Reading Words and Reading Minds:

An Investigation of the Skills of Children Diagnosed with Hyperlexia

Volume II

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Chapter 8 - Advanced Theory of Mind and Hyperlexia

8.1 A rationale for exploration

High level comprehension skills have been shown to rely upon a number of different abilities including integrating information from both environmental and social contexts as well as accurately perceiving the intention of the speaker. It was hypothesised that a core deficit in Theory of Mind may account for the comprehension failure observed in the subjects with Hyperlexia. Given their high functioning nature, it was, however, also predicted that this core deficit would not be manifest in basic Theory of Mind tasks such as the Sally Anne Marble Story, because tasks such as this explore more basic first-order Theory of Mind only (understanding what another person thinks), a skill considered to be adequately developed in the subjects. Instead, it was anticipated that the subjects with Hyperlexia would have difficulty understanding second-order Theory of Mind (understanding that person X thinks that person Y believes). Therefore, previously designed tasks measuring these more advanced skills should be administered as a starting point for the exploration of Hyperlexic functioning in this area.

It was anticipated that their performance on these measures would provide insight into their comprehension failure and guide the research and development of alternate, novel measures that could be sufficiently sensitive to identify the nature of the core deficit in this group of subjects.

The same subjects who participated in the novel word reading task (see Chapter 6 p133) participated in this and all future sections of the study. As such, five of the ten original subjects with Hyperlexia are contrasted with five normal controls matched for age and gender throughout the following experimental situations. Two specific advanced tasks were selected to form the starting point of this investigation. As neither represented normed activities, the normal age-matched control group was essential for the identification of any weaknesses in this area.

8.2 The Bowler (1992) Study

Bowler (1992) both replicated earlier studies of first- and second-order Theory of Mind and created an original study involving a group of adolescents and adults of normal or near-normal intelligence who met the criteria for Asperger's Syndrome. He included two control groups in his study in order to further explore the relationship between social impairment and impaired Theory of Mind. One control group included non-handicapped subjects, while the other included subjects with socially-impairing chronic schizophrenia. Fifteen subjects from each group participated in the study. The study contained two parts. The first part of his study involved two sections beginning with a replication of Baron-Cohen et al's (1985) work on first-order attribution of beliefs. The second section tested the subjects' ability to solve problems involving second-order attribution of beliefs.

The first scenario was similar to the 'marble story' used by Baron-Cohen et al (1985), while the second scenario was based on that which was developed by Perner and Wimmer (1985) and was identical to that used by Baron-Cohen (1989). See chapter 7.

Bowler found that the subjects with Asperger's Syndrome were as capable as normal controls in correctly solving second-order Theory of Mind questions. In addition, neither the subjects with Asperger's Syndrome nor those with Schizophrenia differed markedly from the controls in their use of mental state terms to explain why the protagonists in the two stories behaved in the way they did. He suggested that the data from the non-handicapped group made it unlikely that failure to make explicit reference to mental stated reflected defective metarepresentational skills.

Instead, he proposed that failure to use mental state terms may result from alternate factors including features of the story that focus subjects' minds on non-mental explanations for people's behaviour.

As a result, he devised an additional second-order Theory of Mind story in which the event leading to the false belief was a random, non-intentional action and in which the content of the story was more adult in nature, thereby being more appropriate to the subjects. Bowler's story involved two characters, Peter and Jane. The text of Bowler's (1992) "Peter and Jane Overcoat Story" is presented in Figure 8.2.

Figure 8.2 The Bowler (1992) Peter and Jane Overcoat Story

Bowler applied the following criteria for scoring. Subjects were only credited with a correct response if they answered both the Test Question and the Reality and Memory Questions correctly. He explained that using a strict passing criterion yielded a conservative estimate of subjects' abilities and this maximized the possibility of revealing impaired abilities. The current study applied Bowler's scoring criteria. As such subjects were credited with a correct response only if they answered the Test Question and both the Reality and Memory Questions correctly. Table 8.2 illustrates the results obtained by both the subjects with Hyperlexia and the normal controls.

Table 8.2

BOWLER'S (1992) PETER AND JANE STORY				
SUBJECT	TEST Q.	REALITY Q.	MEMORY Q.	JUSTIFICATION Q.
MH (H)	+	+	+	-
DW (H)	+	+	+	-
CW (H)	-	-	+	-
M Dit (H)	-	-	+	-
AH (H)	+	+	+	+
PB (NC)	+	+	+	+
MB (NC)	+	+	+	+
ZR (NC)	+	+	+	+
JL (NC)	+	+	+	+
DL (NC)	+	+	+	+

H = HYPERLEXIC GROUP NC = NORMAL CONTROL GROUP

+ = CORRECT - = INCORRECT

Results indicate that all normal controls answered all test, memory and reality questions correctly. While all the subjects with Hyperlexia answered all the memory questions correctly, two of the five did not answer the test and reality questions accurately. In accordance with Bowler's (1992) criteria all answers to the justification question "why" i.e. Why does Jane think Peter has gone to store X ? were scored in three possible ways.

Answers were differentiated according to whether they referred to neither character's mental state (zero-order, e.g. because store X is out of stock), either character's mental state (first-order, e.g. because Peter didn't know they were out of stock otherwise he would have gone to store X), or those responses that included one character's mental state embedded in the other (second-order, e.g. because she thinks that he knows they are out of stock). Only if statements explicitly referred to a mental state could they be coded as such. Interestingly, all the normal controls' justification responses were second-order in nature (e.g. because she thinks that he thinks they are still in stock).

An analysis of the Hyperlexic group's responses indicated that only one of the subjects answered the justification question correctly. A.H.'s response to the "why" question i.e. Why does Jane think Peter has gone to store X was : 'because Peter didn't know they're out of stock otherwise he would have gone to store Y.' This response was regarded as correct and evidence of a first-order answer.

The remaining responses were all incorrect.

DW 'because they had scheduled to go there eventually'

C.W. 'because that's where he found a coat almost like it but it wasn't that good'

M.H. 'because to see if they got any information'

M.Dit. 'because store X is out of stock'

The results clearly show that the normal controls answered all questions 100% accurately and they all used second-order mental state terms to explain their solutions.

In contrast, while three of the five subjects with Hyperlexia answered the test, memory and reality questions correctly only one of them displayed success in responding to the justification question and even then he used a first-order mental state explanation. Bowler (1992) confirmed that the nature of the story can influence the kinds of explanations given by subjects.

He demonstrated that there was a stronger tendency for subjects in all three groups to make use of mental state terms in the "Peter and Jane" story relative to the alternate second-order scenario he had used earlier in the study. He found that the non-handicapped controls in his study were more likely to give second-order explanations, but this tendency was not a significant one.

He also concluded that the overall low level of higher-order explanations even among non-handicapped controls suggests that a failure to use mental state explanations is not necessarily a strong predictor of social impairment.

This leads one to question the implications of the finding that three of the five subjects with Hyperlexia could demonstrate second-order Theory of Mind awareness by answering the test question correctly, but only one could offer an explanation encompassing this awareness. Does this reflect a failure in the application of Theory of Mind knowledge rather than a deficit in Theory of Mind itself?

Bowler suggests that it is possible that failure of performance rather than competence characterises the behaviour of individuals with Autism. He proposes that this failure may result from a lack of Frith's 'Central drive for Coherence.' This refers to the central cognitive process that organises and coordinates information from memory and sensory and perceptual systems to render the information of maximum relevance to the psychological task at hand.

Bowler concludes that the relationship between an ability to attribute mental states to others and social impairment is not as straightforward as is sometimes thought.

As such, possession of a Theory of Mind does not protect against social impairment and social impairment does not necessarily imply a defective Theory of Mind. He adds that the combination of social impairment with an intact second-order Theory of Mind suggests that it is a failure of application rather than an absence of knowledge that characterises the behaviour of individuals with Autism. Social impairment in Autism is seen as one manifestation of this inability to apply theory of mind knowledge to solving real-life problems.

This leads one to consider the ways in which the Hyperlexic group's social pragmatic skills break down. If the nature of a story can influence the quality and type of responses provided then perhaps it is this factor that could be prevalent in the anecdotal accounts of comprehension failure and social language breakdown. Would a situation more applicable to daily communication produce different results in the subjects with Hyperlexia and would this offer us greater insight into the quality of their communicative breakdowns?

8.3 Happe's (1994) Stories

In order to explore functioning on advanced Theory of Mind tasks further, a selection of Happe's (1994) stories were chosen for use in this study.

These stories were selected because Happe specifically devised vignettes about everyday situations in which people say things they don't mean literally. The goal in doing this task was to present a more naturalistic challenge to the subjects. Using this contextually embedded and more realistic form of presentation, it was anticipated that it would challenge subjects who succeeded on simplified tasks.

Happe ensured that the stories were not imaginative, but were simple accounts of events which focused on the different motivations that can lie behind everyday utterances that are not literal. The stories themselves were designed to be unambiguous so that only one plausible interpretation of the situation should be made.

The following story types - lie, white lie, double bluff, figure of speech, irony and persuasion were replicated in the current research.

Figure 8.3 presents a selection of these stories.

Figure 8.3 A selection of Happe's (1994) stories

Figure 8.3 A selection of Happe's (1994) stories-continued

Figure 8.3 A selection of Happe's (1994) stories-continued

Once again scoring procedures followed the author's recommendations with justifications given in response to "why" questions rated as correct or incorrect. A justification was scored as incorrect if it involved factual errors from the passage or if it incorporated an inference that was inappropriate as a reason for the character's utterance. Happe provides the following examples to illustrate incorrect responses. In the lie story, Anna breaks a vase but tells her Mother that the dog did it. The justification "Anna did not break the vase" would be considered factually incorrect. The justification "Anna was just joking" would also be incorrect because in the story it is not appropriate to interpret her utterance as a joke.

Justifications were also analysed as to whether they involved a mental or physical state. Mental states referred to thoughts, feelings, desires, tracts and dispositions e.g. use of words such as 'happy, afraid, know, lie, pretend'. Physical states referred to nonmental events e.g. ' big, looks like, to sell them.' Only one score was obtained per story giving credit for subjects' best responses. This meant that if subjects provided more than one justification or self corrected their response, the better response was chosen.

As with Happe's administration, if answers to the first question were wrong, the story was read again until the subject either answered it correctly or justified their answer and appeared to understand the situation. Table 8.3 illustrates the results.

Table 8.3

HAPPE STORIES						
SUBJECT	LIE	WHITE LIE	FIGURE OF SPEECH	DOUBLE BLUFF	IRONY	PERSU-ASION
MH(H)	+	+	+	-	+	-
DW(H)	+	+	+	+	+	+
CW(H)	+	+	+	-	+	-
MDit (H)	+	+	+	+	+	-
AH (H)	+	+	+	+	+	-
PB(NC)	+	+	+	+	+	+
MB(NC)	+	+	+	+	+	-
ZR(NC)	+	+	+	+	+	+
JL(NC)	+	+	+	+	+	+
DL(NC)	+	+	+	+	+	+

H = HYPERLEXIC GROUP NC = NORMAL CONTROL GROUP

+ = CORRECT - = INCORRECT

Both the normal controls and the Hyperlexic group answered all justification questions with reference to mental state terms. All the normal controls answered all questions correctly with the exception of one subject who scored incorrectly on the Persuasion Story. A similar trend was noted in the Hyperlexic group although four of the five subjects did not answer the Persuasion Story correctly and two of the five produced errors on the Double Bluff Story as well.

The Persuasion Story is presented again below.

Jill wanted to buy a kitten, so she went to see Mrs. Smith, who had lots of kittens she didn't want. Now Mrs. Smith loved the kittens, and she wouldn't do anything to harm them, though she couldn't keep them all herself. When Jane visited she wasn't sure she wanted one of Mrs. Smith's kittens, since they were all males and she had wanted a female. But Mrs. Smith said, "If no one buys the kittens I'll just have to drown them!"

Was it true, what Mrs. Smith said?

Why did Mrs. Smith say this to Jane?

This story typically evoked the following type of response from the normal controls.

Was it true, what Mrs Smith said? - no

Why did Mrs Smith say this to Jane? - because she wanted Jane to buy the kitten and wanted her to feel sorry for them

The Hyperlexic group's responses include:

'humour'

'to like to find a way to get rid of them-she had to drown them.'

Happe used these stories and others with 24 subjects with Autism. Eighteen of them had passed first-order false belief tasks and another six had failed these tasks. The group of 18 who passed first- order false belief tasks was further divided into those who performed consistently well on first-order tasks only, and those who were successful at second-order tasks as well. Controls included 11 subjects with mental handicap who had passed first and second-order tasks, plus 2 adults with mental handicap who did not score perfectly on first-order belief tasks, 26 normal children who had passed first and second-order belief tasks and a group of ten normal adults.

Happe found that on the joking, lying and persuasion stories more of the subjects in the "no Theory of Mind group" made mental state errors than did subjects in the "first-order group" who also made more errors than those in the "second-order group." Although she cautioned against drawing strong conclusions from small numbers, she suggested that these stories were at a level of difficulty that best revealed real differences in her groups' ability to attribute mental states. She considered stories about Sarcasm and Double Bluff as being too difficult for them.

The stories reveal deficits in even Happe's very able group of subjects with Autism. She suggested that results on these stories may more closely reflect real life difficulties in understanding other minds.

She found that what distinguished the subjects in her study was not a failure to use mental state terms but a failure to use the appropriate mental state term. In this way her subjects recognised that their answers needed to incorporate mental state language even if their responses were not always appropriate.

In contrast, the Hyperlexic group's responses typically not only involved mental state terms but also incorporated recognition of sarcasm and idiom usage, except for the Persuasion and Double Bluff stories.

8.4 Advanced Theory of Mind - A Conclusion

What implications do the current findings have for possible Theory of Mind deficits in subjects with Hyperlexia ? We now know that unlike the normal controls, the subjects with Hyperlexia were not uniform in demonstrating second-order Theory of Mind.

Administration of Bowler's (1992) task pointed to inconsistency both between the subjects with Hyperlexia and within their response patterns. While three of the five subjects with Hyperlexia displayed second-order Theory of Mind awareness in their responses to the test question, only one of those subject's responses to the subsequent justification question reflected true understanding of Theory of Mind, albeit through use of a first-order mental state explanation.

Such inconsistency was not noted in the normal control response pattern.

While the majority of the Hyperlexic group's answers to the Happe stories were correct, several had difficulty with the Persuasion story in particular. Nonetheless, they were able to display understanding of Theory of Mind, at least in certain circumstances.

In fact, not only did their overall response pattern on the Happe (1994) task reflect use of mental state terms, they also incorporated high level skills such as recognition of sarcasm and idiom usage.

The findings indicate that while the subjects with Hyperlexia can display Theory of Mind they are not able to demonstrate this skill consistently, and their performance thus far still seems better than anecdotal evidence would suggest.

It is certainly true that anecdotal accounts frequently exaggerate one's perception of comprehension difficulty because one typically recalls "spectacular" failures of comprehension rather than incidents which involve a normal course of events. Nonetheless, the combination of inconsistent findings on the Happe and Bowler task together with anecdotal information suggests the need for further investigation in this area. What accounts for these discrepancies?

Perhaps this inconsistency relates to the nature of the stories presented. Were the subjects more successful on some of Happe's stories because they were relatively structured and cued?

Would experimental tasks that relate even more meaningfully to the subjects and that occur more naturally in social contexts applicable to their lives result in different findings.

Perhaps the inconsistency relates to Bowler's suggestion that breakdown occurs in application of skill rather than in lacking the skill entirely and perhaps the nature of the situation influences whether the subjects with Hyperlexia select answers reflecting Theory of Mind. Frith's (1989) Central Coherence Theory certainly warrants further consideration in this regard, as perhaps the breakdown involves Central Coherence rather that Theory of Mind.

Overall, the results point to the need for further investigation designed to explore the conditions under which the subjects' Theory of Mind skills break down.

Chapter 9 - A step further in our understanding of comprehension breakdown in Hyperlexia

9.1 Introduction

Why did the subjects with Hyperlexia display uneven performance on the Bowler (1992) and Happe (1994) tasks? Why do they seem to demonstrate Theory of Mind awareness in one situation and then not use that skill in another situation, and why do some do well despite anecdotal accounts of their comprehension failure? Two different experimental situations will be presented in this chapter to explore Theory of Mind in greater detail.

The investigation will explore whether there is a qualitative difference in the response pattern of subjects with Hyperlexia as compared with the norm, and, if so, whether this qualitative difference could account for their comprehension problems. Chapter 8 indicated that this may in fact be a possible explanation, but the tasks presented were limited and pointed to the need for novel tasks that could explore this area in greater depth and offer more insight into the qualitative differences in response patterns suggested by those findings.

We need to go beyond tasks that explore 1st-order and 2nd-order Theory of Mind exclusively to experimental situations that probe Coherence and Relevance as well. We must approach this investigation with tasks that are less detached from everyday life, involving situations which are specifically relevant to the population being tested.

We might also explore situations that are personalised and that involve subjects as characters to determine whether personal involvement in communicative situations could be influencing their responses.

9.2 Two Story Tasks

The same group of subjects that completed the Bowler and Happe tasks were selected for participation in these experimental situations. Therefore five of the original ten subjects with Hyperlexia were contrasted with five normal controls matched for age, gender and social background. Normal age-matched controls were imperative in order to contrast the functioning of the two groups on novel, non-normed tasks.

The story tasks were designed to investigate subjects' understanding of Theory of Mind by exploring situations that mimicked social contexts of real life. The stories were created to depict situations that were both relevant to teenage life and incorporated plausible breakdowns in communication involving deception. A number of hypotheses were investigated using these tasks. These included examining whether the subjects lacked a Theory of Mind, or whether they broke down only on tasks measuring second-order Theory of Mind. Furthermore, the presence of inconsistencies such as those observed on the Bowler and Happe tasks were explored.

Each story involved a central character who either deceived others or was deceived her/himself. The scene was described to each subject and the story was told with accompanying visual cues in the form of a three dimensional map illustrating the neighbourhood and key factual data. (See figures 9.2a and 9.2b) In addition to the map, a different colour plastic figure was used to identify each character as distinct from one another.

These plastic figures shaped like humans were placed on index cards labelled with their names as a referent for the subject. The researcher told the story and interspersed amongst the text were 25 questions. First and second-order Theory of Mind skills were targeted in several questions, which explored subjects' understanding of the feelings, beliefs, thoughts, intentions and knowledge of others. The questions devised related specifically to the hypotheses delineated above exploring Theory of Mind and the nature of any inconsistencies within/across the story. The specific questions investigated were: Questions 4, 5, 6, 8, 9, 10, 11, 12, 14, 15, 16 and 17 of the Basketball Story and Questions 3, 4, 5, 6, 7, 8, 9, 11, 12, 15 and17 of the Junior high Story.

While each story comprised 25 questions some of these questions targeted factual recall of information to ensure comprehension of the factual components of the story.

The responses of the subjects to four factual questions per story were checked for accuracy and it was determined that all subjects adequately responded to them. The other questions specifically addressed belief attribution. It was anticipated that the Hyperlexic group would exhibit breakdown in their understanding and use of belief attributions and that their response patterns would be qualitatively different to the normal controls.

The precise text of each story follows.

The Basketball Story

Text:

All the kids are on vacation. X (subject's name) wants to go to the park on Green Street to play basketball. He only likes to play basketball with his friends. X calls Jim (his best friend) and invites him to come and play basketball in the park on Green Street at 4 o'clock.

Question 1 : What does X want to do?

Question 2 : Where does he want to go?

Question 3 : When does he want to go?

X and Jim agree to go and play basketball in the park on Green Street at 4 o'clock.

Meanwhile Gavin (X's good friend) calls X. He says, "What are you doing this afternoon?"

Question 4 : What does Gavin think Jim wants to do?

X invites Gavin to come and play basketball.

Question 5 : What do you think X says?

Question 6 : Why does X say that?

Question 7 : What did X and Jim agree to do?

Then Naomi calls. X doesn't really like Naomi. Naomi says, "What are you doing this afternoon?" X says, "We're going to play basketball in the park on Green Street at 4.45p.m. You can come if you like."

Question 8 : What is Naomi going to do?

Question 9 : How does Naomi feel?

Question 10 : Why does Naomi feel that way?

Question 11 : Why did X say that?

Question 12 : When does Naomi think the others are meeting?

Question 13 : Whose fault is it?

Then Daniel calls. X hates Daniel. Daniel says, "Can I come over this afternoon?" X says,"No, I'm going to play basketball in the park on West Street at 4 o'clock. Come there if you want."

Question 14 : How does Daniel feel about this?

Question 15 : Where does Daniel think the others are meeting?

Question 16 : Why does X tell him to go to West Street?

Question 17 : What does Naomi think about Daniel' situation?

Question 18 : Which is worse - to give the wrong time or the wrong place?

Question 19 : Why did you say that?

Question 20 : Do you agree with what X said?

Question 21 : What was the problem described in the story?

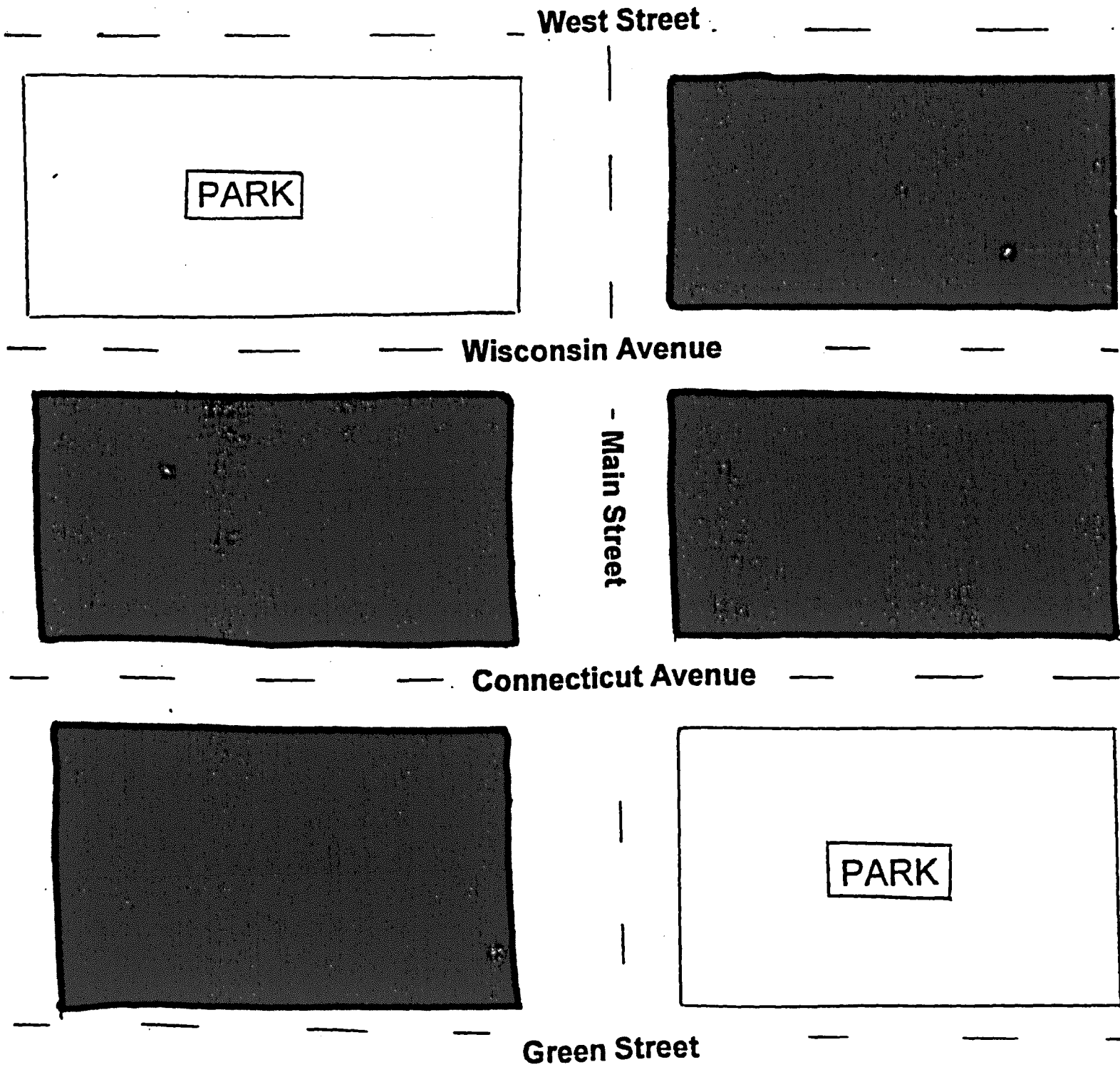
Question 22 : What do you think will happen next?

Question 23 : How could the problem have been avoided?

Question 24 : Have you ever had a problem with a social situation like this?

Question 25 : Tell me about it.

Figure 9.2a The Map of the Basketball Story



The Junior High Story

Text:

This is a story about two girls called Jane and Veronica. Jane is not a popular kid in class. She asked Veronica (the most popular girl) to go to a movie with her on Saturday at 10 o'clock. Veronica agreed.

Question 1 : What did Veronica and Jane agree to do?

Question 2 : When did they agree to go?

By the way Jane does all of Veronica's homework for her.

Question 3 : How does Jane feel about doing all of Veronica's homework?

Question 4 : Why does Jane do it?

Question 5 : What does Jane think Veronica feels about her doing the homework?

Later that day Veronica goes home on the bus with Gabi. Veronica really likes Gabi. Gabi invites Veronica to go to the Mall with her on Saturday at 10 o'clock. Veronica agrees.

Question 6 : What does Veronica agree to do?

Question 7 : Why does Veronica agree to do that?

Question 8 : What do you think Veronica should have said to Gabi?

Question 9 : How does Jane feel about it?

Question 10: Do you agree with Veronica's actions?

Question 11: What does Veronica think Jane feels about it?

Question 12 : What does Gabi think Jane feels about it?

On Saturday Veronica and Gabi went to the Mall together. Jane waited at the movie.

Question 13 : What did Veronica and Gabi do?

Question 14 : Where was Jane?

On Monday Jane refused to do Veronica's homework.

Question 15 : Why did Jane do that?

On Tuesday Veronica asked Gabi to steal Jane's homework. Jane got detention.

Question 16 : What do you think happened to Jane?

Question 17 : Why did that happen?

Question 18 : Whose fault was it really?

Question 19 : Why was it .....'s fault?

Question 20 : What is worse - not to keep an arrangement or to cheat on homework?

Question 21 : What was the problem described in the story?

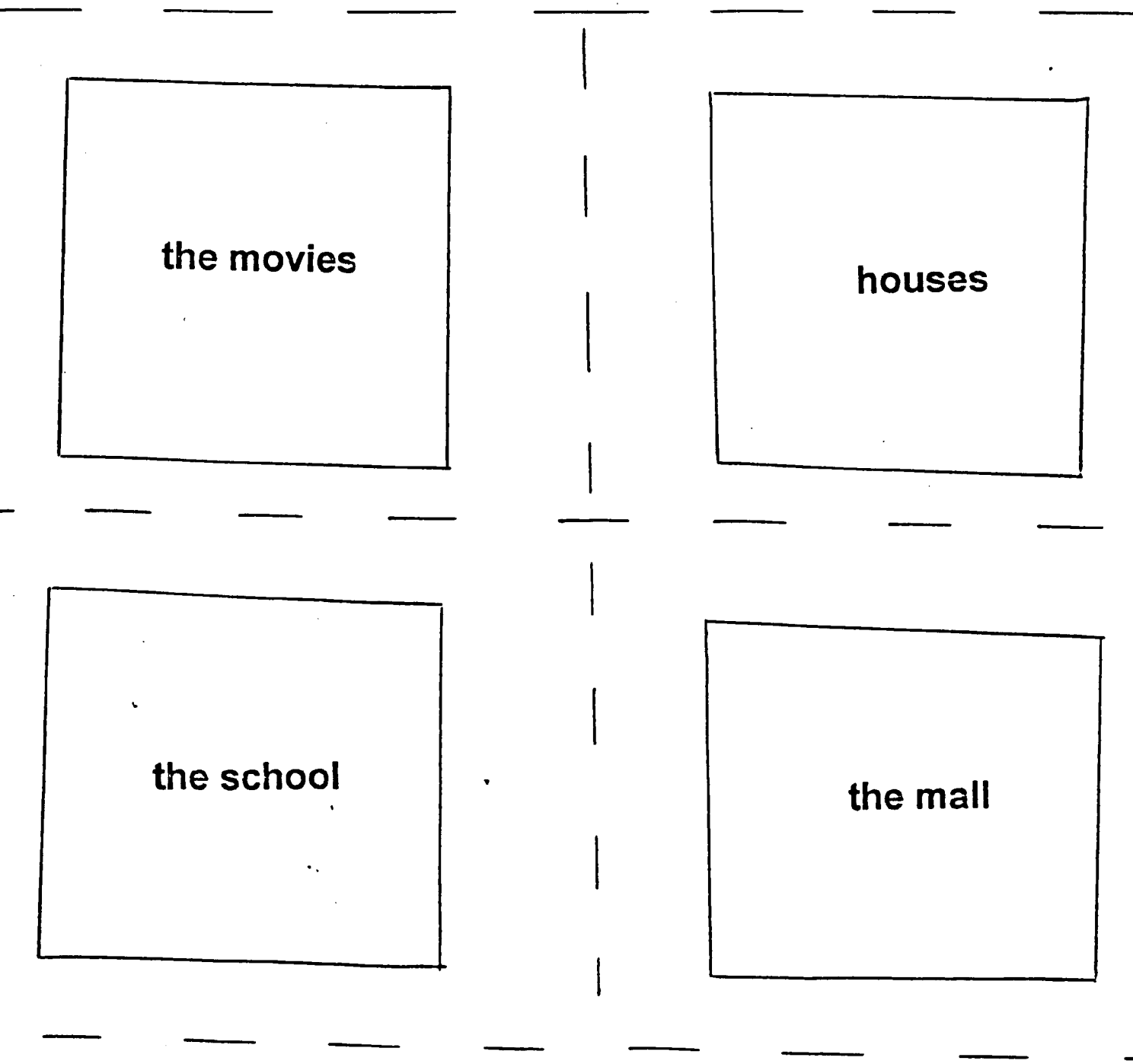
Question 22 : What do you think will happen next?

Question 23 : How could the problem have been avoided?

Question 24 : Have you ever had a problem with a social situation like this?

Question 25 : Tell me about it.

Figure 9.2b Map of the Junior High Story



9.3 Scoring

All responses obtained for both stories were analysed according to whether they demonstrated appropriate understanding of either first or second-order belief attribution. Answers were found to be either correct or incorrect. Correct responses reflected either the first or second-order Theory of Mind understanding explored by the given question.
A number of different reasons could account for an incorrect response. Each category of incorrect response will be discussed and exemplified below.

Responses were scored as incorrect if they demonstrated only partial understanding of the appropriate belief attribution. For example, the subject, C.W., who answered question 11 of the Basketball Story that explored why the main character gave Naomi the wrong time (i.e. because he didn't like her that much and wanted her to arrive late after the game was over) with 'because he didn't want her around the guys because he knew they liked her' obtained a score of incorrect for this item. Although it was valid that he 'didn't want her around the guys,' the second part of his statement (that he knew the guys liked her) was not implied in the text and was an inappropriate inference to make, thus rendering the response only partially correct.

Responses were scored as incorrect if they contained invented or bizarre components. For example, the subject, M.H., who replied to question 8 of the Basketball Story, (What is Naomi going to do?' i.e. will she go and play basketball?) with 'um(long delay) she probably won't come because she doesn't like basketball that much' illustrates his use of justifications that incorporated elements neither stated nor implied by the text and is therefore considered inventive. The former example of a response that was only partially correct also indicated the use of an invented component that compromised the correctness of his statement. A response can however also be partially correct without being invented and bizarre, so that differentiation of the categories is warranted. The category of bizarre/ invented responses thus relates specifically to those responses that aren't partially correct and do include an inventive component.

Responses were scored as incorrect if there was any indication of inconsistency within the single response. For example, in the Junior High Girl Story for question 12 that explores Gabi's perception of Jane's feelings, (when Gabi does not know that Veronica had already made a prior arrangement with Jane for the same time as she had now made with Veronica and the subject is asked what Gabi thinks Jane feels about it), C.W. said, 'hurt but she doesn't care but she didn't know so how could she be blamed.' A different subject, MDit, said 'happy I mean wait a minute sad' as a response to the same question.

Both responses reflected inconsistency within the same answer indicating unstable knowledge of the area explored.

Two further categories of incorrect responses were identified. If there was any evidence of inconsistency within the story, this also constituted an incorrect response. For example, in the Basketball Story, question 9 says 'How does Naomi feel?', while question 10 says 'Why does Naomi feel that way?' According to the story Naomi should feel happy to be invited to play basketball as she doesn't know that she is being deceived and that the others will be meeting at a different time. M.Dit responded to question 9 with 'happy' and to question 10 'because I don't really like him and I invited him anyway.' This answer reflected inconsistency between the questions as although the response to question 9 was correct, the following justification response was incorrect and suggested that the answer to question 9 judged as appropriate did not truly reflect Theory of Mind awareness as could have been inferred were the question to have occurred without further probing. Any blatant error was also regarded as inconsistent with the story (e.g saying someone is happy when they were sad).

Finally, responses were also scored as incorrect if they were unresponsive. In this way any response that stated 'I don't know' or 'I don't understand' or any other vague attempt or avoidance of response was scored as incorrect.

9.4 Results

Certain of the questions posed in the texts were considered useful as evidence of the nature of the subjects' understanding of belief attributions. The remaining questions posed, served to ensure that the subjects had comprehended and remembered essential factual information presented in the texts. The subset of questions that proved relevant to the hypotheses outlined in section 9.1 form the focus of this analysis and discussion. As a starting point for the analysis each subject's responses were broadly investigated in terms of evidence for correct and incorrect responses.

The criteria outlined in section 9.3 were used to determine whether the subjects' responses were correct or incorrect. If they were correct the responses were analysed as to whether they reflected understanding of first-and second-order Theory of Mind. If they were incorrect, they were analysed according to whether they reflected inconsistency in the question, inconsistency in the story, an invented/bizarre response, a partially correct response or whether the answer was unresponsive.

Table 9.4 (i) and 9.4 (ii) have been created to summarise the behaviours demonstrated by the subjects on these tasks.

Table 4.4(i):

The Basketball Story							
	Correct:		Incorrect:				
Name	1st-order ToM	2nd-order ToM	Inconsistency in Question?	Inconsistency in Story	Invented Responses	Part Correct	Unresponsive
M.B.	8	4					
P.B.	8	4					
Z.K.	8	4					
J.L.	8	4					
D.L.	8	4					
A.H.	4	2		1		4	1
M. Dit	4	1	1	3		2	1
M.H.	1	2	1	4	4		
C.W.	3	2		4	3		
D.W.	3	3		6			

Bold = Hyperlexic Group

Table 9.4 (ii)- The Junior High Story

The Junior High Story							
	Correct:		Incorrect:				
Name	1st - order ToM	2nd- order ToM	Inconsistency in Question?	Inconsistency in Story	Invented Responses	Part Correct	Unresponsive
M.B.	8	3					
P.B.	8	3					
Z.K.	8	3					
J.L.	8	3					
D.L.	8	3					
A.H.	5	1		4		1	
M.Dit	4		2	2		2	1
M.H.	5	1		3			2
C.W.	7			1	1	1	1
D.W.	3	1		4	1	2	

Bold = Hyperlexic Group

These tables illustrate that the responses of the Hyperlexic group were qualitatively different to those of the normal controls. All the normal controls obtained 100% accuracy on the questions posed, while the Hyperlexic group were inconsistent in their responses. The data are robust given the non-random response nature of the task and they clearly point to discrepant functioning between the two groups. The results obtained can be analysed according to their implications regarding the specific questions posed.

9.4a Do the subjects with Hyperlexia lack a Theory of Mind?

In confirmation of results of the Bowler (1992) and Happe (1994) tasks, these experimental stories indicated that those with Hyperlexia do not lack a Theory of Mind entirely. Nonetheless, chi square analysis revealed a significant difference between the normal controls and the subjects with Hyperlexia in their response to first-order Theory of Mind questions ($\chi^2 = 36.36$, $p<0.001$ for the Basketball Story and $\chi^2 = 20.00$, $p<0.001$ for the Junior High Story), indicating that the Hyperlexic group were significantly poorer than normal controls on these questions. There were times when the subjects with Hyperlexia could recognise that a character was in a particular emotion or knowledge state, however, likewise, there were alternate times when belief attributions were not consistently applied to the situation. In this way the inconsistent pattern noted on the Bowler and Happe tasks resurfaced amongst the Hyperlexic group and once again was completely absent in the normal controls.

While the Hyperlexic group appeared to produce more errors on questions exploring awareness of feelings and emotions rather than knowledge states, it was equally true that they did not always accurately recognise the person's given knowledge state either.

To exemplify this further, let us consider the Basketball Story in which Daniel is tricked and told to go to the wrong park to play basketball because the main character hates him. Four of the five subjects with Hyperlexia were able to recognise that Daniel would go to the park on West Street rather than Green Street based on his particular knowledge state at that time. The fifth subject's (MDit) response was only partially correct. He said, 'West Street,' but then went on to explain his response by saying 'Oh wait a minute, West Street, where is it, right over there because there's another park over there' as though the mere fact that the park existed resulted in Daniel's decision to go there, rather than making reference to Daniel's specific knowledge state that influenced his decision.

There is substantial evidence supporting the use of responses by subjects with Hyperlexia that demonstrated only partial understanding of the relevant knowledge or emotional state. This partial understanding was reflected in responses that lacked essential components required to demonstrate full understanding. For example, all the normal controls recognised that Naomi would go to the park when she was invited as she didn't know that the others had been invited for a different time.

In contrast, the subjects with Hyperlexia either produced vague and indefinite responses e.g.'come' or 'play basketball' or they demonstrated failure to attribute Naomi with the knowledge she had. The Hyperlexic group also produced responses that were invented. Instead of focusing on the key element influencing the character's actions, they were notable for their focus on less relevant and/or inappropriate assumptions.

We can see this in the subject, M.H., who suggested that the main character invited Gavin to play basketball 'because it's boring to have a one on one game', an assumption not implied or stated in the text. Additionally, D.W., suggested that Jane did Veronica's homework for her because 'she had a strong work ethic' instead of suggesting that it was because she wanted to be popular. Once more, this reflected an unusual and inventive response never observed in the normal controls.

There were several instances of attributing the wrong emotional state to the character without taking their particular knowledge state into account. For example in the Basketball Story, when Daniel is invited to join the group at the wrong park, all the normal controls recognised that Daniel should feel good about being invited as he did not know that the others were going to the other park.

The Hyperlexic group's responses varied from (MDit) 'mad' to (M.H.) ' just like very angry', to 'very bad and (A.H.) 'he doesn't care - he doesn't think there's a problem', a self-contradictory and confused response indicating a failure to identify a positive emotion consequent to the belief that Daniel doesn't know he's being tricked.

Responses were not only inconsistent in their failure to attribute an emotional state that related to a specific knowledge state, but also in their failure to deduce an action based on a particular knowledge or emotional state. Additionally, there was evidence of unresponsive answers further indicating difficulty applying Theory of Mind consistently within the stories. A total absence of the above difficulties were noted in the control group.

Nonetheless, if the subjects with Hyperlexia can display intact Theory of Mind at times, is it the type of Theory of Mind question (first and second-order) that dictates their success or failure?

9.4b Do the subjects with Hyperlexia break down on tests measuring second-order Theory of Mind ?

In analysing the Hyperlexic group's responses one is again struck by the fact that it isn't the first-order versus second-order nature of responses that vary, but inconsistency is rampant across question types.

Chi square analysis confirmed a significant discrepancy between the normal controls and the subjects with Hyperlexia in their response to second-order Theory of Mind questions. (χ^2 = 13.33, $p<0.001$ for the Basketball Story and χ^2 = 20.00, $p< 0.0001$ for the Junior High Story) . Once again, the Hyperlexic group was significantly poorer than the normal controls. On the one hand, the subjects with Hyperlexia were able to show effective understanding of second-order Theory of Mind in certain of their responses. Four of the five could recognise why the main character told Daniel to go to West Street i.e because he hated him and didn't want him to join the group.

In contrast, they all produced incorrect responses for question 17 that asked what Naomi thought about Daniel's situation. Their response patterns were again varied with the majority reflecting blatant error (MDit - 'pretty bad', M.H. - 'upset because Matthew told him the wrong place to go', C.W. - 'very sorry but happy that she's going at 4.45' and D.W. who said 'she hated David as much as he does.' A.H. said 'Naomi can empathise with Daniel. Can I get bonus points for that word?' only to add a moment later - 'What does empathise mean?'

Errors on second-order Theory of Mind questions reflected problems in all the categories defined. Invented responses were noted. For example, C.W. responded to question 10 of the Basketball story by saying 'ever since they were in the fifth grade he never liked her, she was such a brat!'

In addition, responses also reflected a lack of understanding of the vocabulary chosen in their own answers (as seen in the previous example when A.H. said,' Naomi can empathise with Daniel') -even though Naomi doesn't know about Daniel's situation, and then added, 'Can I get bonus points for that word?' or when asked how Gabi thought Jane felt about the change in their arrangement A.H. responded incorrectly with 'distraught,' and followed it up by saying 'What does that mean?' Not only were the words selected inappropriate to the situation but they appeared to be incorporated into the subject's vocabulary with seemingly poorly defined meanings. If the character had the knowledge state the subject had inferred, then those words could have been selected without our awareness that they were poorly understood thus giving a false impression of correct word usage.

As was noted in the scoring section examples, inconsistencies were evident within questions exploring one character's thoughts about another character's feelings, e.g., (Mdit): 'happy -I mean, wait a minute- sad.' The inconsistency noted across questions i.e. within the story leads one to infer that even when they can correctly attribute a feeling to a character they cannot consistently recognise what knowledge the character should have upon which to base that feeling, while the inconsistency within the questions further illustrates the unstable and uncertain knowledge that they bring to the situation resulting in the stating of contrary and opposing emotion labels.

The results are extremely striking when one compares the Hyperlexic group with normal controls who never demonstrated blatant errors, invented responses or inconsistencies within and amongst the questions. The number of errors per error category were analysed for the Hyperlexic group and it was determined that for both the Basketball story and the Junior High story, the most frequent errors occurred in responses that revealed inconsistency within the story. One sample Chi Squares were used to compare the distribution of incorrect responses against chance responding. For the Basketball Story this gave $\chi^2(4) = 24.57$, $p<0.001$ and for the Junior High Story this gave $\chi^2(4) = 17.71$, $p<0.01$. This leads one to question the nature of the inconsistency within the Hyperlexic group.

9.4c How does this inconsistency manifest?

Many examples have been presented to illustrate the manner in which inconsistency is manifest in the Hyperlexic group. To summarize, however, we can conclude that the subjects with Hyperlexia were observed to be inconsistent both within their answer to the same question, and, even more so, between their answer to a question and the nature of the story itself. All the normal controls responded with answers that contained relevant information provided or inferred from the story texts. None displayed invented or irrelevant answers.

While several examples illustrate the qualitative difference in the response patterns of the normal control group as compared with the subjects with Hyperlexia, C.W.'s response: 'because ever since they were in 5th grade he never liked her -she was a brat' perhaps typifies the unusual, unexpected and invented responses obtained. The subjects appeared to invent elaborate and excessive explanations that may or may not be plausible for the context, but certainly were not of central relevance either as specified or inferred from the text. Inconsistency within questions was apparent when the subjects with Hyperlexia selected an action inconsistent with a thought or an emotional state, when they stated opposing emotional states in one response or when they avoided the use of mental state terms altogether, a feature never observed in the normal controls.

Inconsistencies were also readily apparent across responses within the given stories, as described previously in the example for the scoring section. This example showed M.Dit saying 'happy' in response to 'How does Naomi feel?' This response was regarded as correct as Naomi should feel happy to be included and invited to play basketball as she would not know that character X had given her the wrong time on purpose. This same subject answered the following question, 'Why does Naomi feel that way?' by saying 'because I don't really like him and I invited him anyway.' We also see that this subject personalised character X, e.g saying 'I' for 'he' again a feature no normal control exhibited.

In addition there was evidence of altering the pronoun form of the character called Naomi and using "him" for "her." His response suggested that he could have failed to understand the intent of the story, despite an apparent correct response to the previous question. The inconsistency is even more striking when the same subject answered the question 'Why did X say that?' with 'to be nice,' verifying that he had failed to comprehend the character's knowledge and emotional state.

Inconsistencies were also noted in responses that contained inaccurate facts or inappropriate conclusions reflecting limited comprehension of the story intents. Overall results thus confirm that while the subjects with Hyperlexia displayed some evidence of intact Theory of Mind, the evidence is overwhelmingly in support of a deficit in true and consistent understanding in this area and that unless theory of mind questions are followed up by questions exploring justifications and explanations we cannot necessarily conclude that a person has intact Theory of Mind. In fact, results overwhelmingly support a breakdown in first- and second-order Theory of Mind with inconsistency within the story or across questions the predominant error type.

9.5 The Picture Task

A Picture Task was developed as a second source of evidence exploring the qualitative differences between normal controls and the subjects with Hyperlexia. The pictures were selected from a pragmatic language intervention programme called, 'Tackling Teen Topics'.

These pictures were selected for their depiction of relevant, everyday communicative scenes and were chosen for their potential to provide the stimulus for further investigation of the inconsistencies observed in the Hyperlexic group's response pattern. The pictures were also selected to explore subjects' ability to attribute feeling and knowledge states which are implicit in pictorially represented situations. None of the subjects had seen the pictures before.

Each subject was shown five pictures (See pages 49-53) and asked an identical set of questions per picture.

The following questions were asked:

(1) What do you notice first?

(2) What do you notice next?

(3) What is this person (point to person) feeling?

(4) What is this person thinking?

(5) Why is he/she thinking that?

(6) What will he/she do next?

If the picture contained more than one character, each character's feelings, thoughts and intentions were explored in the same manner. All subjects were asked the questions in the same order.

Results were analysed in terms of the following criteria:

(1) attribution of feeling- correct

- absent
- inappropriate (incompatible with the person's facial expression or any construal of the situation or reflecting a physical dimension)

(2) attribution of cognition -consistent -

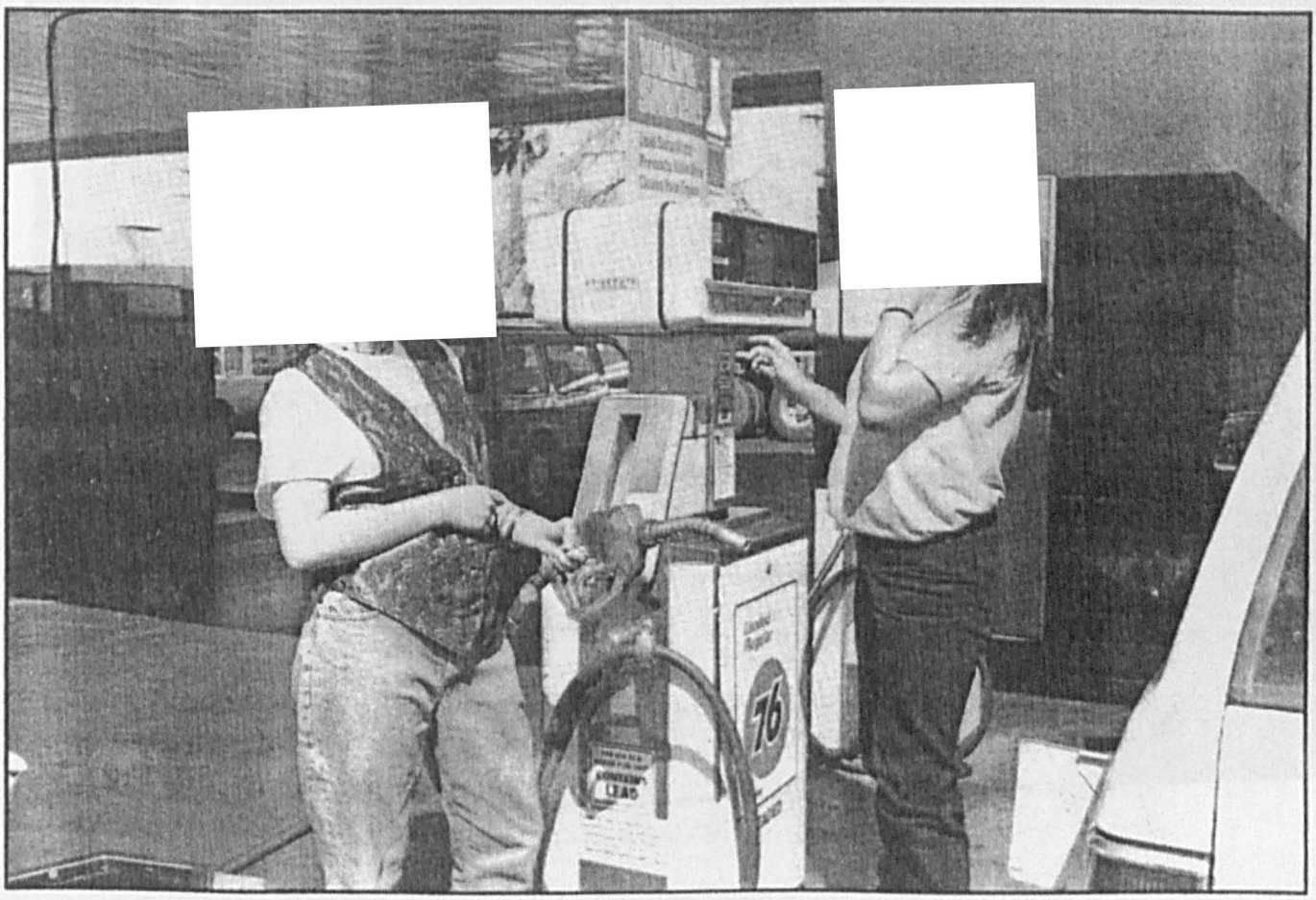
-inconsistent and bizarre

The cognition response is consistent if it is consistent with the prior expressed feeling or thought, regardless of whether the feeling is right or wrong. For example, if the person says that character X 'feels happy' and character X thinks 'what a lovely day,' that response would be regarded as consistent with the prior expressed feeling.

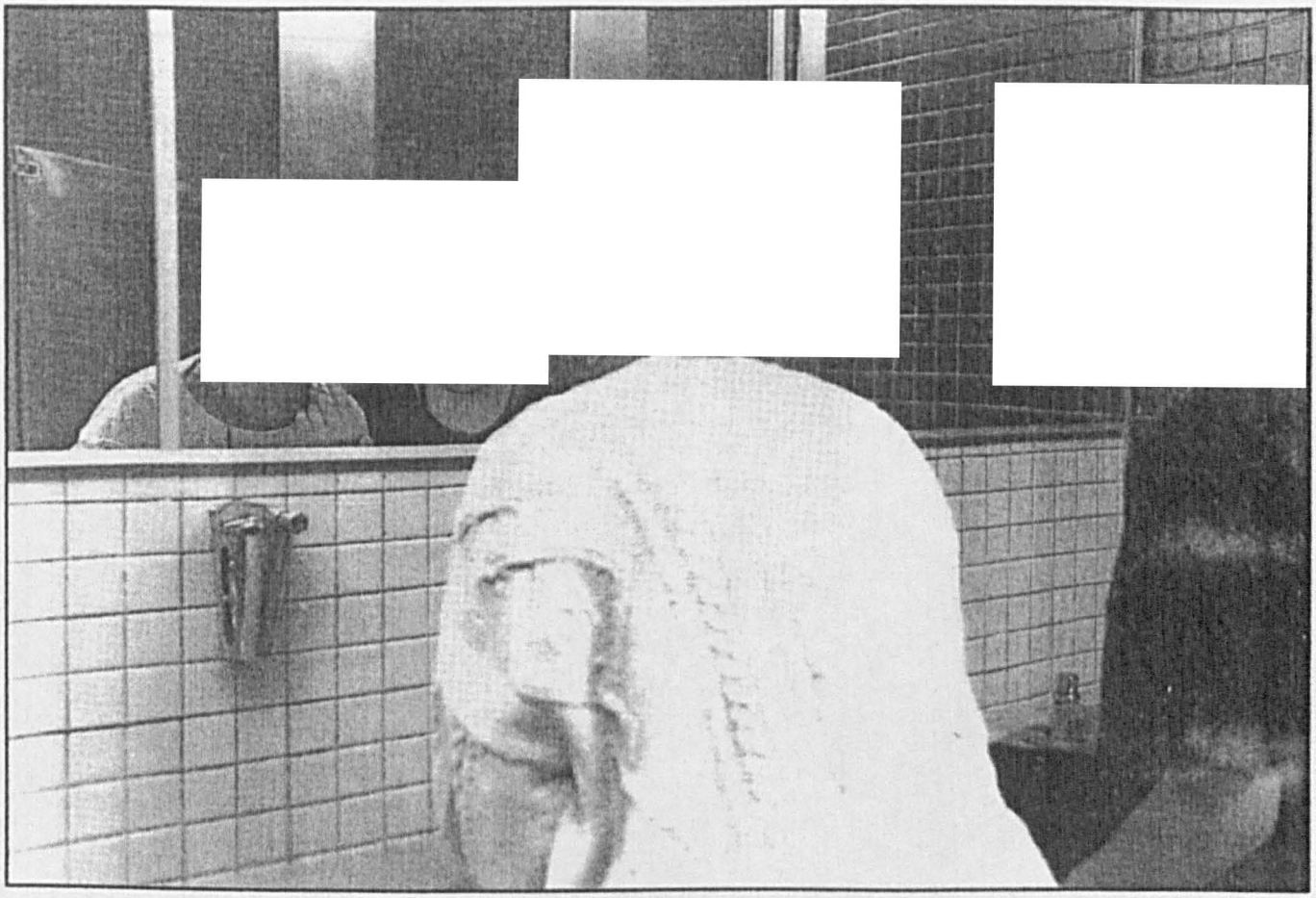
However, if character X feels 'happy' and thinks 'I'm going to beat him up' - that would reflect an inconsistent/bizarre response to the situation. Any response that was unusual, elaborate or extreme in relation to the picture was considered bizarre.

In this way the task not only measured Theory of Mind but also considered Relevance and Central Coherence in considering consistency across questions, and subjects' ability to identify the most relevant factors for the given picture situations. It was hypothesised that the Hyperlexic group would display qualitatively different responses to the normal controls.

Picture 1



Picture 2



Picture 3

Picture 4

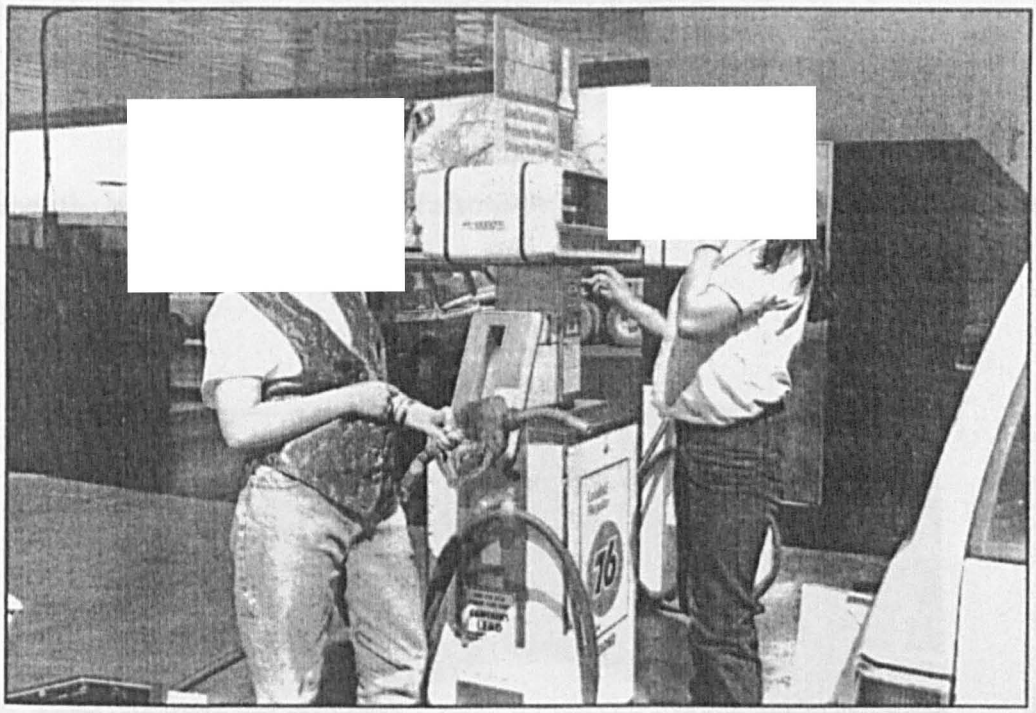
Picture 5

9.6 Results of the Picture Task

An analysis of the normal control and Hyperlexic group's responses supports the original hypothesis and verifies qualitative differences in the functioning of the two groups. It is apparent that the types of breakdown evident in the Hyperlexic group on this task are similar in nature to their functioning on the previous tasks. Once more, the normal controls exhibited consistent and uniform understanding of Theory of Mind. Their response pattern was marked by the production of feelings that matched thoughts and responses that were relevant and appropriate to the picture stimuli and that followed logically showing a progression of consistent thoughts. Their responses demonstrated predictability. Even if one or two normal controls answered the "feeling" questions incorrectly and either did not mention a feeling explicitly and implied it, or in one case the sentence was interpreted in a physical manner, they always demonstrated uniform and complete consistency in their overall responses, producing answers that matched appropriate and relevant construals of the given picture stimuli.

One such example follows to illustrate the predictability and coherence typifying the responses of the normal control group.

PICTURE 1



Subject: J.L.

(Referring to the girl on the right)

What is she feeling?.....*confused*

What is she thinking?.....um she's thinking *about what choice she wants to make*

Why is she thinking that?... *um,she wants to know what type of gas to pump*

What will she do next?.....*fill up her car with gas*

(Referring to the girl on the left):

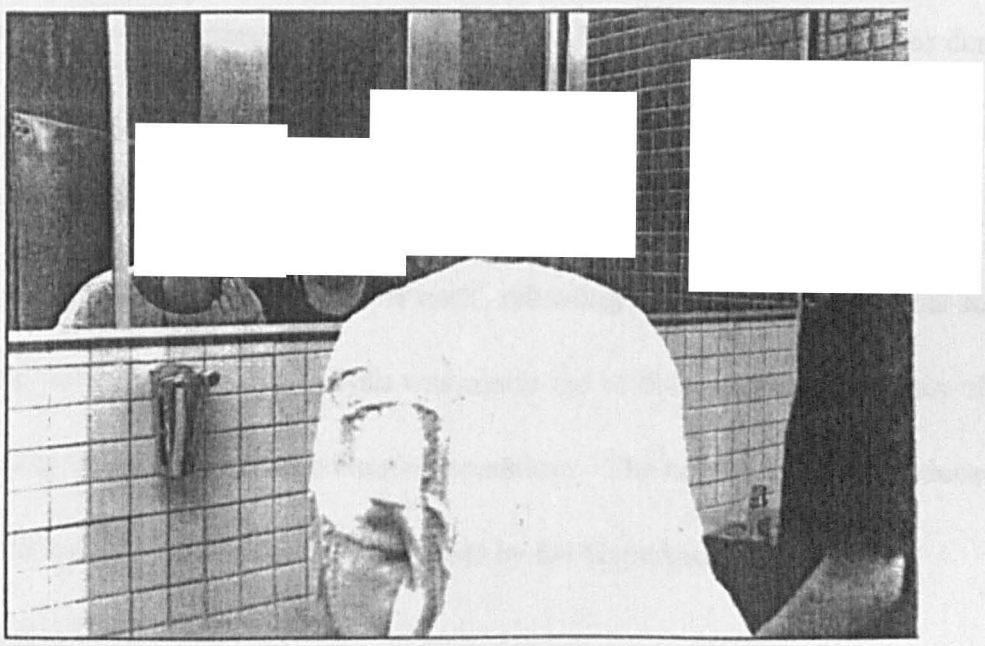
What is she feeling?.....*she's waiting for her friend*

What is she thinking?.....*she wants her friend to hurry up*

Why is she thinking that?..*because she wants to start pumping*

At times the subjects with Hyperlexia also demonstrated consistency in their responses.

PICTURE 2



Subject : C.W.

(referring to the girl on the left)

What is she feeling?.....*kind of bad and confused and angry at her pimples*

What is she thinking?.....*how to put the make-up on just right*

Why is she thinking that?... *why - because she wants to look good for the boys*

Nonetheless, the Hyperlexic group was not consistent in their ability to produce coherent responses.

9.6a Congruence between feelings and thoughts

As was noted on the story tasks, the Hyperlexic group could display accurate attribution of feelings and cognition in one instance and then demonstrate incongruence between feelings and cognition in another instance.

It was shown that feelings could be correctly attributed to characters, as was demonstrated in the prior example. It was also evident that feelings could be absent (e.g., when asked what the young woman who was looking confused and trying to fill her car with gas was feeling, D.W. said 'the muscle in her neck', reflecting a comment on a physical action rather than an emotive state). An analysis was conducted to determine the frequency of responses reflecting physical rather than emotive conditions. The normal controls produced one such error as compared with seven errors made by the Hyperlexic group.

Feelings were also inappropriate or incompatible with the facial expression or any construal of the situation. For example, M.Dit suggested that the young man trying on clothes in picture 4 was 'feeling happy too' when clearly his facial expression suggested otherwise. Responses also indicated weaknesses attributing cognition to the characters in the pictures.

While there was certainly also evidence of consistent responses (see C.W.'s response to Picture 2 described previously),there were also substantial indications of inconsistent and bizarre responses. This is exemplified in D.W.'s response to Picture 5.

PICTURE 5

Subject: D.W.

What do you notice next? *They are about to run over a guy*

(Referring to the woman on the left):

What is she feeling? *Happy about the conversation*

What is she thinking? *That the other woman should be watching the road*

Why is she thinking that? *Um (delay) cos she didn't want to get into an accident*

What will she do next? *Tell her to watch out*

(referring to the hitchhiker):

What is he feeling? *In danger*

What is he thinking? *That in a minute he can hitchhike*

Why is he thinking that? *Cos he's all alone and his friends just dumped him*

What will he do next? *Hitchhike*

(Referring to the woman on the right)

What is she feeling? *happy*

What is she thinking? *Um that the other woman is crazy*

Why is she thinking that? *(Delay) because they've been talking too much without watching the road*

What will she do next? *Um (delay) tell the other woman to shut up*

Here we can see that it is plausible that the woman on the right is happy. Her thought, however, is inconsistent with her prior stated feeling, and her predicted action is extreme for the situation and appears inappropriate.

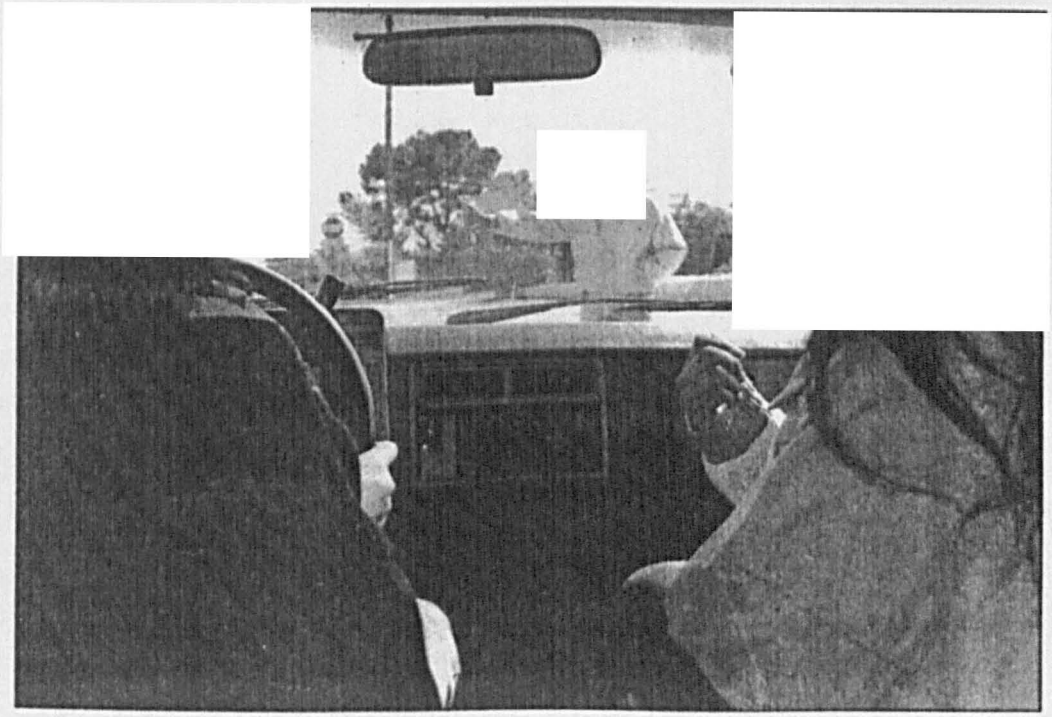
This example thus confirms a lack of congruence between expressed feelings and consequent thoughts and actions evident in the Hyperlexic group exclusively. This example also illustrates that the key factor, that the man is a hitchhiker and the people in the car are considering stopping for him, is not targeted by D.W.

9.6b Personalising Characters

As with the story tasks, it was noted that the Hyperlexic group personalised characters by substituting 'I' or 'me' for 'he' or 'she', 'her' or 'him'. They also added character or place names to the situations, all of which never occurred in the responses of the normal controls.

The following examples illustrate the personalising of characters and provision of character names.

PICTURE 5



Subject: A.H.

(Referring to the girl on the right)

What is she feeling?.....*hey it's Jim let's pick him up*

What is she thinking?.....*maybe he's going where we're going*

Why is she thinking that?..*because it could be me*

What will she do next?.....*ask her Mom if she could pick him up–or her friend or whatever*

Other examples showing this element of inventiveness include: Picture 4 - *'well jeez elees you should have the money. You want this dress so much you should have the money.' (C.W.)*

Picture 5 - referring to the hitchhiker - *'because he has no friends in Tennessee and he's a visitor.'* (C.W.)

Another character's name is also added by C.W.in picture 5- *'well jeez Andrea why do you want the hitchhiker to come.'*

9.6c 'It's on the tip of my tongue - I'm trying to read her mind.'

Some responses clearly indicate a lack of understanding of others' thoughts, feelings and consequent actions. This frequently resulted in unresponsive attempts. The following examples best illustrate the child who was not able to interpret characters' thoughts and when asked to predict a consequent action, a response was produced that was not relevant to the situation.

PICTURE 1:

Subject: M.Dit.

(referring to the girl on the left)

What is she feeling?.....*um (long delay) happy*

What is she thinking?.....*um oh what is she thinking. I think she's thinking oh I just really don't know. It's on the tip of my tongue.*

What will she do next?.....*I don't know put the handle into the car because she's sixteen years old.*

PICTURE 2

(Referring to the girl on the left)

What is she feeling?.....*um looks happy to me*

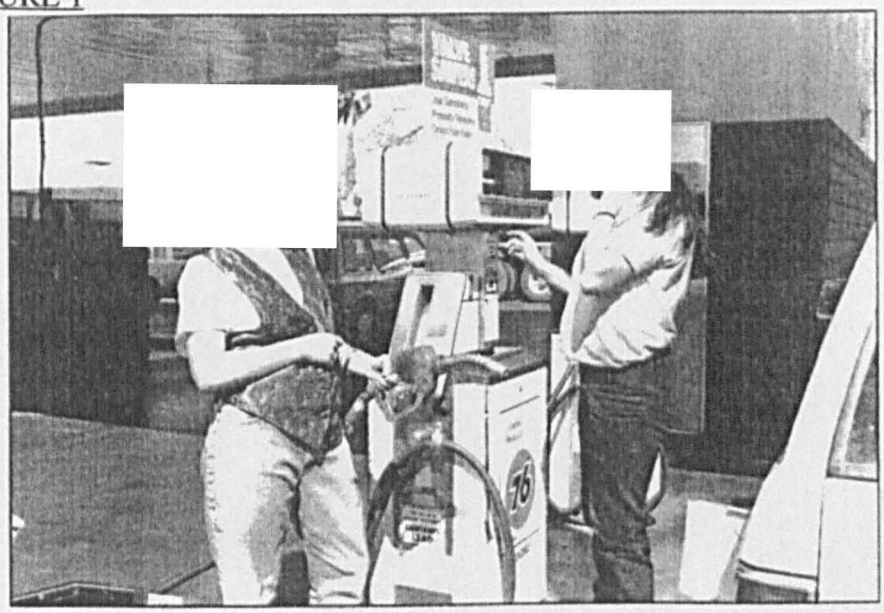
What is she thinking?..... *what is she thinking. I'm not really sure. I just can't read her mind. I'm really trying to think of something.*

The normal controls were all able to identify characters' possible and plausible thoughts. None of the normal controls struggled to respond to any of the questions as compared with the Hyperlexic group who demonstrated overt difficulty with the task. These examples also illustrate the anguish observed in the Hyperlexic group's overt struggle with the task. Their own awareness of their struggle was frequently noted in responses that incorporated anxious reference to the fact that this was their best effort response and that they were doing their best.

9.6d The Extreme and Elaborate Responses

Responses with inventive, bizarre and extreme features were again unique to the Hyperlexic group and are best described through example. Although they were alluded to in section 9.6a, they warrant further description here.

PICTURE 1



Subject: D.W.

(referring to the girl on the right)

What is she feeling?.....*uh a muscle in her neck*

What is she thinking?.....*get out of the way you idiot*

Why is she thinking that?..*because this person is in the way and she needs to get to the gas pump thingy so she can put it in her car and drive off*

What will she do next?....*uh um this person intends to beat the other person up*

(Referring to the person on the left)

What is she feeling?.....*the same way, she feels get out of the way I was here first*

What is she thinking?.....*um she's thinking - she's thinking get out of the way you jerk*

Why is she thinking that?.. *because she needs to get to the gas pump and she's in a hurry to get to work*

What will she do next?.....*um yell at her to move it*

Other responses are perhaps less extreme but equally elaborate and inventive, and not of central relevance to the context provided.

Subject: M.H. - in response to the same picture (1)

(referring to the person on the right)

What is she feeling?.....*(delay) shy*

What is she thinking?.....*(long delay) this might be trying to ask the other person out for a date*

Why is she thinking that?..*he or she probably doesn't have a date or a girlfriend*

What will she do next?.....*try and get up the confidence to ask her*

We thus see responses that vary from being acceptable to those that are inconsistent, unusual and unexpected. Let us consider the implications of these findings.

9.6e Comparison of Hyperlexic and Normal Control Groups' Responses:

In order to explore whether there was a significant difference between the Hyperlexic group and normal controls, responses were analysed as to whether they identified the key factor in each picture. For example, key factors included recognizing that the man in Picture 5 was hitchhiking and the people in the car were considering stopping for him, or that two young women in Picture 1 were trying to fill their car with gas and weren't sure how to do it. An incorrect score indicated that either the subject added elements that were not relevant to the context and that made it bizarre, or they omitted mentioning the key factors at all, resulting in a lack of coherence between story elements. A comparison between the two groups' responses using Chi Square revealed a significant difference, ($\chi^2 = 23.53$, $p<0.001$).

The subjects' responses were also analysed according to whether they demonstrated consistency between feelings and thoughts, thoughts and justifications and feelings/thoughts and consequent actions. Chi square analysis confirmed a significant difference between the Hyperlexic group and the normal controls. ($\chi^2 = 23.53$, $p<0.001$) indicating a breakdown in the application of Theory of Mind skills.

The relationship between identifying the relevant factors central to the communicative context and answering the consequent Theory of Mind questions was also investigated.

Results were, however, not significant. When the Hyperlexic group was not able to identify the key relevant factors (16/25 times) they generally answered the following Theory of Mind questions incorrectly (11/16). But even when they were successful in identifying the key relevant factors (9/25 times) they were able to answer only 4 of the following Theory of Mind questions correctly.

9.7 Overall Implications and Conclusions

The data overwhelmingly support the notion that the subjects with Hyperlexia performed qualitatively differently to their age and gender matched normal controls on both the story and picture tasks. Nonetheless, data from the story tasks clearly show that the subjects with Hyperlexia did not lack a Theory of Mind entirely. In fact they could recognise, at times, that a character was in a particular knowledge or emotion state thus displaying successful first-order belief attributions. Nevertheless, they were not uniform or consistent in their ability to demonstrate Theory of Mind, and their responses to both first- and second-order Theory of Mind questions were significantly poorer than normal controls. Their response pattern for both the story and the picture tasks involved inconsistency within and specifically across questions. Subjects with Hyperlexia tended to personalise characters, to avoid mental state terms at times, and to produce inventive, elaborate and extreme responses.

In contrast normal controls performed uniformly on the Story Tasks, the Bowler (1992) and Happe (1994) replications and the picture experiment.

They demonstrated complete success in their understanding of both first and second-order belief attributions and their responses were completely consistent within and across questions. They never displayed a mismatch between feeling and thought or predicted action and prior thought. They never personalised characters or added bizarre, inventive and elaborate responses.

Happe (1995) documented the striking inventiveness of responses obtained in her study of subjects with Autism. She suggested that her subjects' difficulty attributing mental states resulted in their construction of elaborate and unusual physical explanations consistent with the persistence of weak coherence, even in those with a Theory of Mind. The current subjects did not necessarily employ unusual physical explanations exclusively and their inconsistencies were apparent in a range of different types of errors. In fact, the more open-ended the task the greater the evidence of bizarre and unusual responses so that subjects appeared cued by the structure provided by a task. In this way their responses to both Bowler's and Happe's stories appeared more intact than their responses to picture situations in which the context was not explicitly stated. It is proposed that the current subjects are unable to adequately distinguish key relevant information from less relevant material.

In their consequent state of confusion their responses are frequently vague and inconsistent, or bizarre and unexpected. Comparison with normal controls' responses using Chi Square Analysis confirmed this finding.

Even if they are able to identify the key relevant information in material presented, their resulting responses may not indicate understanding of Theory of Mind and intact Central Coherence, possibly because identifying the relevant information in the text requires such effort thereby reducing capacity for Theory of Mind. Furthermore, if they select an inappropriate or less relevant feature to target, their consequent ability to demonstrate Theory of Mind and Central Coherence is severely affected. Such a deficit would account for the difficulty subjects with Hyperlexia have consistently extracting context dependent meaning and problems applying Theory of Mind knowledge appropriately in given situations. It would also explain their success on a number of questions requiring Theory of Mind awareness.

It is not that they lack a Theory of Mind entirely. It is that underlying deficits in Relevance and Central Coherence influence one's ability to apply Theory of Mind appropriately and these deficits are reflected in the seemingly bizarre and unexpected response patterns of the subjects. It is suggested that the nature of the task influences the symptom pattern and that this feature could relate to the inconsistent anecdotal accounts revealing good comprehension in some circumstances and severe breakdown in others.

Chapter 10 - Final Thoughts on Hyperlexia

10.1 Introduction

The evolution of this project has revealed a number of significant findings regarding the nature of Hyperlexia. This chapter focuses on the drawing together and explanation of these findings. As such, the chapter will focus on the research questions posed at the outset of the project and will discuss the theoretical implications of these findings. In doing so, the project will be critically evaluated for its strengths and limitations and directions for future research will be proposed.

The study began with a group of subjects who shared an unusual developmental history and reading pattern exhibiting unexpected decoding success and equally perplexing reading comprehension failure. Using the definition provided by Snowling and Frith (1986) and Nation (1999), the presence of both these components was regarded as essential for the diagnosis of Hyperlexia. The nature of both the exceptional decoding skills and the surprising comprehension failure formed the focus of the study.

Performance of children with Hyperlexia was compared and contrasted with normal age matched controls (on formal standardised tests), and a comparison group comprising children with Dyslexia was introduced in order to explore the relationship between these two disorders and the potential double dissociation between the two, given the suggestion that Dyslexia may represent the mirror image of Hyperlexia (significant decoding weakness in the face of reading comprehension success). In addition, the performance of children with Hyperlexia was compared with normal adult controls on selected measures in order to investigate the children with Hyperlexia's maturity with the decoding process. In general, when the tasks presented involved formal, standardised material the children with Hyperlexia were compared with normal age matched peers as the control group (by comparison with the norms of the tests), and with age matched peers with Dyslexia as the comparison group. When the experimental tasks involved the introduction of novel material, age matched normal peers were used as the control group.

The findings relating to both the exceptional decoding skills and the surprising comprehension failure are addressed in the following sections.

10.2 Does Hyperlexia represent truly supranormal decoding abilities?

The literature indicates that individuals with Hyperlexia are distinguished by a number of key characteristics including their early and spontaneous acquisition of literacy, their fascination and in some cases the driven, indiscriminate and obsessive quality of their interest in printed words and the exceptionality of their emergent reading abilities frequently in the face of significant cognitive and/or linguistic weaknesses. Findings in the latter area have revealed vast inconsistencies between subjects studied complicating the diagnosis of Hyperlexia and raising questions about its association with other complex developmental disorders including Autistic Spectrum Disorders.

The literature has suggested that Hyperlexia may indicate the presence of modularity in the reading process suggesting the disassociation of supranormal decoding skill from comprehension (Cossu and Marshall 1986, Siegel 1984). Some have suggested that Hyperlexia or exceptional decoding should be considered a truly supranormal ability in the context of even above average reading comprehension skill (Temple 1996).

This study sought to further investigate the nature of the decoding success of a group of children with Hyperlexia to identify whether supranormal decoding skills were truly present. To address this issue, a systematic and detailed exploration of decoding was undertaken.

In order to investigate whether supranormal decoding skills were present, the different routes to reading (lexical and sublexical routes), and to learning of new words were explored.

The study began by confirming the presence of significantly strong single-word reading skill within the Hyperlexic group as compared with the significantly weak scores of children with Dyslexia on this task. Furthermore, significantly strong scores for contextual reading rate and accuracy in the context of significantly poor reading comprehension were identified for the children with Hyperlexia when their scores were compared with the norms provided by the Gray Oral Reading Test-3. The performance of the children with Hyperlexia was also contrasted with the performance of the children with Dyslexia, who exhibited significantly weak reading rate and accuracy, despite average (significantly stronger) reading comprehension skill. As such, initial findings verified the presence of Hyperlexic characteristics in the test group and confirmed a significant discrepancy between the functioning of both groups as compared with each other and with the norm. This revealed little, however, about the nature of the decoding process in children with Hyperlexia. The study first moved on to investigate whether these findings were truly representative of the children's abilities. The consistency of the contextual reading profile was explored over time to verify the existence of the Hyperlexic profile.

Re-administration of test procedures (the GORT-3) a year later confirmed the relative stability of the reading profile, despite mild individual variation. The continued presence of significantly strong contextual reading rate and accuracy and significantly poor reading comprehension in the children with Hyperlexia was therefore confirmed. During the second administration of the GORT-3, the opportunity was undertaken to compare reading and auditory comprehension by administering the test materials in each modality. Auditory administration of the GORT-3 revealed stronger (yet still weak) auditory comprehension as compared with reading comprehension of material of a similar level of difficulty. This result suggested that the deficit may be partly modality specific.

Different routes to reading were then explored to determine whether children with Hyperlexia were distinguished by the way in which they read, preferring one route to another. Findings indicated that the reading of children with Hyperlexia was influenced by the imagery and frequency characteristics of words. A regularity effect was found for low frequency words suggesting that the children with Hyperlexia resort to phonological strategies for the recognition of extremely unfamiliar words. Using the Modified SORT-R Test it was determined that children with Hyperlexia could access the semantics of even complex abstract words.

Although the intactness of both the lexical and sublexical procedures were identified, there was no indication that those skills were truly supranormal. In fact, novel experimental tasks were introduced that focused on the children with Hyperlexia and age matched normal controls learning to read novel regular and irregular words (with and without semantic referents). Results indicated that the normal control group's skills were significantly stronger than the Hyperlexic group, while neither group benefitted from the semantic referents when provided. Furthermore, when tasks were created that eliminated comprehension demands and focused exclusively on rate and accuracy the children with Hyperlexia did not perform differently to the normal control group.

These results bring into question the supranormal decoding abilities previously associated with Hyperlexia. In fact, results demonstrate clearly that while the children with Hyperlexia exhibit solid decoding skills as well as superior rate and accuracy on the GORT-3 and while they demonstrate skill in using lexical and sublexical strategies, the quality of these abilities is not supranormal. At their present age their decoding does not appear to be supranormal, although it is possible that their decoding once was supranormal in comparison to children at a younger age.

Other factors must surely then account for the mismatch between their contextual decoding and their reading comprehension.

10.3 What is the nature of the comprehension breakdown?

Identifying the primary source of the comprehension failure therefore became the second major strand of this thesis. A range of systematic and detailed tasks were introduced to investigate this question. Word and sentence level oral language weaknesses were ruled out as the ultimate cause of the comprehension failure. Furthermore, and contrary to expectation, the children with Hyperlexia were able to comprehend the high-level, complex and even abstract vocabulary they read, suggesting no disassociation of single-word decoding from meaning. Other sources for the comprehension breakdown were therefore investigated.

The striking comprehension failure of the children with Hyperlexia on the GORT-3 as compared with their performance on other measures, as well as the documented pragmatic language difficulties led the study to explore theories of comprehension failure and to consider the relationship between comprehension breakdown and pragmatic language ability.

Informal observation confirmed the presence of social pragmatic weaknesses in the children with Hyperlexia, while anecdotal evidence suggested weaknesses in belief attribution.

While social pragmatic issues (e.g. difficulties with turn taking, poor timing of remarks, and weak topic maintenance) were noted, these could not explain the reading comprehension failure; however, weaknesses in belief attribution could impact the reading comprehension process. The study moved on to explore social cognition as a potential cause of the reading comprehension breakdown.

Belief attribution was explored using Theory of Mind, Relevance and Central Coherence tasks including both replication of prior measures (Bowler 1992, Happe 1994) and the creation of novel experimental narrative and picture tasks. Results confirmed the presence of weaknesses in belief attribution in the test group. Unlike the normal controls who achieved 100% accuracy on these tasks, inconsistent performance within subjects in the Hyperlexic group indicated weaknesses in Theory of Mind, Relevance and Central Coherence. At times, the children with Hyperlexia were able to demonstrate intact Theory of Mind, whilst at other times, severe breakdown in belief attribution was noted.

There were instances when the children with Hyperlexia were unable to identify the key relevant factor central to each communicative situation. Their subsequent answers to Theory of Mind questions suffered, suggesting a relationship between the two.

At other times, the children with Hyperlexia were able to correctly identify the key relevant factor but still exhibited weaknesses applying Theory of Mind skills, suggesting the relative independence of the two skills. There was however a trend towards a relationship between Relevance and Theory of Mind. While the nature of the relationship between Theory of Mind, Relevance and Central Coherence is complex, deficits in these areas and certainly in Central Coherence may account for the reading mismatch in the test group.

Central Coherence, being a central system that integrates meaning from different sources (Frith 1989, Happe 1994), has been proposed to account for both the assets and the deficits in subjects with Autism. Joliffe and Baron-Cohen (1999) propose that subjects with Autistic Spectrum Disorders do not exhibit a preference to strive for coherence unless instructed to, or unless they make a conscious decision to do so. Perhaps the contextual reading mismatch of the children with Hyperlexia can be explained by a breakdown in Central Coherence.

It is hypothesised that this results in the children with Hyperlexia focusing on the local level i.e. reading rate and accuracy, at the expense of the global level i.e. comprehension of the text. In this way, their reading rate and accuracy become inappropriately inflated and appear supranormal while their reading comprehension appears significantly poor.

Consistent with this hypothesis it was found that normal subjects showed a similar increase in rate and accuracy when they were informed that they did not need to show an understanding of the material they were to read.

10.4 What are the theoretical implications of these findings?

This study has shown that truly supranormal decoding skills are not present in the test group. It has also identified the existence of marked weaknesses in social cognition. A breakdown in social cognition appears plausible as an explanation of both the decoding success and the comprehension failure identified in the test group. This finding has major implications for our understanding of the concept of Hyperlexia.

While it has been proposed that Hyperlexia may represent a syndrome (Huttenlocher and Huttenlocher 1973, Aaron 1989), the current study challenges this view. Instead, Hyperlexia is seen as a set of symptoms arising from a deficit in social cognition. Viewing Hyperlexia in this way throws new light on the nature of the mismatch seen in contextual reading and the relationship of Hyperlexia with commonly associated deficits, e.g., Autism. The various associated deficits including Autism and Semantic Pragmatic Disorder /Pragmatic Language Impairment may all be linked by weaknesses (to varying degrees) in social cognition.

Certainly, these subjects display symptoms congruent with Semantic Pragmatic Disorder/Pragmatic Language Impairment and it is likely that symptoms of Hyperlexia may be present in a number of children with Semantic Pragmatic Disorder as most studies targeting subjects with the above disorder have not systematically explored reading abilities. This does not suggest that all children with Semantic Pragmatic Disorder are strong decoders, but that there may be some children diagnosed with the above disorders with deficits in social cognition who focus on local level processing and develop Hyperlexic-like symptoms as a result.

It is possible that children with Hyperlexia may present differently at different ages. This study suggests the possibility that young emergent readers with a deficit in Central Coherence may appear more Hyperlexic-like at a young age because their deficit in Central Coherence results in their focusing on local level rather than global level processing. As a result, they experience success and enjoyment with the decoding component of the task and become fascinated with printed words, therefore approaching decoding with a driven and possibly obsessive quality (savant-like) as compared with normal peers who focus on both local and global level skills simultaneously.

As normal peers gain greater automaticity with the decoding process the mismatch between the two groups' decoding diminishes so that supranormal decoding skill in children with Hyperlexia is not maintained over time. It would be interesting to explore the reading skills of children with Hyperlexia longitudinally to further investigate this issue.

These findings lead one to critically evaluate the strengths and limitations of this study.

10.5 What are the strengths and limitations of this study?

This study has pursued a rigorous and systematic exploration of both the decoding skill and the comprehension breakdown associated with Hyperlexia. The range of tasks carried out with a single group of subjects showing symptoms of Hyperlexia is novel. The novel experimental tasks focusing on the learning of new words as well as on social cognition, lay the foundations for an original and useful assessment package. Through this in-depth investigation, this study has clarified the concept of Hyperlexia and brought into question its existence as a valid clinical entity. It has studied older children with Hyperlexia rather than children of a much younger age and this particular focus has provided new insights into the reading process. The proposed relationship between the decoding strength and the comprehension breakdown represents a new perspective that links these two separate strands for the first time to a deficit in Central Coherence.

A potential weakness of the study includes the limited number of subjects. However, although the children appeared to behave erratically at times, this was not a significant factor in that the test group did behave consistently on a number of tasks including those that are exploring reading rate, accuracy and reading comprehension which are central to Hyperlexia. Although the children with Hyperlexia demonstrated an inconsistent response pattern both as a group and individually on belief attribution tasks they shared an overall breakdown in social cognition and performed significantly differently to the normal age matched controls, again suggesting that the group had validity.

A dilemma in common with many studies of clinical groups relates to the sort of controls used. Norms were already available where standardised tests were used, and children with Dyslexia participated as a comparison group in these cases. It might have been interesting to have maintained the Dyslexic comparison group in the novel, non-standardised tasks developed in this study.

10.6 Directions for future research

This investigation has targeted the decoding and comprehension skills of older children with Hyperlexia rather than focusing on the emerging decoding skills of very young children. As such, it has broadened the debate regarding Hyperlexia to consider the development of reading skills over time.

Further studies of older children with Hyperlexia and longitudinal investigations exploring the development of decoding over time would be helpful in developing our understanding of the evolution and potential changes in symptoms of Hyperlexia that could occur with development.

Studies investigating the relationship between Semantic-Pragmatic Disorder, Specific Language Impairment and Hyperlexia are necessary. It would be beneficial to explore whether some children initially diagnosed with Hyperlexia are later diagnosed as having symptoms consistent with the Semantic Pragmatic Disorder Spectrum. It would also be helpful to determine whether some children with Semantic Pragmatic Disorder show Hyperlexic tendencies.

This study has confirmed professional concern regarding the paucity of available standardised measures that evaluate the language required for day-to-day functioning. It stresses the need for the creation of new normed tasks that explore such skills as social cognition, local to global processing and high level inferencing.

It would be useful to administer the novel tasks (both those that focus on novel word learning and those that target social cognition) to a greater number of subjects and to individuals along the Autistic Spectrum as well as to those diagnosed with Semantic Pragmatic Disorder or Pragmatic Language Impairment. In the future, it would also be useful to further analyze the wealth of data contained within the appendices of this project for additional insights they may offer.

Developing standardised measures that differentiate subgroups with varying socio-cognitive competence would be valuable.

Finally, as the findings from the current study identify deficits in social cognition it points to the need for the creation of new pragmatic interventions that specifically address weaknesses in this area. Studies that investigate and develop intervention models relating to social cognition and local versus global processing are warranted, and investigations that explore the efficacy of such interventions should form a logical outcome of future clinical studies.

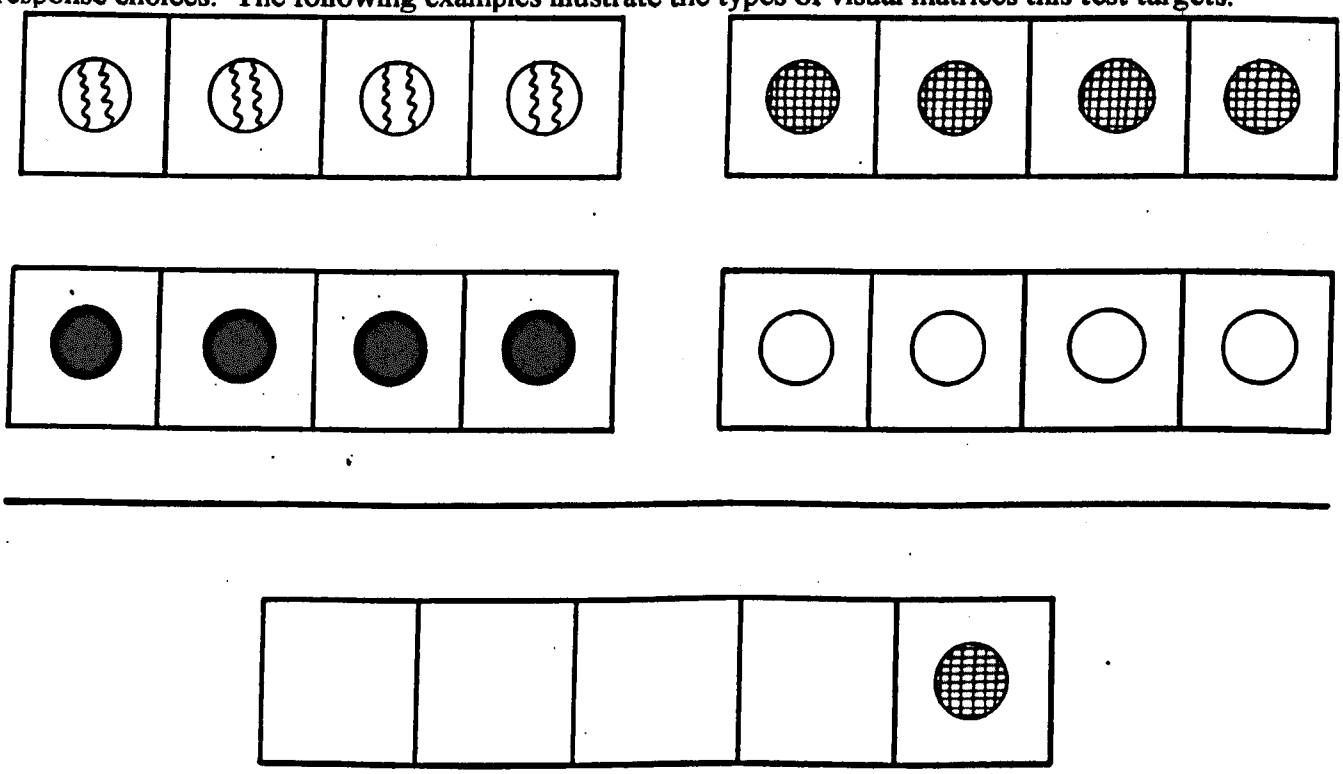
APPENDIX A

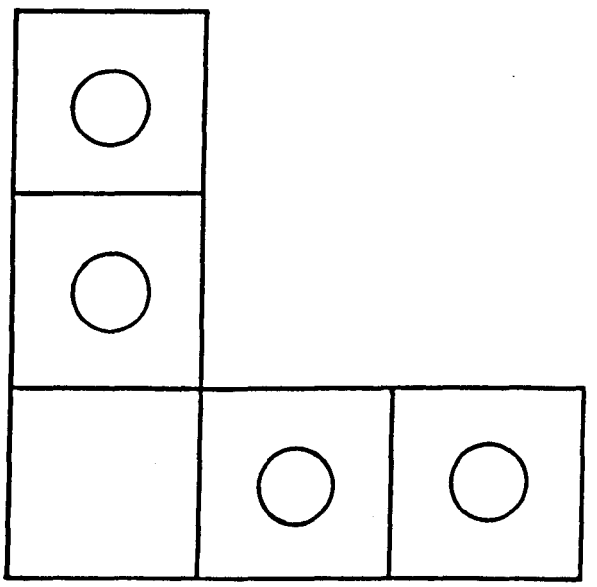
I. Nonverbal Intelligence

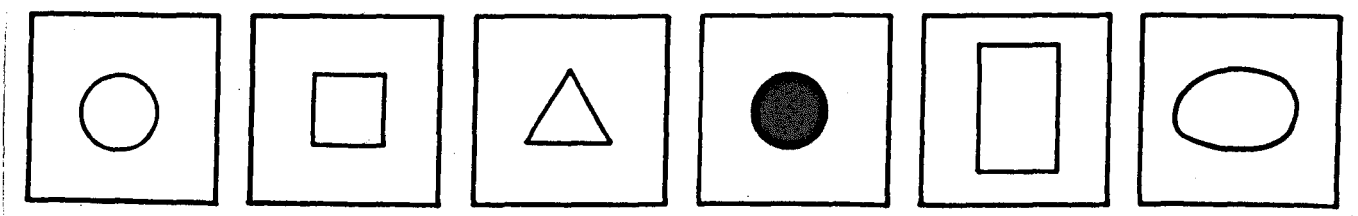
The Test of Nonverbal Intelligence 2 (TONI-2)

The TONI-2 incorporates an administration and response format that is completely free of language and requires only a minimal motor response. As per the manual, those who are particularly well suited to this test include those with known or suspected spoken language disorders, such as Acquired or Developmental Aphasia, or subjects who cannot read or write English. The TONI-2 is applicable for subjects ranging in age from 5.0 to 85.11 years. Although it is not a timed test, subjects generally take fifteen minutes to complete the necessary stimuli.

A basal is attained when a subject produces five consecutive correct responses, while a ceiling is determined when three errors are made within five consecutive items. The test begins with administration of training items using gesture to indicate the sequence of the stimulus and response choices. The following examples illustrate the types of visual matrices this test targets.







II. Single Word Reading

The Slosson Oral Reading Test Revised (SORT R)

The SORT R contains two hundred words arranged in ascending order of difficulty and grouped in ten lists of 20 words each. The words are grouped according to approximate grade reading levels so that Group 1 words are approximately at a first grade level etc.

At the beginning of the test the examiner says *"I want to see how many of these words you can read. Please begin here and read each word aloud as carefully as you can. When you come to a difficult word do the best you can and if you cannot read it, say 'blank' and go on to the next word."*

Subjects should start with a word list card where they can pronounce all twenty words on that list correctly i.e. to establish the basal. The ceiling card is the word list in which the subject cannot read any of the twenty words correctly. Five seconds are permitted per word and words that are mispronounced or omitted or which take more than the allotted five seconds are scored as incorrect. An error is also noted if subjects provide more than one pronunciation for a given target word.

The lists of words from the SORT-R are presented below.

The stimuli from the Slosson Oral Reading Test-Revised (SORT-R):

List P (20)	List 1 (40)	List 2 (60)	List 3 (80)	List 4 (100)
1 see	1 with	1 game	1 safe	1 harness
2 look	2 friends	2 hide	2 against	2 price
3 mother	3 came	3 grass	3 smash	3 flakes
4 little	4 horse	4 across	4 reward	4 silence
5 here	5 ride	5 around	5 evening	5 develop
6 can	6 under	6 breakfast	6 stream	6 promptly
7 want	7 was	7 field	7 empty	7 serious
8 come	8 what	8 large	8 stone	8 courage
9 one	9 bump	9 better	9 grove	9 forehead
10 baby	10 live	10 suddenly	10 desire	10 distant
11 three	11 very	11 happen	11 ocean	11 anger
12 run	12 puppy	12 farmer	12 bench	12 vacant
13 jump	13 dark	13 river	13 damp	13 appearance
14 down	14 first	14 lunch	14 timid	14 speechless
15 is	15 wish	15 sheep	15 perform	15 region
16 up	16 basket	16 hope	16 destroy	16 slumber
17 make	17 food	17 forest	17 delicious	17 future
18 ball	18 road	18 stars	18 hunger	18 claimed
19 help	19 hill	19 heavy	19 excuse	19 common
20 play	20 along	20 station	20 understood	20 dainty

List 5 (120)	List 6 (140)	List 7 (160)	List 8 (180)	List 9-12 (200)
1 cushion	1 installed	1 administer	1 prairies	1 traverse
2 generally	2 importance	2 tremor	2 evident	2 affable
3 extended	3 medicine	3 environment	3 nucleus	3 compressible
4 custom	4 rebellion	4 counterfeit	4 antique	4 excruciating
5 tailor	5 infected	5 crisis	5 twilight	5 pandemonium
6 haze	6 responsible	6 industrious	6 memorandum	6 scrupulous
7 gracious	7 liquid	7 approximate	7 whimsical	7 primordial
8 dignity	8 tremendous	8 society	8 proportional	8 chastisement
9 terrace	9 customary	9 architecture	9 intangible	9 sojourn
10 applause	10 malicious	10 malignant	10 formulated	10 panorama
11 jungle	11 spectacular	11 pensive	11 articulate	11 facsimile
12 fragrant	12 inventory	12 standardize	12 deprecate	12 auspicious
13 interfere	13 yearning	13 exhausted	13 remarkably	13 contraband
14 marriage	14 imaginary	14 reminiscence	14 contrasting	14 envisage
15 profitable	15 consequently	15 intricate	15 irrelevance	15 futility
16 define	16 excellence	16 contemporary	16 supplement	16 enamoured
17 obedient	17 dungeon	17 attentively	17 inducement	17 gustatory
18 ambition	18 detained	18 compassionate	18 nonchalant	18 decipher
19 presence	19 abundant	19 complexion	19 exuberant	19 inadequacy
20 merchant	20 compliments	20 continuously	20 grotesque	20 simultaneous

III. Single Word Receptive Vocabulary

The Peabody Picture Vocabulary Test Revised (PPVT-R)

The PPVT-R is used to assess the subject's single word receptive vocabulary skills through administration of a picture pointing task in which the subjects indicate the one picture in four that best matches a word spoken by the examiner. The following example demonstrates the stimuli for the target word: *swamp*.

Training items are presented initially. A basal is obtained with 8 consecutive correct responses, while a ceiling is achieved when six of eight consecutive responses are failed. Previous studies by Cossu and Marshall (1986) and Goldberg and Rothermel (1984) used the PPVT-R.

IV. Single Word Expressive Vocabulary

The Expressive One Word Picture Vocabulary Test Revised (EOWPVT-R) and Upper Extension (EOWPVT R/UE)

This test assesses confrontational naming/expressive single word vocabulary skills with a version for younger children and one for older children, and adolescents. The EOWPVT-R is designed for children aged 2.0 to 11.11 years, while the EOWPVT-UE caters for subjects aged 12.0 and over. Both tests require subjects to look at the given pictures and tell the name of each picture or pictures. This is an untimed test, which usually takes 10-15 minutes and encompasses individual administration. A basal is attained when eight consecutive correct responses are noted and a ceiling involves six consecutive incorrect responses. The test begins with administration of a series of training plates.

Examples of test stimuli include:

(1) *stadium* (from EOWPVT-R)

(2)*appliances* (from EOWPVT UE)

This is not a test of word finding ability and responses are scored as correct/incorrect rather than analysed in terms of the manner of response. Subjects are encouraged to respond with only one answer, to say "I don't know" if they appear not to know the name of a picture or a group of pictures and to respond within a +/- 10 second time frame. Speed of performance has however no effect on results.

V. Metaphonological Skills and Auditory Memory:

The Woodcock Johnson Revised Cognitive Battery (WJR-Cog)

Selected subtests of the WJR-Cog were incorporated into this study and will be described below. All four subtests require audio-taped presentation of stimuli.

The four subtests included:

(1) Incomplete Words - The tests manual notes that this subtest measures the subjects auditory closure skills. Subjects hear words with one or more phonemes missing and are required to identify the whole word.

Examples of subtest items include:

(a) bicycle *bi-y-le* *(b) volcano* *-ol-ano*

(2) Memory for Words - The subtest measures the subjects' ability to repeat lists of unrelated words in appropriate sequence. The stimulus items increase in complexity from 1 - 8 words and target auditory short term memory.

Examples of subtest items include:

(a) sleep ....little...a *(b) from .....have.....they.....up.....each*

(c) nothing...stand....real.....cut....cry....off.... about.....rock

(3) Sound Blending - This subtest evaluates the subjects' ability to integrate and say whole words after hearing only parts. e.g., a syllable and/or phonemes.

(a) num/ber (2 syllables) *(b) /f/ /d/ (phoneme by phoneme)*

(c) /g/r/ /n/d/m/o/ / r/ (phoneme by phoneme)

(4) Numbers Reversed - This subtest examines the subjects' skill in saying a series of random numbers backwards. As per the test manual, this subtest assesses short term memory and attention skills. Sample items are:

(a) 7-3-6 *(b) 8-5-2-6*

(c) 2-9-6-8-3-7-1-4

Kistner et al (1988) also incorporated subtests of the WJR-Cog in their study of children with Hyperlexia.

VI. Single Word Spelling Skills

The Test of Written Spelling 3 (TWS-3)

The TWS-3 takes approximately ten minutes to administer. Subjects are required to write words to dictation. Stimuli are initially read aloud by the examiner, then the stimuli are presented in a spoken sentence and repeated in isolation prior to the subject writing them down. Two separate lists are provided.

The first targets phonically predictable words i.e. those words whose spelling can be predicted based on the phonetic structure of the word. The second list targets unpredictable or irregular words. All subjects begin at the appropriate entry level for their grade. A basal is achieved when the subject answers five consecutive items correctly, while a ceiling involves missing five consecutive items. A total score is obtained by adding scores on the predictable and unpredictable lists.

The following examples illustrate the type of stimuli presented by the examiner.

PREDICTABLE WORDS

Pronunciation*	Word	Sentence	Word
'stäp	stop	1. Stop talking now.	stop
'bed	bed	2. She slept on a bed.	bed
'let	let	3. Please let me go.	let
'plant	plant	4. The plant needed some water.	plant

UNPREDICTABLE WORDS

Pronunciation*	Word	Sentence	Word
'pē-pəl	people	8. The people were riding in the car.	people
(')hü	who	9. Who did you see?	who
'āt	eight	10. The boys had eight books.	eight

VII. Contextual Reading

The Gray Oral Reading Test 3 (GORT 3)

The GORT 3, a test of paragraph reading ability, is normed for students aged 7.0 to 18.11 years. Administration time varies from 15 to 30 minutes. The test is used to determine reading rate, accuracy and comprehension of passages that increase in complexity.

The rate and accuracy scores form the passage score and this latter category together with the comprehension score is used to calculate basals and ceilings. There are 5 comprehension questions following each story. To achieve a basal for comprehension, subjects are required to answer all five comprehension questions in a given story correctly. A ceiling for comprehension occurs when at least three of the five questions following any given story are incorrect. A basal for the passage score is achieved when a subject scores 9 or 10 on a story. This score is determined by noting the number of seconds it took to read the paragraph as well as the number of deviations from print/errors while reading. These scores are converted to a 1 -5 point score and are added to establish the passage score. The ceiling is obtained with a passage score of 2 or less for any given story . All miscues are noted carefully.

Subjects are told at the outset: *" I want you to read some stories out loud to me. Read them as quickly as you can and as well as you can. Before you read each story I will tell you something about it. Then I'll give you the book I want you to read from. When you have finished I will ask you some questions about what you have read. Let's start now."*

The comprehension questions are read aloud by the examiner with the student following along in their student book. The subjects are not allowed to return to the passage to scan for the correct answer.

The examiner first tells the student, *" I want you to answer some questions based on what you have read. I will read each question and the possible answers out loud, and I want you to follow along as I read. When I have finished reading each question, tell me which one you think is the right answer. Listen carefully."*

Two examples follow to illustrate the type of paragraphs involved and the given comprehension questions. The first is the easiest paragraph using Form B and the second represents the most difficult.

B-1 Prompt: **Say,** "THIS STORY IS ABOUT AN ANIMAL. READ THIS STORY TO FIND OUT WHAT THE ANIMAL DOES." (8)

B-13 Prompt: Say, "THIS STORY IS ABOUT WHAT SOME EMPLOYERS DID FOR THEIR WORKERS. READ THE STORY TO
(26) FIND OUT WHAT THEY DID."

The Test of Reading Comprehension-Paragraph Reading Subtest

This subtest explores subjects' paragraph reading comprehension in a silent reading task in which subjects have to read the short paragraphs silently and answer the five questions that follow each paragraph. A ceiling is obtained when subjects answer three out of five questions incorrectly and testing is then discontinued.

The following paragraph illustrates the type of passages used in this measure.

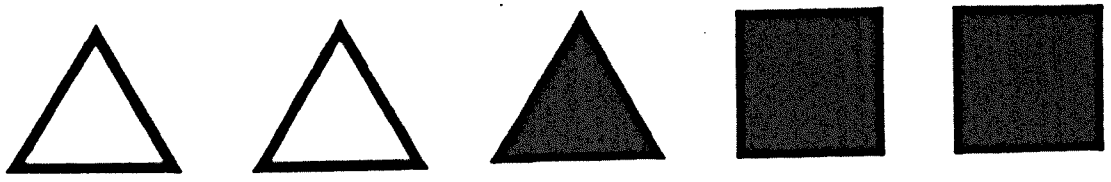
VIII. Receptive and Expressive Oral Language Skills

The Clinical Evaluation of Language Fundamentals - Revised (CELF-R)

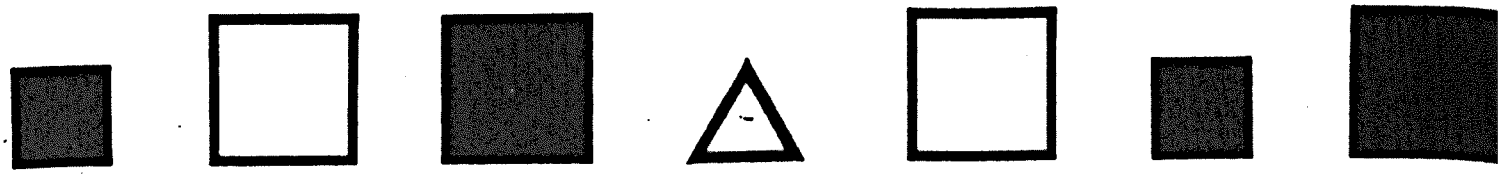
The CELF-R examines oral receptive and expressive semantic and syntactic skills in various tasks that present stimuli in auditory and/or visual formats and require verbal or pointing responses. Scores on three separate subtests are used to determine both a receptive and expressive language score, while the total language score is derived from scores on all six subtests. Two additional (optional) subtests are available.

The CELF-R receptive language subtests include the following: (1) The Oral Directions Subtest -this involves administration of a picture pointing task emphasizing one, two and three step oral commands presented with or without seriation. Two examples follow:

" Point to the last white triangle and the first black square. Go."



"Point to the first big white square to the right of the small white triangle. Go."



As is true with all CELF-R subtests all subjects begin with item 1 and proceed until they obtain four consecutive zero responses. Training items are provided prior to beginning each subtest. Repetition of stimuli is prohibited on the Oral Directions subtest, but this feature is noted to vary per individual subtest.

(2) The Word Classes Subtest - subjects are required to select two words that relate out of a series of four words.

e.g. ***happy*** ***rainy*** ***windy*** ***slowly***

or

seconds ***yards*** ***minutes*** ***winter***

Repetition of stimuli is also prohibited on the Word Classes subtest. This subtest taxes auditory working memory in that subjects are required to hold the four words in working memory in order to determine a relationship between two of them i.e. to select the two that go together best.

(3) Semantic Relationship Subtest - this subtest measures comprehension of spatial, temporal, passive and comparative relationships embedded in sentence structure. Subjects are presented with visual (printed words) and auditory (stimuli are read aloudby the examiner) presentation of stimuli and are asked to select the two correct answers from a choice of four. The following examples are provided: (words in bold represent the correct answers)

Comparative relationships -

books are heavier than

(a) TV's ***(c) chairs***

(b) feathers ***(d) letters***

Spatial relationships -

The coat was in the box. The box was on the bed.

The coat was

(a) under the bed *(c) **on the bed***

*(b) **in the box*** (d) in the bed

Passive Relationships -

Jim was taught by Mary. Bill was taught by Ellen.

Who was taught?

*(a) **Bill*** *(c) Mary*

*(b) **Jim*** *(d) Ellen*

Temporal Relationships -

Monday comes between

*(a) **Saturday and Wednesday*** *(c) **Sunday and Tuesday***

(b) Tuesday and Wednesday *(d) Thursday and Saturday*

A further three subtests are used to establish the expressive language score. They include: The Formulated Sentences Subtest, The Recalling Sentences Subtest and The Sentence Assembly Subtest. Each subtest will be discussed below.

(1) Formulated Sentences Subtest - subjects are asked to formulate sentences given specific target words and accompanying picture stimuli. For example, for the trial item "shoes" the examiner must say, "Make a sentence using the word 'shoes'. You may use the picture to make your sentence. The picture may help you think of what to say. If you would like to talk about something else, you don't have to use the picture, but you do have to use the word 'shoes'. "

The picture stimulus for the training item "shoes."

One repetition of each stimulus is permitted. There are twenty items in this subtest with the latter five comprising two target words which can be used in any order subjects choose, as long as both words are used in the same sentence. Each response is scored following a classification system that indicates whether sentences produced were complete and semantically, syntactically correct.

For example : for the stimulus item 'after' the following scores could be provided:

Score 3 = "After she won the race she had something cool to drink.
Score 2 = "After the boy won, the others have already lost."
Score 1 = "After the race is over."
Score 0 = "Is after up?"

(2) Recalling Sentences - this subtest assesses recall and reproduction of surface structure as a function of syntactic complexity. No picture stimuli or repetition of stimuli are allowed. Subjects are informed that: "I am going to say some things to you. I want you to listen and repeat what I say." Each response is scored according to the number of errors made. Omitted, substituted, inserted and transposed words should be noted on the response form and count as errors.

Samples of subtest stimuli include:

(a) The boy was not chased by the girl.

(b) The man who sits on the bench next to the oak tree is our mayor.

(3) Sentence Assembly Subtest - the test manual notes that this subtest measures the subjects' ability to assemble syntactic structures into grammatically appropriate and semantically meaningful sentences. One repetition per test item is allowed.

Subjects are shown a series of printed words that can be made into a sentence and are told: "Here are some words that can be made into a sentence. Make a sentence with these words."

'The kitten is in the chair.'

Now make a different sentence with the words.

'Is the kitten in the chair?'

The supplementary subtest "Listening to Paragraphs" was also administered in this study. This subtest assesses the subjects' ability to listen to short paragraphs and answer a set of four questions that follow. It examines comprehension, recall and interpretation of factual data only. Different paragraphs are available for different age subjects.

The following paragraph illustrates the kind of stimulus for an 11.0 to 11.11 year old.

'Freckles, Lucy called.' 'Here, Freckles. Where are you?' Hearing Lucy call, the brown and white springer spaniel raced homeward, knowing as always her dinner would be waiting. Just before she got to the front door, Freckles noticed something shining in Lucy's hand. Freckles had seen the shiny thing before. She stopped suddenly just in time to escape another battle with the flea spray. Lucy shrugged her shoulders and said, 'We're going to do this sooner or later, Why don't you make it easier on both of us?'

(a) Why did Freckles race home when she heard Lucy call?

(b) What was Lucy trying to do?

(c) Why did Freckles stop?

(d) Why did Lucy say "Why don't you make it easier on both of us?'

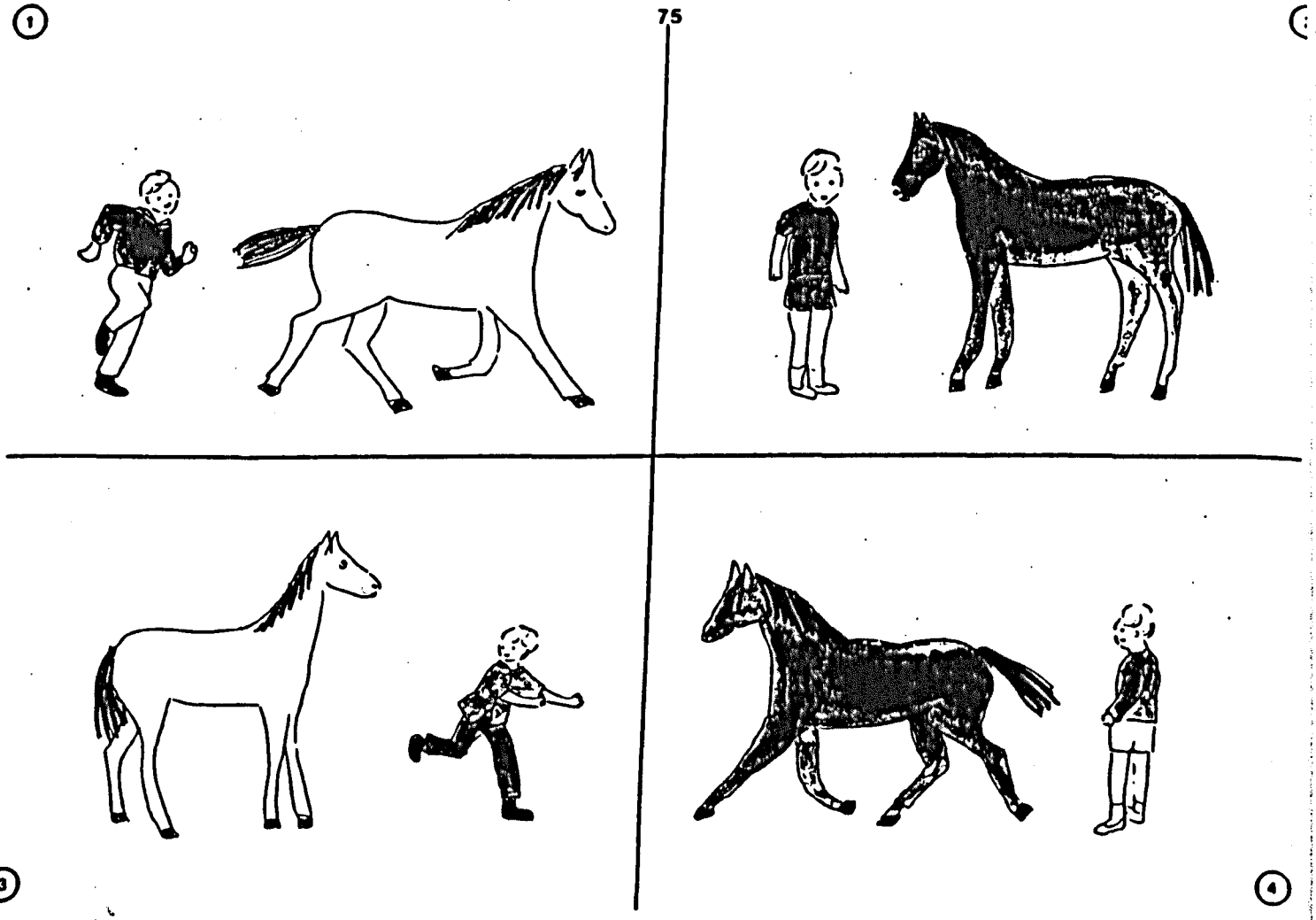
Although alternate subtests also form part of the CELF-R they are not described as they were not used in the current study. The CELF-R itself was selected for its applicability to a wide range of subjects. It is used extensively as one of a limited number of comprehensive batteries that target both receptive and expressive oral language skills.

IX. Receptive Syntax

Bishop's (1982) Test for the Reception of Grammar (TROG)

The TROG was administered following the criteria as set out in the test manual to obtain basals and ceilings. This test involves items that gradually increase in difficulty and are divided into blocks of four items, each block measuring understanding of a specific type of syntactic contrast, including negatives, comparatives, pronouns, plurals, as well as reversible actives and passives. Subjects are asked to point to one picture out of four that match the given sentence stimulus. There are a total of eighty possible items to present. All responses are scored as correct or incorrect with raw scores documented. The test is scored in terms of the number of blocks passed instead of the number of items correct. According to the test manual a block is passed when all four items in the block are responded to correctly. The test manual notes that the probability of a person getting all four items in a block correct by chance is .004, so that the TROG can provide a meaningful assessment of a subject's comprehension of individual syntactic contrasts and can identify particular areas which pose greater difficulty for the child.

The following example is provided to illustrate the type of stimuli found in the TROG.



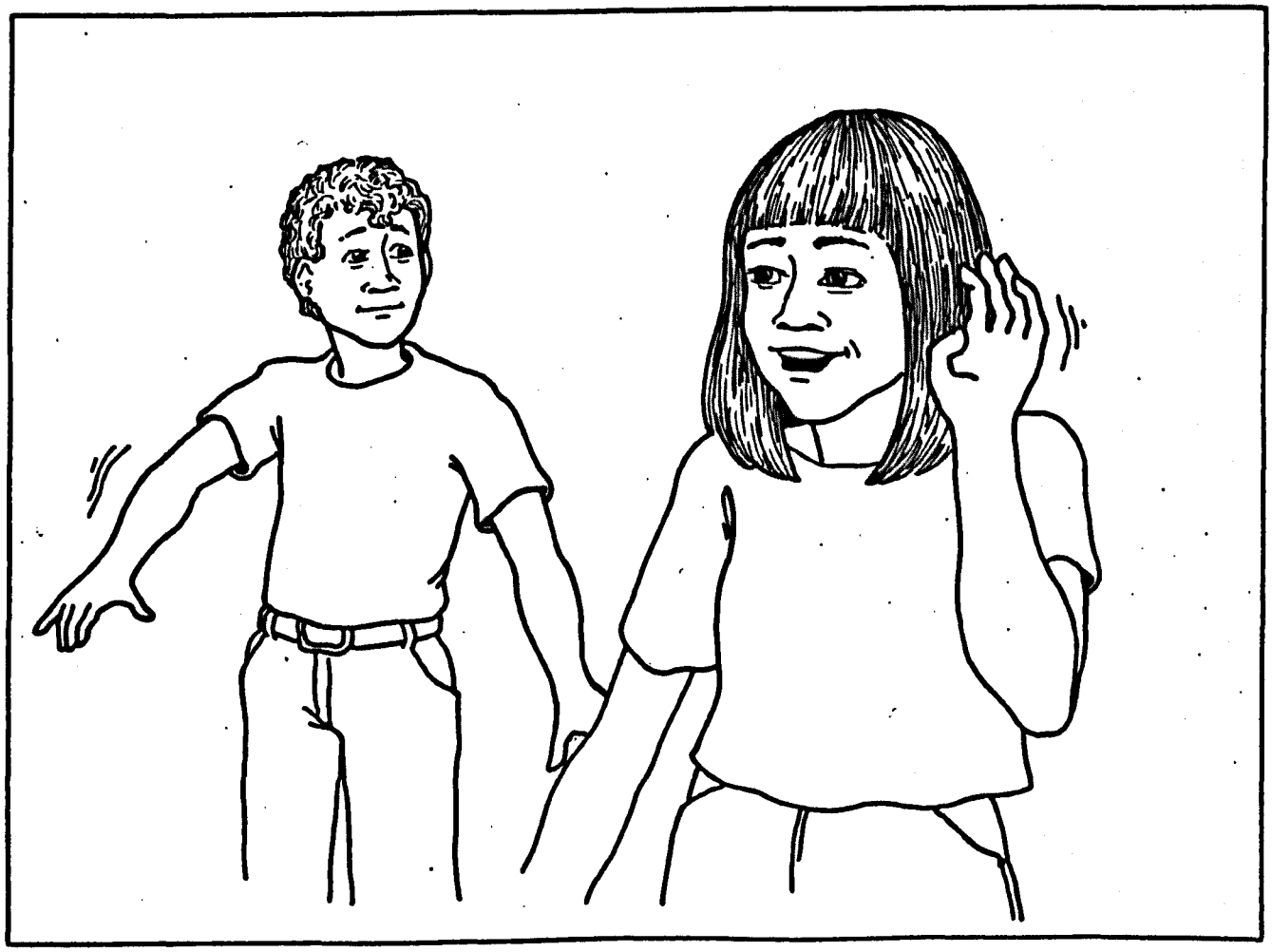
Stimulus = Neither the boy nor the horse is running.

X. Pragmatic Language Skills

The Test of Pragmatic Language (TOPL)

The TOPL forms one of the few available formal assessments of the pragmatic dimensions of language. The test manual describes how it assesses the contribution of physical setting, audience, topic, purpose/speech act, visual-gestural cues and abstraction in pragmatic usage of language. Auditory (spoken) and visual (pictures) presentation of stimuli occur. The following examples illustrate the question types posed in this test.

Example 1 :*"Tom said something to Jill. Jill could not hear him very well. She wanted Tom to say it again, so that she could hear it. What did Jill say to Tom?"*



Example 2 : *"Mike was playing baseball. He hit a ball that went high over the yard and crashed through the neighbour's garage window. Mike went to the neighbour's house and knocked on the door. The neighbour opened the door. What did Mike say to the neighbour?"*

FORMAL STANDARDISED TESTS USED IN THIS STUDY:

CELF-R (Clinical Evaluation of Language Fundamentals -Revised)
Elenore Semel, Elisabeth H. Wiig and Wayne Secord
Copyright 1980
The Psychological Corporation
USA

EOWPVT-R (Expressive One-Word Picture Vocabulary Test -Revised)
Morrison F. Gardner
Copyright 1990
Academic Therapy Publications, Inc.
Novato, CA 94949-6191 USA.

EOWPVT-UE (Expressive One-Word Picture Vocabulary Test - Upper Extension)
Morrison F. Gardner
Copyright 1983
Academic Therapy Publications, Inc.
Novato, CA 94949-6191 USA.

GORT-3 (Gray Oral Reading Tests Third Edition)
J. Lee Wiederholt and Brian R. Bryant
Copyright 1967
PRO-ED, Inc.
Austin, TX 78758 USA.

PPVT-R (Peabody Picture Vocabulary Test -Revised)
Lloyd M. Dunn, PhD and Leota M. Dunn
Copyright 1981

American Guidance Service

Circle Pines, MN 55014-1796 USA

SORT-R (Slosson Oral Reading Test-Revised)

Richard L. Slosson, revised by Charles L. Nicholson

Copyright 1963

Slosson Educational Publications, Inc.

East Aurora, NY 14052 USA

TONI 2 (Test of Nonverbal Intelligence 2)

Linda Brown, Rita Sherbenou and Susan Johnsen

Copyright 1990

Pro-Ed, Inc

Austin, Texas 78758

TOPL (Test of Pragmatic Language)

Diana Phelpe-Terasaki and Trisha Phelps-Gunn

Copyright 1992

PRO-ED,Inc.

Austin, TX 78758 USA

TOWL-2 (Test of Written Language-2)

Donald D. Hammill and Stephen C. Larsen

Copyright 1978.

PRO-ED, Inc.

Austin, TX 78758 USA.

TROG (Test for Reception of Grammar)

Bishop, D.V.M. 1982

Manchester. Manchester University.

TWS-3 (Test of Written Spelling Third Edition)

Stephen C. Larsen and Donald D. Hammill

Copyright 1976

PRO-ED, Inc.

Austin, TX 78758 USA

WJ-R (Woodcock-Johnson Psycho-Educational Battery Revised, Tests of Cognitive Ability)

Richard W. Woodcock and M. Bonner Johnson

Copyright 1989

DLM Teaching Resources

Allen, TX 75002 USA

Appendix -B

I. Word Frequency and Imageability

Subtest 31: Oral Reading: Imageability x Frequency of the Psycholinguistic Assessment of Language Processing in Aphasia (1992) incorporated the following stimuli.

A High I / High Frequency Words		D High I / Low Frequency Words	
audience		alcohol	
battle		axe	
church		cart	
coffee		drum	
fire		elbow	
hand		elephant	
hospital		feather	
hotel		funnel	
letter		gravy	
marriage		monkey	
mother		onion	
night		pig	
picture		pill	
plane		potato	
radio		pupil	
school		slope	
student		spider	
summer		tobacco	
village		tractor	
window		wheat	
Total Correct	/20	Total Correct	/20
C Low I / High Frequency Words		D Low I / Low Frequency Words	
attitude		analogy	
character		bonus	
concept		clue	
crisis		deed	
effort		dogma	
fact		episode	
idea		folly	
length		gravity	
manner		irony	
member		mercy	
moment		miracle	
opinion		pact	
principle		plea	
purpose		realm	
quality		satire	
session		treason	
system		tribute	
theory		valour	
thing		woe	
thought		wrath	
Total Correct	/20	Total Correct	/20

II. Word Regularity

The Oral Reading - Regularity Subtest of the PALPA stimuli are :

Target	R/E	Response
effort	R	
pretty	E	
middle	R	
barge	R	
break	E	
envy	R	
blood	E	
bowl	E	
plank	R	
navy	R	
ceiling	E	
iron	E	
cough	E	
context	R	
rub	R	
routine	E	
bury	E	
yacht	E	
flannel	R	
tail	R	
wolf	E	
island	E	
wedding	R	
chicken	R	
colonel	E	
luck	R	
smog	R	
nerve	R	
sew	E	
sword	E	
Regular		
Exception		

III. Nonword Reading

The Oral Reading Nonwords Subtest of the PALPA stimuli are:

ked	bem
nar	cug
fon	lat
shid	boak
doop	birl
dusp	soaf
snite	hance
hoach	smode
glope	grest
dringe	squate
churse	thease
shoave	pretch

IV. Modified SORT R Synonym Task

The following stimuli formed those that were used in this study.

MODIFIED SORT-R STIMULI:LIST 5				
Stimulus:	Synonym:	Decoy 1:	Decoy 2:	Decoy 3:
cushion	pillow	color	patio	fluid
generally	universally	courteously	elegantly	gainfully
extended	enlarged	explained	acclaimed	intervened
custom	habit	appearance	elegance	wedlock
tailor	outfitter	trader	carer	viewer
haze	mist	list	view	copy
gracious	courteous	showy	hardworking	thoughtful
dignity	elegance	excellence	attractiveness	significance
terrace	patio	fluid	peer	drug
applause	acclaim	desire	throb	involve
jungle	forest	grasslands	center	note
fragrant	perfumed	polluted	arranged	decoded
interfere	intervene	imagine	disapprove	associate
marriage	wedlock	memory	design	arrangement
profitable	gainful	mindful	harmful	careful
define	explain	note	acclaim	praise
obedient	dutiful	hopeful	thoughtful	gainful
ambition	aspiration	attraction	imagination	exception
presence	appearance	indifference	concurrence	significance
merchant	trader	outfitter	designer	visitor

MODIFIED SORT-R STIMULI FOR LIST 6:				
Stimulus:	Synonym:	Decoy 1:	Decoy 2:	Decoy 3:
installed	fitted	designed	arranged	decoded
importance	significance	indifference	concurrence	appearance
medicine	drug	note	copy	habit
rebellion	revolt	center	chaos	view
infected	polluted	imagined	excited	disapproved
responsible	liable	favourable	agreeable	reducible
liquid	fluid	list	prison	drug
tremendous	enormous	dissimilar	unimportant	hideous
customary	usual	exceptional	vocal	universal
malicious	evil	false	obvious	tasty
spectacular	showy	ghostly	colorfully	falsely
inventory	list	visit	view	copy
yearning	longing	harming	involving	recurring
imaginary	unreal	unimportant	unharmful	unarranged
consequently	therefore	and	but	when
excellence	superiority	universality	locality	similarity
dungeon	prison	center	chaos	view
detained	imprisoned	weakened	disapproved	involved
abundant	numeerous	olden	hideous	tasty
compliments	praises	copies	views	visits

MODIFIED SORT-R STIMULI FOR LIST 7:				
Stimulus:	Synonym:	Decoy 1:	Decoy 2:	Decoy 3:
administer	manage	involve	arrange	add
tremor	throb	note	care	recur
environment	locality	universality	emergency	centrality
counterfeit	false	olden	unimportant	chaos
crisis	emergency	locality	universality	centrality
industrious	hardworking	caring	imagining	associating
approximate	similar	indifferent	numerous	elegant
society	association	prison	center	usual
architecture	design	view	list	patio
malignant	harmful	favorable	thoughtful	careful
pensive	thoughtful	dutiful	hopeful	gainful
standardized	regularized	localized	enlarged	associated
exhausted	tired	excited	fascinated	punished
reminescence	memory	chaos	copy	design
intricate	involved	indifferent	intervention	intervene
contemporary	peer	vocalist	visitor	trader
attentively	mindfully	agreeably	hopefully	dutifully
compassionate	caring	managing	copying	aspiring
complexion	color	visit	view	copy
continuously	recurringly	favorably	fundamentally	universally

MODIFIED SORT-R STIMULI FOR LIST 8:				
Stimulus:	Synonym:	Decoy 1:	Decoy 2:	Decoy 3:
prairies	grasslands	forest	center	view
evident	obvious	commensurate	central	similar
nucleus	center	design	peer	association
antique	olden	tasty	obvious	false
twilight	gloaming	recurring	attracting	reducing
memorandum	note	design	memory	drug
whimsical	imaginative	indifferent	similar	concurrent
proportional	commensurate	dissimilar	imaginative	obvious
intangible	ghostly	gloaming	hideous	involved
formulated	arranged	fitted	explained	enlarged
articulate	say	add	note	care
deprecate	disapprove	disassociate	discover	disappear
remarkably	exceptionally	dissimilarly	dutifully	caringly
contrasting	dissimilar	harmful	unreal	evil
irrelevance	unimportance	chaos	hopelessness	concurrence
supplement	addition	attraction	approval	agreeable
inducement	attraction	aspiration	appearance	association
nonchalant	indifferent	false	throb	hardworking
exuberant	excited	fascinated	imagined	involved
grotesque	hideous	false	emergency	similar

MODIFIED SORT-R STIMULI FOR LIST 9-12:				
Stimulus:	Synonym:	Decoy 1:	Decoy 2:	Decoy 3:
traverse	cross	decode	manage	say
affable	agreeable	attractive	excitable	exceptional
compressible	reducible	indifferent	dissimilar	commensurate
excruciating	painful	gainful	mindful	harmful
pandemonium	chaos	loot	olden	center
scrupulous	honest	obvious	similar	numerous
primordial	fundamental	unimportant	exceptional	indifferent
chastisement	punishment	imprisonment	involvement	arrangement
sojourn	visit	view	center	color
panorama	view	grasslands	memory	prison
facsimile	copy	drug	design	peer
auspicious	favorable	agreeable	exceptional	superior
contraband	loot	drug	revolt	list
envisage	imagine	excite	attract	add
futility	hopelessness	weakness	tiredness	gainfulness
enamoured	fascinated	attracted	added	said
gustatory	tasty	showy	ghostly	liably
decipher	decode	care	arrange	say
inadequacy	weakness	indifference	disapproval	involvement
simultaneous	concurrent	fundamental	significant	similar

The tables demonstrated above presented the target word followed by the synonym and the decoys to illustrate the stimuli used for the task. Subjects were, however, not presented with the lists in the manner documented above. Instead, the synonyms and decoys were presented in random fashion as seen in the table below.

MODIFIED SORT-R STIMULI FOR LIST 6:			
installed	fitted	designed	decoded
importance	significance	indifference	appearance
medicine	note	drug	copy
rebellion	revolt	center	view
infected	excited	imagined	polluted
responsible	favorable	trustworthy	agreeable
liquid	prison	list	fluid
tremendous	hideous	dissimilar	enormous
customary	usual	universal	vocal
malicious	tasty	evil	obvious
spectacular	showy	ghostly	colorful
inventory	view	visit	list
yearning	harming	longing	recurring
imaginary	unreal	unimportant	unharmful
consequently	however	therefore	besides
excellence	superiority	similarity	locality
dungeon	chaos	view	prison
detained	imprisoned	weakened	involved
abundant	tasty	numerous	hideous
compliments	views	copies	praises

V. Learning of Novel Words

Nonpicturable Words:

Table 1

NOVEL WORD TASK	
TARGET WORD	REGULAR/IRREGULAR
ABATE	R
ACCOST	R
BELUGA	R
DODO	R
EDICT	R
JAVEL	R
KEEK	R
NAPE	R
SCARAB	R
NABS	R
CAULK	I
EUCHRE	I
FILLET	I
GNAW	I
HEIFER	I
LARYNX	I
MOIRE	I
OEDEMA	I
PHIAL	I
PHASM	I

R = regular words I = irregular words

VI. Learning of Novel Words

Picturable Words

TABLE 2

NOVEL WORD AND PICTURE TASK	
TARGET WORD	REGULAR/IRREGULAR
ABACUS	R
CALYX	R
DABBER	R
JOIST	R
GASKIN	R
INCUS	R
ZITHER	R
SKEG	R
VAIR	R
WELT	R
SCYTHE	I
THYME	I
CUISSE	I
FASCIA	I
HYSSOP	I
CHARON	I
PHLOEM	I
WAPITI	I
JABOT	I
SCOTIA	I

R = regular words I = Irregular words

VII. Reading Rate

The following stimuli were used to explore reading rate without a focus on comprehension.

white	yellow	blue
yellow	green	red
green	red	white
blue	red	blue
green	red	white
yellow	white	blue
green	yellow	

green	blue	yellow
white	blue	white
green	red	yellow
red	yellow	blue
green	red	blue
white	green	yellow
yellow	white	green
red	red	green
white	green	red
white	blue	yellow

NORMAL CONTROLS

NORMAL CONTROLS -SUBJECT : D.L.

BOWLER STORY

1. Store X
2. That night
3. At his office
4. Store X
5. Yes
6. No
7. Yes
8. Store X
9. Because she doesn't know that he knows they're out of stock
10. Store Y
11. Store X

HAPPE STORIES

LIE

1. No
2. Because she didn't want to get in trouble

WHITE LIE

1. No
2. She wanted her parents to feel good

DOUBLE BLUFF

1. Yes
2. In the sea
3. Because he knew they wouldn't believe him

IRONY

1. No
2. Because she's being sarcastic

NORMAL CONTROLS-SUBJECT D.L.

HAPPE STORIES (contd):

FIGURE OF SPEECH

1. No
2. Because it's an expression

PERSUASION

1. No
2. To make Jane feel sorry for the kittens and buy one

BASKETBALL STORY

1. Play basketball in the park on Green Street
2. In the park on Green Street
3. At 4.00
4. Uh he doesn't know
5. Um he says: okay come and play basketball with me
6. Because he's his good friend
7. Play basketball at 4.00
8. She's going to go
9. Happy probably because she can go
10. Because she thinks it's true that they will meet her there
11. Because he didn't want her there
12. 4.45
13. Dov's
14. Happy because he invited him
15. West Street
16. Because they're not going to be there
17. Um Naomi doesn't know about it
18. Wrong place

NORMAL CONTROLS-SUBJECT D.L.

BASKETBALL STORY (contd):

19. Because they'll never meet at West Street but if they give the wrong time maybe they'll still be there
20. Not really
21. That Dov didn't want Naomi and Daniel to play
22. Um Naomi and Daniel will be sad because the others didn't show up and the others will play basketball.
23. If Dov had said no they can't come
24. Not really
25. No

JUNIOR HIGH STORY

1. To go to the movies on Saturday at 10.00
2. At 10.00
3. Probably a bit annoyed
4. Because she wants to be Veronica's friend
5. Happy
6. To go to the Mall on Saturday at 10.00
7. Because she likes Gabi better than Jane
8. She should have said no I'm going with Jane
9. Well she doesn't know but if she did she's be sad
10. No but I don't agree with it in the first place - you shouldn't get someone to do your homework for you
11. Jane doesn't know but she thinks Jane would be sad
12. Gabi doesn't know that Jane was going to the movies
13. Went to the Mall
14. Waiting at the movies
15. Because she wouldn't go with her to the movies

NORMAL CONTROLS-SUBJECT : D.L.

JUNIOR HIGH STORY (contd):.

16. She got in trouble
17. Because Veronica had Gabi steal it
18. Veronica's
19. Veronica asked Gabi to steal it
20. To cheat on homework
21. That Veronica is popular and Jane wanted to be popular too
22. Jane won't do any more of Veronica's homework
23. If Veronica went with Jane to the movie
24. Not really
25. No

THE PICTURE TASK

PICTURE 1

1. Someone filling a car with gas
2. That someone is paying for it
3. Um stressed out I think
4. Which type of gas should I get, I guess
5. She's trying to figure out how much to pay
6. Pay
7. Confused
8. Maybe they parked the car the other way around and she's trying to figure out how to put the gas in
9. Because she needs to put gas in the car
10. Put gas in the car

PICTURE 2

1. Someone looking in the mirror
2. There's a person next to that person

NORMAL CONTROLS - SUBJECT D.L.

PICTURE TASK (contd):

PICTURE 2

3. I don't know what the word is - angry
4. I think she has a pimple and she's looking at it and trying to think how she'll get rid of it
5. Because she doesn't like having a pimple
6. Use some cream or something to get it off
7. She's trying to help her
8. What should they do next
9. Because she wants to help the other girl
10. Maybe give her some cream or something like that

PICTURE 3

1. That guy is trying on a shirt
2. She's helping him
3. He's bored
4. Can't I just buy a shirt and go
5. Because he's bored
6. Buy the shirt
7. Helpful
8. This shirt looks good on him
9. Because she's trying to sell it
10. Ask him to try it on

PICTURE 4

1. She's thinking about buying something
2. She's talking to her about whether she should buy it or not
3. I don't know probably thinking should she buy it or not -she's not sure
4. If she should buy it or not

NORMAL CONTROLS-SUBJECT D.L.

PICTURE TASK (contd):

PICTURE 4

5. Because she doesn't know if she has enough money to buy the shirt
6. Either buy the shirt or not
7. She's feeling she should buy the shirt
8. That she should buy the shirt
9. Because she thinks it's a good shirt probably
10. Convince her to buy the shirt
11. That she should buy the shirt-like optimistic
12. That she should buy the shirt
13. Because she'll make some money
14. Try to convince her to buy the shirt

PICTURE 5

1. Some guy trying to hitchhike
2. Two people driving in a car
3. Maybe we should pick him up - she's not sure
4. Um that he doesn't look - he looks like a nice guy maybe we should pick him up
5. Because he's not just standing there bored and she thinks she should help him
6. Convince the person driving the car to stop
7. Probably annoyed because he can't get anybody to pick him up
8. Um happy because he sees the car
9. Because he's hopeful that they might pick him up
10. Um either continue trying to hitch a ride or get one with them
11. Um I don't think she feels she should stop because he's a hitchhiker and that's illegal
12. That she shouldn't pick him up
13. Because she's heard that hitchhikers are sometimes dangerous
14. Drive past him

NORMAL CONTROLS-SUBJECT M.B.

BOWLER STORY

1. Store X
2. That evening
3. At Peter's office
4. Store X
5. Yes
6. No
7. Yes
8. Store X
9. Because she doesn't know that he's already called store X
10. Store Y
11. Store X

HAPPE STORIES

LIE

1. No
2. Because she didn't want to get in trouble

WHITE LIE

1. No
2. To please them

FIGURE OF SPEECH

1. No
2. It's a Figure of Speech

DOUBLE BLUFF

1. Yes
2. In the sea
3. To try and trick the other side

NORMAL CONTROLS- SUBJECT M.B.

HAPPE STORIES (contd):

IRONY

1. No
2. She was being sarcastic

PERSUASION

1. Yes
2. Because she couldn't take care of all the cats and wanted her to buy one

---

BASKETBALL STORY

1. Play basketball on Green Street
2. The park
3. It didn't say-no 4 o'clock
4. He doesn't know
5. Will you come along
6. Because Gavin is his good friend
7. Play basketball in the park at 4.00 on Green Street
8. Come at 4.45
9. Befriended
10. Because she was invited to come along
11. Because he doesn't really like Naomi
12. 4.45
13. Mark's
14. Befriended
15. In the park on West Street
16. Because he doesn't like Daniel
17. It doesn't say
18. The wrong place or no the wrong time
19. Once it's passed the time you can't do anything about it

NORMAL CONTROLS-SUBJECT M.B.

BASKETBALL STORY (contd):

20. Not really
21. He lied
22. Somehow they will end up and Daniel and Naomi will be there and see them and be angry with them
23. Um he could have turned them down
24. No
25. No

JUNIOR HIGH STORY

1. Go to the movies
2. On Saturday
3. She agreed to do it so she must feel that doing that is worth while being popular
4. To be popular
5. She thinks Veronica will be her friend
6. Go to the Mall with Gabi
7. Because Gabi is her good friend
8. I'm busy
9. She doesn't know
10. No
11. She thinks Jane doesn't know
12. Gabi has no idea Jane is involved
13. Went to the Mall
14. At the movies
15. Because Veronica lied to her
16. Her homework got stolen
17. Because Veronica asked Gabi to steal it

NORMAL CONTROLS-SUBJECT M.B.

JUNIOR HIGH STORY (contd):

18. Veronica's no Jane and Veronica's
19. Because Jane agreed to do her homework and shouldn't have and Veronica lied to Jane
20. To cheat on homework
21. Jane wanted to be popular so she agreed on a trade with Veronica that Veronica would go to the movies with Jane and she would do her homework for her but Veronica went to the Mall with Gabi instead
22. Jane will confront Veronica
23. Veronica could have turned down Gabi's request
24. No
25. No

THE PICTURE TASK

PICTURE 1

1. It's a gas station
2. That they are getting gas for their cars
3. Her hair
4. How much should I pay - she's picking a certain type of gas
5. So she can get on her way
6. Choose the type of gas
7. Um I don't know she's taking the nozzle to her car
8. I hope I don't spill any gasoline
9. Doesn't want to get her clothes messed up
10. Put gasoline into her car

PICTURE 2

1. They're in a bathroom
2. She's looking at a possible skin blemish

NORMAL CONTROLS-SUBJECT M.B.

PICTURE TASK (contd):

PICTURE 2

3. Concerned
4. I hope this isn't socially discrediting
5. Because she wants people to like her I suppose
6. Overreact
7. She wants to help out, be a good friend
8. I hope this isn't awful to her social life
9. Because she cares about her friend
10. Comfort her

PICTURE 3

1. They're in a Department store
2. This woman is holding a shirt up to this guy to see if it looks good
3. Irritated-I don't want to be doing this
4. I shouldn't have come
5. The look on his face
6. Push the shirt away
7. Pleased
8. I wonder how it looks on him
9. Because she's holding it up to see
10. Finish holding the shirt up to him

PICTURE 4

1. These people are in a store
2. The one with the money looks like she doesn't have enough money
3. Worried
4. I don't have enough

NORMAL CONTROLS-SUBJECT M.B.

PICTURE TASK (contd):

PICTURE 4

5. The look on her face
6. The same thing she's been doing - be worried
7. Worried
8. I hope we have enough money
9. The look on her face
10. Being worried
11. I hope these people have enough money
12. These people are wasting my time if they don't have enough money
13. The look on her face
14. Ask them if they can hurry up

PICTURE 5

1. They are in a car
2. He's trying to hitch a ride
3. Confused- should we pick this guy up or shouldn't we?
4. I don't think we should pick him up
5. The look on her face
6. Ask the person if they should pick him up or not
7. I need to get a ride
8. I hope these people pick me up
9. Because if he didn't need a ride he wouldn't be hitchhiking
10. Wait for them to stop if they stop
11. Concerned
12. I don't think we should pick him up
13. From what I can see of her face - the look on it
14. Keep driving

NORMAL CONTROLS-SUBJECT P.B.

BOWLER STORY

1. Store X
2. After work
3. Peter's office
4. Store X
5. Yes
6. No
7. Yes
8. Store x
9. Because she doesn't know that Peter knows that store X doesn't have his coat
10. Store Y
11. Store X

HAPPE STORIES

LIE

1. No
2. So that her Mother wouldn't be cross with her

WHITE LIE

1. No
2. She didn't want to hurt their feelings

FIGURE OF SPEECH

1. Not literally
2. Because he's using an expression

DOUBLE BLUFF

1. Yes
2. By the sea
3. Because he knew the red army wouldn't believe what he said

NORMAL CONTROLS-SUBJECT P.B.

HAPPE STORIES (contd):

IRONY

1. No
2. So that Anne will know she should have said thank you

PERSUASION

1. No probably not
2. So Jane would buy a kitten

BASKETBALL STORY

1. He wants to play basketball in the park
2. In the park
3. 4.00
4. Um (delay) I don't know - it doesn't say
5. Jim and I are going to the park at 4.00. Do you want to come too?
6. He wants Gavin to play as well
7. Go to the park to play basketball at 4.00
8. Going to the park at 4.45
9. Happy
10. Because she's going to play with Paul
11. Because he didn't want to play with Naomi and plans to be gone by 4.45
12. 4.45
13. Paul's
14. He feels happy
15. The park on West Street
16. Because he hates Daniel
17. Naomi doesn't know about it
18. The wrong place

NORMAL CONTROLS-SUBJECT P.B.

BASKETBALL STORY(contd):

19. Because with the wrong time Paul could be late and Naomi could come early, but if Daniel goes to West Street he won't know Paul's on Green Street
20. No
21. Um Paul only wants some people to come and play with him and not others
22. Paul, Gavin and Jim will go to the park on Green Street and Daniel will go to West Street and later after Paul, Gavin and Jim have gone Naomi will arrive on Green Street
23. Um if Paul had just said well I'm busy I can't do anything with you today or if her had just said come to the Green Street park at 4.00
24. Yeah
25. Well I wanted to play ball with my friends and some other friends wanted to come too so I went anyway but didn't have a great time because I didn't want to play with them

---

JUNIOR HIGH STORY

1. To go to the movies on Saturday
2. On Saturday at 10.00
3. Um she feels that it's not right but she does it anyway
4. To be friendly with Veronica so Veronica will make her popular
5. Jane thinks Veronica feels good
6. Go to the Mall with Gabi
7. Because she's a good friend of Gabi
8. No I'm sorry I'm going to the movies with Jane
9. Jane doesn't know about it
10. No
11. Um Jane doesn't know about it so Veronica doesn't know what to think
12. The same thing
13. Went to the Mall
14. At the movies

NORMAL CONTROLS-SUBJECT P.B.

JUNIOR HIGH STORY(contd):

15. Because Veronica didn't go to the movies on Saturday
16. Uh Gabi stole her homework so she didn't have it and got detention
17. Um because Veronica told her to steal the homework
18. Veronica's
19. Because she stood Jane up and made her angry and told Gabi to steal the homework
20. To cheat on homework
21. Um Veronica didn't go to the movies with Jane and went with Gabi instead
22. Jane and Veronica will get in fight
23. If Veronica had said no I'm sorry I can't go with either Jane or Gabi
24. No
25. No

THE PICTURE TASK

PICTURE 1

1. The gas station
2. The women getting gas
3. Confused
4. Um what do I do now
5. Um she's unsure which gas to take
6. Um take one of them I guess
7. Confident
8. I'm going to put this gas in the car
9. It's what she's about to do
10. Put the gas in the car

PICTURE 2

1. They're in a bathroom
2. The women looking in the mirror

NORMAL CONTROLS-SUBJECT P.B.

PICTURE TASK (contd):

PICTURE 2

3. Um she's feeling frustrated
4. I can't believe I look like this
5. She doesn't like the way she looks
6. She will wash her hands
7. Sympathy
8. She's thinking she feels sorry for her
9. Because her friend doesn't look that great
10. Um comfort her friend

PICTURE 3

1. They're in a clothing store
2. This guy is trying on clothes
3. He's feeling nervous
4. I don't want to buy that shirt
5. He doesn't like the way the shirt looks
6. He'll ask the saleslady for another shirt
7. I hope this guy buys the shirt - hopeful
8. He needs to buy the shirt
9. Because she won't be able to sell it to anybody else
10. She's going to ask the guy if he likes the shirt

PICTURE 4

1. 3 girls
2. They're talking about buying something
3. She's feeling um a little nervous
4. Is this shirt I'm buying the right one

NORMAL CONTROLS-SUBJECT P.B.

PICTURE TASK (contd):PICTURE 4

5. Because she was unsure about the shirt she was buying
6. Pay for the shirt
7. She's feeling uh frustrated
8. She's thinking this person here should just make up her mind
9. Because the woman is unsure about buying the shirt
10. She will say something to the woman to convince her to buy it
11. She's also feeling frustrated
12. I hope this woman buys this shirt
13. She wants to make money so she has to sell the shirt
14. Package the shirt, take the woman's money and give her the shirt

PICTURE 5

1. Um two people in a car
2. The guy wants a ride
3. She's expectant
4. She's thinking hey we should give this guy a lift
5. Because he's standing on the side of the road with his hand up
6. She's going to ask her friend who is driving to give the guy a ride
7. He's feeling um he's hoping they will pick him up
8. He's had some trouble and wants them to pick him up so he can get back
9. Because his car could have broken down
10. Keep standing until someone stops
11. Unsure
12. I don't know if I should pick this guy up
13. She doesn't like giving rides to strangers
14. Um she's going to have an argument with her friend as to whether she should pick the guy up or not

NORMAL CONTROLS-SUBJECT Z.R.

BOWLER STORY

1. Store X
2. After work
3. In front of his building
4. Store X
5. Yes
6. No
7. Yes
8. Store X
9. Because she didn't know that he knew that store X was out of stock
10. Store Y
11. Store X

HAPPE STORIES

LIE

1. No
2. Because she didn't want her Mother to know that she had accidentally knocked over the vase

WHITE LIE

1. No
2. Because she didn't want her parents to feel bad about what they had gotten her

FIGURE OF SPEECH

1. No
2. He was using an expression

DOUBLE BLUFF

1. Yes
2. Um in the other place by the sea
3. So that he could trick the other army and they would go to the wrong place

NORMAL CONTROLS-SUBJECT Z.R.

HAPPE STORIES (contd):

IRONY

1. No
2. Because she's angry with Anne and she's being sarcastic

PERSUASION

1. No
2. Because she wanted Jane to buy the kitten and wanted her to feel sorry for them

---

BASKETBALL STORY

1. He wants to go to the park on Green Street to play basketball
2. Green Street
3. At 4 o'clock
4. Um I don't know I guess it is possible he could go with him someplace..it doesn't say
5. Zach says would you like to come with Jim and I to go and play basketball on Green Street in the park at 4 o'clock
6. Um because he wants Gavin to come with him
7. Go to the park at 4 o'clock
8. She's going to go to the park on Green Street at 4.45
9. Good
10. Because she thinks she's going to play basketball with Zach and his friends
11. So that they could be done playing basketball by the time Naomi comes
12. At 4.45
13. Zach's
14. Um I guess he feels bad he can't come over but he feels good because he can go to the park
15. At the park on Green Street no West Street
16. Because Zach doesn't want him to come to the Green Street park
17. Naomi doesn't know does she

NORMAL CONTROLS-SUBJECT Z.R.

BASKETBALL STORY (contd):

18. I guess they are both pretty bad
19. Because you're essentially giving people the wrong information about where you're going to go and that's wrong
20. Um no
21. Um the problem described in the story is that Zach dislikes some other people and told them to go to the other places and that's just wrong
22. Um Naomi and Daniel will find out what Zach did and be angry
23. Um if Zach would just have told them that he was busy
24. Um yeah I have
25. Um I was supposed to go to the movies with some of my friends and another friend who I'm not particularly found of called and he had heard about the movie and let me see I can't remember what happened but he ended up not going I think his Mom called to apologise for him inviting himself

---

JUNIOR HIGH STORY

1. Go to the movies
2. At 10.00a.m.
3. Not very good
4. Because she wants to be popular
5. I think Jane thinks Veronica feels good about it
6. Um go with Gabi to the Mall
7. Um because Gabi is a friend of Veronica's
8. Um I think she should have said that she was going to the movies with Jane
9. Jane probably feels bad when she hears about it
10. No
11. I think she wouldn't really care how Jane feels about it- she doesn't know anyway
12. Um I don't think Gabi knows about Jane

NORMAL CONTROLS-SUBJECT Z.R.

JUNIOR HIGH STORY (contd):

13. Went to the Mall
14. At the movies
15. Because Veronica stood her up at the movies
16. She got detention
17. Because Gabi stole her homework
18. Veronica's
19. Because she told Gabi to steal it
20. They are both pretty bad
21. That you shouldn't do things that aren't right for other people just to become popular
22. Jane and Veronica won't be friends any more
23. If Veronica would have told Gabi when Gabi asked Veronica to go to the Mall that she wasn't available at that time
24. No I don't think so
25. No

THE PICTURE TASK:

PICTURE 1

1. The girl holding the gas pump
2. The gas pump itself-they want to get gas
3. Um I guess she's looking around for something - I don't know -she looks confused
4. What to do next
5. Because they need to put gas in the car
6. Uh I guess by the look of her hand she's going to push a button
7. She's uh she's feeling I don't know-confused and unsure
8. Um that she's going to put the gas nozzle into the car
9. Because she wants to put gas in the car
10. Um put the gas nozzle in the car and fill her car with gas

NORMAL CONTROLS-SUBJECT Z.R.

PICTURE TASK (contd):

PICTURE 2

1. The mirror
2. The two girls facing it
3. Um looks like she feels worried that there's a problem with her face or something
4. She's thinking that she should do something about it
5. I guess she doesn't like what she's looking at or something
6. Uh I don't guess - um perhaps put something on it
7. Um (delay) I guess about her friend I don't know how to say it-she wants to help her
8. Um she's thinking that this girl might have to put on some cream
9. Because she's pointing at herself in a way that looks like she's going to do something
10. Um help her friend

PICTURE 3

1. The shirt the boy is trying on
2. The boy
3. Um he's feeling annoyed
4. He's thinking that he doesn't like this shirt
5. Because he's got an interesting expression on his face-he looks hassled
6. He probably will tell what looks like his Mother over here that he doesn't want the shirt
7. She's feeling happy that the shirt looks good on him
8. She's thinking that shirt looks good on him
9. I don't know - maybe the colours look good on him
10. Try to persuade him to buy the shirt

PICTURE 4

1. The money
2. The girl about to buy something

NORMAL CONTROLS-SUBJECT Z.R.

PICTURE TASK (contd):

PICTURE 4

3. Um looks like she's feeling that she's spending too much money
4. This object costs too much
5. Because she looks angry and disgusted
6. She's probably going to pay for it anyway
7. She's feeling I guess annoyed
8. She's thinking this girl is paying too much for that
9. Because she doesn't like to see her friend waste money
10. Try to persuade her friend not to buy the shirt
11. Um she's feeling that this is a reasonable price
12. That this girl should pay for the shirt
13. Because um (delay) she probably is tired and wants to get rid of the shirt
14. Hopefully sell the shirt

PICTURE 5

1. The man hitchhiking
2. The people in the car
3. She's feeling um I guess kind of disgusted
4. She's thinking that this guy looks like he's hitchhiking that they shouldn't give him a ride
5. Because um she's um I guess she doesn't like to pick up hitchhikers
6. She's going to try to persuade her, what looks like her Mother, to not pick up this man
7. He's feeling I guess abandoned
8. He's thinking he needs a ride
9. Because um he's standing on the side of the road and a ride would be good transportation
10. Get in the car with them and hopefully go where he's going to go

NORMAL CONTROLS-SUBJECT Z.R.

PICTURE TASK (contd):

PICTURE 5

11. Um she's feeling that she should probably pick up the guy
12. I think she's thinking the same thing
13. Because he looks nice or something
14. Pick up the guy

NORMAL CONTROLS-SUBJECT J.L.

BOWLER STORY

1. Store X
2. That evening
3. Peter's office
4. Store X
5. Yes
6. No
7. Yes
8. Store X
9. Because she thinks that he thinks they're still in stock
10. Store Y
11. X

HAPPE STORIES

LIE

1. No
2. She was trying to protect herself, not get into trouble

WHITE LIE

1. No
2. She wanted to be nice

NORMAL CONTROLS-SUBJECT J.L.

HAPPE STORIES (contd):

FIGURE OF SPEECH

1. No
2. She sounds like a frog croaking

DOUBLE BLUFF

1. Yes
2. In the sea
3. He's trying to trick them

IRONY

1. No
2. She's being sarcastic

PERSUASION

1. No
2. She's trying to get rid of her kittens-she needs to sell them

---

BASKETBALL STORY

1. Play basketball
2. To Green Street
3. 4 o'clock
4. I don't know -it's not in the story
5. Will you come and play basketball
6. He wanted to play with Gavin
7. To play basketball in Green Street
8. She will show up at the park at 4.45
9. At this point she feels happy
10. She probably thinks it's great to be invited
11. Because he hopes the game will be over when she shows up
12. 4.45

NORMAL CONTROLS-SUBJECT J.L.

BASKETBALL STORY (contd):

13. John's
14. He feels happy
15. West Street
16. He hates Daniel
17. She doesn't know
18. Wrong place
19. Because there's still a chance you can make it with the wrong time
20. No
21. Jim called John, and Gavin called John, and they all decided to play basketball, but these two other people Daniel and Naomi also wanted to do things with them, but John wasn't up for that but he's better friends with Naomi than Daniel but was rude to both of them
22. Jim, Gavin, John will play basketball
23. He could have been honest to all of them
24. Yes
25. Uh when you have a person call you up who is not really good friends with you and he says hey what are you doing tonight and you say oh I'm going to see a movie with my parents but in actuality you're going to a party with other friends and don't want to include them

---

JUNIOR HIGH STORY

1. See a movie
2. Ten o'clock on Saturday
3. Um she feels bad
4. She wants Veronica's friendship
5. She's happy
6. Go to the Mall

NORMAL CONTROLS-SUBJECT J.L.

JUNIOR HIGH STORY (contd):

7. Because she likes her
8. I'm sorry I'm already going to a movie
9. She doesn't know
10. No
11. She's probably not really concerned how she feels-she didn't tell her
12. She has no idea Jane is involved
13. To the Mall
14. At the movies
15. Because Veronica had double crossed her
16. She lost her homework and got detention
17. Because Veronica got Gabi to steal it
18. Veronica and Gabi's
19. It's wrong to steal
20. They're equally bad
21. Stealing
22. Veronica may try to apologise to Jane so she will start doing her homework again
23. All three of them could have gone to the movies
24. No
25. Say you have a friend who drives you around and takes you places because he has a car but you also have this other friend who is your better friend and you decide to do something with friend A for Saturday night but B invites you somewhere better and you go

---

THE PICTURE TASK

PICTURE 1

1. They're helping each other
2. Um she's getting ready to pump the gas

NORMAL CONTROLS-SUBJECT J.L.

PICTURE TASK (contd):

PICTURE I

3. Confused
4. Um she's thinking about what choice she wants to make
5. Um she wants to know what type of gas to pump
6. Fill up her car with gas
7. She's waiting for her friend
8. Um (repeats question) she wants her friend to hurry up
9. Because she wants to start pumping
10. Start pumping the gas

PICTURE 2

1. She's looking at a zit
2. A friend feeling compassionate
3. Distressed
4. What are people going to think of me
5. Because she's conceited
6. Find a way to get rid of it or hide it
7. Thank G-d I don't have one
8. Um what can I do to help her
9. Because she's her friend
10. Um act on a way to help her

PICTURE 3

1. The guy's not happy with the clothes
2. The Mom is almost trying to get him to wear girl's clothes
3. Um he's fed up
4. I want to be doing something else
5. Because he's sick of trying on clothes
6. Um put up with his Mother

NORMAL CONTROLS-SUBJECT J.L.

PICTURE TASK (contd):

PICTURE 3

7. Um she feels happy
8. She thinks it looks good on him and hopes he's not getting too bored
9. Because he doesn't seem interested
10. Have him try it on

PICTURE 4

1. The money
2. They're buying clothes
3. She feels stressed - she doesn't have enough money
4. Where did all my money go?
5. Because she didn't expect to run out of money
6. Borrow some money from her friend
7. She feels that she doesn't want to help her friend
8. She wants to save money
9. She might want to buy something
10. Pretend she doesn't have any money
11. What's going on with these girls, why don't they buy anything - frustrated
12. They shouldn't be here if they don't buy anything
13. Because her job is to sell
14. Um ask if they have enough money

PICTURE 5

1. Guy hitchhiking
2. Um two friends who aren't sure whether to stop
3. Um she feels somewhat angry because the other girl wants to stop
4. Oh my what could happen to us
5. Because she assumes the hitchhiker is bad
6. Beg her friend not to pick him up

NORMAL CONTROLS-SUBJECT J.L.

PICTURE TASK (contd):

PICTURE 5

7. Gosh I want a ride - it's cold outside
8. Oh it's two girls they probably won't pick me up
9. Because he knows what people think of hitchhikers
10. Wait for them to pass and try to get another ride
11. Oh he looks nice - I should stop for him
12. Maybe my friend is right
13. Because she respects her friend's opinion
14. Drive off anyway- it is too dangerous

HYPERLEXIC GROUP

SUBJECT: A.H.

BOWLER STORY

1. Store X
2. After work
3. In the Mall
4. Shopping for coats - store Y
5. No
6. No
7. Yes
8. Store X
9. Because Peter didn't know they're out of stock otherwise he would have gone to store Y
10. Store Y
11. Store X

HAPPE STORIES

LIE STORY

1. No
2. She didn't want to get in trouble

WHITE LIE

1. No
2. She's polite

SUBJECT: A.H.

HAPPE STORIES (contd)

FIGURE OF SPEECH

1. No

2.It is just an expression.

DOUBLE BLUFF

1. Yes
2. The sea
3. To fool them

PERSUASION

1. No
2. Humour

IRONY

1. No
2. Guilt trip

BASKETBALL STORY

1. Play basketball on Green Street at four o'clock with Jim
2. Green Street
3 . Four o'clock
4. Play basketball sure whatever-it doesn't say
5. Why don't you come and play with us?
6. Because he's nice
7. Play basketball, invite Gavin along, both
8. Come
9. Fine

SUBJECT: A.H.

BASKETBALL STORY (contd)

10. Because Aaron invited her
11. To be nice again
12. I don't know exactly
13. Aaron
14. He doesn't care, he doesn't think there's a problem
15. West street
16. He doesn't like him
17. Naomi can empathise with Daniel (Can I get bonus points for that word?)
18. They're both equally bad, no actually the wrong place
19. Because you're waiting there, the wrong time you can just say they'll eventually show
20. No I think he should have been up-front and stated what he felt
21. I don't know. I don't understand
22. They'll all go and play basketball
23. If Jim, Gavin and me are going to play basketball and if he stated what he felt instead of doing whatever
24. I don't think so - no
25. No

JUNIOR HIGH STORY

1. Go to a movie
2. On Saturday at 10 o'clock
3. Probably like a fool but she did it to be her friend
4. Because she has no other way to hang out with Veronica unless she you know whatever
5. Grateful
6. Go to the Mall with Gabi
7. She likes Gabi more than what's her face Jane

SUBJECT: A.H. JUNIOR HIGH STORY (contd)

8. Sorry I already have plans but you're welcome to join us
9. Hurt
10. No
11. Okay
12. Distraught (What does distraught mean?)
13. Went to the Mall
14. At the movies
15. Because Veronica stood her up
16. She got detention
17. Because she wanted to steal the homework
18. Gabi's, both, it's like a murder, it's not fair because the trigger man is just as guilty as the guy
19. Because she instigated the order
20. Cheat on homework
21. uh a dilemma with Veronica - what should she do or where
22. Veronica and Jane will be friends and Gabi um Jane and Gabi will become friends
23. Veronica should have told Jane she didn't like her
24. No
25. No

PICTURE TASK

PICTURE 1

1. People
2. The girl fiddling with the thing on the right
3. The price I'm not sure
4. Leaded or unleaded
5. I don't remember
6. Uh I don't know

SUBJECT: A.H.

PICTURE TASK (contd)

PICTURE 1

7. The pump
8. Why this is dirty
9. Because it's true
10. Pump the gas

PICTURE 2

1. The girl checking herself in the mirror wondering what's wrong
2. The other girl looking
3. A um a zit or something
4. G-d I'm ugly
5. Because she has a slight misperfection and some people think it is
6. Wash it off
7. Don't do that
8. It's just a little zit
9. Because it's true
10. - I don't know

PICTURE 3

1. Weird looking outfit on this guy
2. The Mom
3. Embarrassment
4. I like going shopping with my Mom
5. Because there's an ugly flowered dress, an ugly flowered shirt that's being held up to him
6. Put the shirt away
7. Oh this will look great honey
8. We'll buy this one
9. She has no taste in clothes
10. Convince him to buy the shirt

SUBJECT: A.H. PICTURE TASK (contd)

PICTURE 4

1. Um they don't have enough money
2. The girl at the counter
3. We're short
4. Um what are we going to do
5. Because she doesn't have enough money to buy the shirt she wants
6. Put the shirt back and come back another time
7. Sorrow because her friend really wanted that shirt
8. Uh maybe I have some money in my pocket that I can lend her
9. Because she wants to help out her friend
10. Search her pockets
11. She doesn't have any feelings. I don't know what she's feeling- maybe annoyed
12. She's thinking you don't have enough money you can't buy it, so she's hesitant to like wrap it up and everything
13. Because that's the store policy
14. Um she intends to sell them the shirt if they have enough money

PICTURE 5

1. The girl on the left
2. The guy
3. Hey it's Jim, lets pick him up
4. Maybe he's going where we're going
5. Because it could be me
6. Ask her Mom if she can pick him up - or her friend or whatever
7. Man I wish I had a car
8. Oh he's feeling cold and he's thinking man I wish I had a car
9. Because if he did he wouldn't have to hitchhike
10. Um continue to hold his thumb up until someone stops and gives him a lift

SUBJECT: A.H.

PICTURE TASK (contd)

PICTURE 5

11. Oh, she's unsure
12. She's unsure, she's thinking whether, she's hesitant to pick him up or not
13. Because she doesn't know him
14. Keep on driving

SUBJECT Mdit

BOWLER STORY

1. Store X
2. After work
3. Pete's office
4. Store X
5. Yes
6. (Delay) um no
7. Yes
8. Store Y
9. Because store X is out of stock
10. Store X
11. Store X

HAPPE STORIES

LIE STORY

1. Obviously no
2. So the Mom wouldn't know it was her

SUBJECT: M.Dit

HAPPE STORIES (contd)

WHITE LIE

1. No
2. Because her parents would have been upset

FIGURE OF SPEECH

1. Actually yes because it's an idiom
2. Because it means the same thing as she has a cough

DOUBLE BLUFF

1. Prisoner said where the tanks were
2. In the sea
3. So his army wouldn't be killed

IRONY

1. No
2. Because she didn't listen or maybe because she didn't say thanks

PERSUASION

1. I mean I'm not- that depends
2. Maybe she didn't want her cats to be taken away

BASKETBALL STORY

1. Play basketball
2. Park (cued for complete answer)
3. 4 o'clock
4. (Delay) um repeats question
5. What do you think he says- let's go play basketball?

SUBJECT: M.Dit

BASKETBALL STORY (contd)

6. Because he wants to play basketball
7. Play basketball (cued for complete answer)
8. Play basketball
9. Happy
10. Because I don't really like him and I invited him anyway
11. To be nice
12. 4.45
13. Mine
14. Mad
15. Park
16. Oh wait a minute, West Street, where is it, right over there, because there's another park over there
17. Pretty bad
18. Wrong place
19. Because he said on Green Street
20. (Long delay) uh not really
21. Michael gave Daniel the wrong place, the right time but the wrong place
22. Daniel will go to the park- and I mean- like Daniel- I don't know- nothing really comes to mind
23. If you give the right time
24. Not really
25. (Long delay) I've never seen a problem like this

JUNIOR HIGH STORY

1. Go to the movies
2. In the morning

SUBJECT: M.Dit

JUNIOR HIGH STORY (contd)

3. Uh terrible-to be friends
4. Maybe she has to
5. Uh I'm not really sure- nothing comes to mind
6. Go to the Mall
7. Just because uh actually they are friends
8. Sorry I have other plans
9. Put down
10. No
11. Sad
12. Happy- I mean- wait a minute- sad
13. Went to the Mall
14. At the movies
15. Because she didn't go to the movies
16. She got detention
17. because she liked to do it and she didn't do it
18. Really Gabi
19. Because she stole her homework
20. Well to cheat on homework
21. The problem was Veronica didn't go to the movies with Jane
22. Veronica will probably go to the movies with Jane next Saturday
23. Make different times
24. Not really
25. I don't really-nothing comes to mind

PICTURE TASK

PICTURE 1

1. Um (delay) well the first thing I see first I see two girls by a gas tank

SUBJECT: M.Dit PICTURE TASK (contd)

PICTURE 1

2. I see a minivan in the background
3. Uh itchy
4. Um (delay) uh uh I don't know I can't tell
   (Researcher says-Would you like to guess?)
   Well what was it again? (repeated question)
   um (delay ++) I don't really have an answer for that
5. -(no response)
6. Intends to do next (repeated x 3) well, let me think (long delay) intends to do next (long delay) I hate saying it but I just can't tell
7. Uh (long delay) happy
8. Um oh what is she thinking? I think she's thinking -oh I just don't really know. It's on the tip of my tongue
9. -(no response)
10. I don't know put the handle into the car because she's 16 years old

PICTURE 2

1. 2 girls looking in the mirror
2. Bathroom door in the background
3. Oh itchy again
4. Thinking ... I think I'll have an answer for this one -well um well she's really feeling that...said it for the last one- so I'll say something else. Well I don't really remember
5. -(no response)
6. Uh itch the spot where she was itchy -scratch I mean
7. Uh looks happy to me
8. What is she thinking- I'm not really sure. I just can't read her mind I'm really trying and think of something. (Silence)
9. -(no response)
10. I don't know- help her friend

SUBJECT: M.DIT

PICTURE TASK (contd)

PICTURE 3

1. A woman and a man
2. A door to the dressing room in the background
3. Happy
4. These clothes are very uh pretty
5. Because there are all kinds of flowers I mean because there are flowers on the shirt
6. Uh what does well try it on
7. Feeling happy too
8. Uh nothing comes to mind
9. -(no response)
10. Uh buy uh buy some new clothes

PICTURE 4

1. Uh (long delay) 2 girls yeah 2 girls
2. Uh they are checking out
3. Uh (long delay) person feeling, happy -I guess
4. (Long delay) nothing comes to mind
5. - (no response)
6. Buy the clothes
7. Uh happy -I guess
8. The clothes are probably expensive
9. (Long delay) because it's a lot of money, the price is very high
10. Buy the clothes
11. Happy
12. Um.... nothing comes to mind
13. - (no response)
14. Sell the clothes

SUBJECT: M.DIT

PICTURE TASK (contd)

PICTURE 5

1. Uh 2 women in a car
2. A man in front of the car
3. (Long delay) happy
4. It's fun to drive
5. Because it's not hard and you go forward
6. Drive some more
7. Wait a minute, never mind, happy
8. I need a ride
9. Uh because he's putting his thumb out like he needs a ride
10. Get a ride
11. Happy too
12. Nothing comes to mind
13. -(no response)
14. Uh (long delay) drive some more

SUBJECT: M.H.

BOWLER STORY

1. Store X
2. That evening
3. Store X
4. To the office
5. (Long delay) Yes
6. (Long delay) Yes because she was with him
7. Yes
8. Um (long delay) store X

SUBJECT: M.H.

BOWLER STORY

9. Because to see if they got any information

10 Probably store Y

11. Store X

HAPPE STORIES

LIE STORY

1. No
2. Because she didn't want to get the blame

WHITE LIE

1. No
2. To make them feel good that they got the right present even though she doesn't like it

FIGURE OF SPEECH

1. No
2. It's like um (long delay) a bad cold but she doesn't really have a frog in her throat. It's an expression

DOUBLE BLUFF

1. Yes
2. In the mountains
3. Because he wants to be but then the army will check the mountains when they are really In the mountains. He told them the exact location

IRONY

1. No
2. (Long delay) she really means the opposite. It's like exaggerated

SUBJECT: M.H. HAPPE STORIES (contd)

PERSUASION

1. Um (long delay) No
2. To like to find a way to get rid of them-she had to drown them.

BASKETBALL STORY

1. He wants to invite his friend Jim to play basketball with him
2. Green Street
3. During the day (cued for complete answer)
4. Um (long delay) probably play basketball
5. Um it's fine if Gavin comes and plays basketball we need more than two
6. It's boring to have a one on one game
7. (Long delay) Talk to him so that Gavin would play in one team and then in the other
8. Um (long delay) she probably won't come because she doesn't like basketball that much
9. (Long delay) Sad because Matthew doesn't really like her so she's tired that he doesn't like her
10. (Long delay) Because um she doesn't like basketball and stuff. She doesn't know what to do
11. Because he didn't really like her so he said she could come if she wants to
12. 4.45
13. (Long latency) Matthew's
14. Just like very angry
15. West Street
16. Because like nobody is there because there that's not where the game is being held
17. Upset because Matthew told him the wrong place to go
18. (Long delay) Wrong place
19. Because like you really wouldn't know where to be if you went to the wrong place but if you're told the wrong time then you go to the right place but just be there later and find everybody there

SUBJECT: M.H.

BASKETBALL STORY (contd)

20. (Long latency) Yeah
21. Um that Matthew invited Daniel and told him to go to West Street instead of Green Street
22. Uh Daniel will go to West Street and go back home and like yell at him
23. Uh (Long delay) if Daniel didn't call
24. (Long delay) No
25. Not really I don't really know of any

JUNIOR HIGH STORY

1. Go to the movies on Saturday
2. At night (cued for complete answer)
3. Feels bad because she shouldn't be doing all of Veronica's homework because Veronica should do it herself
4. Because she can still stay friends
5. Um she thinks that she's happy that Jane does the homework for her
6. Go to the Mall at 10 o'clock
7. Because she's really good friends with Gabi
8. (Long delay) I think she already agreed to go to the movies with Jane
9. Unhappy
10. No
11. Jane is very sad
12. I think she feels the same thing - very sad
13. Went to the Mall
14. At the movies
15. ....I don't know
16. She got in big trouble

SUBJECT: M.H. JUNIOR HIGH STORY (contd)

17. Because Veronica got Gabi to steal her homework and now Jane doesn't have her homework
18. Gabi's and Veronica's
19. Because Veronica told Gabi what to do and Gabi agreed to do it
20. (Long delay) To cheat on homework
21. It was (long delay)- Veronica was going to the movies with Jane but then she called up Gabi and said that she'd go to the Mall with Gabi and they went to the Mall instead without Jane
22. Jane might find something really good to do and leave Gabi and Veronica out
23. If Veronica had gone to the movies with Jane, and invited Gabi with her so that after the movies they could all have gone to the Mall
24. (Long delay) No
25. No

PICTURE TASK

PICTURE 1

1. (Long delay) These two like adults-kids taking out gas-kid is taking the gas pump to put in the car
2. (Long delay) That uh another person who is uh I guess buying something
3. (Delay) Shy
4. (Long delay) This might be trying to ask the other person out for a date
5. He/she probably doesn't have a date or girlfriend
6. Try and get up the confidence to ask her
7. Um happy
8. Um (long delay) I think she's lucky she has a car
9. She might have just gotten a car
10. To fill up her gas tank

SUBJECT: M.H.

PICTURE TASK (contd)

PICTURE 2

1. Two girls in a girl's bathroom
2. They're looking in the mirror
3. Um she might be -does she have a pimple on her skin
4. That she has to get rid of it
5. Because she um if she doesn't do something about her pimple, boys won't like her
6. Put some cream on or try to pluck it off
7. (Long delay) Concerned
8. That she um wants to help her friend
9. Because her friend might not have cream or anything
10. To get out her bag of stuff

PICTURE 3

1. A man and a woman standing in a store- a department owner
2. She's holding a dress to the man
3. Embarrassed
4. Like the woman is being silly
5. Um the man he doesn't want her to embarrass him
6. Tell her to uh put the dress back because he doesn't want her to embarrass him anymore
7. (Long delay) uh silly
8. Uh the dress may look good on the man
9. She thinks it's a joke
10. Have him try it on

PICTURE 4

1. (Long delay) Two girls in a store and there's a clerk behind the desk
2. The two girls are um talking to each other to see uh how much the clothes cost, how much money they have

SUBJECT: M.H.

PICTURE TASK (contd)

PICTURE 4

3. Um- she's not really sure- she doesn't actually have enough money
4. (Long delay) Like um like she may not have enough money to buy the clothes she really wanted
5. Sort of two dollars isn't enough- clothes are more expensive than that
6. Ask her friend if she has any money so that she can buy the clothes
7. (Long delay) Upset
8. She really should go back to get more money and come back to buy the stuff
9. She doesn't have any money
10. Call her parents
11. (Long delay) Sort of angry
12. That she thinks that the two girls don't have enough money to buy things
13. She's like um she can't make money if they don't buy anything
14. Uh (long delay) ask them to go

PICTURE 5

1. (Long delay) Two girls in a car
2. Uh (long delay) they want to know who is outside waving at them
3. Excited
4. That she could pick up that man because she knows him
5. Because she could go out on a date with him
6. Um to have her friend stop the car and pick him up
7. Uh (long delay) happy
8. That the car will stop and he can get in
9. That he will (long delay) he wants to go out to a party or a football game
10. Try to um make the people stop by waving his hand in the air
11. Um (long delay she's not really sure

SUBJECT: M.H.

PICTURE TASK (contd)

PICTURE 5

12. That she probably shouldn't pick up the man because she just doesn't know who he is
13. She doesn't like to talk to strangers
14. Keep driving

SUBJECT: C.W.

BOWLER STORY

1. Store X
2. After work
3. 5.15 at store X I mean his office
4. Store X
5. Yes
6. Yes
7. Yes
8. Store Y
9. Because that's where he found a coat almost like it but it wasn't that good
10. Store X
11. Store X

HAPPE STORIES

LIE

1. No it was a lie
2. Because she wouldn't get in trouble

SUBJECT: C.W. HAPPE STORIES (contd)

WHITE LIE

1. No it's a lie
2. So they wouldn't feel sorry that they messed up the present

FIGURE OF SPEECH

1. Yes
2. Because it's an idiom that she has a bad cough

DOUBLE BLUFF

1. Yes
2. In the mountains-I mean - yes, in the mountains
3. Because he wanted to lie to them

IRONY

1. Well yes in terms of that -she is not- I mean watching TV and not paying attention to her Mom
2. Because she's being sarcastic and thinks if she doesn't want it she won't get it

PERSUASION

1. To drown them um (delay) well yes but not drown them throw them away as well
2. Because she's going out of business and if no one buys her kittens and her dogs she'll have to go out of business and then sell them or drown them

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BASKETBALL STORY

1. Wants to play basketball with his best friend Jim at 4.00 on Green Street
2. To the park on Green Street
3. 4 o'clock

SUBJECT: C.W.

BASKETBALL STORY (contd)

4. Go play in the park, swim and run around
5. Hey Gavin do you want to come over, I mean to the park
6. Because he wants to be friendly
7. Play basketball at 4.00 in the park -4.45 -I thought it was 4.00 oh, he's tricking her- I see
8. She's going to ask Gavin or Jim what's happening
9. Angry that he lied to her even though she knows that he doesn't like her at all
10. Because ever since they were in the 5th grade he never liked her, she was such a brat
11. Because he didn't want her around the guys because he knew they liked her
12. 4.45
13. Charles'
14. Angry because it's a lie
15. West street at 4.00
16. He just doesn't want him around. He hates him
17. Very sorry but happy that she's going at 4.45
18. The wrong place
19. Well the time doesn't really matter they can say 4.30 and go at 4 o'clock but the place is kind of big because if you live in this street he goes all the way over there finds no one and goes back to his house - it's a kind of a drag
20. Yes- I mean -if he hates him - away
21. That the people who wanted to play with him, he Charles did not want to play with them so he lied
22. Naomi will come at 4.45 and Daniel will come at 4.00 to West street
23. Don't ask Charles if they can come over and play
24. (Delay) um I doubt it

SUBJECT: C.W. BASKETBALL STORY (contd)

25. Oh yeah I can. It was a long time at sports. Me and Pennock were playing basketball like the story says and we were just passing and shooting and stuff like that and this kid named Travis a little brat comes along and asks if he can play too. We said no because he's a dork, he's a dork and so he like, goes to Judd and says they won't let me play with them and we got in trouble.

JUNIOR HIGH STORY

1. Go to the movies
2. 10:00
3. Well if that will get her friends it's worth it
4. Maybe because she wants friends
5. So she won't have to do it
6. Go to the Mall at 10:00
7. She prefers Gabi
8. No I'm sorry but I'm going to the movies with Jane
9. Does she know? She feels sad and hurt that Veronica went with Gabi
10. No, she made plans to go with Jane and broke them like that
11. Well how does she know - she's a stuck up brat who's a popular kid
12. Hurt -but she doesn't care- but she didn't know- so how could she be blamed
13. Went to the Mall
14. Sitting alone waiting for her
15. Because Veronica stood her up
16. Jane got detention
17. Because it was her homework that got stolen
18. Gabi
19. Because she took it
20. Not to keep an arrangement

SUBJECT: C.W.

JUNIOR HIGH STORY (contd)

21. That Veronica went to the Mall with Gabi and she stood Jane up
22. Jane will ask Veronica why she stole her homework
23. If Veronica said no to Gabi - I made plans to go to the movies with Jane
24. No
25. Oh a long time ago I was at my school fair and Jim my best friend Jack then (he's not my best friend but still) he took me to the school fair and this kid named Alex um I spent all my time with Jack and Alex- you know Alex- well I was with him the whole time and Jack was all by himself, so, after that, my Mom said, "Well Charles- you- he took you there and you just took him for granted." And I was like, "I'm sorry. I didn't mean to."

PICTURE TASK

PICTURE 1

1. The gas tank
2. Two women
3. Um um she's feeling good
4. Trying to see which kind of gas she should take premium, supreme or regular
5. Because she wants all the pump she needs
6. Put the gas tank in the gas tank- um -the gas- what's it called- the gas pump in the gas tank
7. Good
8. (delay) Um she's thinking to go to the car and put the gas in
9. So she can get on the road
10. Put the gas in the gas tank

PICTURE 2

1. Two girls
2. Probably putting on some make-up

SUBJECT: C.W.

PICTURE TASK (contd)

PICTURE 2

3. Kind of bad and confused and angry at her pimples
4. How to put the make-up on just right
5. Why because she wants to look good for the boys
6. Put on make-up
7. Sorry for her
8. Going to help her
9. Because they're best friends
10. Help her out

PICTURE 3

1. (Laughs) a guy and a woman
2. A dress in front of the guy
3. Embarrassed
4. Oh G-d- this stupid dress -oh no
5. Because it's very embarrassing to have a dress over him
6. Just take the dress back and leave
7. Laughy, laughable
8. She's thinking well it's very funny when a man wants a dress as beautiful as this
9. Because she thinks it's for him not for his wife or girlfriend
10. See if he wants it

PICTURE 4

1. Three girls
2. Money
3. Annoyed that um she doesn't have enough money
4. No, no, no I don't have enough money
5. Because she thought she had enough money. She thought she had twenty bucks

SUBJECT: C.W.

PICTURE TASK (contd)

PICTURE 4

6. (Delay) Sort of not buy the shirt, buy something else
7. Surprised that she doesn't have the money
8. Well jeez Elees you should have the money. You want this dress so much you should have the money
9. Because she is her best friend and she tries to look out for her
10. Give her some money that she has
11. Annoyed (delayed)
12. Well if the girl doesn't have enough money I cannot give her the sweater or the dress
13. Because it's true, because she is a good salesperson
14. Give her a sale on it

PICTURE 5

1. A guy highjacking- I mean- I forgot- hitchhiking
2. Two women
3. Look at that, check him out
4. Wow, why is he standing out there hitchhiking
5. Because she was thinking he'd have a car or someone to pick him up or he'd have at least a rental car
6. Well tell her friend to stop and pick him up
7. Forlorn
8. Forlorn- because he doesn't have a ride or a car or anything to get him to where he wants to go he doesn't have anywhere I mean any transportation to go where he wants to go
9. Because he has no friends in Tennessee and he's a visitor
10. Keep hithchiking
11. Annoyed that her friend wants her to stop and pick him up

SUBJECT: C.W.

PICTURE TASK (contd)

PICTURE 5

12. Well jeez Andrea why do you want this hitchhiker to come
13. Because she doesn't like intruders in her car
14. Convince Andrea to forget picking him up

SUBJECT: D.W.

BOWLER STORY

1. Store X
2. After work
3. Store X at 5.15
4. Store X
5. Yes
6. No
7. Yup
8. Store X
9. Because they had scheduled to go there eventually
10. Store Y
11. Store X

HAPPE STORIES

LIE STORY

1. Wrong
2. Um (delay) because she didn't want to get into big trouble

SUBJECT: D.W. HAPPE STORIES (contd)

WHITE LIE

1. Wrong, she did the right thing though if you get a gift from someone you should say thank you even if you don't like it. If you don't like it you should keep it a secret from the person. It will hurt their feelings greatly if you do it
2. Because she didn't want to hurt their feelings

FIGURE OF SPEECH

1. No it's an expression when your throat is clogged up like that so it sounds like there's a frog in your throat and it's stuck in there and you can't breathe
2. Well it's an idiom

DOUBLE BLUFF

1. No they're really in the sea
2. In the sea, it's going to be a trap obviously
3. He didn't want his army defeated

IRONY

1. Nope
2. Because she thinks she's going to fix it she might as well be thankful for it

PERSUASION

1. No
2. To get her to buy one

BASKETBALL STORY

1. Play basketball
2. To Green street
3. 4 o'clock

SUBJECT: D.W. BASKETBALL STORY (contd)

4. (Delay) I don't know um perhaps play basketball
5. Okay cool
6. Because- because he thinks Gavin is cool
7. Take him along (cued for complete answer)
8. Refuse to go
9. Very bad
10. Um (delay) because she wasn't invited she feels bad because she wasn't invited
11. Because he hates Naomi
12. 4.45
13. Mine
14. Very bad
15. West Street
16. Because they're really going to be on Green Street - it's a trick
17. She hates David as much as he does
18. Wrong place
19. Well in logic terms- I mean- time- I mean- people have plenty of time these days. To meet in the wrong place they would be really worried they would be like hey wait a minute they told us they'd meet us here and that person would get really worried like was he kidnapped or something did was he supposed to go somewhere. Then he'd have to go back home and call and then something like that and then suddenly realise he'd been tricked
20. Yeah
21. Uh that David has some friends and enemies and that that some people he doesn't like and like he wants to try to trick them to go to the wrong place
22. His two enemies will beat him up
23. (Delay) Excellent question! um ask them to come to the right place at the right time or just like if they call just hang up on them if you really don't like them that much
24. Plenty of time

SUBJECT: D.W. BASKETBALL STORY (contd)

25. Actually not really sure if it's tacky or not um I haven't really had a bad social situation before. Can you think of any situation similar to this. Yeah. Socialising with my Dad but um I remember one time my Dad and I we went running and um like I told him I was going to go two and a half miles to run and he said okay maybe I'll go a mile and a half and I expect to meet you here then but as it turned out I was in better shape than I thought I was so I'm like okay David you can keep going so I went past two and a half miles and instead I ended up going about 3.1 or 3.5 miles instead. Instead when I turned around my dad was going David you really fucked up this time and then he gave me a big punishment. No running- no running- until after Christmas break

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JUNIOR HIGH STORY

1. Go to the movies Saturday 10a.m.
2. Saturday
3. Feels that Veronica should do it by herself because I mean Veronica is not learning anything. Jane is learning everything instead
4. Because she has a strong work ethic
5. Great because she doesn't have to do it (x2) she gets to hang out with everybody instead
6. Go to the Mall on Saturday
7. (Delay) Because she doesn't like Jane that much
8. Uh no I'm sorry I already scheduled to meet Jane already but maybe next time I can do it
9. Um oh very, very angry and sad
10. No I think she did the wrong thing
11. All angry and pissed off
12. (Delay) Um like all upset and angry and stuff
13. Went to the Mall
14. At the movies sitting there
15. Because Veronica didn't do what she said she was going to do
16. She had her homework tripled

SUBJECT: D.W. JUNIOR HIGH STORY (contd)

17. Because she threw away her homework for no reason
18. Gabi oh Gabi no actually Veronica no Gabi
19. Because she didn't trust her own judgement. When somebody tells you to do something you don't just do it like if your friends jumped off a cliff would you do it too
20. Cheat on homework
21. Um meeting somebody else, the problem is Veronica didn't stick with Jane originally
22. Veronica and Jane will get into a big fight and start beating each other up. It could happen
23. Veronica could have said to Gabi "I'm sorry, not this time. Maybe we could try next weekend though."
24. Yes
25. Um well I'm trying to think, well I wouldn't call it a social situation but um I do remember about a year ago we were scheduled to meet this woman named Cathy, my Mother's best friend at a restaurant and I'm not sure whether we were meeting her daughters or not but she has kids one in High School, one in Intermediate slash Middle School and her other ones in college right now and during that day what happened is she found out that she had to go to a nursing home because I mean her Mother had just been put into a nursing home instead which is very horrible for me because we couldn't meet her now and it's like my Mom gave alternate suggestions what to do but I didn't like them at all because I mean that's what my problem one of my biggest problems these days when something gets canceled I make a big deal about it now and I don't like it the least little bit. If they know they're going to a nursing home why don't they tell us earlier and then I would have known. In the meantime I got in a big argument and I was forced to sit in my room all day long because we kept fighting and stuff until finally later we just walked over to the Capitol and kicked the ball around and stuff, but I was punished.

SUBJECT: D.W.

PICTURE TASK

PICTURE 1

1. I notice that a woman is about to pump some gas into her car
2. That there's like another woman like to use using her credit card to pay for the gas, in other words to pay for her gas
3. Uh (delay) a muscle in her neck
4. Get out of the way you idiot
5. Because this person is in the way and she needs to get to the gas pump thingy so she can put it in her car and drive off
6. Uh um this person intends to beat the other person up
7. The same way, she feels get out of the way I was here first
8. Um she's thinking hm (delay) she's thinking get out of the way you jerk
9. Because she needs to get to the gas pump and she's in a hurry to get to work
10. Um yell at her to move it

PICTURE 2

1. A girl admiring herself
2. That she is um that she thinks she sees a zit or something
3. Um depressed
4. Man how am I going to get rid of that thing
5. To be more attractive
6. Fix it
7. Uh (delay) mm funny
8. That how stupid this other girl looks
9. Because she thinks she's a dork
10. Uh tell her to get out of the way

SUBJECT: D.W.

PICTURE TASK (contd)

PICTURE 3

1. A woman trying to get a guy to try something on
2. The guy feeling embarrassed
3. That he should get the heck out of there
4. Um he's thinking this woman is weird or something
5. Because somebody is putting on his clothes for him
6. Um (delay) run away
7. Happy
8. That somebody this guy will buy it
9. Because she likes she's greedy and likes to have money
10. Make him try it on

PICTURE 4

1. A girl offering her friend money actually I noticed she um she's giving this girl money and the
2. Other thing I noticed is that the girl looks like she's broke
3. Upset at the other person for not bringing any money
4. What a loser
5. Because she doesn't like to give money away
6. Never give her money again
7. Mm frustrated
8. She's thinking to herself dang why didn't I bring any money
9. Because she doesn't think before she does something
10. Um (delay) after she gets the money tell her to get out of my life
11. Um frustrated
12. That the girl should pay the money and get out
13. because there are other customers coming
14. Uh yell hurry up and get out

SUBJECT: D.W.

PICTURE TASK (contd)

PICTURE 5

1. Two girls talking talking while driving
2. They are about to run over a guy
3. Happy about the conversation
4. That the other woman should be watching the road
5. Um (delay) cos cos she didn't want to get into an accident
6. Tell her to watch out
7. In danger
8. That in a minute he can hitchhike
9. Cos he's all alone and his friends just dumped him
10. Uh hitchhike
11. Um happy
12. Um that the other woman is crazy
13. (Delay) Because they have been talking too much without watching the road
14. Um (delay) tell the other woman to shut up

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