocity		
PRAG 1.5 Developing metapragmatic awareness		
Social understanding and social interpretation (SUSI)		
SUSI 1 Understanding social context cues in interactions	SUSI 2 Understanding emotion cues in interactions	SUSI 4 Understanding thoughts and intentions of others
SUSI 1.1 Understanding nonverbal cues in context	SUSI 2.2 Enhanced emotion vocabulary	SUSI 4.1 Signaling feelings and intentions (nonverbal)
SUSI 1.2 Understanding and solving problems in social contexts	SUSI 2.3 Understanding complex feelings[a]	SUSI 4.2 Predicting thoughts and intentions
		SUSI 4.3 Understanding mismatch of language and thoughts
SUSI 2 Understanding emotion cues in interactions	Integrated activity: Using emotional vocabulary in social contexts (SUSI 2.1 with SUSI 1.2)	SUSI 4.4 Understanding complex intentions
SUSI 2.1 Building emotion vocabulary		

[a]The procedures for this therapy activity are shown in full in the Appendix.

LSA and teacher, work with peers (in Block 3), and reporting back to Connor's parents via a home–school book. These were completed within the hour of therapy time or occasionally extended beyond the allotted time. The SLP was also able to move on to more complex activities within an objective or to repeat the same level of activity according to Connor's response. Therapy activities were increasingly integrated by the SLP between language, pragmatics, and social components of SCIP in line with the intervention's methodology. At each stage, the SLP provided feedback to teaching staff and parents regarding progress and modeled the activity for the LSA. Progress was reviewed at the end of each block, and the next block intervention plan was altered if necessary.

By the end of Block 3, it was observed that Connor had retained information about pragmatic conventions and had learned and retained the meanings of new verbs. There was notable improvement in asking for clarification and maintaining attention to the other speaker. His self-monitoring had improved in therapy sessions, and his awareness of being on task was much improved. His LSA reported at this point that he was much more involved in classroom activities and was asking for help appropriately when prompted.

SCIP Phase 3 Intervention

The purposes of Phase 3 (three sessions) were to consolidate what had been learned up to that point by integrating components of intervention already implemented and to use personal examples of social interaction in all therapy sessions from this point forward. Therapy activities were constructed from the Phase 3 activity template in the manual; these incorporated skills learned in Phase 2 and were constructed by the research SLP to contain examples of personal situations and problems in social communication that had been identified throughout therapy. For example,

a Phase 3 personalized activity was designed that focused on his parents' account of inviting a friend to play at Connor's house. Careful preparation of all participants, overrehearsal of key skills learned in Phase 2, and a practice session before the actual event were incorporated into Phase 3. This method was repeated until the end of the intervention. At the end of the SCIP intervention, Connor was transferred back to the care of his local SLP and continued to receive additional support for learning in the classroom.

Results

The outcome measures for Connor's assessments at Time 1, Time 2, and Time 3 are shown in Table 5. The principal language and pragmatic outcomes are the CELF-4 (see also Table 6) and the TOPICC. Functional outcomes for social communication skills are shown in teacher- and parent-reported outcomes. All outcomes should be treated with caution given that the design did not incorporate a control condition or participant.

At Time 3, Connor showed a substantial increased CELF-4 Core Language Standard Score, which was unlikely to be due to variable performance and was sustained across treatment reversal. Inspection of CELF-4 subtest scores showed that the change took place principally on some receptive language subtests and that expressive language subtest standard scores did not change substantially (see Table 6).

Aspects of pragmatics in conversation were reassessed at Times 2 and 3 using video analysis (TOPICC) by an experienced observer blind to Connor's experimental condition in the SCIP trial. At Times 2 and 3, improvements in

Table 6. Scaled scores on Clinical Evaluation of Language Fundamentals–Fourth Edition U.K. version (CELF-4) subtests at Times 1 (before intervention), 2 (immediately after intervention), and 3 (6 months after Time 2).

CELF-4 subtest	Time 1	Time 2	Time 3[a]
Receptive Language			
Concepts and Following Directions	4	5	9
Word Classes Receptive	9	7	7
Sentence Structure	3	11	
Expressive Language			
Word Structure	4	4	
Recalling Sentences	1	3	3
Formulated Sentences	3	1	2

Note. Scaled scores are based on population norms of $M = 10$ and $SD = 3$.

[a]At this time point, the 9-16 version of the CELF-4, which does not include the Sentence Structure or Word Structure subtests, was used.

Connor's conversational skills were noted (see Table 6). Problems with responsiveness or turn taking had reduced from severe to mild and problems with discourse style had reduced from severe to moderate, but difficulties with nonverbal signaling remained. Response problems had reduced from moderate to mild. Difficulties with appreciation of listener knowledge continued to be noticeable but only mildly affected the conversation. The overall impression of the rater was that conversational ability had improved from Time 1 to Time 3. There is good reason to expect that this result is clinically valid. A separate reliability study of Time 1 and Time 3 TOPICC videos (38% of total sample) from the SCIP trial ($n = 86$; videos rated = 66) had shown

Table 5. Outcome measures for Connor at Times 1 (before intervention), 2 (immediately after intervention), and 3 (6 months after Time 2).

Outcome measure	Time 1	Time 2	Time 3
CELF-4 Core Language SS (95% CI)	56 (50–62)	58 (52–64)	70 (64–76)
CELF-4 Receptive Language SS (95% CI)	71 (62–80)	86 (77–95)	88 (79–97)
CELF-4 Expressive Language SS (95% CI)	55 (48–62)	55 (48–62)	59 (52–66)
TOPICC scores[a]			
Responsiveness and turn taking	3	1	1
Discourse style	3	2	2
Response problems	2	2	1
Appreciation of listener knowledge	1	2	1
TOPICC total scores	9	6	5
Parent-reported outcomes			
Language skills		Improved	Don't know
Social communication		Improved	Improved
Social skills		Stayed same	Improved
Peer relations		Improved	Improved
Teacher-reported outcomes			
Language skills			Improved
Social communication			Improved
Social skills			Improved
Peer relations			Stayed same

Note. CELF-4 = Clinical Evaluation of Language Fundamentals–Fourth Edition (Revised U.K. version); SS = standard score; CI = confidence interval; TOPICC = Targeted Observation of Pragmatics in Children's Conversation.

[a]A lower score indicates improvement on TOPICC.

substantial interrater agreement (Landis & Koch, 1977) for overall impressions of conversational change (Cohen's κ = .68).

Teacher-Reported Outcomes

Opinions from the class teacher at Time 3 reported improvements in social communication, language use, and social skills in the classroom. General behavior in the classroom was also perceived to have improved. Connor's teacher reported on her Time 3 commentary that his use of language within narratives had shown improvement. His reading age had improved by 18 months between Time 1 and Time 3 (a period of 10 months) on a classroom formal assessment of literacy skills. Connor's written output had shown dramatic change; written output had doubled in length and was more coherent. He could now use *because* and *then* to link ideas and could use *how* and *why* appropriately. Connor was more talkative at Time 3, but he still displayed problems with turn taking in a group communication task. He was now able to approach the teacher with a question and to put his hand up in discussions without being prompted. He showed pleasure in being rewarded for good communication. Connor was also now able to ask for clarification when he did not understand. At this time, Connor still required additional support for learning to complete classroom group work because he continued to find it difficult to compromise and share. At Time 3, however, his teacher reported that although peer relations remained a problem, he now interacted more readily with other children in the classroom.

Parent-Reported Outcomes

Connor's parents perceived improvements in social communication, social skills, and peer relations but did not comment on specific language skills. His parents' narrative account at Time 3 indicated that Connor was now able to wait until the speaker has stopped talking instead of talking over that person. Instead of shouting to get his message across, Connor was now able to interact with peers and family acquaintances in a more appropriate manner. His listening and ability to "take things in" had improved. His ability to create sequenced stories and to relate recent events had improved significantly at home, and he was now able to complete homework more independently. Connor's parents felt that having strategies to ask for assistance in the classroom had helped him greatly. He was now more willing to share and was more patient with his siblings. The main improvement his parents noticed was a rapidly developing enthusiasm for math, reading, and writing homework. After beginning to receive therapy, he had been able to complete a whole page of writing homework, whereas previously he would write only a single sentence.

SLP Reflection on Outcomes

The research SLP who worked with Connor in the SCIP intervention reflected on therapy at the end of the intensive intervention period. She reported that it had taken time to identify key areas of difficulty in such a complex profile but that over the period of intervention, his main areas of communication difficulty emerged as (a) comprehension of grammar, (b) discourse-level comprehension and expression, and (c) word-finding ability (significant word-finding difficulties affected his ability to express himself fluently). She felt that building confidence in asking for clarification was essential and had made a real impact on his interaction style. Connor's anxiety about communication tended to trigger pragmatic errors as an avoidance strategy. Reducing task demands and training others to support comprehension had an effect on this. The research SLP felt that he had benefited from working on emotional vocabulary and the use of complex vocabulary in discourse. Connor remained quite inflexible in his thinking and had significant limitations of interpretation of multiple-meaning words and jokes at the end of intervention.

Treatment Fidelity

Fidelity of intervention within the SCIP trial was measured by an audit of planned intervention sessions versus received sessions and adherence to written activity procedures as stated in the manual (both across 10% of sample), and was at ≥ 80% for both measures. The majority of scheduled treatment activities for Connor were delivered as planned. All treatment was derived from the SCIP manual and intervention resource.

Discussion

The first clinical hypothesis—that Connor would show clinically meaningful improvements in language and pragmatic ability after a period of SCIP intervention—was upheld by outcome measurements at Time 3 but not at Time 2. At Time 3 (6-month follow-up), Connor's language ability as measured by the Core Language Score of the CELF-4 U.K. showed a change of 14 points, taking the score outside of the 95% confidence interval for the same scale at Time 1. Inspection of the confidence intervals indicates that the magnitude of this change is unlikely to have arisen by chance alone, and it is likely that this represents an effect of his intervention. It is possible that Connor had a rapid period of maturation in his language skills during this period, but in evaluating the change in formal language testing alongside other functional reported outcomes, this seems unlikely.

The content of Phase 2 SCIP intervention on discourse comprehension, enhanced comprehension monitoring, and vocabulary and word knowledge may be associated with this change. However, it is not possible to determine whether there is a direct training effect from specific parts of the intervention or whether there is a more generalized effect of intervention. A similar effect is shown for the CELF-4 Receptive Language Scale, which approached the 95% confidence interval boundary but did not exceed it, but not for the CELF-4 Expressive Language Scale, which showed

little change over time. In order to test such hypotheses, it would be necessary to devise assessments of each individual aim or aspect of the intervention and to monitor change in these skills over time. Research studies have not carried out such detailed longitudinal assessments within an intervention program with this population.

It should be recalled that it is not the purpose of this clinical focus article to provide evidence of the effect of the SCIP intervention. This could not be achieved using a single-case design in such a variable group without appropriate control measures. We have attempted to show how a case might be treated and evaluated in typical clinical practice using measures that are commonly available. Evidence subsequently may be provided by large-scale trials using outcome measures that are sensitive to changes caused by the intervention. Difficulties arise, however, in the heterogeneity of social communication, pragmatic, and language needs within the SCD population and how individual changes can be detected. The documented within-participant variation in formal test scores (Eadie et al., 2014) suggests that it is unwise to rely on single, standardized measures to demonstrate effects of an intervention. Formal testing of outcomes should be backed up by functional perceptions of change in communication. As a profession, we have to also accept that, ultimately, some aspects of language impairment are impervious to intervention and that compensation and support may be a meaningful long-term approach.

That there was no significant change in Connor's language scores at Time 2 compared to Time 1 requires further consideration. It is notable that the main changes occurred between the end of intervention and follow-up. Whereas it is often stated that distal changes (Time 3) are less likely to be associated with the earlier treatment, we suggest that this is not the case for treatment of developmentally complex behaviors and that there may be a sleeper or delayed treatment effect (Kazdin, 2008a). Similar delayed effects have been found in studies of intervention for complex language skills such as narrative abilities (Peterson, Jesso, & McCabe, 1999). It is possible that interventions that require development of partnerships with parents and coworkers as trainers and that entail steady consolidation of learning by the child are likely to show delayed effects.

Results of the TOPICC analysis provided additional support for the first clinical hypothesis. Connor showed decreases in atypical conversational behaviors such as absence of expected responses and was able to take listener knowledge into account more effectively. Overall, conversational skills were perceived as showing improvement by a researcher blind to the point of the assessment. Independent evidence from Connor's parent report at the end of intervention provided support for the TOPICC ratings. His parents reported that Connor showed improved listening in conversations, was able to wait his turn, and decreased his insistence on dominance of the conversation. Connor showed substantial difficulties with pragmatics and conversation at the start of therapy. During SCIP Phase 2, he received intervention in the pragmatics components Conversation and Metapragmatic Skills and Understanding Information

Requirements, both of which may have contributed to changes in conversational skills.

Observation and reliable coding of conversational and pragmatic abilities is not without its difficulties (Cordier, Munro, Wilkes-Gillan, Speyer, & Pearce, 2014). Schemes such as the TOPICC provide a framework for structured observations but are fallible as outcome measures. TOPICC has no normative data associated with it but does have appropriate test–retest and intrarater reliability. It may be that, where intervention contains mostly targets in the pragmatic component, additional profiling and testing for pragmatics is required by using instruments such as the Test of Pragmatic Language–Second Edition (Phelps-Terasaki & Phelps-Gunn, 2007) or the Social Use of Language Test (Bowers & LoGiudice, 2008).

The second clinical hypothesis, which predicted a generalized effect of intervention at the activity and participation level, was strongly supported by functional measures of communication. Connor's parents and teacher reported improvements in most aspects of social communication, social skills, and language skills in the classroom at Times 2 and 3. Parent and teacher reports were not returned to the active researchers in direct contact with the family. Moreover, narrative commentaries that accompanied ratings of change provided rich accounts of improvements in both social communication behaviors (e.g., being able to sequence events in stories) and, significantly, functional social behavior. For example, Connor was able to better tolerate his younger siblings and was able to join in with family conversations. There is an inherent danger in inviting commentaries from grateful service users because they may feel a requirement to compliment. On the other hand, one might demonstrate improvements in a trained skill on a formal task but see no changes at a functional level. The opinions of those who live and work with the child must be of paramount importance in obtaining clinically significant outcomes where the focus of the disorder is a social one. It is the unelicited and unexpected commentaries of his family that had the most resonance in the overall outcome.

Targets of social intervention included understanding emotion cues, understanding the thoughts and intentions of others, and an enhancement of emotion vocabulary. The broader social changes at home and in school reported by parents and teachers may be associated with these but may also be part of a general progression in communication abilities and Connor's improved confidence. Although this is an essential part of the intervention for children with SCDs, no formal assessments and few informal methods tap into the sort of social communication learning targeted in SCIP. There is a need to develop assessment tasks to capture baseline and outcome performance on specific social communication tasks that form the core of SCIP intervention and similar socially directed therapies.

Dosage of intervention, in terms of intensity and length, has not been studied. It is evident that Connor needed a longer period of intervention than could be provided over 20 sessions. As Fujiki and Brinton's (2009) principles of pragmatic intervention indicate, the quantity and complexity

of work to be done require intense, comprehensive, and long-term support. Good communication and coworking with the teaching staff and parents was perceived by the SLP to be a key component of the intervention. Such interventions ideally should aim to include coworkers and families regularly and to pass on skills and strategies for successful language support. Further research into optimal length and intensity of interventions is essential.

The nature of SCIP intervention is highly specialized. It demands a sound understanding of the nature of language and pragmatic impairment and clinical judgment in developing appropriate objectives. Making decisions about what targets to include and how and when to move on and particularly the skill involved in integrating language, pragmatic, and social aspects of therapy require careful training and experience. There is no existing literature or evidence that provides the SLP with guidance on the preferred targets of intervention when a child's intervention needs are many and complex. Rather, the SLP depends on the experience of previous cases and likely therapy effects in addition to strong influences from training and local practice (Law, Campbell, Roulstone, Adams, & Boyle, 2008). We recommend that SCIP must be supervised and at least partially delivered by a specialist qualified SLP. Some direct intervention with the child is required, but Adams, Lockton, Gaile, Freed, et al. (2012) showed success in delegating some simple therapy duties to assistant practitioners who had undergone a period of intense training.

The unique contribution of the SLP in cases such as Connor's is to provide specialist understanding of the nature of the language impairment and subsequent language needs. Much attention had been paid in the literature to diagnostic matters around SCDs, language impairments, and ASDs. Connor has some of the characteristics of a child with an ASD and has language characteristics of a child with a language impairment. He meets the *DSM-5* criteria for an SCD (persistent deficit in pragmatic development that affects social functioning with additional persistent language difficulties). The Autism Diagnostic Observation Schedule algorithm indicated that he does not have "core autism" because of the (relative) absence of restricted and repetitive behaviors. Yet the *DSM-5* criteria indicate that an SCD is classified as a communication difficulty and separate from autism. Reviews such as that of Norbury (2014) have highlighted these diagnostic problems. Norbury proposed that a social (pragmatic) communication disorder would be best viewed as a "dimensional symptom profile" present in a number of neurodevelopmental disorders rather than being conceived of as a separate type of communication disorder.

The influence of social limitations on pragmatics in children with ASDs (e.g., in dealing with inference) have been addressed in the literature (Dennis, Lazenby, & Lockyer, 2001; Martin & McDonald, 2003). Relatively little attention has been paid to the underlying structural language skills, especially receptive language and discourse-level language skills, which underpin pragmatic competence. Over the course of this study, Connor's language needs became more predominant. In fact, Connor's structural language profile

is that of a child with a language impairment. The presence of additional significant social and pragmatic difficulties contributed to the diagnosis of an SCD, but the origins of these are likely to be complex. In Connor's case, a significant part of his pragmatic profile was attributable to persistently poor language skills, but there may have been additional developmental social interaction difficulties that affected his pragmatic learning over time.

Social skills programs are not explicitly developed for children with SCDs, who have diverse and complex communication profiles. Application of generic social skills training packages to children with complex profiles may have limited impact, especially because there is limited or no targeting of the language impairment part of an SCD. In addition, generalization to broader, functional social communication has been obstinately difficult to obtain from social skills training (Koenig, De Los Reyes, Chichetti, Scahill, & Klin, 2009). A unique characteristic of SCIP is that therapy content is inclusive of social, pragmatic, and language components; the emphasis on language therapy alongside social therapies is a significant change in emphasis for these children. We recommend that assessment of needs should include testing of language skills using formal instruments and that discourse-level testing of narrative and conversation skills should also be carried out for all children with diagnoses of an SCD. We also recommend that children who present with pragmatic impairments as part of an SCD should undergo a period of intervention to support language needs and that appropriate training in scaffolding and simplification of language input should be a priority in working with the child's school staff and families.

Connor is a fairly typical child with an SCD, certainly in the U.K. context, on the basis of the sample of children in the SCIP trial. The outcome of this study indicates that with careful profiling of needs, a tested intervention method and resource, skilled specialist input, and marshalling of people in the child's environment to support therapy, children such as Connor can demonstrate significant change, even after years of stagnation. Children who have social communication needs will require our long-term commitment to supporting language development and nonverbal communication for social purposes (Whitehouse, Watt, Line, & Bishop, 2009).

Overall, the outcomes associated with SCIP intervention for Connor were demonstrable improvements in various aspects of language (including pragmatics), in literacy, and in social behavior. The fact that most changes in communication have been sustained to follow-up allows the assumption that there is a valid inference of clinical change (Kazdin, 1981) at the level of the case study. Potential confounding factors that could partly explain the changes were the increase in one-to-one general attention and expected maturation over the 10-month period. However, the substantial functional and impairment-level changes and the observed proximity between the objectives of intervention and changes in communication suggest that there is a genuine treatment effect (Kazdin, 2008b).

It is important to note that Connor was not selected as an ideal case because we are not making any claims about efficacy based solely on his outcomes. Decisions about selection were based on pragmatic characteristics of the breadth of therapy that could be illustrated in this clinical focus article. Not all children responded identically to SCIP intervention in the trial, which is why randomization and alternate conditions within controlled trials are important in proving effects. Some children in the SCIP trial showed little change in language function, and some children made rapid progress in language, pragmatic, and social functioning. Within the SCIP trial, there was an almost universal report of functional gain across the intervention group.

The purpose of this study was to translate evidence from a group clinical trial into clinical actions for practitioners on the basis of a single-subject case study (Ratner, 2006; Tonelli, 2006). Advances in evidence-based practice have underlined the importance of clinician expertise in developing and implementing evidence. The field of speech-language pathology would benefit from the aggregation of practice-based research (e.g., well-designed and well-conducted case studies) into a valid and reliable source of clinical outcomes. Kazdin (2008a) suggested that complex interventions can be studied by clinicians using existing models of case formulation and decision making. The next steps are to improve evidence around the consistency of clinical decision making among practitioners and to use systematic measures across studies. Establishing outcomes for individualized therapy is particularly challenging. A step forward would be to establish progress against individualized targets for each trial participant. This study has demonstrated the effects of SCIP intervention for one child with an SCD and has contributed to our preliminary discussions around potential mechanisms of change (Kazdin, 2008b), which, in the longer term, will enable the profession to provide better clinical services.

Acknowledgments

References

Adams, C. (2001). Clinical diagnostic and intervention studies of children with semantic–pragmatic language disorder. *International Journal of Language & Communication Disorders, 36,* 289–305.

Adams, C. (2013). Pragmatic language impairment. In F. R. Volkmar (Ed.), *Encyclopedia of autism spectrum disorders* (pp. 2320–2325). New York, NY: Springer.

Adams, C., Cooke, R., Crutchley, A., Hesketh, A., & Reeves, D. (2001). *Assessment of Comprehension and Expression (6-11)*. Windsor, United Kingdom: NFER-Nelson.

Adams, C., & Gaile, J. (2015). *The Social Communication Intervention Programme (SCIP): Manual, rationale and intervention resource*. Cheshire, United Kingdom: Napier Hill Press.

Adams, C., Lloyd, J., Aldred, C., & Baxendale, J. (2006). Exploring the effects of communication intervention for developmental pragmatic language impairments: A signal-generation study. *International Journal of Language & Communication Disorders, 41,* 41–65.

Adams, C., Lockton, E., Gaile, J., Earl, G., & Freed, J. (2012). The Social Communication Intervention Programme: Implementation of a manualized communication intervention for school-aged children with pragmatic and social communication needs in a randomized controlled trial. *International Journal of Language & Communication Disorders, 47,* 245–256.

Adams, C., Lockton, E., Gaile, J., & Freed, J. (2011). TOPICCAL applications: Assessment of children's conversation skills. *Speech and Language Therapy in Practice, Spring,* 7–9.

Adams, C., Lockton, E., Gaile, J., Freed, J., Earl, G., McBean, K., . . . Law, J. (2012). The Social Communication Intervention Project: A randomized controlled trial of the effectiveness of speech and language therapy for school-age children who have pragmatic and social communication problems with or without autism spectrum disorder. *International Journal of Language & Communication Disorders, 47,* 233–244.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Bishop, D. V. M. (2000). Pragmatic language impairment: A correlate of SLI, a distinct subgroup, or part of the autistic continuum? In D. V. M. Bishop & L. Leonard (Eds.), *Speech and language impairments in children: Causes, characteristics, intervention and outcome* (pp. 99–114). Hove, United Kingdom: Psychology Press.

Bishop, D. V. (2003a). *The Children's Communication Checklist–Second Edition*. Oxford, United Kingdom: Pearson Assessment.

Bishop, D. V. (2003b). *Test for Reception of Grammar–Version 2*. Oxford, United Kingdom: Pearson Assessment.

Bishop, D. V. (2004). *Expression, Reception and Recall of Narrative Instrument: ERRNI manual*. Oxford, United Kingdom: Pearson Assessment.

Bishop, D. V. M., Chan, J., Adams, C., Hartley, J., & Weir, F. (2000). Conversational responsiveness in specific language impairment: Evidence of disproportionate pragmatic difficulties in a subset of children. *Development and Psychopathology, 12,* 177–199.

Bishop, D. V. M., & Norbury, C. F. (2002). Exploring the borderlands of autistic disorder and specific language impairment: A study using standardized diagnostic instruments. *Journal of Child Psychology and Psychiatry, 43,* 917–929.

Blank, M., & Marquis, M. A. (1987). *Directing discourse*. Tucson, AZ: Communication Skill Builders.

Bowers, L., & LoGiudice, C. (2008). *Social Language Development Test Elementary*. East Moline, IL: LinguiSystems.

Bowers, L., & LoGiudice, C. (2009). *Social Language Training Elementary*. East Moline, IL: LinguiSystems.

Brinton, B., Fujiki, M., & Robinson, L. (2005). Life on a tricycle: A case study of language impairment from 4 to 19. *Topics in Language Disorders, 25,* 338–352.

Brinton, B., Robinson, L. A., & Fujiki, M. (2004). Description of a program for social language intervention: If you can have a

conversation, you can have a relationship. *Language, Speech, and Hearing Services in Schools, 35,* 283–290.

Brinton, B., Spackman, M. P., Fujiki, M., & Ricks, J. (2007). What should Chris say? The ability of children with specific language impairment to recognize the need to dissemble emotions in social situations. *Journal of Speech, Language, and Hearing Research, 50,* 798–811.

Centers for Disease Control and Prevention. (2014). *Transparent Reporting of Evaluations with Nonrandomized Designs (TREND).* Retrieved from http://www.cdc.gov/trendstatement/

Cordier, R., Munro, N., Wilkes-Gillan, S., Speyer, R., & Pearce, W. M. (2014). Reliability and validity of the Pragmatics Observational Measure (POM): A new observational measure of pragmatic language for children. *Research in Developmental Disabilities, 35,* 1588–1598.

Dennis, M., Lazenby, A. L., & Lockyer, L. (2001). Inferential language in high-function children with autism. *Journal of Autism and Developmental Disorders, 31,* 47–54.

Des Jarlais, D. C., Lyles, C., Crepaz, N., & The TREND Group. (2004). Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: The TREND statement. *American Journal of Public Health, 94,* 361–366.

Dunn, L. M., Dunn, L. M., Whetton, C. W., & Burley, J. (1997). *The British Picture Vocabulary Scale–Second Edition.* Windsor, United Kingdom: NFER-Nelson.

Eadie, P., Nguyen, C., Carlin, J., Bavin, E., Bretherton, L., & Reilly, S. (2014). Stability of language performance at 4 and 5 years: Measurement and participant variability. *International Journal of Language & Communication Disorders, 49,* 215–227.

Fujiki, M., & Brinton, B. (2009). Pragmatics and social communication in child language disorders. In R. Schwartz (Ed.), *The handbook of child language disorders* (pp. 406–423). New York, NY: Psychology Press.

Fujiki, M., Brinton, B., McCleave, C. P., Anderson, V. W., & Chamberlain, J. P. (2013). A social communication intervention to increase validating comments by children with language impairment. *Language, Speech, and Hearing Services in Schools, 44,* 3–19.

Gerber, S., Brice, A., Capone, N., Fujiki, M., & Timler, G. (2012). Language use in social interactions of school-age children with language impairments: An evidence-based systematic review of treatment. *Language, Speech, and Hearing Services in Schools, 43,* 235–249.

Gibson, J., Hussein, J., Holsgrove, S., Adams, C., & Green, J. (2011). Quantifying peer interactions for research and clinical use: The Manchester Inventory for Playground Observation. *Research in Developmental Disabilities, 32,* 2458–2466.

Karmiloff-Smith, A. (2009). Nativism versus neuroconstructivism: Rethinking the study of developmental disorders. *Developmental Psychology, 45,* 56–63.

Kazdin, A. E. (1981). Drawing valid inferences from case studies. *Journal of Consulting and Clinical Psychology, 49,* 183–192.

Kazdin, A. E. (2008a). Evidence-based treatment and practice: New opportunities to bridge clinical research and practice, enhance the knowledge base, and improve patient care. *American Psychologist, 63,* 146–159.

Kazdin, A. E. (2008b). Mediators and mechanisms of change in psychotherapy. *Annual Review of Clinical Psychology, 3,* 1–27.

Kelly, A. (2007). *Talkabout: A social communication skills package.* London, United Kingdom: Speechmark.

Kleiman, K. I. (2011). *Functional conversation games.* East Moline, IL: LinguiSystems.

Koenig, K., De Los Reyes, A., Chichetti, D., Scahill, L., & Klin, A. (2009). Group interventions to promote social skills in school-age children with pervasive developmental disorder: Reconsidering efficacy. *Journal of Autism and Developmental Disorders, 39,* 1163–1172.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33,* 159–174.

Law, J., Campbell, C., Roulstone, S., Adams, C., & Boyle, J. (2008). Mapping practice onto theory: The speech and language practitioner's construction of receptive language impairment. *International Journal of Language & Communication Disorders, 43,* 245–263.

Law, J., Lee, W., Roulstone, S., Wren, Y., Zeng, B., & Lindsay, G. (2012). *"What works": Interventions for children and young people with speech, language and communication needs.* London, United Kingdom: Department for Education.

Lopata, C., Thomeer, M. L., Volker, M. A., Toomey, J. A., Nida, R. E., Lee, G. K., . . . Rodgers, J. D. (2010). RCT of a manualized social treatment for high-functioning autism spectrum disorders. *Journal of Autism and Developmental Disorders, 40,* 1297–1310.

Lord, C., Risi, S., Lambrecht, L., Cook, E. H., Jr., Leventhal, B. L., DiLavore, P. C., . . . Rutter, M. (2000). The Autism Diagnostic Observation Schedule—Generic: A standard measure of social and communication deficits associated with the spectrum of autism. *Journal of Autism and Developmental Disorders, 30,* 205–223.

Martin, I., & McDonald, S. (2003). Weak coherence, no theory of mind, or executive dysfunction? Solving the puzzle of pragmatic language disorders. *Brain and Language, 85,* 451–466.

Merrison, S., & Merrison, A. J. (2005). Repair in speech and language therapy interaction: Investigating pragmatic language impairment of children. *Child Language Teaching & Therapy, 212,* 191–211.

Norbury, C. F. (2014). Practitioner review: Social (pragmatic) communication disorder conceptualization, evidence and clinical implications. *Journal of Child Psychology and Psychiatry, 55,* 204–216.

Owens, G., Granader, Y., Humphrey, A., & Baron-Cohen, S. (2008). Lego therapy and the social use of language programme: An evaluation of two social skills interventions for children with high functioning autism and Asperger syndrome. *Journal of Autism and Developmental Disorders, 38,* 1944–1957.

Perkins, M. (2007). *Pragmatic impairment.* Cambridge, United Kingdom: Cambridge University Press.

Peterson, C., Jesso, B., & McCabe, A. (1999). Encouraging narratives in preschoolers: An intervention study. *Journal of Child Language, 26,* 49–67.

Phelps-Terasaki, D., & Phelps-Gunn, T. (2007). *Test of Pragmatic Language–Second Edition.* East Moline, IL: LinguiSystems.

Pugmire, A. (2011). *Social communication difficulties resource pack.* London, United Kingdom: Speechmark.

Ratner, N. B. (2006). Evidence-based practice: An examination of its ramifications for the practice of speech-language pathology. *Language, Speech, and Hearing Services in Schools, 37,* 257–267.

Raven, J. C. (1979). *Coloured Progressive Matrices.* Oxford, United Kingdom: Oxford Psychologists Press.

Reichow, B., Steiner, A. M., & Volkmar, F. (2013). Cochrane review: Social skills groups for people aged 6 to 21 with autism spectrum disorders (ASD). *Evidence-Based Child Health, 8,* 266–315.

Richardson, K., & Klecan-Aker, J. S. (2000). Teaching pragmatics to language-learning disabled children: A treatment outcome study. *Child Language Teaching and Therapy, 16,* 23–42.

Rinaldi, W. (2004). *Social Use of Language Programme*. Retrieved from http://www.wendyrinaldi.com

Rutter, M., Bailey, A., & Lord, C. (2003). *The Social Communication Questionnaire*. Los Angeles, CA: Western Psychological Services.

Semel, E., Wiig, E. H., & Secord, W. (2006). *Clinical Evaluation of Language Fundamentals–Fourth Edition UK*. Hove, United Kingdom: Harcourt Assessment.

Timler, G., Olswang, L., & Coggins, T. (2005). "Do I know what I need to do?" A social communication intervention for children with complex clinical profiles. *Language, Speech, and Hearing Services in Schools, 36,* 73–85.

Tonelli, M. R. (2006). Integrating evidence into clinical practice: An alternative to evidence-based practice approaches. *Journal of Evaluation in Clinical Practice, 12,* 248–256.

White, S. W., Keonig, K., & Scahill, L. (2007). Social skills development in children with autism spectrum disorders: A review of the intervention research. *Journal of Autism and Developmental Disorders, 37,* 1858–1868.

Whitehouse, A. J., Watt, H. J., Line, E. A., & Bishop, D. V. (2009). Adult psychosocial outcomes of children with specific language impairment, pragmatic language impairment and autism. *International Journal of Language & Communication Disorders, 44,* 511–528.

Appendix (p. 1 of 4)

Examples of Therapy Activities

The following examples illustrate therapy activities undertaken in Phase 1 and Phase 2 of Connor's intervention (examples are taken from Adams & Gaile, 2015).
Phase 1 Therapy Example 1

Phase 1: Understanding social context (USC)
Activity USC 3: Describing behaviors and language for social contexts
Purpose
To enable the child to describe social contexts by the expected behaviors and language, including social contexts that he finds personally challenging
Materials
Pictures of everyday social contexts and prepared scripts to match these contexts, including new contexts and pictures and scripts for situations the child finds difficult in real life
Procedure
Present a number of social context pictures on the table. Ask the child to describe a picture only using language about the behavior associated with the chosen context picture (role reversal compared with USC 1).
Support the child's description and, if necessary, provide clues about the possible behavior expected in that context.
You will "win" the card when it is accurately described.
Repeat the activity with the same pictures, saying, "This time give me a clue what someone will say," and focus on the expected or likely language used in that context.
Repeat and scaffold until the child can give examples of behavior and language for all contexts.
Vary the chosen contexts in order to observe the child's performance on familiar, unfamiliar, and personally challenging contexts.
Input Guidance
Observe the child's responses. If he or she is unsuccessful or is finding the task too easy, react in one of the following ways:

To make the activity easier: To increase complexity:
Ask questions to scaffold the child's descriptions (e.g., "Can I run around?").   Use less familiar contexts.
Use choices (e.g., "Am I inside or outside?").
Take turns describing a context.

Phase 1 Therapy Example 2

Phase 1: Comprehension monitoring (CM)
Activity CM 1: Understanding the concept of knowing and not knowing
Purpose
To enable the child to (a) understand the concepts of knowing and not knowing and (b) practice ways to signal that he or she
    does not know and needs help
Materials
Opaque box or tin with a lid
Variety of familiar objects in a separate bag
Cards with "I know" and "I don't know" written (enough for each person or puppet to have one of each)
Puppets
Procedure
This can be delivered as a group activity, or use puppets to act as others.
Explain that the purpose is to learn words to help us talk about knowing and not knowing.
With the child's knowledge, hide an object in the box.
Ask, "Who knows what's in the box?"
State, "I know," and explain how you know (e.g., "I put it there").
Give everyone an "I don't know" symbol and keep for yourself all the "I know" symbols and explain how these are to be
    used.
Discuss ways of working out what's in the box (e.g., take a look, ask a friend, ask the group a question, use a clue to work it
    out).
Each child has a turn to work it out. When he or she knows, swap his or her card with yours and explain explicitly what is
    happening (e.g., "'Jack knows because he had a look"). Try to ensure they don't tell each other, but if they do, explain that
    we can find out by talking to friends.
Discuss at the end of every turn who knows and who still needs to work it out, swapping cards as children know.
Provide praise for saying "I don't know" (e.g., "That's the right answer—you don't know. Would you like to work it out?").
Continue around the group until everyone has an "I know" card, and describe all the ways used to work it out.
Repeat and model once more before supporting one child at a time to be the one who hides the object and gives out the
    cards.
This activity depends on positive encouragement to say "I don't know" and on demonstrating that it is possible to work
    things out in a variety of ways.
Discourage guessing. If any child persists in guessing, move to CM 2.
Input Guidance
Observe the child's responses and differentiate in the following ways:
To make the activity easier:
Tell each child how they can work it out.

Phase 2 Therapy Example 1

Phase 2: Social understanding and social interpretation (SUSI)
2.3 Understanding complex feelings
Activity SUSI 1: Understanding feelings in complex social situations

Purposes

To identify expected emotions for a range of social contexts; to enable the child to describe a social situation that would give rise to a specified emotion

Materials

Photos of disappointed, embarrassed, worried, surprised, frustrated, and confused faces (e.g., Emotions Fun Deck)
Emotions thermometer from SUSI 2.1.1
Speech bubble sticky notes or thought bubble icon
Resource for SUSI 2.3.1 (in Social Communication Intervention Programme manual)
Book of feelings

Procedure

This activity forms one part of making a book of feelings for use throughout Phase 2 to support the child in understanding and expressing his or her feelings in a range of situations.
Lay out up to four emotion cards.
Describe an event from the SUSI 2.3.1 resource that matches one of the emotions.
Ask the child to point to the one you are describing.
Discuss and correct as necessary.
Repeat for all feelings, using several examples from the resource.
Engage in role reversal.
Put the emotion cards face down in a pile on the desk. Ask child to select one, to hide it from your view, and to describe an event for that feeling.
Repeat until the child has been able to describe events for all the targeted feelings.
Support the child to provide descriptions of events and reasons for feelings.
Ask the child to repeat this again, but now sabotage the game by providing wrong answers to the child's descriptions and observe his or her response to this. Support him or her to correct you and to explain why your answer was wrong.
Briefly discuss solutions by asking, "What would make it feel better?"
Add each feeling to the child's book of feelings.

Input Guidance

Observe the child's responses and differentiate in the following ways:
To make the activity easier:
Reduce the number of choices.
Work on one feeling at a time until it is consolidated.

Phase 2 Therapy Example 2

Phase 2: Pragmatics (PRAG)
1.2 Understanding speaker roles
Activity PRAG 4: Understanding repetitive questions

Purposes

To demonstrate that the function of asking questions is to obtain useful information; to develop metapragmatic awareness of the impact of repetitive questions on the interaction

Materials

Two puppets
List of questions
Pictures of social scenes related to the questions if necessary
Child's book of feelings

Procedure

Explain that you are going to help one of the puppets learn how to ask questions.

Select one question from the list and set out the matching picture.

Explain what the puppet wants to know and explain that sometimes the puppet keeps asking the same question over and over and doesn't listen to the answer.

You provide both voices for the demonstration.

The first puppet asks one question (i.e., "What's your name?"), and the second puppet answers. Make the first puppet ask the same question again. The second puppet gives an appropriate answer (i.e., "I told you, it's Jamie").

Repeat the question three more times. Each time Jamie answers, he gets more annoyed and shows this until the last time, when he ignores the question.

Discuss Jamie's feelings and why he ignored the first puppet's question.

Repeat, this time with the child answering questions from the first puppet.

Discuss what it is like to answer the same question over and over.

Relate to SUSI work on feelings and draw this out as a story in the child's book of feelings. Explain that it has a sad ending.

Discuss how to make it better (i.e., ask just once and listen to the answer) and draw this out as a happy ending.

Draw the sequence of questions and answers in two columns with an arrow between each question and answer. Draw the arrow returning to the same answer from repeated questions and give this a name (e.g., "stuck in a loop").

Input Guidance

Observe the child's responses and differentiate in the following ways:

To increase complexity:

Engage in sabotage and ask the child to come up with repetitive questions that won't help the puppet get what it wants.