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**Co-construction of Narrative in Verbally Able Children  
with Autism**

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## **Overview**

This thesis consists of three sections. Part one is a review of the literature on narrative and autism. Part two is a quantitative empirical investigation, which examines 20 children with autism and 26 children with learning disabilities, but not autism, on a collaborative story creation and narrative task. The investigation focuses on the abilities and deficits of children with autism in social interaction, symbolic engagement, role-taking, social communication and pragmatic language. Part three is a critical appraisal of the study, exploring each stage of the research and concluding with a reflection upon the study limitations.

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## **PART 1: LITERATURE REVIEW**

### **Narrative and Autism**

### *Abstract*

The aim of this paper is to review the research literature on characteristics of narrative in autism in order to specify more clearly the relative abilities and deficits of children with autism in this mode of social communication. The paper first considers how narrative can provide information about the way in which we understand and engage in social exchanges. It then provides a framework for the large body of literature on narrative in typically developing children and this is defined within three parameters of narrative described by Norbury and Bishop (2003). The review considers social communication and pragmatic language in autism before describing in more depth the main studies investigating narrative in autism. It concludes with theoretical implications of narrative ability with autism and reflects upon the value of using narrative as a tool for exploring social understanding.

## *Narrative and Autism*

“Our sensitivity to narrative provides the major link between our own sense of self and our sense of others in the social world around us”

(Bruner, 1986, p.69)

There is a long research history examining the way both typically developing children and children with autism use language and communication. Of interest in more recent years has been the study of narrative and its many facets including linguistic ability and pragmatics. Narrative represents more than a communicative tool but also cognitive and social knowledge as people are continually experiencing life through narrative. Through narrative, we are able to place events that may otherwise be isolated into an order that conveys meaning to ourselves and a listener. This requires some finely tuned skills such as identifying what is the important and relevant information to be conveyed, an appreciation of what the listener might want to hear as well as points of view and comprehension of personal positions. In this way, it has become apparent to researchers that narrative ability draws upon social-emotional competences and can be used as a useful means of examining social knowledge and a means of investigating atypical development.

The aim of this paper is to review the research literature on narrative characteristics in autism in order to specify more clearly relative abilities and deficits in this area and how they reflect social understanding. The paper first considers how narrative can provide information about the way in which we communicate and engage in social exchanges. It then provides a framework for the large body of

literature on narrative in typically developing children before describing in more depth the main studies investigating narrative in autism.

**The literature was sourced from the PsycINFO database, academic search engine, google scholar, and papers referenced by those originally obtained.**

**Search terms: “Narrative/ language/ social interaction/ communication” combined with “autism/ development/ children/ learning disabilities”. All papers on narrative in autism are included and reviewed.**

### *Narrative ability in typically developing children*

Narrative development and competence has been researched extensively in typically developing children and provides a useful comparison for the study of narrative in children with disabilities. A full review of the research providing evidence on the multi faceted nature of language, language acquisition, communication, conversation and narrative in typically developing children is beyond the scope of this paper. It is helpful, none the less, to synthesise some of the main elements of narrative in order to set the scene for the review of literature on narrative in autism.

Norbury and Bishop (2003) describe three main parameters of narrative: *global structure*, *local sentence structure* and the use of *evaluation*. Global structure refers to the way in which the narrator organises the fundamentals of the story which, Trabasso and Stein (1994) suggest contains six main elements:

- Setting information, which provides details of the who, when and where of narrative.

- Initiating event or change in circumstance, which signals a problem that must be solved.
- Internal response, which are thoughts, wishes or emotions about the initiating events
- Explicit goal, which arises from the internal response to the initiating event.
- Attempts to achieve that goal.
- Outcome of the narrative is reached after the attempts are made and the goal achieved. (Trabasso & Stein, 1994, pp. 323-349).

Bermin and Slobin (1994) condense this lengthy description into a process which is essentially the initial goal or problem that instigates the story, the attempts to achieve the goal or solve the problem and the outcome. In their book *“Relating events in narrative: A crosslinguistic developmental study”*, these authors use (amongst other methods, tools and techniques) the book by Mayer (1969), *“Frog, where are you?”*, which is described in more detail later in this review. This book has been a popular choice amongst narrative researchers, possibly because it is a wordless picture book that allows a narrative to be constructed. This includes the potential for theory of mind analysis when, for example, the narrator knows the frog is in a certain place but the protagonist thinks differently. Bermin and Slobin (1994) used the frog book to study narrative development in typically developing native speakers of five languages, with ages ranging from three years to adulthood. At three years of age, few children across languages were able to demonstrate an onset component (e.g. the boy finds that the frog is missing) or all of the subsequent components in their narrative. By nine years, children included most components but were still not as proficient as adults in the story outcome or resolution (e.g. the boy finds the frog).

The authors also report that the development of each component occurs at different ages and there are differences between the languages in the onset of components.

Norbury and Bishop (2003) describe the next parameter, *local structure*, as basic linguistic configurations such as syntactic complexity, sentence productivity and referential cohesion (linking sentences together). Wigglesworth (1997) and Bamberg (1986, 1987) used the “*Frog, where are you?*” book to study local sentence structure and sentence cohesion. Bamberg's analysis focused on the introductions to the main characters, and then the way reference was switched and maintained throughout the narrative. He found most four-year-olds showed a preference for using a strategy where they choose a character as the thematic subject and then referred to that character with pronominals and referred to other characters with full nominal. He described older children as developing a mixture of strategies until around aged nine where they tended to use anaphoric (for example the use of *him* to refer to Jim in the sentence Bob asked him to pass the salt) strategies akin to adults. The results of this study have not always been replicated, however as there seems to be evidence of children using different character referencing strategies at differing ages (Karmiloff-Smith, 1981; Wigglesworth, 1991). Wigglesworth (1997) attributes some of the conflicting evidence to differences in methodology. In her study she reports a clear developmental stage pattern of the type of referencing strategy used. Liles (1993) provides a detailed review of narrative development literature which includes linguistic structures.

The third parameter described by Norbury and Bishop (2003) is *evaluation*. This parameter can be viewed as the basket of tools that the narrator uses in order to add depth and flavour to narrative. In this way the narrator provides information that extends the monologue beyond a description of a set of events and actions into a rich,

cohesive and meaningful set of experiences. Evaluative comments can include explanations of causes and consequences, mental and emotional states and character speech (Bamberg & Damrad-Frye, 1991). Kemper (1984) analysed narratives from children aged five and six and found there was a low use of references to mental states. Kemper also found that increased age was positively correlated with the number of mental state references used in narratives. In general, research in this area suggests that very little spontaneous mention of the mental states and motives of others are observed in children's narrative up until the age of nine (Kemper, 1984), but some evidence of evaluative comments has been found in children as young as two (Miller & Sperry, 1988).

#### *Social communication and pragmatic language autism*

According to the American Psychiatric Association (1994) and the DSM-IV diagnostic criteria, one of the defining characteristics of autism is an impairment or deficit in communication abilities and language. Research presents a complex picture of the exact nature of language deficits and abilities in autism and where skills range from mutism and limited communication to relatively well-developed syntactic capabilities and person directed speech. In typical development, the four domains of language (pragmatics, phonology, semantics and syntax) develop in synchrony whereas in children with autism there may be an uneven emergence (Lord & Paul, 1997). The pragmatic use of language is closely linked to narrative as well as other aspects of language including specific syntactic and morphological characteristics (Swisher & Demetras, 1985), prosody and emotional expression (Baltaxe & Simmons, 1985) and semantics (Tager-Flusberg, 1981b).



There is no single study that provides a comprehensive examination of pragmatic language abilities in autism and no real consensus on the precise nature of any underlying deficits although the literature presents a picture reflecting impaired functioning in many aspects even in high functioning autism (Shopler & Mesibov, 1992). Pragmatic aspects of language are defined by Bates (1976) and cited in Baron-Cohen (1988) as using speech and gesture in a communicative way, appropriate to the social context. Fillmore (1981) further defines the pragmatic use of language as “a three-termed relationship that unites a) linguistic form and b) the communicative functions that these forms are capable of serving, with c) the contexts or settings in which those linguistic forms can have those communicative functions” (p. 144). It should be noted that research in this area uses a variety of variables (pragmatic feature, context) and matches their participants in different ways (IQ, mental age, verbal mental age) so it can be difficult to draw conclusions.

The first study to look specifically at pragmatic language characteristics in autism was by Baltaxe (1977) who described how adolescents with autism would confuse the hearer and speaker roles. Baron-Cohen (1988) describes an unpublished undergraduate dissertation that found that children with autism were more impaired than a matched comparison group in conveying thoughts, relating past experiences and following discourse rules (Ball, 1978). Baron-Cohen (1988) and Watson (1988) provide a review of pragmatic deficits in autism that include imagination, humour, expressing appropriate emotions and appropriately considering the listener’s perspective.

Pragmatic difficulties have also been observed in speech-based conversation (Lord & Paul, 1997). Turn-taking has been noted to be problematic for autistic individuals (Ghaziuddin & Gerstein, 1996; Ramberg, Ehlers, Nyden, Johansson &

Gillberg, 1996). Authors have also described persistent questioning that did not serve the function of eliciting information (Hurtig, Ensrud & Tomblin, 1982; Prizant & Rydell, 1993) as well as the propensity to ask embarrassing or socially inappropriate questions, such as asking a stranger's age (Langdell, 1980 cited in Baron-Cohen, 1988). Researchers have observed more unusual aspects of language in autism such as echolalia which is characterised by immediate or delayed repetition of words or phrases (Prizant & Duchan, 1981; Prizant & Rydell, 1984) and confusion of personal pronouns (Lee, Hobson & Chiat, 1994). These characteristics are not unique to children with autism but seem to occur more frequently and persistently than in other language related or developmental disabilities (Chiat, 1982).

Pragmatic competence represents more than purely the mechanics and structure in language, but rather is indicative or embedded within the way in which an individual communicates. In this way, the basic syntax or prosody of a spoken sentence can be correct but the context in which it is used or consideration of the listener's needs can render the sentence meaningless or inappropriate. As such, the pragmatics of speech represent a communicative tool that contributes towards a social exchange.

One way of examining pragmatic competence further as well as other aspects of a social exchange is to look at narrative. Narrative provides a means of investigating the relationship between language competence and social cognition as well as valuable information about the way information has been perceived. Narrative also reveals how that information is communicated to the listener. Capps, Losh and Thurber (2000) discuss the application of narrative in research as a useful source of information about atypical development in social knowledge. As our ability to narrate combines cognitive, linguistic and social skills, it provides a particularly

appropriate tool for examining the complex interplay between these relative abilities and deficits in autism. These authors reflect on the wide body of research in typically developing children's narrative (providing a useful background for comparison as mentioned above). There is a relative dearth of studies examining the narrative of children with autism or studies using narrative to look at aspects of social cognition. This paucity of research remains but the following is a description and discussion of the available evidence.

### *Narrative characteristics and the case of autism*

In order to present a coherent review of studies looking at narrative and autism, it is helpful to summarise the abilities required to accomplish narrative and to consider possible constraints in the case of autism. Returning to Norbury and Bishop's (2003) three main parameters of narrative, it can be hypothesised that children with autism might be expected to experience difficulties at every level.

First, the global structure of narrative requires the speaker to comprehend a set of events, organise components of a story and then report those set of events in order to reach some kind of outcome or resolution. For individuals with autism, who may have features of atypical cognition, including the ability to sequence information (Frith, 1971, 1972) this might be quite a complex task.

Second, Norbury and Bishop (2003) describe the local structure of narrative as basic linguistic configurations such as syntactic complexity, sentence productivity and referential cohesion (linking sentences together). For individuals with autism, difficulties in a range of linguistic skills have been reported although the range of ability is wide across this group (Swisher & Demetras, 1985, Tager-Flusberg, 1981, Shopler & Mesibov, 1992).

The final parameter described by Norbury and Bishop (2003) is evaluation which is, perhaps, the aspect of narrative likely to present the most difficulties for children with autism since it represents the way in which the narrator understands causal events and perceives other people's minds to interpret behaviour, motivation, intentions and subjective states. Evaluation also incorporates having an appreciation of what the listener might need to know in order to share meaning. These elements partly reflect theory of mind which has been reported as a common deficit amongst children with autism (Baron-Cohen, 1988).

The following review describes studies that have looked at narrative in autism in chronological order and considers the empirical evidence for relative abilities and deficits in relation to the three parameters outlined by Norbury and Bishop (2003). The earlier studies in this area largely take a linguistic approach by focussing on the structural and pragmatic aspects narrative. Research then progressed into a more social domain with later studies using narrative to explore social cognition, perspective taking and theory of mind. Before commencing a review of each study it is important to note that studies in this area have often reported sample sizes which fall below the recommended group size in order for there to be sufficient statistical power to detect group differences according to Cohen (1992). With this in mind, each study should be considered in terms of whether any null hypotheses reported are as a result of sample size impacting on statistical power and interpreted with caution.

### *Narrative and autism*

One of the first studies to examine narrative in autism was by Loveland, McEvoy, Tunali and Kelly (1990). They investigated the ability of high-functioning verbal children and adolescents with autism or Down's Syndrome to tell a story to a listener.

They included sixteen participants in each group who were matched for chronological age. Participants were also matched for verbal age and nonverbal intelligence in order to ensure that any group differences were not due to differing language ability. It should be highlighted that the sample size for each group in this study is fairly small and therefore null findings should be interpreted with caution since the study may not have attained sufficient statistical power to detect group differences (Cohen, 1992).

Participants were asked to watch a puppet show or video tape story with actors. This was repeated twice. The authors explain that this difference in medium was due to levels of social maturity amongst participants but two stories were designed to be parallel in content and structure. Each involved a central character and a thief who tries to steal something from the central character. After the second viewing, the participants were asked by a researcher to “Tell me the story. What happened in the story?” and their responses were video taped. Participants were also asked prompt questions to assess their knowledge of factual events, understanding of affective information and ability to speculate about the implications of themes given in the story. The responses were transcribed and coded according to general quality and detail of narration, unclear references, misinterpretations, repetition and material that was not part of the story. It was also noted whether the participant referred to characters as if they were objects and not meaningful parts of the story.

The results revealed that participants with autism were, to some extent, able to interpret events in the story and convey the basic events to the listener in a meaningful way. As participants were not directly assessed for memory abilities, it is not possible to draw a definite conclusion that the ability to recall did not influence results, but as all participants were able to relay basic events, the authors assume an

adequate level of memory. There were no significant group differences between narrative length and complexity. Participants with autism were more likely than the control group to have pragmatic problems indicative of a limited understanding of both “what a story is and what it means to tell it to someone else” (p.17). Loveland et al. (1990) also report that the children with autism included more bizarre or irrelevant items in their narrative. The follow up prompt questions suggested that there was little difference between the autistic and DS groups in general comprehension of the story, but participants with autism did tend to give more inappropriate answers. The authors suggest that the inappropriate answers indicated a difficulty in providing appropriate responses and not necessarily a lack of story comprehension.

As this study included participants with Down’s Syndrome as a comparison group, the results suggest that children with autism have some pragmatic deficits in language above and beyond what is typical for children with learning disabilities matched for verbal ability. One limitation is that it does not include typically developing children as an additional comparison group. What is interesting is that the participants with autism seemed to attain a similar level of story comprehension but then struggled to relay the story to the listener. The authors suggest that this observation supports Baron-Cohen, Leslie and Frith’s (1985) model of “theory of mind” in that it reflects a lack of understanding of the listener’s mind. These results have implications for the way in which children with autism interact in a social world. As narrative may reflect one part of how we relate to and interact with others, the ability to decipher what a listener needs to know and then relay relevant information in a meaningful way is essential to everyday conversation. In this way, adapting narrative to be audience and context appropriate may be problematic for people with

autism, as their conversational speech has been observed to be “often inappropriate and uninformative to the listener” (p. 20).

Tager-Flusberg (1995) further explored narrative abilities in children with autism by investigating the relationship between linguistic deficits in narrating a story and ability to interpret story character’s actions using ‘mentalistic’ constructs. This sample included three groups. Children with autism, children with learning disabilities and typically developing children. The learning disability and autism groups were matched for chronological age and all three groups were closely matched for verbal mental age. It should be mentioned that the sample size for each group was relatively small ( $n = 10$ ) which impacts upon statistical power. The author acknowledges this limitation and reflects upon the difficulty experienced in recruiting well matched participants and also, what is described as the labour intensive nature of the linguistic analyses. It could be suggested that one further limitation of this study is that participants were not matched for mental age and therefore group differences could arguably be attributed to immature development.

In this study the 24 page wordless picture book ‘*Frog, Where Are You?*’ (Mayer, 1969) was chosen to elicit a story narrative from each participant. The participant looked through the book, page by page with the first researcher. The researcher then returned to the start of the book and asked the child to tell the story to a second researcher while she, again, turned the pages. Each narrative was audiotaped and coded for length, structural complexity, story structure (to include conventional beginnings and endings, as well as main themes and orientation statements), referencing (such as shifting focus between characters and the use of nominal phrases) and narrative enrichment devices (to include emotional enhancers such as affective states and sound effects and social-cognitive enhancers such as

mental state terms and causal statements). What these authors term ‘enrichment devices’, appear similar to the ‘evaluation devices’ described by Norbury and Bishop (2003).

The overarching findings of the Tager-Flusberg (1995) study were that both of the clinical groups experienced similar problems in that their stories were shorter than the typically developing group and showed difficulties in the story structure and the way in which they used referential devices. The author concludes that this finding suggests that these cognitive and pragmatic difficulties are not specific to autism. The children with autism did tend to narrate shorter stories that were less complex than the other two groups. This contrasts with the findings reported in the earlier paper by Loveland et al. (1990) who found no difference in this area between the group with autism and the group with Down’s syndrome. A possible explanation for the difference in findings is that Loveland et al. (1990) did not include a typically developing group for comparison and their clinical control group comprised children with Down’s Syndrome whose language abilities, according to these authors, are well known to be more impaired than their cognitive abilities and have been shown to produce impoverished narratives ( cf. Tager-Flusberg, 1995). They also suggest that there was a difference in narrative tasks operationalised in the two studies that may account for differences in story length. In the Loveland et al. (1990) study, the story was first narrated by the puppets/ actors in the story, whereas in the Tager-Flusberg (1995) study the participants were required to generate the narrative. Tager-Flusberg (1995) suggests that although, in her study, participants were matched for verbal comprehension, they may still have had more difficulty spontaneously generating the complex sentences required to narrate a story that is not evident in a story recall task.



Tager-Flusberg (1995) predicted that children with autism would be less likely to include a range of narrative enrichment (or evaluation) devices because they may lack a culturally based understanding of how a story is narrated (Loveland & Tunali, 1993) and also because, according to the theory of mind model (Baron-Cohen, Leslie and Frith, 1986), children with autism have a reduced ability to predict the intentions and mental states of the characters in the story. In fact, the findings did not support this prediction. The author somewhat explicates this finding by suggesting that some of the participants with autism may have learnt rote conventions of story telling without necessarily anticipating the audiences' experience of such devices.

In terms of quality of narrative enrichment, no participant with autism used any causal statements for which Tager-Flusberg suggests a number of possible explanations. The children with autism produced shorter and less complex sentences in comparison to the other two groups which may provide some rationalisation since causal links and inferences may naturally extend and add complexity to a sentence. That said, it is not clear in this explanation in which direction the prediction lies. Does lack of causal links in the autistic participant's repertoire result in less complex sentences or does their propensity to generate less complex sentences limit the opportunity for the inclusion of causal links? Another possibility is that this result reflects a theory of mind deficit in that children with autism struggled to infer psychological motivation or mental states in order to link events, behaviour and action. Further to this, if the participants with autism were able to comprehend causal links in the story, perhaps deficits in their communication abilities meant that they did not identify that the listener might benefit from hearing about them.

All three groups lacked the tendency to assign mental states to characters which contrasts previous studies which have observed children with autism as differing from comparison groups on this aspect of story narration (Baron-Cohen et al., 1986; Tager-Flusberg, 1992). It may simply be that this story offered less opportunity for attribution of mental state. The small sample in each group may be a confounding factor in this finding and the author proposes that a story that contains a greater propensity for mental state terms should be used in studies with a larger sample in order to test this finding.

This was the first study to examine both linguistic competence and mental state aspects of social cognition together and provides important indicators as to how they may be linked in narrative. It showed that the use of unambiguous references (pragmatic skills) and narrative enrichment devices are correlated. In other words, the way children introduced characters and made clear shifts in focus between them was significantly correlated with the way in which the narrative was adapted and enriched in order to capture the attention of the listener. The author regards this finding as support for the theory of mind model and it also supports earlier findings in studies which investigate similar aspects of narrative (Baron-Cohen et al., 1986; Loveland et al., 1990). What is apparent here is that again, correlation does not necessarily denote causality and, therefore if there is a causal link between pragmatic language skills and social cognition, these studies do not provide evidence as to which direction that causal relationship is in.

Tager-Flusberg and Sullivan (1995) followed up this study by further investigating causal attributions, mental state language and theory of mind. This time, they substituted the book '*Frog, where are you?*' (Mayer, 1969) for the book '*Frog on his own*' (Mayer, 1973), a 28 page story, as they deemed this book to be more

likely to elicit mental state terms. In this study they had a larger participant group who were also linguistically more competent. The sample was comprised of 27 with autism or pervasive developmental disorder not otherwise specified, 27 participants with learning disabilities and 17 typically developing participants which is considered an acceptable sample size for statistical power to draw conclusions about group findings according to Cohen (1992). They additionally asked the participants a series of questions about the characters' emotional states and investigated the association between narrative ability and their performance on a false belief task. In this way they were able to explore in more detail the relationship between narrative competence, linguistic ability and aspects of social cognition.

In this later study Tager-Flusberg and Sullivan (1995) found that the groups did not differ in their use of mental state terms or causal statements. They did find that the autistic group were less accurate in naming characters' emotions and were less likely to generate appropriate causal explanations. They found that narrative variables such as story length and the production of cognitive state terms correlated with performance on the false belief tasks. The authors suggest that these findings indicate that narrative ability is under-pinned by social cognitive and linguistic abilities.

Capps, Losh and Thurber (2000) expanded upon previous studies by testing 13 participants with autism, 13 participants with developmental delays (not Down's Syndrome) and 13 typically developing children using the same book as Tager-Flusberg and Sullivan (1995) *'Frog on his own'* (Mayer, 1973). Again, it should be highlighted that a group size of 13 participants may impact upon statistical power and therefore null findings should be viewed with caution (Cohen, 1992). This study matched participants for language ability and the two clinical groups were also

matched for mental age and IQ. The authors chose this book specifically to follow on from Tager-Flusberg and Sullivan's (1995) study and because it contains instances of deception that provide opportunities for the participant to include cognitive and affective mental states in their narration. A detailed description of coding, adapted from Reilly, Klima and Bellugi (1991), can be located in the paper. The narratives were rated for length and morphosyntax (grammatical and syntax ability). Capps et al. (2000) also rated narrative evaluation (Norbury & Bishop, 2003) which encompassed elements that are not explicit in the story book but are made so in the interpretation of the narrator. In repetition of the Tager-Flusberg and Sullivan (1995) study, participants were also given three false belief tasks and their scores averaged. Lastly, the two clinical groups were rated according to Capps, Kehres and Sigman's (1998) specifications on an informal, semi-structured conversation with a researcher.

Although Capps, Losh and Thurber (2000) did not predict group differences in the length of stories, they did find that typically developing children produced significantly longer stories. Interestingly, although they found that there was a non significant trend for two clinical groups to commit more morphological errors, the types of errors across the three groups were similar in nature.

In support of the findings reported by Tager-Flusberg and Sullivan (1995), in the Capps et al. (2000) study, groups did not differ significantly in the proportion of evaluation statements included in their narrative but their findings did reveal a significantly more restricted range of evaluation amongst the clinical groups highlighting that an understanding of the need to engage the audience was not absent but is restricted. Groups did not differ in the frequency of references to affective and emotional states but the two clinical groups made causal statements about those cognitive and affective states less. The authors highlighted one or two sentences

produced by the children with autism that make explicit reference to the behavioural manifestations of a mental state;

“The frog ate the bug and made his mouth sad”

“And her face looks mad” (p. 199)

Further analyses revealed that the two clinical groups were more likely to make causal statements about action based events such as a character’s behaviour. There was no significant differences in the number of attention getting statements but the authors note that the two clinical groups tended to use less sophisticated devices than the typically developing group. The authors suggest that the limited causal explanations of characters’ internal states suggests limited appreciation of and access to the social problem-solving function of narratives. It should be highlighted here that this deficit was not confined to children with autism.

Amongst children with autism, theory of mind (as indicated by the false belief tasks) was significantly correlated with the total proportion of evaluation statements, evaluation diversity and syntactic diversity. Capps et al. (2000) suggest that for children with autism, theory of mind is related to two fundamental aspects of narrative: narrative as a social activity that involves monitoring and maintaining listener involvement; and narrative as a means of elaborating a point of view concerning characters’ emotions, thoughts, and actions (p. 202). Specifically, theory of mind was positively correlated with mental state language. Surprisingly, theory of mind was negatively correlated with references to affective states. The authors explain this unanticipated finding by referring back to the finding that the participants with autism did not tend to make causal inferences about characters’ emotions. Therefore, it could be that, rather than accessing the character’s mental states, they are in fact labelling the emotion that is clearly and repeatedly perceptible

in the illustration of the character's faces. They further this hypothesis by suggesting that participants with a less developed theory of mind may have been more likely to use this emotion labelling strategy than those who were able to access characters' mental states. This explanation is in line with Tager-Flusberg's (1995) assertion that some participants with autism may have learnt rote conventions in story telling without necessarily developing a real comprehension of story characters internal states.

Losh and Capps (2003) extended this study by utilising two discourse contexts- storybook narratives and narratives of personal experience. In this way they include a less structured, more interactive form of narrative which is closer to everyday social interchanges and were thus able to consider how narrative deficits manifest themselves in real life exchanges. This study builds upon previous studies that have focused on linguistic abilities, theory of mind and narrative competence by additionally examining the role of emotional and social comprehension. The sample comprised of children with high functioning autism and Asperger's Syndrome ( $n = 28$ ) and twenty two typically developing children who were matched in terms of chronological age and verbal IQ. The HFA and AS group were considered a single group as no significant differences on any measure was found between them. The storybook part of this study was run using the book '*Frog, Where Are You?*' (Mayer, 1969) and followed the same protocol as previous studies.

For the personal narrative, children were first told that story telling is a good way to get to know one another and were then asked to tell the researchers a story about themselves. The experimenter prompted them by suggesting they talk about a birthday or pet, for example. The researcher encouraged each participant to relay a story about a specific occasion. Both narrative contexts were coded in line with

previous research to include length, grammatical complexity, evaluation and structure. The participants completed additional tasks to enable the researchers to assess theory of mind and emotional understanding.

Losh and Capps (2003) report few differences between groups. The groups told stories that were of a similar length for the storybook narrative and the length of stories tended to rise for the personal accounts for both groups. In particular, there were few group differences between the themes and number of stories in the personal narratives. The children with autism narrated the general themes of the story book although tended to include fewer events. This may reflect some impairment in the cognitive skills necessary for global structure in narrative (Norbury & Bishop, 2003) such as ability to recall and sequence information.

Of interest here is that although the participants with autism told comparable length personal accounts to the typically developing group and these stories tended to be longer than in the story book condition, the actual frequency of complex devices and diversity of evaluative content of the personal stories in the autistic group was not as sophisticated. Therefore, as the group with autism did not use such devices more frequently in the longer stories, it made for a qualitatively less rich account. This seems highly relevant to the way in which children with HFA communicate within a real life social context as this study highlights the increase in social and cognitive demands in a more naturalistic context.

The study by Losh and Capps (2003) also highlights that the propensity to neglect causal statements is inherent in lower functioning and higher functioning individuals with autism's narrative and that this finding transfers across contexts. It could be hypothesised here that the storybook condition was a more structured task with visual cues and therefore placed less demands on the participant than the

unstructured, naturalistic condition. This may also bring back to the discussion the suggestion made by Capps et al. (2000), that the story book condition allows for an element of emotion-labelling that is not available for use in the personal account condition. In their discussion, Losh and Capps (2003) point to the way in which studying narratives can reveal important information about the relationship between social cognition, emotional understanding and narrative. They acknowledge that this study does not examine the nature of such a relationship in depth but does highlight narrative as an important future tool to investigate these subtle and dynamic processes.

The Losh and Capps (2003) study is limited in that it does not include a comparison group of children with other developmental disabilities and, therefore, it is not possible to speculate as to whether the abilities and deficits revealed are confined to those with autism only. Future studies could include other clinical groups in order to investigate this further. It may also be of worth to build upon these findings by including participants across a range of functioning on the autistic spectrum. This may present particular problems in terms of classification and matching but, if feasible, would help to map a picture of a range of abilities.

Norbury and Bishop (2003) explored the relationship between structural language ability and pragmatic competence in narrative in children with communication impairments and typically developing children. This study compared the narrative abilities of three clinical groups; specific language impairment (SLI, *n* 17), pragmatic language impairment (PLI, *n* 21) and high functioning autism (HFA, *n* 12). As with previous studies, any null findings for this study should be interpreted with caution since the sample sizes may not be sufficient for adequate statistical power according to Cohen (1992).



By comparing narrative abilities across these three groups they were able to investigate whether language ability is the key determinant of narrative competency, pragmatic language skills are independent determinants of narrative skills and whether diagnosis predicts performance. A further strength of this study is that 18 typically developing children of comparable age were included as a comparison group. Participants were given a background assessment for non-verbal ability, pragmatic impairment, language comprehension and expressive language. As with previous studies, each participant was given the book '*Frog, Where are you?*' (Mayer, 1969) which allows for some comparison of findings. Participants looked through the book and then told the story to a researcher.

The children's narrative was rated for episodic structure, including the extent to which they could infer causal relationships between events in the story. They were also rated for various aspects of story length, syntax, semantics, cohesion and evaluation. As Loveland et al. (1990) noted more bizarre and irrelevant information amongst participants with autism, these authors also included a measure that assessed how often participants deviated from the information in the pictures.

Norbury and Bishop (2003) report no significant differences between groups for global structure as most children were able to relay the general gist of the story. The clinical groups had more difficulties with syntactic measures than the typically developing children but these syntactic measures did not distinguish between the three clinical groups. There was no difference between the clinical groups and the control group on semantic measures. The authors suggest in this case, that by using a story portrayed in pictures, the test was not sensitive enough and that providing a narrative around just a title, for example, would be a more taxing and rigorous task. With regards to story cohesion, there were no group differences and all children

adapted their narrative to meet listener needs when introducing and reintroducing characters. The authors identify that it would be helpful to match the control and SLI groups on various language measures and not just chronological age in order to help determine whether deficits in referencing can be attributed language deficits as opposed to skills that are yet to develop.

One novel finding in this study was the number of ambiguous nouns that the participants with autism used. Norbury and Bishop (2003) suggest that the reasons for this are unclear and warrant further investigation. In relation to this, they found that all participants embellished their stories a little and that it would be difficult to distinguish between this and what would constitute bizarre or irrelevant information as described in Loveland et al. (1990). Again the authors suggest that further exploration of this, particularly qualitative methods, would provide more insight here.

The results for this study were unable to provide conclusive evidence for the second hypothesis that pragmatic skills are an independent determinant of narrative competence, as the clinical groups showed little difference when narrative deficits were found. They suggest that the SLI group may not have the level of pragmatic competence necessary to offset their linguistic deficits within the context of telling a story.

A methodological consideration for the Norbury and Bishop (2003) study, and for other studies is whether it made a difference having the participants re tell the story to a second researcher. So, in the study by Tager-Flusberg (1995) participants looked through the book with a first researcher and then told the story to a second, naive researcher. In other studies (Norbury & Bishop, 2003) the participants were asked to tell the story to the same researcher that they looked through the book with. One might hypothesise that in this condition, participants may omit some details or

causal explanations as they assume that the researcher already has some information given that they looked through the book as well. In the study by Tager-Flusberg (1995), the participant may be less likely to assume any knowledge of the story in the second researcher.

In a recent study by Diehl, Bennetto and Carter Young (2006), the story recall and coherence of the narratives of high functioning autistic children was examined. This study compared children with higher functioning autism ( $n = 17$ ) and typically developing children ( $n = 17$ ) who were matched for age, gender, language abilities and cognitive abilities. Once again the sample size for this study is a concern when considering statistical power and the interpretation of findings.

In this study, participants listened to an audio taped version of "*Frog, Where Are You?*" (Mayer, 1969) while looking at the wordless picture book and is then asked to re-tell the story. Participants were then asked a series of factual and inferential questions about the story. The Strong Narrative Assessment Procedure (SNAP: Strong, 1998) was used to provide data on story length, syntactic complexity, referential cohesion and grammar. Transcripts were also analysed for causal connections and causal chains (sequences of events that describe the gist of a story) as well as memory for story elements, intrusions (elements that were not present in the original narrative) and story cohesion. Based on previous research, these authors predicted that children in the HFA group would not differ from the typically developing comparison group on measures of story length, syntactic complexity or recall of concrete story elements. They predicted that children with HFA would not score as highly on causal connectedness or causal chains and that their narratives would be less coherent due to this lack of causal connectedness.

Diehl et al. (2006) showed that children with HFA did not differ significantly from the control group in number of c-units (communication unit) although the trend was for the control group to have slightly higher scores. There were no group differences in the average number of words and both groups scored similarly for syntactic complexity. There were also no group differences in the number of basic story elements recalled.

As previous papers have indicated that children with autism tend to include more bizarre or irrelevant story details (Loveland et al., 1990), Diehl et al. (2006) analysed the total number of intrusions. They found no group difference here but suggest that there may not have been sufficient power in the statistical analysis to detect group differences. They went on to examine items of inappropriate story telling and report that children with HFA showed a higher rate, although the paper does not describe what was considered inappropriate or how these and other subgroups of intrusions were defined. This observation may, however, be in support of Loveland et al.'s findings which described children with autism as giving more inappropriate answers to prompt questions. This may be indicative of difficulties in understanding what is relevant or important to the listener or which the appropriate items of the story should be told, rather than a lack of story comprehension.

In line with Diehl, et al.'s (2006) predictions, the narratives of children with HFA were less coherent in that they tended to list discrete events rather than use connective comments to provide structure. They emphasise that children with HFA were almost twice as likely to produce unconnected c-units. This contrasts with previous studies which found no difference in story structure (Loveland et al., 1990; Tager-Flusberg, 1995). The authors explain that the method used to analyse story structure in this study may have been more sensitive in that it examined

interconnectedness as opposed to isolated components such as beginnings and endings.

Also in line with Diehl et al.'s (2006) predictions, children with autism did produce narratives with significantly lower numbers of causal connections. Post hoc analyses revealed that children with HFA had a higher proportion of isolated c-units which were not connected in any way. This contrasted with participants from the typically developing comparison group whose c-units were more likely to be connected with three or more other units. Hence children with autism were identified as having less complex sentences that were less causally connected. Further to this, analyses revealed that while for typically developing children, the connectedness of their narratives was strongly correlated with the overall gist of the story, this was not so for children with HFA. These results suggest that children with autism were less likely to use the gist of the story to link events together and make causal inferences that present a coherent narrative for the listener. This seems to reflect a tendency of children with autism to recite a story narrative as if it were a list of events or actions rather than a cohesive account of meaningful events.

A recent study by García-Pérez, Hobson and Lee (2008) used a narrative task to investigate aspects of social understanding as indicated through role-taking. As previous studies have highlighted difficulties in children with autism in attributing causal attributions to characters' emotional states (Tager-Flusberg & Sullivan, 1995; Capps et al., 2000) as well as narratives highlighting theory of mind deficits (Baron-Cohen et al., 1986), this study sought to investigate abilities of children to understand and shift focus from character to character by adapting Feffer's (1970) role-taking task.

García-Pérez et al. (2008) included a group of participants with autism (*n* 15) and a learning disabilities group (*n* 15) as a comparison and they were matched for verbal mental age and chronological age. The authors also assessed mean length of utterance (MLU: Brown, 1973) in order to establish that any group differences were not due to differences in linguistic output. The groups were comparable in this respect. It can be suggested that the relatively small sample size for this study may have impacted upon statistical power and the detection of group findings (Cohen, 1992). Participants were asked to tell stories involving different characters that were presented as cardboard figures with various background scenes. Each participant was asked to tell two stories and when they had finished each story, they were then asked to re-tell the story from the perspective of two more of the characters for each story;

“Now I want you to tell me the very same story again as if you are.....”

(p. 160)

The scoring was a simplified version of those outlined by Feffer (1970). In brief, the narratives were rated for overall role-taking as indicated by co-ordination of story content and perspective taking as well as an index to highlight the participants ability to move between alternative perspectives within the same story. In addition, the authors added a rating of use of psychological terms.

In this study by García-Pérez et al. (2008), the participants with autism were able to understand and engage with what is actually quite a complex task. They were able to create stories using cardboard characters and pretend that they were one of those characters or that one of the characters represented self. Three participants with autism scored very highly for story co-ordination and were also able to change

perspective within a story and so it cannot be claimed that all children with autism are unable to engage in role-taking tasks.

In line with previous studies, García-Pérez et al. (2008) showed that participants with autism were also able to understand the task of re-telling the story. They were able to adjust their narrative in order to take on the perspectives of different characters which shows that this ability was not absent but rather that they were less proficient in this area. The authors note that the particular language used in this task may have made a difference to the way the children with autism responded to it. For example, they suggest that asking the children to *be* a different character may connote something slightly different than instructing the participant that *they are* a certain character. These are fine details which may benefit from investigation in future studies.

The results of this study did show a group difference in overall role-taking which was more pronounced in the area of perspective taking rather than story co-ordination. Participants with autism had more difficulty than the control group in taking the perspective of a new character and making another character 'external'. The authors describe these two stances as adopting an 'inner orientation' and an 'outer orientation'. They also report that participants with autism were less inclined to move between characters' perspectives at least once within a story- 3/15 occasions for autism and 9/15 for participants without autism.

Of interest is that most participants in both groups used mental state terms at a similar frequency. The authors stress that this does not represent a stringent theory of mind test but does seem to suggest that although there were some group differences in overall role-taking, the differences were not attributable to a deficit in understanding the mental state of another.

### *Theoretical implications of narrative ability in autism*

The studies outlined above present a complicated picture of the relative strengths and deficits that children with autism have in producing narratives. Although these papers present empirical evidence for deficits in all three parameters of narrative ability defined by Norbury and Bishop (2003), the most evident deficits fall within the parameter of evaluation. As evaluation encompasses the socio-communicative nature of narrative, this review offers further support for the use of narrative as an investigative tool in the study of social understanding and interpersonal engagement in autism.

The picture has been complicated in part by the use of different methodologies, although this review has highlighted the strength in replicating the use of experimental materials and procedures to extend and develop previous research. In the case of investigations into narratives in autism, this review has described a number of studies that kept the experimental material constant (namely, the use of the *Frog, where are you?* book), whilst amending the procedure, experimental groups and rating in order to address specific questions. Of course there are exceptions to this which include valuable studies which have utilised different materials and methods.

Some methods have thrown into question who should be included in such a study i.e. the studies described above vary as to whether they include a typically developing comparison group, a comparison group with learning difficulties, or both. It seems that ideally both groups would be used in order to allow a distinction to be drawn between results that are confined to the autistic spectrum, and observations which are applicable to both clinical groups but not seen in typically developing children.



Further methodological considerations have involved the way in which participants are matched. Many studies match participants in term of linguistic ability in order to establish that any difference in narrative performance being attributable to basic language skills or talkativeness rather than to social or communicative deficits. This in itself presents a theoretical conundrum as, as García-Pérez et al. (2008) propose, if we consider the theory that social interaction contributes to the acquisition of language then samples of participants with higher verbal ability may bias the results on measures reflecting aspects of social engagement. As most of these studies show, in order to match the autistic and control groups for verbal ability, it tends to be necessary to include children who have a higher verbal age which often means they fall within a higher functioning category. The results may not therefore be generalised to lower functioning groups and studies need to be replicated across a range of autistic functioning in order to map a picture of narrative ability.

We might also question any assumed unidirectional cognitive theory of narrative development. Narrative development and social interaction could well represent more of a two way process than studies imply. The way in which we come to understand social processes is intricate and dynamic. Narrative ability can be identified as impinging on social interactions and also visa versa. Studies have investigated the relationship between narrative and theory of mind and socioemotional understanding. They conclude that poor narrative skills may be related to an inability to understand what the listener needs to know, and capture the listener's attention. García-Pérez et al. (2008) provide a discussion about the merits of adopting a role-taking perspective to add depth to the prevalent theory of mind perspective by considering the degree to which the child with autism grasps self and other orientations and perspectives. This approach extends the cognitive or

representational approach to assert that the child's emotional and affective understanding of other people as selves is primary in their development. In this way we might consider deficits in narrative ability to be related to a child's motivational and emotional engagement with others.

Methodological and theoretical debates aside, it is clear that the social world is full of narratives that have numerous layers and subplots. These interactions require a child to have a deep contextual and self-other understanding in order to make inferences, predictions and causal attributions about other people's mind, emotion and behaviour. Through studying narrative, researchers have been able to start to map how children with autism differ from typically developing children and children from other clinical groups in the way they understand and interpret the actions and interactions of others. Narrative can continue to provide valuable clues as to how children with autism perceive, interpret, engage and role-take in social exchange.

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## **PART 2: EMPIRICAL PAPER**

### **Co-construction of Narrative in Verbally Able Children with Autism**

### *Abstract*

Research presents a complex picture of social interaction, symbolic functioning and social communication in children with autism. The present study aims to examine the ability of verbally able children with autism to socially interact and symbolically engage in a collaborative story creation task and how this is then reflected participant's narrative as this is told subsequently to a naïve listener. The study additionally observes role-taking in relation to the participant's own story character and the character of another. These skills are considered in relation to pragmatic language ability. Participants were 20 children with autism and 26 children with learning disabilities, but not autism, who were equivalent in chronological age, oral expression and language productivity. Children with autism were able to engage with the collaborative creation of a story and re-tell the story to a naïve listener. They also performed similarly to the comparison group in their ability to symbolically engage with the materials. There was a group difference in social interaction although this was not absent for children with autism, but atypical. Of significance is that, although children with autism were similar to the learning disabilities group in ability to role-take in relation to their own story character, there was a significant difference in their propensity to role-take in relation to another's story character. For both groups, performance on these tasks was not related to indices of social communication impairment or pragmatic language skills. The results are discussed in terms of the complex interplay between symbolic functioning and language development as well as the significance of identification and the propensity to take on the role of another for social interaction in children with autism.

## ***Introduction***

Autism is defined and classified by the Diagnostic and Statistical Manual of Mental Disorders (APA, 1994; DSM-IV) as impairment in the areas of social interaction, language and communication and repetitive or stereotypical behaviours and interests. Further to this, the classification criteria specifies delays or abnormal functioning, with onset prior to the age of 3, in social interaction, social communication and symbolic or imaginative play.

### *Language and social communication in autism*

Research presents a complex picture of the exact nature of language deficits and abilities in autism and language skills range from mutism and limited communication to relatively well-developed syntactic capabilities and person directed speech (Miranda-Linné & Melin, 1997). Researchers interested in the psycholinguistic aspects of speech in autism (e.g. Baltaxe, 1977; Lord & Paul, 1997) have focussed on pragmatic language and how this reflects the comprehension of social context. Pragmatic aspects of language are those that consider the appropriate use of language within a variety of social contexts in order that the listener is able to interpret the speaker's intentions and meaning (Berko-Gleason, 2005). In autism, pragmatic language deficits have been well documented (Lord & Paul, 1997; Martin & McDonald, 2003; Ozonoff & Miller, 1996; Tager-Flusberg, 1981).

The study of pragmatics, and in particular narrative (which involves a degree of pragmatic skill), has offered one means of investigating the relationship between language competence and social cognition as well as providing valuable information about the way information has been perceived and interpreted. Narrative reflects the way in which an individual makes sense of the world, organises thoughts and then

conveys meaning to a listener. It has been studied both structurally (for example through syntax and lexically) and through content (as with studies focussing on causal links or evaluative statements).

### *Autism and narrative*

Capps, Losh and Thurber (2000) discuss the application of narrative in research as a useful source of information about atypical development in social knowledge. They reflect on the wide body of research in typically developing children's narrative but the relative dearth of studies examining the narrative of children with autism or studies using narrative to look at aspects of social cognition. However, this approach would seem particularly appropriate given the social-communicative deficits inherent in autism.

Loveland, McEvoy, Tunali and Kelley (1990) were among the first researchers to study narrative in autism. They showed high functioning children with autism and children with Down's syndrome a puppet show or story acted by real actors and then asked them to tell the story. They found that participants with autism were, to some extent, able to interpret events in the story and convey the basic events to the listener in a meaningful way. There were no significant group differences between narrative length and complexity but participants with autism were more likely than the Down's syndrome comparison group to have pragmatic problems indicative of a limited understanding of both "what a story is and what it means to tell it to someone else" (p.17). They also report that the children with autism included more bizarre or irrelevant items in their narrative.

Tager-Flusberg (1995) and Tager-Flusberg and Sullivan (1995) advanced the Loveland et al. (1990) study by using wordless picture books to elicit a story

narrative from a group of children with high functioning autism, a learning disability group and a group of typically developing children. These studies investigated the relationship between linguistic deficits in narrating a story and their ability to interpret story characters' actions using 'mentalistic' constructs, use of causal attributions and mental state language. In this way, the focus of the analysis began to take on a more interpersonal interest as the researchers coded narrative for examples which indicated a deeper level of story comprehension. The studies provided information about how these children interpreted events and actions in the story and also yielded evidence as to whether the children drew conclusions or made interpretations about the internal motivations and intentions of the characters. In other words, they considered how narrative could be used to identify examples of theory of mind. Neither study found group differences in the ability of the children to identify characters' mental states although Tager-Flusberg and Sullivan (1995) found that the autistic participants were less accurate in naming character's emotions. Tager-Flusberg and Sullivan (1995) also found that the group with autism were less likely to generate appropriate causal explanations which implies a deficiency in the way in which they perceive and interpret motivation and intention.

Capps, Losh and Thurber (2000) used a similar story-book approach (although included a group of children with learning disabilities but not Down's syndrome) and found that groups did not differ in the frequency of references to affective and emotional states. They also found that the two clinical groups made causal statements about those cognitive and affective states less than typically developing children and were more likely to make causal statements about action based events such as a character's behaviour. Amongst children with autism, theory of mind (as indicated by false belief tasks) was significantly correlated with the total

proportion of evaluation clauses (why an event happened, inferences regarding characters etc), evaluation diversity and syntactic diversity. Specifically, theory of mind was positively correlated with mental state language but, surprisingly theory of mind was negatively correlated with references to affective states.

Losh and Capps (2003) extended this study by including two discourse contexts- storybook narratives and narratives of personal experience. In this way they included a less structured, more interactive form of narrative which is closer to everyday social interchanges and were thus able to consider how narrative deficits manifest themselves in real life exchanges. The paper reports few differences between groups in the themes and number of stories in the personal narratives, although the actual frequency of complex devices and diversity of evaluative content of the personal stories in the autistic group were not as sophisticated. This study also highlights that the propensity to neglect causal statements is inherent in the narrative of lower and higher functioning individuals with autism and that this finding transfers across contexts.

#### *Narrative as the outcome of the interpersonal process*

These studies represent the growing popularity in using narrative to explore more than the structural complexities of language. Each paper provides information about the way in which the child has processed the information that they have received via pictures or a play and how they have interpreted and created meaning from these symbolic representations. As our ability to narrate combines cognitive, linguistic and social skills it provides a particularly appropriate tool for examining the complex interplay between these relative abilities and deficits in autism. It is therefore possible to view narrative, in this context, as an outcome. It is the outcome of a

process that involves the child making interpretations about the interpersonal engagement and mental states of the story's characters. Narrative also requires the child to have some appreciation of what the listener needs to know and what might be interesting or relevant for them to know. What all of these skills are indicative of and embedded within is a concept of oneself and other people's minds.

### *Narrative and theory of mind*

Narrative has been studied in order to reveal evidence for the way in which children perceive other people's minds and understand the perspective of another; a primary facet of interpersonal engagement. This ability to second guess what another person might be thinking is termed "theory of mind" which, as originally coined by Premack and Woodruff (1978) is the capacity to attribute mental states such as beliefs, desire and intention to oneself and others. Having theory of mind enables us to understand that mental states can be the cause of behaviour and is therefore the precursor to predicting how another person might behave. This approach has been adopted by researchers such as Leslie (1987) and Baron-Cohen and colleagues (1985, 1989b, 1991) who regard the phenomena as the ability to form representations of other people's representations of the world. The theory of mind approach has been linked, in particular to the social deficits inherent in autism, as these individuals typically display characteristics which are indicative of a difficulty in understanding other people's minds. These authors ground the inability to cognitively construe other people's mental representations as the developmentally based foundation of such social difficulties.



### *Limitations of theory of mind approach*

The theory of mind approach remains a popular feature in early social development research and in particular, has received much emphasis in autism research. Although few researchers of autism would refute the importance of theory of mind hypothesis as a key component of the autistic presentation, it has been suggested that this approach may have some limitations. One limitation is that it does not satisfactorily explain the 'affective' component of interpersonal interactions. That is, comprehending or perceiving another may go beyond what is a cognitive representation of what another may be thinking and involve other components such as identifying with and relating affectively to what it means to be another.

Hobson (1993) has made the distinction between cognitive representation and affective relatedness explicit as an alternative but complementary theory. His work has focussed on the hypothesis that rather than theory of mind being both the source and the all encompassing theory of social deficits in autism, affectively based deficits could lead to cognitive deficits as a more fundamental level of explanation. As such, Hobson and colleagues have emphasised the role of affect as the essential underpinning of interpersonal relatedness. One way to think of this is in terms of a child's propensity or ability to take on the perspective or role of another person. The role-taking perspective expands upon cognitive representational approaches such as theory of mind, by moving beyond the cognitive processes involved in understanding other minds into a more affect based domain that seeks to elucidate identification or relatedness as involved in the interpersonal. That is, understanding the mental state of another person involves *experiencing* what it is to be that person or to take on the role of other.

Gallagher (2004) presents a complimentary approach which he terms “Interaction Theory”. In a similar framework to Hobson, he proposes that primary forms of intersubjective understanding develop at an early age and may even be innate. He divides the process of interpersonal engagement into two elements. These are Primary intersubjectivity which involves emotionally informed, embodied capabilities that enable us to identify the intentions of others and Secondary intersubjectivity which are perceptual and action based capabilities that enable us to comprehend others within context.

These theories, whilst teasing out the very nature of social interaction and engagement, have huge implications within the study of autism where interpersonal relatedness has been regarded as a primary feature of these individuals’ presentation.

#### *Narrative to explore interpersonal and role-taking*

Narrative is one way in which the nature of interpersonal engagement and understanding in autism has been explored. A recent study by García-Pérez, Hobson and Lee (2007) used a narrative task to investigate aspects of social understanding as indicated through role-taking. This study sought to investigate ability of children to understand and shift focus from character to character by adapting Feffer’s (1970) role-taking task. It included a group of participants with autism, with a learning disabilities group as a comparison, and the groups were matched for verbal mental age and chronological age. In line with previous studies, this study showed that participants with autism were able to understand the task of re-telling the story. They were also able to adjust their narrative in order to take on the perspective of different characters, highlighting that this ability was not absent but they were less proficient in this area. The results of this study did show a group difference in overall role-

taking which was more pronounced in the area of perspective taking rather than story co-ordination. Participants with autism had more difficulty than the control group in taking the perspective of a new character and making another character 'external'. The authors describe these two stances as adopting an 'inner orientation' and an 'outer orientation'. Of interest is that most participants in each group used mental state terms at a similar frequency. The authors emphasise that this does not represent a stringent theory of mind test but does seem to suggest that although there were some group differences in overall role-taking, the differences were not attributable to a deficit in understanding the mental state of another. Given that the participants were also matched for verbal mental age and MLU (mean length of utterance), the group differences in role-taking ability were not also attributable to deficits in language.

#### *Narrative, symbolic play and social development*

Inherent in the ability to narrate a story is the ability to symbolise. For example, in order to interpret the actions of characters in a puppet show and then re-tell the story in meaningful way, one must first understand that those characters made out of fabric and wood symbolise a person. Further to this, in order to depict a sequence of events that has depth, flavour and meaning, one must attribute mental states such as intention, belief, motivation and subjective states to the characters.

How does an infant achieve this capacity to symbolise? Hobson (1993, p. 9) discusses the social-developmental contribution to this capacity in terms of a shared meaning towards an object. In this way, even in infancy, a child understands another person's "psychological attitude" towards an object. They may then develop the capacity to recognise person-dependent rather than object-dependent meanings

which is the beginning of the ability to symbolise. Hobson asserts that this triangulation of meaning is linked to a child's capacity for interpersonal relatedness;

*“If this account is correct, then an infant's capacity to relate to another person's psychological relatedness to the world may have developmental significance for the child's subsequent ability to modify his or her own psychological attitudes and attributions in creative symbolic play”*

Hobson (1993, p.9)

There is considerable empirical evidence for deficits in pretend play in children with autism compared with typically developing children (Baron-Cohen, 1987; Bernabei, Camaioni & Levi, 1999; Doherty & Rosenfeld, 1984; Gould, 1986; Ungerer and Sigman, 1981; Wing, Gould, Yates, & Brierley, 1977) and compared with children with other developmental disorders (Sigman, 1998). A failure to use toys symbolically is a diagnostic item on most diagnostic systems for autism (e.g., the Autism Diagnostic Observation Schedule (ADOS: Lord, Rutter, DiLavore & Risi, 2001) and the Autism Diagnostic Interview (ADI-R: Rutter, Le Couteur, & Lord, 2003).

Given that the propensity of autistic individuals to struggle with aspects of social interaction involving shared attention and perspective taking has been well documented (Dawson, Toth, Abbott, Osterling, Munson, Estes & Liaw, 2004; Mundy, 1995), it can be theorised that this may impede their ability to symbolise. In support of this theory, Stahmer (1995) described how teaching symbolic play skills to children with autism improved their symbolic play but also, incidentally, improved their social interaction skills suggesting a relationship between the two.

Stanley and Konstantareas (2007) investigated the relationship between symbolic play and other domains such as degree of autistic symptomatology, language and social development. They found that social development was not uniquely related to symbolic play but highlighted the interconnectivity of these areas of development. These findings support Hobson's (1993) proposal which links language and communication, the ability to symbolise, self-reflective awareness and theory of mind and frames these deficits in what he argues to be a deficiency in the innate propensity to develop affect based interpersonal relatedness.

*Present study: The Social Feffer Task*

The present study investigates the relative abilities and deficits of children with autism to socially interact and take on the role of another person. In order to do this Feffer's (1970) task has been modified to examine social interaction and role-taking as demonstrated by; a) the way in which they are able to collaborate with a tester in order to create a story; b) their interaction with the tester's toy character (including responding to the tester's character's subjective states) and; c) the way in which this social interaction is inherent in their narrative when re-telling the story as evidenced by adopting the role of the tester's character and the degree of mutuality in the account. In accordance with Hobson's (1993) interpersonal relatedness approach outlined in the above discussion, one hypothesis is that children with autism have particular difficulties in social interaction which is rooted specifically in deficits in the propensity to role-take and identify with another.

This study has operationalised this hypothesis by using dolls to represent the participant and the tester. The task required the child to engage in symbolic play as defined by Baron-Cohen (1987) by using the props and materials in a symbolic way.

Moreover, it required the child to be able to *relate* to the characters in a symbolic way. In this way the child involved him or herself in “being” the character and relate to and interact with the tester’s character as if they represented the tester. It involved the child understanding and engaging with the symbolic nature of the task and demonstrating social interaction and relatedness *through* their adoption of and engagement with the characters. This is evidenced by a) their ability to generate ideas and meanings through the use of the materials and invest in those meanings through the use of materials in the story narrative and; b) their propensity to role-take using their own character in both the story creation and the story narrative. In line with Hobson’s (1993) proposal that the development of the ability to symbolise is linked to the propensity and ability of an individual to socially engage with another, the hypothesis is that children with autism are less able to use materials symbolically to demonstrate investment in meanings and role adoption of characters.

*Predictions for between groups differences:*

Children with autism who are matched with typically developing children for gender, chronological age, expressive and receptive vocabulary and mean length of utterance will show specific deficits on the Social Feffer Task, both with symbolic engagement with materials and in social interaction. This pattern of group differences will be evident in both process (story co-creation) and outcome (narrative).

1. Children with autism will show specific deficits in social interaction in both their ability to collaborate with the tester in the story creation and the mutuality of their account in the story narrative.

2. Children with autism will demonstrate less symbolic engagement with materials in both the meanings and ideas expressed through the materials in the co-creation and their investment in the materials in the story narrative.
3. Children with autism will show deficits in role-taking as evidenced through their identification and engagement with their own character and the character of the tester. This will be evident in the story co-creation and narrative.

*Specific predictions for individual differences:*

4. There will be individual differences in the overall diagnostic indices of social and communication impairment and overall performance on the Social Feffer Task. More socially impaired individuals will perform less well on the Social Feffer Task.
5. There will be a relationship between symbolic engagement and social interaction on the Social Feffer Task.

In addition to the above predictions, a subsidiary set of analyses will be run to investigate how social communication and language ability relates to the Social Feffer Task.

*Within groups and across groups language predictions:*

- 6.1. It is expected that individual differences in indices of social communication impairment will relate to overall performance on the Social Feffer Task
- 6.2. It is expected that overall performance on the Social Feffer Task will be associated with pragmatic language abilities.

## *Method*

### *Ethics and consent*

This study forms part of a larger body of research and was approved by the UCL Committee for Ethic of Non-NHS Human Research; Project ID: 0244/009: Dialogic aspects of language disability in autism (Appendix 1). The schools had a longstanding relationship with the research team associated with the funded body of research. Each participating school was fully briefed in person as to the aims and procedures for the study and permission granted. Parents or responsible care-provider for each participant were contacted via letter to request their permission for their child to participate in the study. They were provided with an information sheet and consent form (Appendix 2).

### *Participants*

Participants were recruited from five schools in the UK for children with autism and/or learning disabilities. Participants were 20 children with autistic spectrum disorder (18 boys, 2 girls) and 26 children with learning disabilities but without autism (16 boys, 10 girls). The ASD group was over represented by males but this is consistent with the larger population for autistic spectrum disorder (Fommbonne, 2005). The mean chronological age for the ASD group was 12 years, 2 months and for the LD group 11 years, 8 months (see Table 1).

### *Diagnosis*

Participants in the ASD group had been previously diagnosed with autism and were attending schools with special educational placements for autism spectrum disorders. In addition, it was determined through expert clinical judgment that they fulfilled



standard DSM-IV criteria for autism (DSM-IV: American Psychiatric Association, 1994) on the basis of semi-structured standard assessment, parent and teacher report, and classroom observation as follows.

The *Autism Diagnostic Observation Schedule* (ADOS: Lord, Rutter, DiLavore & Risi, 2001) was used as a standardised diagnostic measure. Module 3 was used which is appropriate for children under 16 years of age who are verbally fluent (a criterion necessary for the present study) and assesses social and communicative behaviour associated with autism. It is comprised of 14 structured and unstructured tasks that are varied in nature and purpose, such as make-believe play, telling a story from a book and interactive tasks with the tester. Individual items are scored and converted into an algorithm and summed to form two domains, Communication and Social Interaction. These two composite scores are combined to create a “Communication-Social Interaction” total score which was used as both a diagnostic tool and as a measure of social communication impairment in the present study.

Parent and teacher reports on the *Social Communication Questionnaire* (SCQ: Berument, Rutter, Lord, Pickles, & Bailey, 1999) were also used to confirm diagnosis. The SCQ is a screening instrument, which was previously known as the Autism Screening Questionnaire (ASQ). It is a 40-item questionnaire based on the original version of the Autism Diagnostic Interview-Revised (ADI-R: Rutter, Le Couteur, & Lord, 2003) algorithm used for DSM-IV diagnosis of autism. The items are administered as yes/ no response items. Items include “*Does she/he seem to be unusually interested in the sight, feel, sound, taste or smell of things or people?*”, “*Does she/he respond positively when another child approaches her/him?*”, “*Does*

*she/he say the same thing over and over in exactly the same way or insist that you say the same thing over and over again?”.*

If there were discrepancies between scores on the ADOS and SCQ and previous clinical diagnoses, then participants' diagnostic history were reviewed and a decision reached whether they met criteria for the ASD clinical group.

### *Matched criteria*

As the task involved participants co-creating a story and then re-telling the story, they were required to have a level of language ability that would enable them to carry out this task. In order to limit the possibility that any group differences were due to dissimilarity in language ability it was important to assess whether the two groups had comparable skills in language. The ASD and the LD comparison group were matched for language competence on:

1. The *Oral and Written Language Scale: Oral Expression; age equivalent* (OWLS: Carrow-Woolfolk, 1995) was used to measure Oral Expression which reflects understanding and use of spoken language. It is comprised of 96 items where the examiner reads aloud verbal stimulus and shows a picture. The respondent answers the questions orally. The Oral Expression Scale includes four categories of language; lexical, syntactic, pragmatic and supralinguistic.

The test-age equivalent is calculated from the average of the test-age equivalents of the four scales and represents the age at which the raw scores are average. For example, a participant who scores a test age equivalent of 7 years and 2 months for Oral Expression has achieved the average score for individuals who are 7 years and 2 months of age. The ASD and LD groups were matched on Oral

Expression test-age equivalent scores. As can be seen in Table 1, participants with and without autism were similar on scores for Oral Expression, age equivalence on the OWLS, ( $t(44) = -1.32, ns$ ).

## 2. Mean Length of Utterance.

Participants' speech was transcribed for both story co-creation and the story narrative. Mean Length of Utterance was calculated for both using the Expression, Reception and Recall of Narrative Instrument (Bishop, 2004) manual as a guide. MLU is a measure of linguistic productivity in children. A higher MLU is taken to indicate a higher level of language proficiency. A lower MLU score may reflect that the participant uses predominantly single clauses with simple structure. To calculate MLU, the total number of words in the participants' speech was divided by the number of utterances. False starts and non words were excluded.

*Example:*

*The boy picked some apples/ He picked, um, five apples. / Then he ate them./*

In this example, the MLU score is 2.6 ( $13/5 = 2.6$ ).

Two independent raters calculated MLU for 20% of the transcripts for both the story co-creation and narrative, and were found to have a Kappa reliability rating of .52 and .31 respectively. These were interpreted as fair to moderate according to Altman (1995). MLU was calculated for each participant and the means compared to assess similarity across the ASD and LD groups. The groups were very similar for Mean Length of Utterance for both co-creation, ( $t(44) = -1.17, ns$ ), and Narrative ( $t(44) = 1.14, ns$ ). See Table 1.

Table 1  
Descriptive data for group matching measures

	LD group n 26			ASD group n 20		
	Mean	Range	SD	Mean	Range	SD
CA: Y;M	12;2	7;8-15;4	2.31	11;9	8;4-15;3	1.66
Oral Expression: Y;M age equivalent	5;4	2;8-8;0	1.61	6;1	3;4-10;0	1.65
MLU co-creation	3.09	1.48-4.66	.83	3.42	1.30-6.50	1.11
MLU narrative	4.35	2.56-6.26	.795	4.04	2.04-5.69	1.07

### Measures

#### 1. *The Children's Communication Checklist-2* (CCC2: Bishop, 2003).

The CCC-2 is a 70 item checklist, designed to assess pragmatic language impairments which are dependent on context. It is completed by individuals who have observed the participant over a period of time. For the present study, the checklist was completed by teachers or parents of the participants.

Five scales assessing inappropriate initiation (“*Talks too much to anyone and everyone*”), coherence (“*Uses terms like ‘he’ or ‘it’ without making clear what he/she is talking about*”), stereotyped language (“*Makes frequent use of expressions such as ‘by the way’, ‘actually’, ‘you know what?’, ‘well you know’ or ‘of course’*”), use of context (“*Tends to repeat back what someone has just said*”) and rapport (“*Tends to look away from the person he/she is talking to: seems inattentive or preoccupied*”) are included and combined to create a pragmatic composite score. Raters make a judgement about frequency for each item (0= less than once a week or never; 1 = at least once a week, but not every day; 2 = once or twice a day; and 3 = several times [more than twice] a day or always). Three summary variables are

calculated from the completed CCC-2; the General Communication Composite (GCC), the Social Interaction Deviance Composite (SIDC) and the sum of scaled scores for pragmatic subscales (PRAG). GCC indicates children with a structural, pragmatic or both impairment. The SIDC, used in conjunction with the GCC indicates a pragmatic impairment from a structural impairment and represents discrepancy between general language ability and social interaction facility. A large negative discrepancy suggests social impairment characteristic of autism. PRAG indicates overall pragmatic language ability.

2. *Oral and Written Language Scale*- Pragmatic language subscale (OWLS: Carrow-Woolfolk, 1995).

The pragmatic language subscale was used from the OWLS Oral Expression Scale (outlined above) to measure pragmatic language competence. The pragmatic scale includes items which require appropriate responses to the context. Example items include “*Sarah gave Mary a present. What should Mary say to Sarah? [courtesy response]*”, “*Mary is looking for her ball. Mother comes in. What does Mary ask Mother? [question]*”.

3. *Social Feffer Task* (SFT).

Designed for the present study, this task involved each participant co-creating a story using characters and materials with one researcher and then re-telling the story to a second researcher. The scoring criteria was a novel rating scale designed to examine two primary aspects of the story co-creation and story narrative. The two aspects were broadly defined as social interaction and symbolic engagement with materials.

Each item was scored on a four point scale (0-3). The task and the rating scale was piloted on 6 children with learning disabilities in order to assess the suitability of all aspects of the task and subsequent coding. Pilot participants data are not included in the final analyses. See Appendix 6 for full scoring criteria.

### *Story co-creation*

The focus of the observation was on the story as created jointly by the tester and the participant. This involved both a) Symbolic engagement: the participant's ability to generate new and creative ideas, and to become invested in and sustain his/or her ideas expressed through the play materials and character; as well as b) Social interaction: his or her propensity to be responsive to and engage with the ideas and subjective states of the tester (and the tester's character) in a truly collaborative manner. See Table 2.

### *Story narrative*

The focus of the observation was on the duality inherent in the story as re-told by the participant. Specifically, the interest was in how 'what went on' in the co-creation between the tester and participant became internalised within the participant's own narrative. This involved a) Social Interaction: the participant's investment with the mutual story/ideas, as expressed through b) Symbolic Engagement: the use of and adoption of materials and characters. See Table 3.

Table 2.  
Item, description and scoring examples for story co-creation

A. Symbolic Engagement			
<i>Item</i>	<i>Title</i>	<i>Description</i>	<i>Scoring example</i>
<b>A1:</b>	Creativity	The propensity and/or ability of the child to generate new meanings and ideas.	0: Fails to produce new ideas. 3: Fluent in initiation and generation of ideas. Creative, contribute to the flow and smoothness of the story.
<b>A2</b>	Investment with meanings/ideas as expressed through materials	The extent to which the meanings and ideas matter to the participant.	1: Use of materials is primarily fleeting, rigid or superficial. 3: Cares about the ideas and meanings as expressed through the play materials.
<b>A3</b>	Role adoption for own character	The extent to which the participant participates in the story <i>through</i> his or her own character.	2: Shows a preference for his or her own character. Adopt the character role with a superficial or un-sustained quality or conveys events in terms of actions rather than experiences. 3: Adopts a role for his or her own character and involves him or herself in 'being' in this role. Describes events and experiences from the point-of-view of his or her own character
B. Social Interaction			
<i>Item</i>	<i>Title</i>	<i>Description</i>	<i>Scoring example</i>
<b>B1</b>	Responsiveness to tester's ideas	Participant's responsiveness to ideas introduced by the tester.	1: Acknowledges the tester's ideas (this could be a verbal acknowledgement or a physical gesture) but does not adopt, relate to or include them in the story. 3: Engages with the tester's ideas. Shows signs of actively incorporating the ideas of the tester into the story, evolving and developing them.
<b>B2</b>	Interaction with tester's character	How the participant (in character) interacts with the tester's character	0: Does not interact with the tester's character and appears unaware of the character's subjective states. 3: Active interaction between the characters, including appropriate responsiveness to the subjective states of the tester's character.
<b>B3</b>	Interaction with Tester	How the child responds to and interacts with the tester	1: Acknowledges/responds to the tester when prompted, but does not initiate interaction. 2: Responds to and initiates interaction with the tester but an unusual quality to the interaction – e.g. may be controlling rather than collaborative

Table 3.

Item, description and scoring examples for story narrative

<b>C. Symbolic Engagement: Narrative</b>			
<b>Item</b>	<b>Title</b>	<b>Description</b>	<b>Scoring example</b>
<b>C1</b>	Investment with meanings/ideas as expressed through materials	The extent to which the participant relates to the materials in a meaningful/engaged way during the story narrative.	1: Uses the materials when re-telling the story – but in a fleeting, rigid or superficial manner. 3: Cares about the ideas and meanings as expressed through the play materials- clear in the way he or she uses the play materials when re-telling the story.
<b>C2</b>	Role adoption for own character	The extent to which the participant re-tells the story <i>through</i> his or her own character.	0: Makes little or no reference to their own character except when prompted to do so. 3: Adopts a role for his or her own character and involves him or herself in ‘being’ in this role. Conveys and describes events and experiences from the point-of-view of his or her own character.
<b>C. Social Interaction: Narrative</b>			
<b>Item</b>	<b>Title</b>	<b>Description</b>	<b>Scoring example</b>
<b>C3</b>	Role taking in relation to tester’s character	How the participant includes the tester’s character in the story narrative	1: Makes infrequent reference to the tester’s character but this is fleeting and lacks evidence of relation to the role. 2: Makes consistent reference to the tester’s character, but this is done on the basis of actions rather than experiences- focussed on what the tester’s character did or said – rather than how the character felt.
<b>C4</b>	Overall mutuality of account	The degree to which the narrative conveys a sense of mutuality and collaboration	0: Makes little to no reference to the ideas that the tester introduced, unless prompted to do so. 3: Conveys mutuality and collaboration. The ideas of the tester and of the child have become interwoven into a story which is a joint product. Able to ‘be’ both self and other (tester) in re-telling their joint story.



***Social Feffer Task variables defined by items***

*Total Score for Social Feffer Task*

All items were combined to give a total score for this task:

Total SFT: A1, A2, A3, B1, B2, B3, C1, C2, C3, C4

*Symbolic Engagement*

Items were computed as follows to create co-creation, narrative, and total variables for Symbolic Engagement:

SE co-creation: A1, A2, A3

SE narrative: C1, C2.

SE all: A1, A2, A3, C1, C2

*Social Interaction*

Items were computed as follows to create co-creation, narrative and total variables for Social Interaction:

SI co-creation: B1, B2, B3.

SI narrative: C3, C4.

SI all: B1, B2, B3, C3, C4.

*Role taking in relation to Own and Tester's figure*

These composite scores were created to reflect role taking through own and tester's character as follows:

Role-taking Own character: A3, C2.

Role-taking Tester's character: B2, C3.

### ***Social Feffer Task procedure***

Each participant was tested in a quiet room in their own school. There were two investigators involved in running the task. Researcher 1, who co-ordinated and gave instructions for the task, was known to the participant and introduced Researcher 2 (the present author) to the participant in advance. The testing session was videotaped and transcribed. See Appendix 7 for administration manual.

The participant and both researchers sat at a desk within full view of the video camera. Researcher 1 took the role of the instructor and used a prescribed script to describe the task to the participant. Researcher 2 adopted more of a peer role and listened to the instructions along with the participant. Researcher 1 began the instructions by explaining that the participant and Researcher 2 would create a story together using some characters and materials. Researcher 1 laid out all of the dolls in front of the participant and asked them to select which one could be them (Figure 1). A range of dolls were used representing different ages, genders and ethnicity. When the participant had chosen, Researcher 1 asked Researcher 2 to select a doll to be herself. Finally, Researcher 1 selected a third doll to be in the story. This character was always the opposite gender from the participant in order to maximise the level of distinction between the three characters. Researcher 1 named the doll Ben or Jenny as appropriate.

Researcher 1 gave the following instructions:

*Using your figures and all of these things, you and 'Researcher 2' are going to make up a story together while I am out of the room.*

*When I come back I want you to tell me the story that you and 'Researcher 2' made up.*

*Figure 1.*  
*The participant chooses a figure to represent self.*



Researcher 1 then left the room for 5 minutes. Researcher 2 indicated that more time

was needed, in which case Researcher 1 allowed a further 2 minutes. Researcher 1

Researcher 2 took the role of a playmate and used modelling and encouragement to promote mutual play (Figure 2). During the co-creation of the story, Researcher 2 introduced some of her own ideas. These ideas were standardised in that they were taken from a prescribed list although were flexible depending on what the participant brought to the story. The first aim of the standardised ideas was to suggest a subjective state in the researcher's character. For example, the researcher might pretend she was hurt, thirsty, angry or frightened. The second aim was to encourage aspects of symbolic play by attributing false property to one of the test materials or referring to the presence of an absent object. For example, Researcher 2 might pretend that the ball is a bee that stings her. Or she might pretend to climb up the ladder and pick some apples. See Appendix 7 for administration manual.

Would you like to add anything else about 'Participants'?

*Figure 2.  
The participant and Researcher 2 co-create a story.*



Researcher 1 returned after 5 minutes, unless Researcher 2 indicated that more time was needed, in which case Researcher 1 allowed a further 2 minutes. Researcher 1 then placed all three dolls and all of the materials in front of the participant and said;

---

*I'm giving all of the characters to you 'Participant' and I want you to use all of the characters and the materials to tell me the story that you made up with 'Researcher 2'*

---

The participant could take as much time as they required to tell the story. Researcher 1 used the following standard prompts in order to encourage as much narrative as possible:

*What else happened?*

*Would you like to add anything else about Ben/ Jenny?*

*Would you like to add anything else about 'Researcher 2'?*

*Would you like to add anything else about 'Participant'?*

---

### ***Inter-rater reliability of scoring for Social Feffer Task***

Rater 1 was a placement student gaining research experience who was blind to the hypotheses and predictions of the study, as well as diagnoses, while Rater 2 (the present author) was blind to diagnosis. A coding manual was drawn up using specific examples to aid rating clarity where appropriate. This was accomplished by rating five SFT videos together and discussing the scoring. The criteria and consensus examples were recorded in the coding manual and used as a reference tool throughout rating. See Appendix 8 for coding manual.

Coding of the remaining set of 41 cases proceeded independently, with reference to the coding manual. Each item was compared and tested for agreement between raters and a weighted Kappa value obtained (See Table 4). The Kappa values for each items were good to very good, according to Altman (1995).

*Table 4*

*Inter-rater agreement for Social Feffer Task*

	<b>k value</b>
<b>Item</b>	
<b>A1: Creativity</b>	.65
<b>A2: Investment with meanings/ideas as expressed through materials</b>	.68
<b>A3: Role adoption for own character</b>	.81
<b>B1: Responsiveness to tester's ideas</b>	.72
<b>B2: Interaction with tester's character</b>	.79
<b>B3: Interaction with Tester</b>	.76
<b>C1: Investment with meanings/ideas as expressed through materials</b>	.73
<b>C2: Role adoption for own character</b>	.79
<b>C3: Role taking in relation to tester's character</b>	.68
<b>C4: Overall mutuality of account</b>	.73

The 5 consensus ratings and remaining 41 independent ratings by Rater 1 were used in the analysis to give a total sample of 46 participants.

### ***Specific Predictions***

*Predictions for between groups differences: Social Feffer Task.*

1. Children with autism will show specific deficits in social interaction in both their ability to collaborate with the tester in the story creation and the mutuality of their account in the story narrative.

*Variables:* SI co-creation: (B1, B2, B3); SI narrative: (C3, C4); SI all: (B1, B2, B3, C3, C4)

2. Children with autism will demonstrate less symbolic engagement with materials in both the meanings and ideas expressed through the materials in the co-creation and their investment in the materials in the story narrative.

*Variables:* SE co-creation: (A1, A2, A3); SE narrative: (C1, C2.); SE all (A1, A2, A3, C1, C2)

3. Children with autism will show deficits in role-taking as evidenced through their identification and engagement with their own character and the character of the tester. This will be evident in the story co-creation and narrative.

*Variables:* Role-taking own character: (A3, C2.); Role-taking Tester's Character: (B2, C3).

*Specific predictions for individual differences:*

4. There will be individual differences in social communication as measured by the ADOS and the Total Score for the Social Feffer Task. The higher the individual's score on the ADOS, the lower their Total Score will be on the SFT.

*Variables:* Total SFT (A1, A2, A3, B1, B2, B3, C1, C2, C3, C4), ADOS

5. There will be a relationship between Symbolic Engagement and Social Interaction on the Social Feffer Task.

*Variables:* Symbolic Engagement (A1, A2, A3), Social Interaction (B1, B2, B3,).

*Within groups and across groups language predictions:*

6.1. It is expected that individual differences in indices of social communication impairment; pragmatic language as measured by the CCC-2 will relate to the Total Score on the SFT

*Variables:* Total SFT, ADOS, CCC-2 (PRAG, GCC, SIDC)

6.2 It is expected that the Total score on the SFT will be associated with pragmatic language on the OWLS Oral Expression: pragmatic scale.

*Variables:* Total SFT, OWLS OE: Prag.

## ***Results***

### ***Overview***

Analyses were run in accordance with the main and subsidiary predictions. This involved between group analyses for Social Interaction, Symbolic Engagement and Role-taking. The relationship between these items were then further investigated. The relationship between scores on the Social Feffer Task and indices of language were also explored.

### ***Social Feffer Task***

Descriptive data for each of the major composite variables (Symbolic Interaction, Social Engagement and Role-taking) were calculated for the autism group (ASD) and learning disabilities comparison group (LD). See Table 5.

### ***Between group analyses***

Figure 3 presents the means for the Total SFT score, Symbolic Engagement, Social Interaction and Role-taking. In accordance with the main predictions for the present study, group comparisons were made for these variables.

### ***Group comparison for Total Social Feffer Task score***

When Symbolic Engagement and Social Interaction items were combined to give an overall score for the Social Feffer Task, analyses showed no significant group difference between the ASD and LD groups ( $t(44) = 1.31, ns, one-tailed$ ).

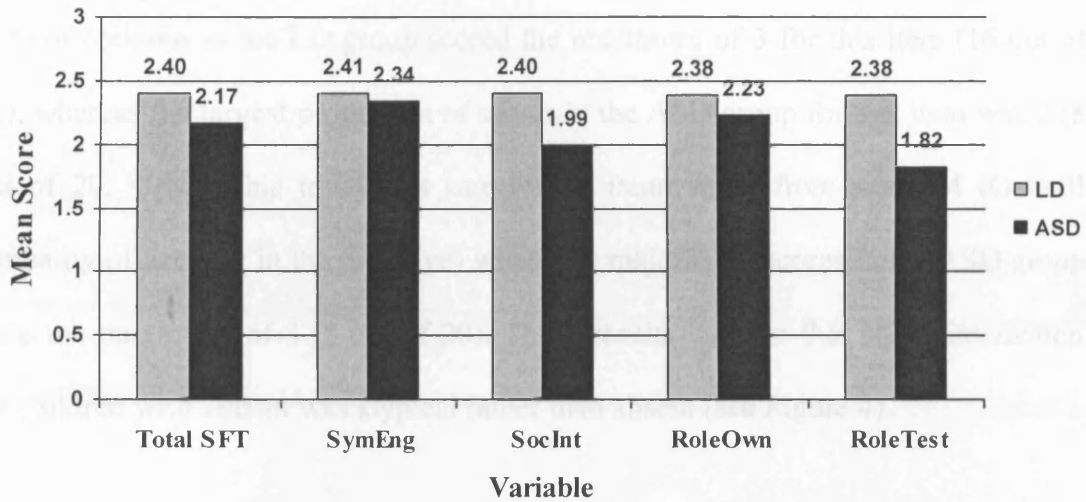


*Table 5*  
*Descriptive data for Social Feffer Task ratings*

	LD n 26			ASD n 20		
	Mean	SD	Range	Mean	SD	Range
<b>Symbolic engagement All</b>	2.41	.61	1.20-3.00	2.34	.65	.60-3.00
<b>Symbolic engagement Co-creation</b>	2.53	.63	1.00-3.00	2.45	.61	.67-3.00
<b>Symbolic engagement Narrative</b>	2.23	.77	1.00-3.00	2.18	.77	.50-3.00
<b>Social interaction All</b>	2.40	.70	.80-3.00	1.99	.65	.60-3.00
<b>Social interaction Co-creation</b>	2.53	.66	1.00-3.00	2.17	.61	1.00-3.00
<b>Social interaction Narrative</b>	2.21	.92	.50-3.00	1.73	.84	.00-3.00
<b>Role-taking Own character</b>	2.38	.71	1.00-3.00	2.23	.85	.00-3.00
<b>Role-taking Tester's character</b>	2.38	.71	1.00-3.00	1.82	.59	.50-3.00

In order to check the group differences in Social interaction could not be attributed to the higher number of females in the LD group, scores on Social Interaction were compared for girls (n = 10) and boys (n = 16) in the LD group. Mean scores were similar for boys (M = 2.44) and girls (M = 2.34). This suggests that group differences between the LD and ASD groups (where M = 1.99) could not be attributed to gender differences in the composition of the groups.

Figure 3  
 Mean scores for main variables: Total SFT score, Symbolic Engagement, Social Interaction and Role-taking.



#### Group Comparison for Social Interaction

In accordance with prediction 1, children with autism received significantly lower scores than those without autism for overall indices of Social Interaction ( $t(44) = 2.03, p < .05$ , one-tailed). This group difference held for both the co-creation ( $t(44) = 1.89, p < .05$ , one-tailed), and the narrative, ( $t(44) = 1.85, p < .05$ , one-tailed), sections of the task.

In order to check that group differences in Social Interaction could not be attributed to the higher number of females in the LD group, scores on Social Interaction were compared for girls ( $n = 10$ ) and boys ( $n = 16$ ) in the LD group. Mean scores were similar for boys ( $M = 2.44$ ) and girls ( $M = 2.34$ ). This suggests that group differences between the LD and ASD groups (where  $M = 1.99$ ) could not be attributed to gender differences in the composition of the groups.

When individual items for Social Interaction were reviewed, the majority of scores in the LD group were the highest rating of 3. For the ASD group, a rating of 2 was the most frequent score. For example, for B1 (Responsiveness to tester's ideas) 62% of children in the LD group scored the maximum of 3 for this item (16 out of 26), whereas the largest proportion of scores in the ASD group for this item was 2 (8 out of 20, 40%). This trend was true for all items apart from item C4 (Overall mutuality of account in the narrative) where the majority of scores in the ASD group were the maximum of 3 (8 out of 20). These results indicate that social interaction for children with autism was atypical rather than absent (see Figure 4).

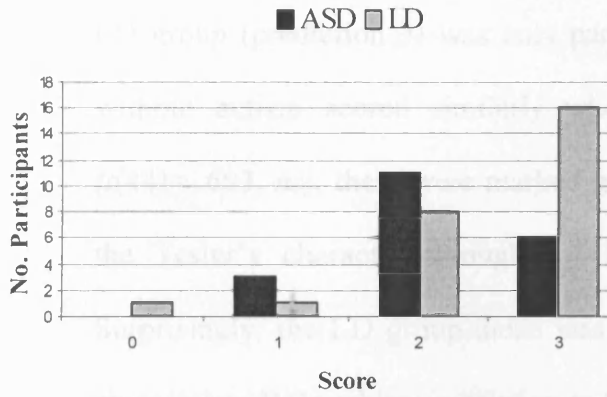
#### *Group Comparison for Symbolic Engagement*

On ratings of Symbolic Engagement, participants with and without autism received very similar scores for both the co-creation and the narrative sections of the measure, ( $t(44) = .41$  and  $.99$  respectively, *ns*). These results were not as predicted (prediction 2), suggesting that, for this task, children with autism were able to engage with the materials similarly to the children with learning disabilities.

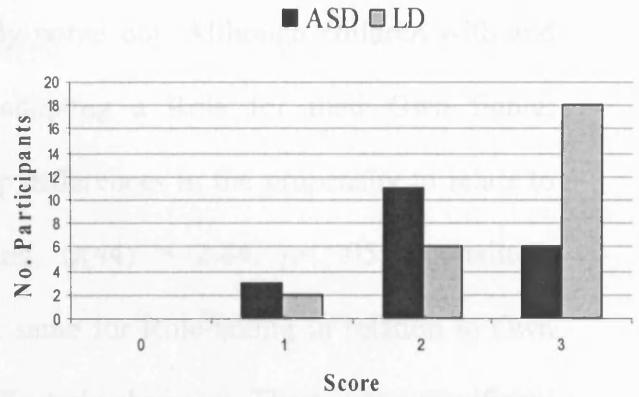
When scores were examined for individual items for Symbolic Engagement, it was clear that for each item the largest proportion of individuals from both LD and ASD groups had been rated the maximum score of 3

Figure 4  
Individual scores for Social Interaction items: B1, B2, B3, C3, C4.

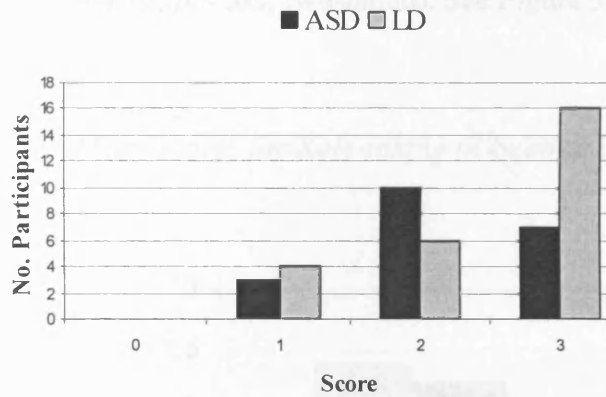
B1: Responsiveness to tester's ideas



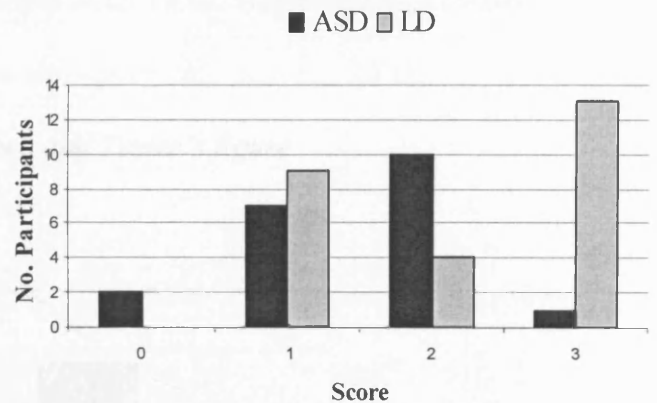
B2: Interaction with tester's character



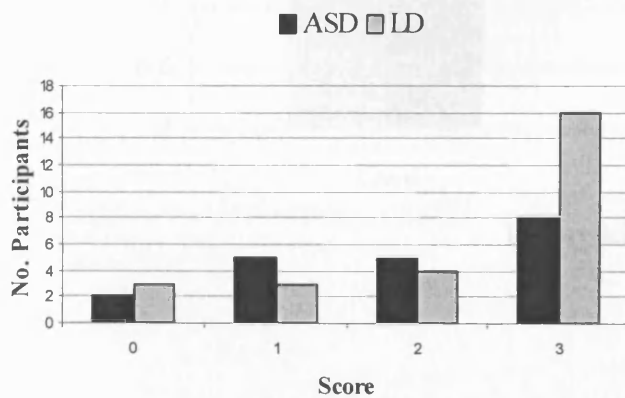
B3: Interaction with tester



C3: Role-taking, tester's character



C4: Mutuality of account

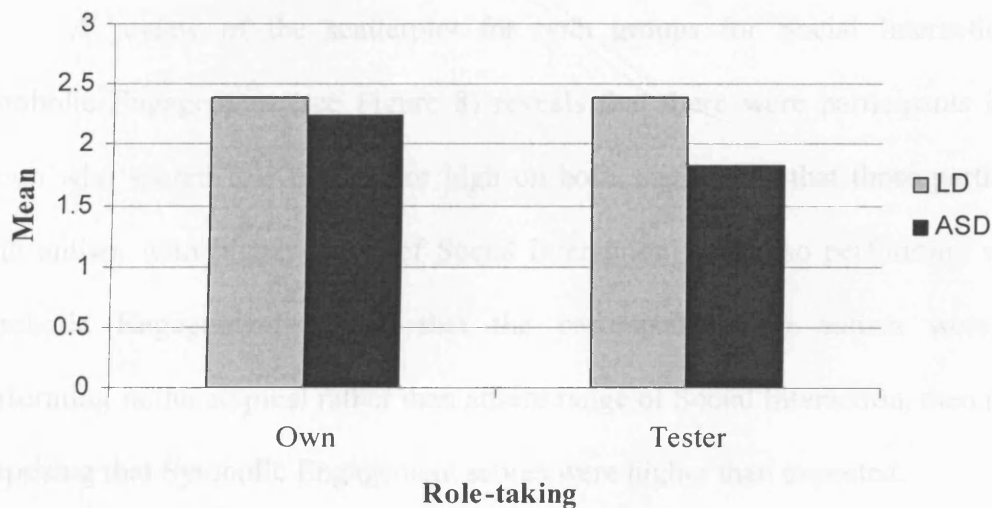


*Group comparison for Role taking in relation to Own and Tester's figure*

The prediction that children in the ASD group would show deficits in Role-taking through both their Own figure and through the Tester's figure in comparison to the LD group (prediction 3) was only partially borne out. Although children with and without autism scored similarly when adopting a Role for their Own figure, ( $t(44) = .693, ns$ ), there were marked group differences in the propensity to relate to the Tester's character through role-taking, ( $t(44) = 2.84, p < .05$ , one-tailed). Surprisingly, the LD group mean was the same for Role-taking in relation to Own character as Role-taking in relation to the Tester's character. There was a significant Group x Task interaction for Role Adoption with Own vs. Other character, ( $F(1, 44) = 4.12, p < .05$ , two-tailed). See Figure 5.

*Figure 5*

*Mean scores for Role-taking in relation to Own and Tester's figure*



Individual scores for Role-taking in relation to participant's Own figure reveal that for both LD and ASD groups, the largest proportion of scores were the maximum of 3. For Role-taking in relation to the Tester's figure, the largest

proportion participants in the LD group were scored the maximum of 3 for both items (18 and 13 out of 26) whereas a much smaller proportion of individuals in the ASD group scored the maximum of 3 for these items (6 and 1 out of 20). For these two items, the largest proportion of participants scored 2 for each item (11 and 10 out of 20) indicating that Role-taking in relation to the Tester's character was not absent but again, atypical. See Figures 6 and 7.

#### *Relationship between Symbolic Engagement, Social Interaction and Narrative*

In order to test the 5th prediction that Social Interaction would be associated with Symbolic Engagement on the SFT, correlations were examined between groups and across groups. There was a significant correlation between the overall index of Social Interaction and that of Symbolic Engagement across the groups, ( $r(45) = .74$ ,  $p < .001$ ), as well as within each group (ASD:  $r(19) = .63$ ,  $p < .01$ ; LD  $r(25) = .85$ ,  $p < .001$ ).

A review of the scatterplot for both groups for Social Interaction and Symbolic Engagement (see Figure 8) reveals that there were participants in each group who scored low on both or high on both, suggesting that those participants with autism with higher levels of Social Interaction were also performing well on Symbolic Engagement. Given that the participants with autism were often performing in the atypical rather than absent range of Social Interaction, then it is not surprising that Symbolic Engagement scores were higher than expected.

Figure 6  
Scores for Role-taking, Own character

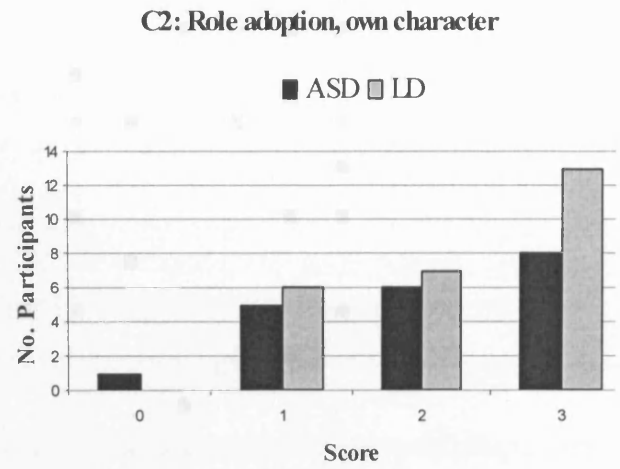
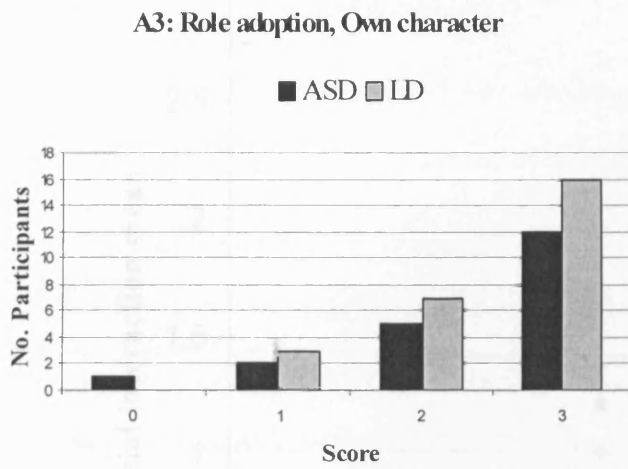


Figure 7  
Role-taking, Tester's character

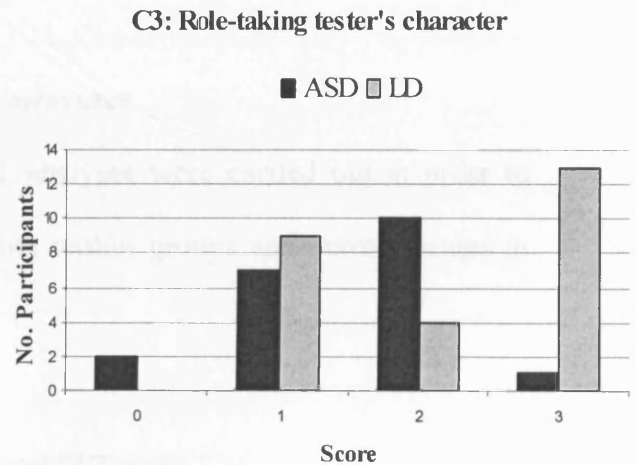
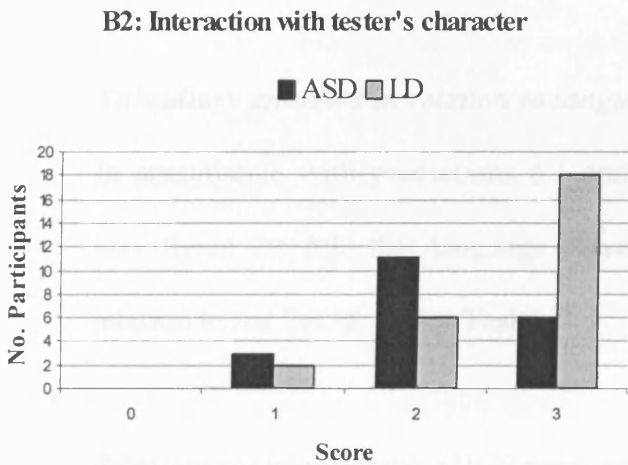
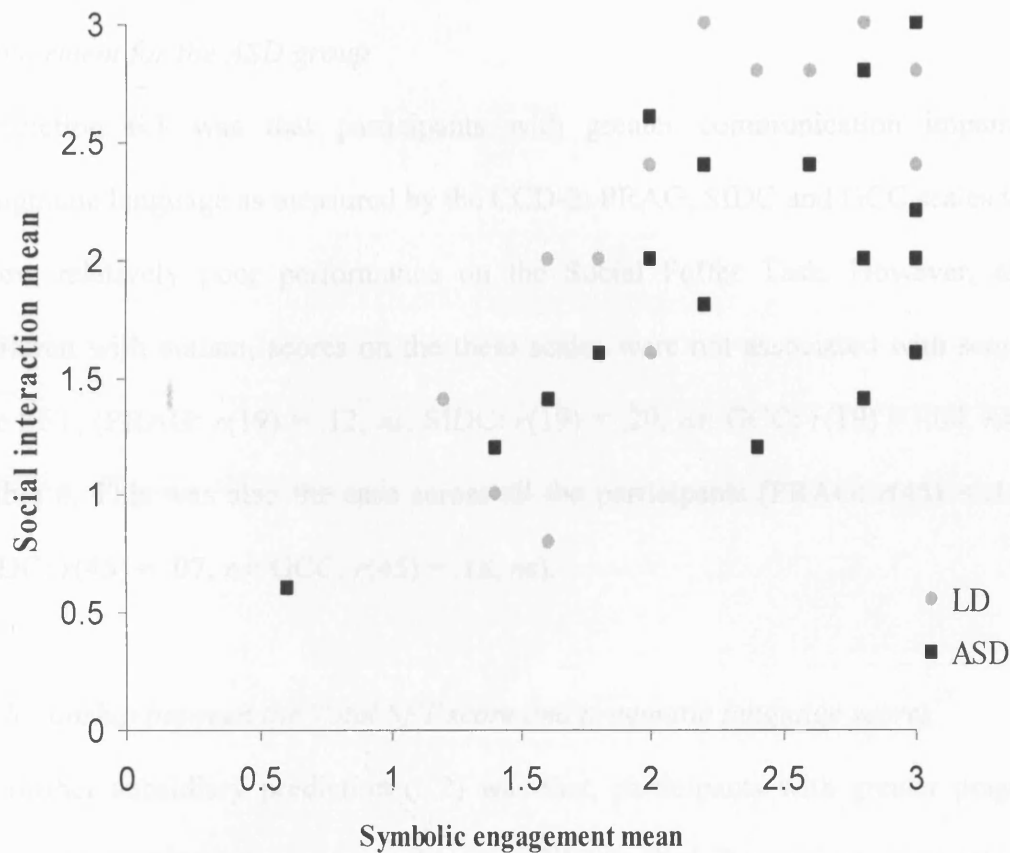


Figure 8  
Scatterplot: Social Interaction and Symbolic Engagement for LD and ASD groups



### *Subsidiary analyses in relation to language measures*

In accordance with predictions 6.1 and 6.2, analyses were carried out in order to investigate the role that language played both within groups and across groups in relation to the Social Feffer Task.

#### *Relationship between the ADOS score and Total SFT score*

Prediction 6.1 was that participants with greater social-communication impairment as measured by the Autism Diagnostic Observation Schedule would show relatively poor performance on the Social Feffer Task. However, among children with autism, scores on the ADOS were not associated with scores on the SFT, ( $r(19) = .14, ns$ ), see Table 6. This was also the case across all the participants, ( $r(45) = -.14, ns$ ).



*Relationship between the Total SFT score and indices of social communication impairment for the ASD group*

Prediction 6.1 was that participants with greater communication impairment; pragmatic language as measured by the CCD-2: PRAG, SIDC and GCC scales would show relatively poor performance on the Social Feffer Task. However, among children with autism, scores on the these scales were not associated with scores on the SFT, (PRAG:  $r(19) = .12, ns$ ; SIDC:  $r(19) = .20, ns$ ; GCC:  $r(19) = -.04, ns$ ), see Table 6. This was also the case across all the participants (PRAG:  $r(45) = .17, ns$ ; SIDC:  $r(45) = .07, ns$ ; GCC:  $r(45) = .18, ns$ ).

*Relationship between the Total SFT score and pragmatic language scores*

A further subsidiary prediction (6.2) was that, participants with greater pragmatic language impairment as measured by the OWLS: Oral Expression; pragmatic scale would show relatively poor performance on the Social Feffer Task. The analyses showed that, for children with autism, there was no relationship between their overall performance on the Social Feffer Task and their pragmatic language ability, ( $r(19) = -.31, ns$ ), see Table 6). This was also the case across all participants ( $r(19) = .04, ns$ ;  $r(19) = .19, ns$ ).

To summarise, Total SFT scores were not related to matching variables (CA, MLU, Oral Expression-age equivalence and SCQ). Total SFT Scores were also not related to indices of social-communication impairment (ADOS and CCC-2), and were not related to indices of pragmatic language (OWLS: Oral Expression: Pragmatic items). See Table 6.

Table 6

Intercorrelations for Total SFT score, matching variables and social communication and pragmatic language measures for participants with autism (n 20).

	score	CA	SCQ	OE-AE	MLU Story create	MLU Narr	ADOS	CCC2 PRAG	CCC 2 GCC	CCC 2 SIDC	OWLS Prag
<b>Total SFT Score</b>	---	-.31	-.09	-.13	.32	.20	.14	.12	-.04	.20	-.31
<b>CA</b>		---	-.24	.11	.04	.04	-.52*	.04	.20	-.12	.35
<b>SCQ</b>			---	.09	.13	.08	.22	-.24	-.15	.07	.06
<b>OE-AE</b>				---	.31	.32	.12	.51*	.61**	-.40	-.25
<b>MLU Story create</b>					---	.61**	.11	.10	.19	-.21	.36
<b>MLU Narr</b>						---	-.07	-.05	.08	1.24	.43
<b>ADOS</b>							---	-.10	-.14	.04	-.57*
<b>CCC2 PRAG</b>								---	.68*	.25	-.21
<b>CCC2 GCC</b>									---	-.38	.05
<b>CCC2 SIDC</b>										---	.15
<b>OWLS Prag</b>											---

\*  $p < .05$ , two tailed, \*\*  $p < .01$ , two tailed,

CA= Chronological age, SCQ= Social Communication Questionnaire, OE-AE= Oral expression-Age equivalence, MLU= Mean Length of Utterance, ADOS= Autism Diagnostic Observation Schedule, CCC2= Child Communication Checklist-2 (pragmatic, general communication composite and social interaction deviance composite scales), OWLS= Oral and Written Language Scale (pragmatic subscale).

## *Discussion*

This study has produced a set of results some of which were predicted while others were unexpected. The Social Feffer Task, as a novel paradigm, has revealed new information about the complex interplay between symbolic engagement, social interaction and role-taking in verbally able children with autism. The reliability of this scale was stringently tested via a second, independent rater. The rating scale was devised through in depth examination of pilot videos with each item considered in intricate detail to ensure that each observation had sound face validity. The rating scale was also developed in close adherence to the study hypotheses and predictions in order to ensure that, as far as possible, the measure reflected and encompassed observations associated with the study aims. It is important to note that, as a novel paradigm in it's early stages, further analysis could bolster claims about reliability and validity. For example, the measure could be used with different populations to include typically developing children or children with lower functioning autism.

It was observed overall that, in accordance similar studies children with autism were able to engage collaboratively to create a story using figures and materials (García-Pérez, Hobson, & Lee, 2008), and then re-tell that story to a naïve listener (Capps, Losh & Thurber, 2000; Diehl, Bennetto & Carter Young, 2006; Tager-Flusberg, 1995). An overarching conclusion drawn from this study was that, for this sample of children with autism, social interaction and symbolic functioning cannot be viewed as a universal deficit in comparison to children with learning disabilities when matched for overall language ability. In fact, some children with autism demonstrated higher level social interaction and were able to engage symbolically with the materials as proficiently as children with learning disabilities. The results also showed that children with autism were able to demonstrate role-

taking through the use of their own toy character but were less likely than children with learning disabilities to take on the role of another person's toy character. This, in itself, presents questions about the way in which children with autism engage with or identify with another. In discussing this study, therefore, the emphasis will be less on describing characteristics of autism in any conclusive or definitive way but rather on teasing out the atypical nature of social interaction and symbolic engagement for this sample of children.

### *Social interaction*

The study had three principal predictions for group differences. The first concerned the way in which these participants would socially interact during this task. The prediction was borne out as there were significant group differences in overall social interaction and this trend was apparent in both the co-creation of the story and inherent in the child's narrative. This meant that during the co-creation of the story, participants with autism tended to collaborate less well with the tester, were less engaged in the tester's ideas and interacted less with the tester's character. During the story narrative, participants with autism showed less evidence of adopting the tester's character's role as part of the story and the degree of mutuality in their account was less apparent. Whereas these group differences indicate a deficit in social interaction that might be considered typical for this group, the difference was by no means uniform across the group. All participants with autism were able to interact to a sufficient degree to successfully manage the story co-creation. Only one child with autism was excluded from analyses as he declined to re-tell the story. In this case, however, the assumption was that the child probably had the ability to re-tell the story but chose not to.

On closer inspection of individual scores for social interaction, it is apparent that some children with autism were functioning at an equivalent level to the majority of participants with learning disabilities. For example, during the story co-creation, 35% of participants with autism scored the maximum score of 3 for interaction with the tester (7 out of 20) although, in comparison, 62% of children in the learning disabilities group scored the maximum for this item (16 out of 26). This was also the case for the story narrative where a similar proportion of children with autism scored the maximum for overall mutuality in their narrative (8 out of 20) suggesting that 40% of children with autism were well engaged with the mutuality of the task. That said, half of the children with learning disabilities demonstrated the same level of proficiency for this item (13 out of 26). While these figures can be viewed as representing some general trends, it should be noted that quantitative analysis has not been carried out to examine whether these group differences are statistically significant for individual items.

There is also trend for the largest proportion of scores from participants in the autism group to fall just below the maximum (a score of 2) across most of the social interaction items. This observation can be further developed with a more qualitative description of the results. It is therefore necessary to ask what it means to score a 2 as opposed to the maximum of 3 on social interaction items. It was apparent when scoring these items that whereas children with autism socially interacted relatively well with the task, there was often an unusual quality or slight nuance in the *way* they interacted which felt qualitatively different from children without autism. For example, for the item “Responsiveness to tester’s ideas”, which looked at how well the participant engaged with the tester’s ideas, participants with autism were often able to adopt ideas and incorporate them into the story. However, there was

frequently little evidence of actively engaging with the tester's ideas so that they evolved or expanded them. As an illustration, many of the highest scoring participants took the idea of picking apples and developed it further with their own ideas about how many they picked, fetched the bucket to put them in or even got a stomach ache because they ate too many. Lower scoring participants for this item may have engaged briefly with the suggestion and pretended to pick apples but showed no sign of progressing the story line further or adding depth or flavour to it. Also noticeable in the co-creation, for many participants with autism, was that interaction with the tester's character or the tester herself, although not explicitly rejected, did not appear to be actively elicited or welcomed. Therefore, in order to score the maximum, the participant was required to come across as actively collaborating with the tester to create a story and often initiated this interaction both with the tester and by spontaneously including the tester's character in their story ideas.

This qualitative examination of the data yields a fuller depiction that, although there was a statistical group difference in social interaction, children with autism tended to socially interact during this task in an atypical way as opposed to their social interaction being very limited or absent. It should be highlighted, however, that as the sample of children for the present study were verbally able, caution should be applied when considering this finding since it may not be representative of the broader range of children with autism.

#### *Symbolic engagement with materials*

The prediction that there would be a group difference in symbolic engagement was not borne out as the overall means for symbolic engagement were very similar

between the two groups. A closer look at these results can illuminate a more detailed picture of how children with autism have performed in comparison with the learning disabilities group. The figures show that both groups tended to perform in the higher ranges for each item indicating that the overall standard of symbolic engagement with materials was high within this sample and for the present rating scheme. This was not expected since there is empirical evidence for deficits in symbolic functioning in children with autism compared with children with other developmental disorders (Sigman, 1998) and failure to use toys symbolically is a diagnostic item on most diagnostic systems for autism (e.g., the Autism Diagnostic Observation Schedule (ADOS; Lord, Rutter, DiLavore, & Risi 2001) and the Autism Diagnostic Interview (ADI-R; Rutter, Le Couteur, & Lord, 2003).

One reason for this might be to do with the specific nature of the task. Although it is widely reported that children with autism show deficits in their ability to play symbolically, studies which have examined the nature of this deficit have also distinguished between spontaneous free play and play which is more instructed or directional (Jarrold, Boucher & Smith, 1993; Lewis and Boucher, 1988; Charman & Baron-Cohen, 1997). It is possible that the symbolic play in the present study was guided and prompted sufficiently to facilitate engagement for this sample of children with autism. In addition to this, there is evidence to suggest that children with learning disabilities, without autism, display impairments in symbolic functioning (Charman, Swettenham, Baron-Cohen, Cox, Baird & Drew, 1997). If this is the case then the potential for group differences in the present study may have been reduced, especially considering that participants were matched on associated abilities such as verbal proficiency.

It could be suggested that given that the majority of children from each group were scored within the higher range for symbolic engagement, the rating scale did not sufficiently capture a range of performance for this variable and therefore a ceiling effect has been created. This does not appear to be the case since there was a range of scores for this variable and a minority of participants from both groups who scored very poorly for symbolic engagement. When performance across each of the measures are reviewed, it can be seen that these participants also scored within the lower ranges for social interaction and language competence. No participants with learning disabilities scored 0 for any items representing symbolic engagement whereas one participant from the autism group scored 0 for two items which, interestingly, were “Role-adoption for own character” in both the story co-creation and story narrative. This indicates that this participant had significant difficulty in relating to their own story character as self. The participant also scored 0 for two of the other narrative items; “Role-taking in relation to the tester’s character” and “Overall mutuality of the account” indicating that he/ she’s narrative was deficient in expression of social interaction, role-taking and symbolic engagement.

What was evident was that some children with autism showed unusual or atypical ways of symbolically engaging with the materials which the present rating scheme was unable to sufficiently capture. For instance, whilst generating ideas and meanings through the materials that were quite creative in content, they also had a rote or scripted quality to their ideas. To illustrate, one participant, while generating a range of ideas, also stuck very rigidly to the idea that there was a treasure map guiding each aspect of the story and this came across as being very scripted. One participant, while appearing to understand the principle of pretending an item stood for another (in this case pretending that the cup was an apple) when co-creating the



story, went on to tell the naïve listener, during her story narrative, that the tester ate the bucket.

These unusual observations, although present in a minority of children with autism, were not observed amongst children with learning disabilities. According to Leslie (1987), this represents a deficit in second order representation which is indicative of sophisticated symbolic play. In first-order representation, a child may use a toy as a substitute for the real thing, but not indulge in symbolic play, because s/he believes in the reality of the object (e.g. the toy ladder was a ladder). Second-order representation involves the awareness that the pretend object is something different such as the cup being an apple, (Williams, Reddy and Costell, 2001). These children tended to score within the lower ranges, or, if they showed evidence of symbolic engagement but appeared atypical or slightly less proficient, then they received a score of 2.

There was a relationship between symbolic engagement and social interaction across groups as well as amongst children with autism. Although there was a group difference for social interaction, there was still a positive correlation across groups suggesting that as performance on social interaction increases, so does performance on symbolic engagement. What was apparent was that there were both high and low scorers for both social interaction and symbolic engagement in both the learning disabilities and autistic groups. Within the autism group, however, there were some participants who performed well on symbolic engagement but within the lower ranges for social interaction.

A recent study by Stanley and Konstantreas (2007) investigated the complex relationship between symbolic play in autism and other domains such as degree of symptomatology, receptive and expressive language and social development. They

report that multiple symptoms of autism are required to account for a deficit in symbolic play and symptoms, in isolation are unlikely to do so. They did not find that social interaction was uniquely related to symbolic play and that nonverbal cognitive ability appeared to moderate this relationship. Thus, for participants whose nonverbal IQ scores were above the sample median, there was a significant positive relationship between social development and symbolic play.

The relationship between symbolic engagement and social interaction in the present study can therefore be considered in terms of the relative overall abilities and functioning of the ASD children included in the sample. Although no measure of nonverbal IQ was included in the present study, the sample was comprised of relatively high functioning, verbally able children. It is possible therefore, that in accordance with the Stanley and Konstantreas (2007) study, a variety of abilities, including a higher verbal ability, may have impacted of the relationship between symbolic engagement and social interaction for children in the ASD group for this task. Further to this, if nonverbal IQ is a possible moderating factor for this relationship, it can be hypothesised that IQ may have also impacted upon the relationship between performance on symbolic engagement and social interaction for the learning disabilities group.

### *Role-taking*

This study also investigated the ability of children with autism to role-take through their own toy character and through the toy character of the tester. There was no group difference for role-taking in relation to their own character. That is, children with autism and children with learning disabilities showed evidence that they identified with their toy character as *self*. This in itself is a rather complex

achievement. It suggests that participants were able to relate to the wooden doll in such a way that the doll came to represent themselves. Qualitatively, what this meant was that during both the co-creation of the story and in the narrative, children who performed well for this item referred to their figure in the first person, expressed attitudes or subjective states, engaged in experiences through their figure and, essentially, involved themselves in *being* that character. An example of this often arose when the children were using one particular story prop; the magnifying glass. There were many clear examples of participants who held the magnifying glass to their doll's face when the tester suggested "why don't you take a look?". In contrast, some children who struggled to "get into" their character's role and convey meaning through them, often held the magnifying glass up to their own eye, even when the tester had first modelled their own character looking through it. A particularly intriguing example came from one participant with autism who struggled to role-take through his figure and asked the tester to speak to him, not the doll, "No, *I'm* James, speak to me". When the tester persisted in interacting with his doll, he found an inventive way to solve his problem. He "killed" his character in the story and then explained that he, himself was the angel of his character and therefore the tester should now speak directly to him!

The individual scores for role-taking in relation to own character during the story co-creation were very similar for both the autism group and the learning disabilities group where the majority of participants were able to demonstrate role-taking proficiently and score the highest rating (ASD group 12 out of 20, LD group 16 out of 26). For the story narrative, children with learning disabilities scored similarly to the co-creation with half of the group scoring the highest mark. For the children with autism however, the range of scores for this item in the narrative was

more diverse. Again, these differences have not been analysed statistically so comment can be made about apparent trends in order to develop a fuller understanding about performance on individual item but further quantitative analyses would need to be carried out in order test the significance of these trends.

In support of García-Pérez et al. (2008), there was a significant group difference in role-taking in relation the tester's character where, overall, participants with autism showed less evidence of relating to or sharing the perspective of the tester's character. During the story co-creation six participants with autism scored the maximum for interaction with the tester's character and only one scored the maximum for role-taking in relation to the tester's character in the story narrative. This was in comparison to 18 and 13 participants respectively from the learning disabilities group. Surprisingly, the LD group mean was the same for role-taking in relation to own character as role-taking in relation to the tester's character, perhaps indicating that they were able to step into or identify with the tester's stance with similar ease to that of their own.

In order for participants to score highly in this area, they needed to show evidence of *experiencing* something of what it was like to be the tester's character. Of course this is extremely difficult to assess or to pin down in quantitative terms but the scoring criteria included subtle observations which were suggestive of such role-taking. For example, during the story narrative, a high scoring participant for this item might pick up the tester's doll and act out what happened. They would also convey a subjective state such as saying that the tester's character cried because they hurt themselves or felt thirsty so drank tea. In essence, what was observed as evidence of role-taking was a participant's description of experiences rather than a purely action based account.

The present study does not seek to provide any stringent test of theory of mind in that it did not require participants to explicitly attribute independent mental states to self and others to predict and explain actions. Rather, the emphasis was on the ability or propensity of the participants to mentalise and assimilate with the other person's experience and then express this through the story narrative. What is interesting here is that although the largest proportion of individuals showed some evidence of role-taking in relation to the tester's character, what appeared to be qualitatively lacking was the propensity to express another's position or action in the story in terms of experiences or subjective states. This would support a body of work by Gallagher (2001, 2004) who proposes an interaction theory of intersubjectivity. The propensity of the autism group in the present study to express the tester's character's contribution to the story in terms of action based events and neglect expressions of subjective states or experiences may reflect a deficit in what Gallagher (2004) terms "Primary Intersubjectivity". That is, an embodied, emotion-informed capability to interpret the mental states of others.

The present finding is also in accordance with Hobson's (1993, 2002) research, as described in the introduction to this paper, which suggests that children with autism's primary deficit is not wholly related to a deficit in cognitive representation of another but is also grounded in a deficit or atypicality in the way they affectively relate to or share position with another. Hobson (2002), and Hobson and Hobson (2007) discuss this process in terms of children with autism having less of a propensity to *identify* with others. They describe identification as a process whereby individuals relate to another person and incorporate some of the other person's subjective reality into their own. In this way, experiences are *shared* (Hobson and Hobson, 2007, p. 415). It can be hypothesised that the group difference

in role taking in relation to the tester's character and group by task interaction for children with autism thought of in terms of children with autism's difficulties in identifying with and role-taking with another. Further to this, this finding may go some way towards explaining the atypicality in social interaction for participants with autism described above.

### *Language competence and the Social Feffer Task*

The present study did not find a significant relationship between indices of pragmatic language competence and overall performance on the Social Feffer Task. This was unanticipated given the socially contextual nature of pragmatic language and the social and narrative components to this task. It does not reflect the findings of Loveland et al.'s (1990) study who report pragmatic language deficits amongst children with autism on their narrative task, even amongst the most socially advanced participants. However, unlike the Loveland et al study, the present study used a separate, standardised measure of pragmatic competence rather than an analysis of the narrative transcript itself. Loveland et al. coded transcripts of participants' narrative for pragmatic impairment whereas the present study considered the relationship between standardised indices of pragmatic language and overall performance on the Social Feffer Task. For the present study, the finding suggests that language ability was not related to social interaction or symbolic engagement. It does not provide information about individual or group differences in pragmatic language use during the actual task nor specifically in relation to the story narrative.

In order to replicate the procedures of previous studies, it may be helpful to return to the individual transcripts and conduct a detailed analysis of pragmatic

components in order to obtain a more sensitive picture of how language ability and social communication were related to indices of social engagement and symbolic interaction in the present study. For example, Loveland et al (1990) rated narrative transcripts for bizarre or irrelevant inclusions. Although the present study did not include this form of analysis, an informal review of the transcripts reveals possible idiosyncrasies amongst the narratives of some participants with autism. For example, some participants from the autism group included events in their narrative that were “surplus” to the original story created (i.e. events that did not occur during the co-creation). Norbury and Bishop (2003) found that all participants embellished their stories a little although asserted that it would be difficult to distinguish between this and what would constitute bizarre or irrelevant information as described by Loveland et al. (1990). In the present study there was also one participant with autism who confused personal pronouns during the story narrative; a phenomenon also described by Lee, Hobson & Chiat (1994). Norbury and Bishop (2003) suggest that further qualitative exploration of narratives amongst children with autism would provide further insight.

The absence of a significant relationship between the present task and indices of pragmatic language could be considered in terms of the participant’s overall level of functioning. One hypothesis is that as the participants with autism were functioning at a relatively high level in language (at least comparable to the learning disabilities group), any threshold for language impairment to impede social interaction or the ability to symbolise has already been surpassed. What is known is that the development of language is linked to social interaction, theory of mind and symbolic ability (Hobson, 1993; Tager-Flusberg, 2000), but the present study is not

able to explain that association nor where exceptions to these relationships might apply.

### *Study limitations*

In considering potential limitations of this study, it is imperative to review how the participants were matched, since this may have had an impact upon the results. As the Social Feffer task involved conversation and the ability to narrate, participants needed a level of verbal ability which would enable this process to some degree. It was also important for participants in the two groups to have a similar level of language ability so that any observed group differences could not be attributable to one group having better linguistic skills or being more verbally productive. The two groups for this study were very similar for three measures of language which were listening comprehension, oral expression and mean length of utterance. In fact, the two groups were relatively verbally able. It should be highlighted that a sample comprised of children who have a sophisticated level of verbal ability may somewhat bias the results in that there may well be a relationship between language, symbolic engagement and social interaction. This approach to matching should therefore be considered in parallel to the results and caution exercised in the interpretation of findings.

The sample of children with autism as a verbally able group, were relatively high-functioning. The same study conducted with children with autism who were much less able may have yielded more pronounced differences. It may be helpful, therefore, for future studies to include participants who are less able and more severe in terms of the autistic spectrum as the present study may not be representative of the broader range of children with autism.



This sample did not include a typically developing comparison group. The present study did not find group differences between children with autism and language matched children with learning disabilities for symbolic functioning. There is considerable empirical evidence for deficits in pretend play in children with autism, compared with typically developing children (Baron-Cohen, 1987; Bernabei, Camaioni & Levi, 1999; Doherty & Rosenfeld, 1984; Gould, 1986; Ungerer & Sigman, 1981; Wing, Gould, Yates, & Brierley, 1977). Since there is evidence to suggest that some children with learning disabilities without autism may show impairments in language and symbolic functioning (Charman et al., 1997.), the present sample may have limited the potential for more pronounced group differences and, it may be helpful in future to include a typically developing group as an additional comparison.

### *Conclusion*

This study investigated symbolic engagement and social interaction in two different, but connected contexts namely during the co-creation of a story and in the story narrative. Both represented slightly different facets of these processes in that the story creation was an arena in which evidence of social interaction and symbolic engagement could be displayed as a process in the here and now and the story narrative represented the outcome of that process. It provided evidence about the way in which the participant made sense of, organised and interpreted events in the story co-creation. The results showed that children with autism were atypical in their social interaction but were able to symbolically engage at a similar level of proficiency to participants with learning disabilities who were matched for chronological age, oral expression and mean length of utterance. Children with autism were also similar to

children with learning disabilities in their ability to role-take through their own story figure, but did not show the same propensity to role-take through the figure of another. This may provide some explanation for their atypical way of socially interacting in this study. There was a strong relationship between symbolic engagement and social interaction in this task but overall performance was not related to indices of pragmatic language competence.

The Social Feffer Task, as a novel paradigm, has presented a multifaceted picture of the relative strengths and deficits of children with autism in symbolic engagement, social interaction, role-taking abilities and considers how these relate to social communication. This warrants further investigation since the complex interplay between them, and indeed where the source of these deficits may lie has important clinical implications for this group. The present study highlights the importance of considering each of these areas in order to produce a comprehensive clinical assessment of individuals on the autistic spectrum (as is found in standardised measures such as the ADOS, 2001). It also suggests that interventions might be most usefully tailored to consider these domains as interrelated as opposed to isolated areas of functioning.

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## **PART 3: CRITICAL APPRAISAL**

## *Critical Appraisal*

This critical appraisal reflects upon and discusses the experience of conducting the present study. It is split into three main sections. The first section, Study preparation, considers the process of selecting a project and the origins of the research questions and the development of the hypotheses and predictions. The second section, Process and method discusses the development of the measures, rating and testing and the final section, Results and beyond, reflects upon the study write up, limitations and potential for further work.

### *Study preparation*

Having completed a Masters in research and also been employed as a Research Psychologist on three separate studies prior to clinical psychology training, I had some ideas about the kind of research I would be interested in. A personal goal for my doctoral research project was to improve my ability to design a scientifically valid study and write it up to a high standard. In order to try and meet some of these criteria I contacted two academic researchers (who were colleagues within a research unit external to the UCL department of clinical psychology) who I had worked with previously and was interested in their area of research, autism.

The present study was part of a larger funded body of work and was at the proposal stage. The study seemed to have a lot of potential for me as it was at the very early stages with a lot of scope for development. Of particular interest for me was the design of the study task and the development of a novel rating scale.

During these early stages, the task for me was to not just develop the task and the rating scale (which is described later), but to try to “get to grips” with what

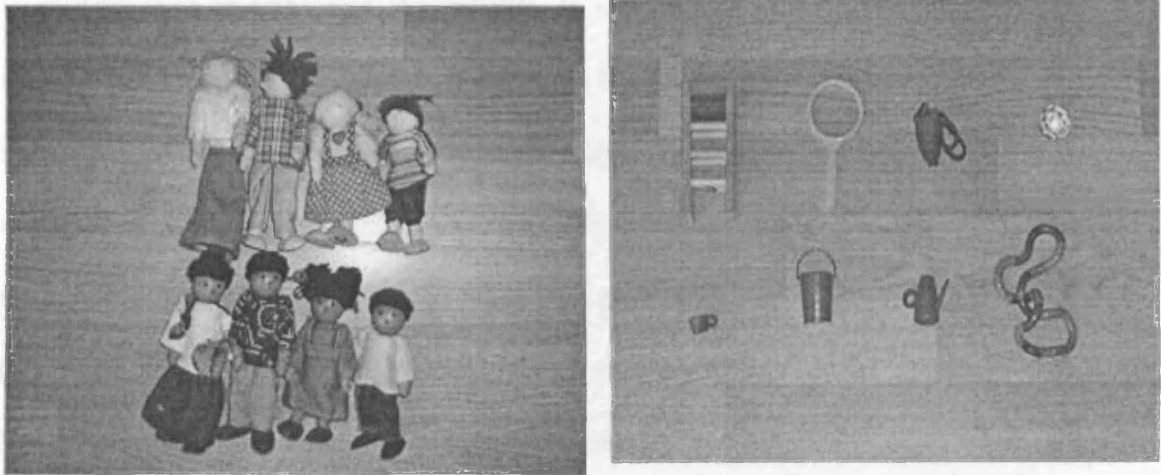
seemed like an overwhelming body of associated literature. I found that the most helpful thing to do was to narrow the literature on autism down into categories that directly related to my study- namely language, symbolic functioning and social interaction. My supervisors helped me to limit my literature review to focus on autism and narrative only and I found that this really helped me to think about why narrative might be an interesting way of investigating symbolic functioning and social interaction. The literature review also helped me to think about language and, in particular, what is known about autism and pragmatic language ability.

Further to this, I also wanted to consider the body of literature on identification, social role-taking and interpersonal since “self and other” seemed particularly important in this study. I found this area of research to be both intriguing and challenging at the same time. The starting point was a paper that was co-authored by one of my supervisors (García-Pérez, Hobson & Lee, 2008) which used a role-taking task and story narrative (adapted from Feffer, 1970) to look at the ability of children with autism to role-take and take on the perspective of others.

### *Process and method*

In many ways, designing the experimental procedure seemed the longest and most labour intensive part of the study. Care was taken to locate the appropriate materials for the task which comprised of 12 wooden figures and various other objects such as a ladder and a ball. I selected some items that had an obvious use and some for which the intended use was more ambiguous in order to encourage symbolic play. See Figure 9.

Figure 9.  
*Social Feffer Task test materials*



Time was then spent designing the task and developing the rating scale. The task itself was greatly improved by piloting at all stages of development. This helped me to determine how long each participant needed to co-create a story and also to assess which of the semi-standardised ideas introduced by the tester worked most effectively. It also helped me to “get a feel” for how a child might engage with the task and where potential problem might lie. As it happens, the task seemed to run fairly well from the outset and so all that was required was to decide upon what the semi-standardised ideas would be. At this stage I intended for these ideas to be fairly structured and to be introduced in quite a standard way. However, as I became more proficient in administering the task I realised that the ideas introduced by the tester could be quite flexible during the co-creation of the story and the task worked more successfully when my ideas were introduced in a more flexible and natural way through taking the child’s lead. In this way, I noted that I needed to develop a collaborative and mutually engaged stance in much the same way as I would be rating the child on!

A significant amount of time was spent fine tuning the coding sheet with attention paid to detail and language. Although the study was quantitative in

approach, the quality of the qualitative descriptions in the coding manual was crucial in order for it to be valid and also reliable. It was important that the coding manual directly reflected what had been devised as my hypotheses and related directly to my predictions. The temptation here could have been to include ratings on an infinite number of interesting aspects to the task. The final coding manual very clearly related to the study predictions for what was now called the “Social Feffer Task”, since the procedure had been adapted from Feffer’s role-taking test (Feffer, 1970). The primary focus of observation was social interaction, symbolic engagement and role-taking during the co-creation of the story and then reflected in the child’s narrative.

The recruitment for this study was not problematic. The research team that I was based within had a long standing history of working within schools for children with autism and learning disabilities and fifty-five children were tested altogether of which forty-six met criteria for inclusion in analysis.

The study included a range of measures aside from the Social Feffer Task. The procedure for allocating participants to the autism group was based on two standardized measures the Autistic Diagnosis Observation schedule (ADOS: Lord, Rutter, DiLavore & Risi, 1989) and the Social Communication Questionnaire (SCQ: Berument, Rutter, Lord, Pickles, & Bailey, 1999). If there were discrepancies between scores on the ADOS and SCQ and previous clinical diagnoses, then participants’ diagnostic history was reviewed and a decision reached whether they met criteria for the ASD clinical group by one of my supervisors. This process of allocation to the ASD group was necessary since autism, as a spectrum disorder, can be complex to diagnose. Those children included in the learning disabilities

comparison group were not considered to have traits that might warrant a diagnosis of autism.

The process of matching the two groups was important for the scientific validity of the study. Some studies in similar areas have matched participants for non verbal IQ (Capps, Losh and Thurber, 2000; Losh and Capps, 2003; Loveland, McEvoy and Tunali,1990). It was decided that, since two “clinical” groups were to be compared (i.e. autism and learning disabilities, with no typically developing group) then it would be more helpful for groups to be matched for chronological age and language ability. The Oral and Written Language Scale: Oral Expression; age equivalent (OWLS: Carrow-Woolfolk, 1995) was used to measure Oral Expression which is designed to measure the understanding and use of spoken language. In addition, I analysed the Social Feffer Task transcripts for Mean Length of Utterance in both the story co-creation and in the story narrative. This was a time-consuming process but it was imperative to be able to rule out any subsequent group differences being attributable to language proficiency or productivity. As it happened, the two groups were very similar and, if anything, the autism had a slight advantage over the learning disabilities group in terms of oral expression.

As a subsidiary aspect to this study, I decided to look at language ability and how this related to performance on the Social Feffer Task. This may seem counter-intuitive since the groups had been matched for language ability, however, within groups there was a range of language competence and it was predicted that this may impact upon participants performance on the Social Feffer Task. Again, a number of linguistic competencies could have been measured here but I decided to focus on pragmatic language since pragmatic language is inherently related to social

understanding and also closely related to narrative (Lord & Paul, 1997; Berko-Gleason, 2005; Tager-Flusberg, 1981).

The final part to the testing process was assessing the reliability of the Social Feffer Task rating scale. As the author of the study I was blind to diagnosis of the participants at the time of testing and rating but was not blind to the study predictions. Therefore, a second rater was utilised who had not been involved in the development of the predictions and had no knowledge of the study other than administration procedures. I trained the second rater on how to score the videos and spent a significant amount of time devising a coding manual that we both referred to. The inter-rater reliability was crucial to the scientific value of the study since, if the rating scale was not reliable, I could not report the findings with any confidence. The second rater scored independently scored 41 out of 46 videos and the reliability was found to be good for all items.

### *Results and beyond*

At the data analysis stage it is very tempting to run a variety of analyses that may be interesting but do not directly to original hypotheses or predictions. If enough predictions are made, and enough analyses are run, then the likelihood of finding a significant result increases but the chance of committing a type 1 error also increases. On reflection, this is where carefully devised predictions grounded in well established theoretical hypotheses started to shape the quality of my analyses and the remaining write up.

Something that I learnt during this study is that similarities between groups sometimes tells us more than the group differences. The importance here is examining the data more closely than simply acknowledging group statistics. The

statistical data is rendered somewhat empty without thought put in to what it qualitatively means. For this study, a fuller picture was created of the findings by examining trends in scoring. In this way, I was able to glean more information about the performance of children with autism on social interaction measures through looking at individual scores and identifying that the children with autism were scoring quite well for social interaction. Further to this, I reflected upon the *qualitative* nature of their interaction, how this was atypical as opposed to absent and provided some examples.

This study did not include a typically developing comparison group which limits some of the conclusions that can be drawn. In this way I have only been able to draw conclusions about how this group of children with autism compared to children with learning disabilities. The strength here is that I can comment upon the results as reflecting strengths and deficits in autism that is not reflected in children with learning disabilities but not autism suggesting that some characteristics are unique to autism. Of course a typically developing group would have strengthened this claim and, perhaps, more pronounced group differences would have been found. I did consider including a typically developing group of children in this study at an early stage of the study design but decided that it was unrealistic given the time-frame that I had. Future work might also benefit from including children with autism who are lower functioning since this study included a relatively able group of children.

I was surprised that the Social Feffer Task did not significantly correlate with the indices of pragmatic language nor with the ADOS. As a novel paradigm, it has shown to be reliable and so I haven't questioned whether it is a useful and valid measure of the target measures. It does look at symbolic engagement and social



interaction in two specific and unusual contexts, a story co-creation and narrative. My discussion provides some possible explanations for this which includes the way language was measured. What was apparent, when reviewing the transcripts for this study, is that the present rating scheme was unable to capture some of the unusual nuances present for children with autism. For example, one participant with autism showed evidence of confusion in their use of personal pronouns. Future work might examine the transcripts for specific examples of pragmatic impairment which could then be compared to standardised indices of pragmatic language.

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## **APPENDIX**

**Appendix 1:** UCL Committee for Ethic of Non-NHS Human research approval.



The Graduate School  
University College London  
Gower Street London WC1E 6BT

Head of the Graduate School

Tel: [redacted]  
Fax: [redacted]  
Email: [redacted]

6 July 2005

Professor R Peter Hobson  
Professor of Developmental Psychopathology

Dear Professor Hobson

**Re: Notification of Ethical Approval**

**Project ID: 0244/009; Dialogic aspects of language disability in autism**

I am pleased to confirm that the above research has been given ethical approval by the Chair of the UCL Committee for the Ethics of non-NHS Human Research for a period of 12 months from the commencement of the project (1 August 2005) subject to the following conditions:

1. It is a requirement of the Committee that research projects which have received ethical approval are monitored annually. Therefore, you must complete and return our 'Annual Continuing Review Approval Form' PRIOR to the 1 August 2006. If your project has ceased or was never initiated, it is still important that you complete the form so that we can ensure that our records are updated accordingly.
2. You must seek Chair's approval for proposed amendments to the research for which this approval has been given. Ethical approval is specific to this project and must not be treated as applicable to research of a similar nature. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing the 'Amendment Approval Request Form'.

The forms identified above can be accessed by logging on to the ethics website homepage: <http://www.ucl.ac.uk/gradschool/ethics/> and clicking on the button marked 'Key Responsibilities of the Researcher Following Approval'.

3. It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. Both non-serious and serious adverse events must be reported.

**Reporting Non-Serious Adverse Events.**

For non-serious adverse events you will need to inform [redacted], Ethics Committee Administrator ( [redacted] ), within ten days of an adverse incident occurring and provide a full written report that should include any amendments to the

participant information sheet and study protocol. The Chair or Vice-Chair of the Ethics Committee will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

**Reporting Serious Adverse Events**

The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator immediately the incident occurs. Where the adverse incident is unexpected and serious, the Chair or Vice-Chair will decide whether the study should be terminated pending the opinion of an independent expert. The adverse event will be considered at the next Committee meeting and a decision will be made on the need to change the information leaflet and/or study protocol.

4. On completion of the research you must submit a brief report (maximum of two sides of A4) of your findings to the Committee. Please comment in particular on any ethical issues you might wish to draw to the attention of the Committee. We are particularly interested in comments that may help to inform the ethics of future similar research.

Yours sincerely

[Redacted signature]

**Chair of the UCL Committee for the Ethics of Non-NHS Human Research**

Cc: [Redacted] Research Fellow, Institute of Child Health

**Appendix 2:** Information sheet and consent form



## UCL Institute of Child Health

31<sup>st</sup> August, 2007

### INFORMATION SHEET

Name of project: Collaborative Competence in Dialogue

Name of investigators: Dr. Jessica Hobson & Prof. Peter Hobson (with Keren Smith)

Dear Parent or Carer of Child's name

I am writing to ask you for your permission to include X in the above project. In this letter I would like to introduce our Unit and project, and describe what is involved for those children who take part. We have been working with typically developing children and children with autism spectrum disorders for many years, to better understand the abilities and difficulties in autism. We are very grateful to X School for supporting our work, as well as the families who agree to participate in our projects.

We are undertaking a project to study how the ability to understand and adopt communicative roles relates to the development of flexible language skills. Understanding these questions may be helpful in further developing ways to foster social and cognitive development. This particular project is looking at language, symbolic engagement and social interaction.

What does the project involve? During 4 visits to X School we will meet with X for brief sessions lasting about 30 minutes. During this time, we will assess her ability to interact and communicate with another person using a range of specially designed tasks, which are designed to be informative to us as well as fun for your child to engage in. A brief report of your child's language and social skills based on the sessions will be sent to your school.

We will need to videotape the measure in order to score it. These tapes will be made anonymous and stored in a locked filing cabinet at the Institute of Child Health in London where our research team is based. If you have a particular wish to view the tape we can provide excerpts for you. The task has been rigorously developed, and will be informative to us, but also fun for the children who take part. We intend to publish the results of this project once it is completed to communicate our findings to a wide audience of parents and professionals. The results will be presented in a way that prevents the identification of any one child, and strict confidentiality is assured. If you have any questions, please send an email to . You may also reach us by telephone on .

We would be very grateful if you would consider taking part but you are in no way obligated to do so. Your child's education or care will not be affected. If you choose to do so, please could you complete the attached consent form (keep one copy for yourself) and return it to school with X by February 15th. You are free to withdraw from the study at any point without giving a reason for doing so.

Yours sincerely,

Jessica Hobson  
PhD Senior Research Fellow

**APPENDIX 3 CONSENT FORM FOR COMMUNICATION STUDY**

**Name of School**

Title of Project: *Collaborative Competence in Dialogue*

Name of Researchers: Dr Jessica Hobson & Prof. Peter Hobson (with \_\_\_\_\_ and Keren Smith)

Contact Phone No: ( ) \_\_\_\_\_

1. I have read and understand the information sheet and have had the opportunity to ask questions.
2. Giving consent for my child to participate in the project is voluntary and confidential and I understand that I am free to withdraw my consent at any time, without giving any reason.
3. I understand that any publication resulting from this research will not identify my child (or me) in any way.

Please choose one of the following options:

- YES, I consent for Child's name to take part in the above project on communication.
- NO, I would prefer that Child's name not participate in this research project.

Your name: ..... Date:.....

Signature: .....

Your address: .....  
.....  
.....

Researcher: ..... Date: .....

Signature: .....

Please return this copy completed to Name of School

### **Appendix 3: Social Feffer Task scoring criteria**

# SOCIAL FEFFER TASK

CHILD ID: \_\_\_\_\_

RATER:  LR  KS OTHER: \_\_\_\_\_

RATING STATUS  INDEPENDENT  JOINT

2<sup>ND</sup> TESTER  SISSY  KEREN

## Observation

### 1 Co-creation of the story

*Focus of observation.* The focus of the observation is on the story as created jointly by the tester and the participant. Specifically, we are interested in the degree of mutuality in the play. This involves both a) the child's own ability to generate new and creative ideas, and to become invested in and sustain his/or her ideas expressed through the play materials and character; as well as his or her propensity to b) be responsive to and engage with the ideas and subjective states of the tester (and the tester's character) in a truly collaborative manner.

*Notes:*

## 2 Story narrative

*Focus of observation.* The focus of the observation is on the joint-ness inherent in the story as re-told by the participant. Specifically, we are interested in how ‘what went on’ in the co-creation between the tester and participant becomes internalised within the participant’s own narrative. This involves *investment* with the mutual story/ideas, as expressed through the materials and characters.

*Notes:*

# Ratings

## 1 Background Ratings

- A.** Attentiveness to and comprehension of task instructions.
0. The participant was inattentive to the task and/or did not understand the instructions. Use this score for participants who refused to participate.
  1. The participant was attentive to the task and materials, and understood the instructions.
- B.** Able to show evidence of symbolic ability.
0. The participant was unable to use the materials in a symbolic (not solely functional) way.
  1. The participant showed evidence of symbolic ability, as expressed by at least one of the following {tick those that apply}:
    - Attributes a false property
    - Makes one thing stand for another
    - Refers to the presence of an absent object
- C.** Shows the ability to recall details of the story.
0. The participant was unable to give any account of what took place in the story. Use this score for participants who either fail to recall any of the events of the story, or whose entire story is a fabrication.
  1. The participant provides a narrative which includes at least some elements of the story during the co-creation episode.

**Please Note:** If the participant scores 0 *in total*, do not rate subsequent sections. If they score a 1 for both sections A and B, rate the story co-creation section. If they score 1 for section C, score the story narrative. If they score a 1 on all three items, please complete all ratings.

## 2 Co-creation of the story

**A. Engagement with Materials.** These items focus upon the participant's use of the materials and objects (including his or her own character) in the creation of a story.

### **A1. Creativity**

This item is broadly defined as the propensity and/or ability of the child to generate new meanings and ideas.

0. The participant fails to produce new ideas.
1. The participant is limited in the initiation of new ideas – either in frequency (very few) or range (restricted to limited topic), or there is a clear rote/scripted and/or concrete quality to any ideas initiated by the participant.
2. The participant often initiates new ideas but these ideas are limited in range, or there may be rote/scripted qualities to the ideas.
3. The participant is fluent in the initiation and generation of ideas. The ideas are creative, and contribute to the flow and smoothness of the story.

### **A2. Investment with meanings/ideas as expressed through materials**

This item is broadly defined as the extent to which the meanings and ideas matter to the participant.

0. The participant shows little to no investment in the meanings as expressed through the play materials.
1. Use of materials is primarily fleeting, rigid or superficial.
2. The participant shows some investment in the meanings as expressed through the play materials, but does not sustain the engagement.
3. The participant cares about the ideas and meanings as expressed through the play materials.

### **A3. Role adoption for own character**

This item is broadly defined as the extent to which the participant participates in the story *through* his or her own character.

0. The participant makes little or no reference to their own character except when prompted to do so.
1. The participant makes some reference to their character, but this lacks evidence of role adoption. He or she may refer to the character in the 3<sup>rd</sup> person, or relate similarly to all of the dolls.
2. The participant refers to and shows a preference for his or her own character. S/he may refer to his or her own character in the 3<sup>rd</sup> person, adopt the character role with a superficial or unsustained quality or conveys events in terms of actions and events rather than experiences.
3. The participant adopts a role for his or her own character and involves him or herself in 'being' in this role. Here, the participant may refer to his or her own character in the first-person. He or she conveys and describes events and experiences from the point-of-view of his or her own character

**B. Engagement with Tester - These items refer to the participant's propensity to engage and collaborate with the tester during the co-creation of the story.**

**B1. Responsiveness to tester's ideas**

This item is broadly defined in terms of the participant's responsiveness to those ideas introduced by the tester.

0. The participant either consistently and actively rejects the ideas of the tester or fails to register ideas coming from the tester.
1. The participant acknowledges the tester's ideas (this could be a verbal acknowledgement or a physical gesture) but does not adopt, relate to or include them in the story.
2. The participant adopts the tester's ideas but engages with them in a fleeting or transitory way. The ideas of the tester are not really incorporated into the participant's narrative, or developed within the flow of the story
3. The participant engages with the tester's ideas. In doing so, he or she shows signs of actively incorporating the ideas of the tester into the story, evolving and developing them.

**B2. Interaction with tester's character**

This item is focussed upon how the participant (in character) interacts with the tester's character in the story narrative.

0. The participant does not interact with the tester's character and appears unaware of the character's subjective states.
1. The participant acknowledges the tester's character and/or subjective states but there is limited if any sense of reciprocity or engagement.
2. The participant acknowledges the tester's character and/or subjective states and there is clear responsiveness to the tester's character. However, there may be a transient or superficial quality to this interaction and the participant's ability to sustain interaction may be inconsistent or require prompting.
3. There is active interaction between the characters, including appropriate responsiveness to the subjective states of the tester's character and sustained mutual engagement.

**B3. Interaction with Tester**

This item is focussed upon how the child responds to and interacts with the tester.

0. The participant fails to acknowledge the tester and appears unaware of her as a partner in the activity.
1. The participant acknowledges/responds to the tester when prompted, but does not initiate interaction.
2. The participant responds to and initiates interaction with the tester but there is an unusual quality to the interaction – e.g. the participant may be controlling rather than collaborative, or the interaction may be fleeting or not sustained.
3. The participant responds to, initiates and maintains interaction with the tester such that the activity feels truly collaborative.



### 3 Story Narrative – Re-telling

#### **C1. Investment with meanings/ideas as expressed through materials**

This item is broadly defined as the extent to which the participant relates to the materials in a meaningful/engaged way during the story narrative.

0. The participant shows little to no investment in the meanings as expressed through the play materials. He or she fails to use or refer to the materials when re-telling the story.
1. The participant uses the materials when re-telling the story – but in a fleeting, rigid or superficial manner.
2. The participant shows some investment in the meanings as expressed through the play materials, but does not sustain the engagement.
3. The participant cares about the ideas and meanings as expressed through the play materials, and this is clear in the way he or she uses the play materials when re-telling the story.

#### **C2. Role adoption for own character**

This item is broadly defined as the extent to which the participant re-tells the story *through* his or her own character.

0. The participant makes little or no reference to their own character except when prompted to do so.
1. The participant makes some reference to their character, but this lacks evidence of role adoption. He or she may refer to the character in the 3<sup>rd</sup> person, or relate similarly to all of the dolls.
2. The participant refers to and shows a preference for his or her own character. S/he may refer to his or her own character in the 3<sup>rd</sup> person, adopt the character role with a superficial or unsustained quality or conveys events in terms of actions and events rather than experiences.
3. The participant adopts a role for his or her own character and involves him or herself in 'being' in this role. Here, the participant may refer to his or her own character in the first-person. He or she conveys and describes events and experiences from the point-of-view of his or her own character.

#### **C3. Role taking in relation to tester's character**

This item is focussed upon how the participant includes the tester's character in the story narrative.

0. The participant makes little or no reference to the tester's character except when prompted to do so.
1. The participant makes infrequent reference to the tester's character but this is fleeting and lacks evidence of relation to the role.
2. The participant makes consistent reference to the tester's character, but this is done on the basis of actions rather than experiences. The description may be focussed on what the tester's character **did** or **said** – rather than how the character felt.
3. The participant identifies with the role of the tester's character during the story re-telling. Here, he or she may use the tester's character to act out relevant parts of the story as well as make clear reference to the tester's character's subjective states.

#### **C4. Overall mutuality of account**

This item reflects the degree to which the narrative provided by the participant conveys a sense of mutuality and collaboration.

0. The participant makes little to no reference to the ideas that the tester introduced, unless prompted to do so.
1. The participant refers to the tester's ideas/input in a matter-of-fact or fleeting way, and may need to be prompted to elaborate upon these ideas.
2. The participant makes spontaneous reference to the tester's ideas and contributions. However, there is the sense that these are added on rather than part of a mutually developed story. The participant may seem a bit stuck on his or her own agenda and the story from his or her own point-of-view.
3. The participant's narrative conveys mutuality and collaboration. The ideas of the tester and of the child have become interwoven into a story which is a joint product. The participant is able to 'be' both self and other (tester) in re-telling their joint story.

**Appendix 4: Social Feffer Task administration manual**

# Social Feffer Task (SFT)

## Administration Manual

### Materials

Bag of dolls and props  
Video camera & tripod  
Three chairs and a table  
Two researchers

### Time

Story create: 5-7mins  
Story re tell: 4 mins (this is flexible but no longer than 10 mins)

### Participants

1 Child  
Researcher 1: Administers instructions  
Researcher 2: Co creates the story

### Overview of the task

In this task the child and Researcher 2 will create a story together using the props provided. Researcher 1 will explain the instructions for the task to the child and will then leave the room and allow the child and Researcher 2 to carry out the instructions. The child will take the role of one of the dolls and Researcher 2 will take the role of another.

In the co creation of the story, the props will be used both for their intended purpose and in a symbolic way. During the task Researcher 2, in the role of a peer, will make suggestions about how the story could develop and how props can be used. These suggestions are standardised (administered in a semi structured format) for each participant and specified in the instructions. Researcher 2 will also follow the child's lead and adopt their ideas.

In the second part of the task Researcher 1 will re enter the room. Researcher 1 will then ask the child to re tell the story that they created with Researcher 2 using the dolls and the props.

### Room set up

- The camera should be placed so that it captures all three chairs (Researcher 1&2 and child) and the materials on the table.
- Child faces the camera
- Researcher 2 is at right angles to the child

- Researcher 1 sits directly across from the child but does not obscure the camera view
- The figures should be lined up in a row in front of the child so that they can view and pick one.
- When the child and Research 2 has picked a doll, Researcher 1 chooses the 3<sup>rd</sup> figure according to the instructions. The remaining figures are moved to one side. Researcher 2 moves the props in front of the child and explains what happens next according to the instructions

## Instructions for Researcher 1

Today you and 'Researcher 2' are going to use all of these objects to make up a story together.

Which one could be you?

- Give the doll that they have chosen to the child and name the doll the child's name

O.k, this is 'name'

Now 'Researcher 2' would you like to pick a figure to be you?

O.k. this is 'Researcher 2'

- Researcher 2 should choose adult figure most similar to their own appearance
- Give child and Researcher 2 their figures and emphasise who is who by name

Now I'm going to choose a third person to be in the story.

This is Ben/ Jenny

- Choose an appropriate third doll. The third figure should be a different age, race and gender from the child
- Move the remaining dolls away

You and 'Researcher 2' are going to use all these things to make up a story. While you make up the story I will be out of the room.

When I come back I want you to tell me the story that you and 'Researcher 2' made up using all of the materials

O.k.?

- Ensure that the child appears to have understood the instructions

- Researcher 2 then leaves the room and waits outside
- Return in 5 mins and check if they are ready. If not, wait 2 mins (7mins maximum)

*O.k. are you ready?*

*I'm giving all of the characters to you 'child' and I want you to use all of the characters and the materials to tell me the story that you made up with 'Researcher 2'*

- Researcher 2 doesn't hold on to any characters
- Encourage the child to demonstrate '*Can you show me?*'
- During the re telling, Researcher 2 should not add any details but can be non verbally available to the child by watching them tell the story and being interested
- Researcher 1 should use two prompts. When the child seems to have finished they should ask them if they would like to add anything else. They should also ask if there is anything to be added about each character
- It is important that each child receives similar prompting in order to keep the task as standardised as possible for each participant

*O.k. that's great*

*What else happened?*

*Would you like to add anything else about Ben/ Jenny?*

*Would you like to add anything else about 'Researcher 2'?*

*Would you like to add anything else about 'Child'?*

## Instructions for Researcher 2

- Be the role of a playmate. Try not to instruct the child what to do but use modelling, encouragement and mutual play
- Refer to your figure as 'I' and the child's figure as 'you' or their name. Refer to Ben/ Jenny in the 3<sup>rd</sup> person

e.g. "Hey, would you like to come and play with me in the garden?"

"Shall we climb a tree?"

"Do you think Ben/ Jenny/ He/ She would like to climb the tree?"

- Introduce ideas and actions into the story as specified in the standardised instructions. It is also o.k. to suggest new ideas and actions into the story as they arise.
- Encourage the child to generate their own ideas. Comment upon these ideas and engage/ elaborate on them.
- Ben/ Jenny should be involved with a few actions but not really be a central focus. They should always be referred to in the 3<sup>rd</sup> person.
- Focus on your feelings, thoughts and experiences from the first person perspective. Try suggest your feelings, like, dislikes, reactions etc.

e.g. "Ouch that hurts"

"Yummy, I really like that"

"Oh I'm frightened"

"Hooray, that's fun"

- Encourage interaction between the characters. Speak directly to the child's figure.

e.g. "'Name' would you like to pick apples?"

"Do you want to play football with me 'Name'?"

- Try to elicit some emotional/ subjective states from the child
- Try to have fun!



### **Standardised ideas**

1. Use the ball as a stinging bee. The bee should sting Researcher 2. **Show fear and pain.**

*Oh no, I'm afraid, it's a bee!*

*Ouch it stung me! How can we make it better?*

Allow the child to use one of the objects to help. If they haven't already done so, suggest that you need medicine from the cup

*I think I need some medicine. Can you get some for me please?*

2. Ben/ Jenny uses the magnifying glass as a shovel. Use it to dig a hole. Researcher 2 trips over the shovel and falls into the hole. **Show anger**

*Look what's happened now? I have fallen into the hole. What can you use to pull me out of the hole? Please help me*

3. Researcher 2 suggests making some tea. Ben/ Jenny can drink some tea. Pretend that you didn't get any tea or didn't have enough tea. **Show feeling upset and feeling thirsty**

*Oh I didn't have any tea, that isn't fair*

*I'm so thirsty*

4. Ben/ Jenny play football with the child's character. You are left out. **Show feeling left out of the game and lonely**

*Why don't we pretend that you play a game of football with Ben/ Jenny?*

*Oh I'm all on my own now and feel left out*

Give child opportunity to invite you to join them. If they don't then asked to join in. **Show excitement to be playing the game**

*Can I play with you please?*

*Yeay! This is fun!*

5. Encourage the child to use an object with no obvious meaning e.g. the coloured hoop

*What can this be?*

6. Encourage the child to use an object with an obvious meaning e.g. the ladder

**Appendix 5: Social Feffer Task coding manual**

## Coding guide

### Story Co-creation

*Focus of observation.* The focus of the observation is on the story as created jointly by the tester and the participant. Specifically, we are interested in the degree of mutuality in the play. This involves both

a) the child's own ability to generate new and creative ideas, and to become invested in and sustain his/or her ideas expressed through the play materials and character

b) the child's responsiveness to and engagement with the ideas and subjective states of the tester (and the tester's character) in a truly collaborative manner.

**A. Engagement with Materials. These items focus upon the participant's use of the materials and objects (including his or her own character) in the creation of a story.**

<b>A1 Creativity</b>
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This item is broadly defined as the propensity and/or ability of the child to generate new meanings and ideas.

**4. The participant fails to produce new ideas.**

The child may play along quite happily but doesn't produce ANY ideas themselves.

**5. The participant is limited in the initiation of new ideas – either in frequency (very few) or range (restricted to limited topic), or there is a clear rote/scripted and/or concrete quality to any ideas initiated by the participant.**

The child produces some ideas but very few. The ideas they produce may also feel lacking in creativity- they may be very fixed on one topic or have little fluidity in their ideas.

**2.b.ebs:** This participant is slow to generate ideas and meanings- would probably do so more but the tester may have been a little fast to jump in with ideas. Could have possibly rated 1 but does generate a few ideas even though not really verbal about them.

**6. The participant often initiates new ideas but these ideas are limited in range, or there may be rote/scripted qualities to the ideas.**

Introduces more ideas than participants scoring 1 but there is still a slightly limited range or rigid quality to the range of ideas. They may only introduce just a few ideas in comparison to those scoring 3.

**7. The participant is fluent in the initiation and generation of ideas. The ideas are creative, and contribute to the flow and smoothness of the story.**

Here we would really expect the child to generate a variety of ideas that are fluid and flexible within the story. It is possible that the child may be slightly interested in a particular topic but they are able to inject these ideas in a smooth and relevant way.

### **See 6.b.ws**

#### Reliability and trends on consensus rating

Most of the discrepancies during the consensus rating seem to occur when Keren rates higher than Leah.

#### Examples

### **3.b.ws: K3 L1**

This participant requires some prompting but does generate a range of ideas:

- Looks at bruise through magnifying glass
- Goes up ladder to look
- Watches TV
- Pool
- “Go to bed all day long”
- Stuck in bucket
- Given that this participant does not seem as fluid or keen to suggest new ideas and meanings and requires prompting but does not generate a range:

Suggested consensus: **2**

### **4.b.ws K2 L1**

This participant is a little slow in generating ideas- requires prompting. She does generate quite a range once prompted:

- Water the plants
- Not allowed in pool- naughty
- Go and get a plaster/ bandage
- Medicine from cup
- Play catch/ it
- Insects/ bee/ ant

Suggested consensus: **2**

### **See example above of a clear 1**

### **3.b.bhs K3 L1**

This participant does generate a range of ideas and meanings:

- Ball as apple
- Magnifying glass as shovel
- Uses hoop to pull out
- Pours tea
- “Maybe we should say sorry and get the ball?”
- “Maybe we should go to his house?”

If this example is compared to **2.b.ebs** above, she seems to generate a lot more ideas (and is more creative and expressive). However, the generation of these ideas may not be quite as fluid or creative as a participant rated 3, e.g. **6.b.ws**.

Suggested consensus rating **2**

<b>A2 Investment with meanings/ideas as expressed through materials</b>
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This item is broadly defined as the extent to which the meanings and ideas matter to the participant.

**4. The participant shows little to no investment in the meanings as expressed through the play materials.**

The child barely uses the materials, if at all.

**5. Use of materials is primarily fleeting, rigid or superficial.**

The child uses the materials a little but this may not be consistent or they may seem very dismissive of them. They may also struggle to really create meanings and experiences through the materials or have difficulty in being creative with the use of the materials.

**6. The participant shows some investment in the meanings as expressed through the play materials, but does not sustain the engagement.**

This child is likely to use the materials more than rating 1 but may not seem engaged consistently. The use of the materials may seem superficial or rigid at times. They may seem less invested in the materials than participants rated 3 so that they are less proficient in expressing ideas, meanings or experiences through them.

**7. The participant cares about the ideas and meanings as expressed through the play materials.**

This participant is consistently invested in the materials so that ideas, meanings and experiences are expressed with them and through them. There is a sense that they are engaged and care about expressions through the materials.

**See 1.b.rhs, 14.b.ws for good examples of 3**

Examples

**2.b.rhs      K2    L3**

This ppt is clearly engaged with the materials and cares about using them and so would not be rated 1. He does create some meanings, such as using the magnifying glass and fetches some medicine in the cup. However, if we compare him to a rating of 3 where the ppt is active and proficient in expressing meanings and experiences through the materials in a very engaged way, this ppt falls slightly short. (See e.g. **1.b.rhs, 14.b.ws**)

**Suggested consensus: 2**

### A3 Role adoption for own character

This item is broadly defined as the extent to which the participant participates in the story *through* his or her own character.

**4. The participant makes little or no reference to their own character except when prompted to do so.**

There is no spontaneous expression of self through their figure. They may rarely pick up the figure.

**5. The participant makes some reference to their character, but this lacks evidence of role adoption. He or she may refer to the character in the 3<sup>rd</sup> person, or relate similarly to all of the dolls.**

The participant refers to their figure and may use it a little but there is little sense that they are actually using it to portray “self” or that they identify with the figure. They may refer to the dolls in a similar way with little evidence of preference towards their figure as “self”

**6. The participant refers to and shows a preference for his or her own character. S/he may refer to his or her own character in the 3<sup>rd</sup> person, adopt the character role with a superficial or un-sustained quality or conveys events in terms of actions and events rather than experiences.**

There is more evidence of identification than rating 1 as the child may obviously use and prefer their own figure. The key element here is whether they relate to the figure in a very action based way or whether they express experiences. Experiences may be conveyed through subjective states, talking “through” the figure or the way in which the story evolves around the character. It is sometimes helpful to watch out for use of the magnifying glass- do they hold it to their figure to look through or always look through it them self?

**7. The participant adopts a role for his or her own character and involves him or herself in ‘being’ in this role. Here, the participant may refer to his or her own character in the first-person. He or she conveys and describes events and experiences from the point-of-view of his or her own character.**

This participant will really act at being the figure and taking on the role. Experiences are expressed through the character to include points of view, conversation, subjective states and events. They may also indicate role adoption by holding the magnifying glass to their figure’s eye.

**C. Engagement with Tester - These items refer to the participant’s propensity to engage and collaborate with the tester during the co-creation of the story.**

### B1 Responsiveness to tester’s ideas

This item is broadly defined in terms of the participant’s responsiveness to those ideas introduced by the tester.

**4. The participant either consistently and actively rejects the ideas of the tester or fails to register ideas coming from the tester.**

There really is no sense of reciprocity here. There is no sense that they engage with the tester's ideas.

**5. The participant acknowledges the tester's ideas (this could be a verbal acknowledgement or a physical gesture) but does not adopt, relate to or include them in the story.**

The child may take a little notice of the tester's ideas but doesn't take them on for themselves or evolve them. They don't really integrate the tester's ideas into their own play. The tester's ideas may not seem readily accepted or welcomed.

**6. The participant adopts the tester's ideas but engages with them in a fleeting or transitory way. The ideas of the tester are not really incorporated into the participant's narrative, or developed within the flow of the story**

The participant does acknowledge and take on the tester's ideas but there is less evidence of them actually engaging with the ideas as they don't really evolve or build upon the tester's ideas. The child doesn't seem to integrate the tester's ideas into the story or play as a flowing and growing story line as often or as well as rating

**7. The participant engages with the tester's ideas. In doing so, he or she shows signs of actively incorporating the ideas of the tester into the story, evolving and developing them.**

The participant probably seems comfortable with the tester's ideas and actively incorporates them and builds upon them. The ideas are accepted and welcomed as part of an evolving story.

<b>B2 Interaction with tester's character</b>
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This item is focussed upon how the participant (in character) interacts with the tester's character in the story narrative.

**4. The participant does not interact with the tester's character and appears unaware of the character's subjective states.**

The participant does not interact character to character. They may refuse to interact in this way and rebuff attempts to interact by the tester or seem unaware of the tester's character.

**5. The participant acknowledges the tester's character and/or subjective states but there is limited if any sense of reciprocity or engagement.**

The child is aware of the tester's character and may acknowledge subjective states but does not appear to actively engage with them or respond to them in a spontaneous way. Attempts to interact by the tester may appear unwelcome so that it doesn't feel like a mutual exchange. The child may make clear attempts to avoid interactions with the tester's character and engage in solitary play. There is likely to be little character to character communication.



- 6. The participant acknowledges the tester's character and/or subjective states and there is clear responsiveness to the tester's character. However, there may be a transient or superficial quality to this interaction and the participant's ability to sustain interaction may be inconsistent or require prompting.**

The child is more open and receptive to interaction with the tester's character than in rating 1. They recognise the tester's character's subjective state. This interaction may be transient in that they appear to not actively seek out and engage with the tester's character- rather they are more likely to interact character to character when encouraged to do so. Their character to character interaction may seem less convincing or consistent than in rating 3. It may seem more superficial.

- 7. There is active interaction between the characters, including appropriate responsiveness to the subjective states of the tester's character and sustained mutual engagement.**

A high rating requires the child to actively interact character to character which includes engaging with and responding to the tester's character's subjective state. There is likely to be examples of character to character speech. The child may actively involve the tester's character in their narrative and experiences.

### **B3 Interaction with Tester**

This item is focussed upon how the child responds to and interacts with the tester.

- 4. The participant fails to acknowledge the tester and appears unaware of her as a partner in the activity.**

The child may engage in solitary play only and rebuff attempts to play mutually.

- 5. The participant acknowledges/responds to the tester when prompted, but does not initiate interaction.**

Any interaction may seem superficial or unwelcome- the child may prefer to play in a solitary way. The child does not actively engage (through initiating and including the tester)with the tester in order to collaboratively complete the task. The interaction may be inconsistent or require encouragement.

- 6. The participant responds to and initiates interaction with the tester but there is an unusual quality to the interaction – e.g. the participant may be controlling rather than collaborative, or the interaction may be fleeting or not sustained.**

The child does interact with the tester more than rating 1 but the quality of the interaction is such that it doesn't feel truly mutual or collaborative. The child may be quite dominating or more passive. There isn't the sense of a truly reciprocal exchange as the child and tester work together.

**7. The participant responds to, initiates and maintains interaction with the tester such that the activity feels truly collaborative.**

There is a sense that the child is open to working in a truly mutual and collaborative way so that the focus is on both party's contribution.

Story Narrative

*Focus of observation.* The focus of the observation is on the joint-ness inherent in the story as re-told by the participant. Specifically, we are interested in how 'what went on' in the co-creation between the tester and participant becomes internalised within the participant's own narrative. This involves *investment* with the mutual story/ideas, as expressed through the materials and characters.

**C1 Investment with meanings/ideas as expressed through materials**

This item is broadly defined as the extent to which the participant relates to the materials in a meaningful/engaged way during the story narrative.

**4. The participant shows little to no investment in the meanings as expressed through the play materials. He or she fails to use or refer to the materials when re-telling the story.**

Child does not really use the play materials to tell the story. May refer to them briefly.

**5. The participant uses the materials when re-telling the story – but in a fleeting, rigid or superficial manner.**

May refer to, touch or pick up the materials occasionally but does not use them to "show" or act out the story. The child's investment in the materials is not inherent in their narrative

**6. The participant shows some investment in the meanings as expressed through the play materials, but does not sustain the engagement.**

The child may use the materials to tell the story a little but is not as active expression Or appear as invested in the materials as an inherent component to the story narrative as rating 3. They may pick up and put down the materials.

**7. The participant cares about the ideas and meanings as expressed through the play materials, and this is clear in the way he or she uses the play materials when re-telling the story.**

The child uses the materials to act out the story and there is a real sense that the materials are an integral part of the story telling. This is evident in the way the child uses the materials to convey expressions, actions and events.

**C2 Role adoption for own character**

This item is broadly defined as the extent to which the participant re-tells the story *through* his or her own character.

4. **The participant makes little or no reference to their own character except when prompted to do so.**

The child may not include their own character or refer to it as “I” or “me”. Little or no indication that they identify with the figure as “self”.

5. **The participant makes some reference to their character, but this lacks evidence of role adoption. He or she may refer to the character in the 3<sup>rd</sup> person, or relate similarly to all of the dolls.**

The child may refer to their own character in such a way that suggests little personal identification. The child may tell the story with little reference to personal role.

6. **The participant refers to and shows a preference for his or her own character. S/he may refer to his or her own character in the 3<sup>rd</sup> person, adopt the character role with a superficial or un-sustained quality or conveys events in terms of actions and events rather than experiences.**

The child shows more identification with own character than rating 1 but does not express the same level of personal identification or “being” their character as with rating 3. The narrative may focus on isolated events rather than a rich description of experiences.

7. **The participant adopts a role for his or her own character and involves him or herself in ‘being’ in this role. Here, the participant may refer to his or her own character in the first-person. He or she conveys and describes events and experiences from the point-of-view of his or her own character.**

The child clearly adopts their character as “self” and narrates a story that includes experiences. The child may include points of view, character speech and subjective states.

### **C3 Role taking in relation to tester’s character**

This item is focussed upon how the participant includes the tester’s character in the story narrative.

4. **The participant makes little or no reference to the tester’s character except when prompted to do so.**

The child neglects the tester’s character and does not describe them as central to the story. There is no evidence that they have related to the tester’s character.

5. **The participant makes infrequent reference to the tester’s character but this is fleeting and lacks evidence of relation to the role.**

The child may refer to the tester’s character but does not include them as an integral part of the story. They are unlikely to use the tester’s character to tell the story. They mention only actions with no reference to subjective states.

6. **The participant makes consistent reference to the tester’s character, but this is done on the basis of actions rather than experiences. The**

**description may be focussed on what the tester's character did or said – rather than how the character felt.**

The child may often include the tester's character and may pick up the tester's figure. However, when referring to the tester's character there is little sense that they take on the character's role or "be" the character. The narrative is action based with little sense of experiences or subjective states.

**7. The participant identifies with the role of the tester's character during the story re-telling. Here, he or she may use the tester's character to act out relevant parts of the story as well as make clear reference to the tester's character's subjective states.**

The child seems to actively take on the role of the tester's character when telling the story. They act out events and include a rich narrative of experiences. They express subjective states and may repeat speech. When they tell the part of the tester's character they appear to "be" them

<b>C3 Role taking in relation to tester's character</b>
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**This item is focussed upon how the participant includes the tester's character in the story narrative.**

**a. The participant makes little or no reference to the tester's character except when prompted to do so.**

Ppt may completely ignore the tester's character unless prompted.

**b. The participant makes infrequent reference to the tester's character but this is fleeting and lacks evidence of relation to the role.**

Mentions some action based events but in a fleeting way, may need to be prompted. No mention of subjective states. Probably does not really act out events using tester's doll.

**c. The participant makes consistent reference to the tester's character, but this is done on the basis of actions rather than experiences. The description may be focussed on what the tester's character did or said – rather than how the character felt.**

A qualitative difference in the way events are described. Little or no reference to subjective states.

**d. The participant identifies with the role of the tester's character during the story re-telling. Here, he or she may use the tester's character to act out relevant parts of the story as well as make clear reference to the tester's character's subjective states.**

Acts out experiences using the tester's doll. Conveys experiences, subjective states. Seems really involved with what the tester's character experienced.

<b>C4. Overall mutuality of account</b>
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**This item reflects the degree to which the narrative provided by the participant conveys a sense of mutuality and collaboration.**

**4. The participant makes little to no reference to the ideas that the tester introduced, unless prompted to do so.**

May only talk about own ideas or may just be limited in their narrative of the story

**5. The participant refers to the tester's ideas/input in a matter-of-fact or fleeting way, and may need to be prompted to elaborate upon these ideas.**

For example, may briefly say "this happened, that happened" when prompted but does not seem engaged with the ideas.

**6. The participant makes spontaneous reference to the tester's ideas and contributions. However, there is the sense that these are added on rather than part of a mutually developed story. The participant may seem a bit stuck on his or her own agenda and the story from his or her own point-of-view.**

**7. The participant's narrative conveys mutuality and collaboration. The ideas of the tester and of the child have become interwoven into a story which is a joint product. The participant is able to 'be' both self and other (tester) in re-telling their joint story**

A truly collaborative feel to their account. Is interested in the mutuality of the account and conveys this when telling the story from both perspectives.