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The underlying basis of the communication difficulties of high functioning pervasive developmental disorder

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APPENDIX C

DESCRIPTIVE STATISTICS, ANALYSIS OF VARIANCE, KRUSKAL-WALLIS TEST AND BONFERRONI T TEST VALUES

APPENDIX C1: RECEPTIVE LANGUAGE RESULTS

Table C1.1: **Descriptive statistics for receptive language measures**

	HFPDD			SLI			NDD		
	Mean	SD	Skewness	Mean	SD	Skewness	Mean	SD	Skewness
BPVS – standardized score	94.5	13.6	0.02	101.4	7.5	1.7	113.6	8.2	0.2
Basic Concepts – raw score	15.5	2.9	-1.0	17.4	0.9	-1.4	18	0	-
Grammatic Understanding – standard score	9	2.4	0.3	11.1	2.1	0.6	13.2	2.0	0.7
Understanding conversation – rating	4.5	1.7	0.7	9.3	1.0	-1.1	10	0	-

Table C1.2: **Analysis of variance results for receptive language measures**

		SS	df	MS	F	p
BPVS – standardized score	Between	4832.3	2	2416.2	23.5	<.0001
	Within	7727.2	75	103.0		
Basic Concepts – raw score	Between	87.4	2	43.7	13.9	<.0001
	Within	236.4	75	3.2		
Grammatic Understanding – standard score	Between	228.5	2	114.2	24.3	<.0001
	Within	352.7	75	4.7		

Table C1.3: **Kruskal-Wallis test results for pragmatic comprehension (understanding conversation) measure**

	Chi-Square	df	p
Understanding conversation - rating	62.6	2	<.0001

Table C1.4: **Between means values for Bonferroni t test for receptive language measures**

	HFPDD-SLI	HFPDD-NDD	SLI-NDD
BPVS – standardized score	6.9	19.0 *	12.2 *
Basic Concepts – raw score	1.9 *	2.5 *	0.7
Understanding grammar – standard score	2.1 *	4.2 *	2.1 *
Overall receptive language score (combination of above three raw scores)	13.4 *	29.4 *	16.0 *
Understanding conversation - rating	4.9 *	5.5 *	0.7

* indicates significant difference between these two groups at the 0.05 level

APPENDIX C2: EXPRESSIVE SEMANTICS RESULTS

Table C2.1: **Descriptive statistics for expressive semantic measures**

	HFPDD			SLI			NDD		
	Mean	SD	Skewness	Mean	SD	Skewness	Mean	SD	Skewness
Renfrew (age score in months)	60.6	15.5	0.1	62.0	9.5	0.7	83.4	13.7	-0.5
Pronoun alternation (raw score, n=17)	9.7	5.8	-0.3	15.5	3.3	-2.7	16.6	1.1	-3.3
Oral Vocabulary (standard score)	6.7	2.8	-0.6	9.2	1.8	-1.2	12.1	1.1	0.2
Modified TOPS (raw score, n=100)	9.3	8.6	1.0	38.5	11.9	0.001	56.2	7.9	-0.1

Table C2.2: **Analysis of variance results for expressive semantic measures**

		SS	Df	MS	F	p
Renfrew (age score in months)	Between	8494.4	2	4247.2	24.6	<.0001
	Within	12927.4	75	172.4		
Pronoun alternation (raw score, n=17)	Between	707.9	2	353.9	23.3	<.0001
	Within	1141.9	75	15.2		
Oral Vocabulary (standard score)	Between	383.1	2	191.6	47.2	<.0001
	Within	304.2	75	4.1		
Modified TOPS (raw score, n=100)	Between	29141.6	2	14570.8	157.6	<.0001
	Within	6936.0	75	92.5		

Table C2.3: **Between means values for Bonferroni t test for expressive semantic measures**

	HFPDD-SLI	HFPDD-NDD	SLI-NDD
Renfrew (age score in months)	1.4	22.8 *	21.4 *
Pronoun alternation (raw score, n=17)	5.8 *	6.9 *	1.04
Oral Vocabulary (standard score)	2.5 *	5.4 *	2.9 *
Modified TOPS (raw score, n=100)	29.2 *	46.9 *	17.7 *

* indicates significant difference between these two groups at the 0.05 level.

APPENDIX C3: EXPRESSIVE GRAMMAR RESULTS

Table C3.1: **Descriptive statistics for results of grammatical analysis**

	HFPDD			SLI			NDD		
	Mean	SD	Skewness	Mean	SD	Skewness	Mean	SD	Skewness
Minor	44.7	17.5	-0.6	47.3	22.6	0.9	39.4	20.9	1.3
Major	13.5	6.7	2.0	15.6	7.8	1.1	7.2	3.4	0.4
Phrasal	25.2	11.0	0.6	29.9	8.0	0.9	21.5	7.1	1.0
T-units	120.4	55.5	0.7	109.0	36.4	1.0	135.4	29.3	0.4
Dependent clauses	15.2	12.3	0.3	12.0	7.3	0.8	29.9	12.3	0.5
Total clauses	135.6	65.8	0.6	120.9	42.0	0.9	165.3	37.9	0.2
MLU	5.9	1.0	-1.7	5.8	0.6	0.6	7.3	0.6	-0.8
Different complex clauses	3.7	1.9	-0.3	4.0	1.7	-0.6	5.9	1.3	-0.4

Table C3.2: **Analysis of variance results for results of grammatical analysis**

		SS	df	MS	F	p
Minor	Between	815.5	2	407.7	1.0	0.4
	Within	30993.2	74	418.8		
Major	Between	968.0	2	484.0	12.2	<.0001
	Within	2928.8	74	39.6		
Phrasal	Between	907.2	2	453.6	5.7	0.005
	Within	5863.5	74	79.2		
T-units	Between	8921.4	2	4460.7	2.5	0.1
	Within	130804.9	74	1767.6		
Dependent clauses	Between	4637.8	2	2318.9	19.7	<.0001
	Within	8717.4	74	117.8		
Total clauses	Between	25932.7	2	12966.3	5.1	0.008
	Within	186755.0	74	2523.7		
MLU	Between	37.0	2	18.5	32.2	<.0001
	Within	42.6	74	0.6		
Different complex clauses	Between	76.6	2	38.3	14.3	<.0001
	Within	198.7	74	2.7		

Table C3.3: **Between means values for Bonferroni t test for results of grammatical analysis**

	HFPDD-SLI	HFPDD-NDD	SLI-NDD
Minor	2.6	5.3	7.9
Major	2.0	6.3 *	8.4 *
Phrasal	4.8	3.6	8.4 *
T-units	11.4	15.0	26.4
Dependent clauses	3.3	14.7 *	18.0 *
Total clauses	14.7	29.7	44.4 *
MLU	0.1	1.4 *	1.5 *
Different complex clauses	0.3	2.3 *	2.0 *

* indicates significant difference between these two groups at the 0.05 level.

APPENDIX C4: RESULTS OF NARRATIVE ANALYSIS

Table C4.1: **Descriptive statistics for results of narrative analysis**

	HFPDD			SLI			NDD		
	Mean	SD	Skewness	Mean	SD	Skewness	Mean	SD	Skewness
Narrative coherence score	7.0	2.8	2.0	18.6	3.9	-0.9	22.7	2.6	-1.2
Narrative clarity score	1.5	0.6	-	1.7	0.7	-	4.0	1.0	-
Total narrative score	8.5	3.2	2.0	20.4	4.2	-0.5	26.7	3.5	-1.1

Table C4.2: **Kruskal-Wallis test results for narrative analysis**

	Chi-Square	Df	p
Total coherence	57.3	2	<.0001
Total narrative	59.2	2	<.0001
Temporal organisation	56.9	2	<.0001
Relevance	57.8	2	<.0001
Developing character(s)	56.8	2	<.0001
Supporting description	54.6	2	<.0001
Ending	50.0	2	<.0001
Clarity	47.0	2	<.0001

Table C4.3: **Between means values for Bonferroni t test for narrative results**

	HFPDD-SLI	HFPDD-NDD	SLI-NDD
Narrative coherence	11.6 *	15.7 *	4.1 *
Total narrative	11.8 *	18.2 *	6.4 *

* indicates significant difference between these two groups at the 0.05 level.

APPENDIX C5: RESULTS OF PRAGMATIC ANALYSIS

Table C5.1: **Descriptive statistics for results of pragmatic analysis**

	HFPDD			SLI			NDD		
	Mean	SD	Skewness	Mean	SD	Skewness	Mean	SD	Skewness
Comprehension (understanding conversation) (n=10)	4.7	1.7	0.7	9.3	1.1	-1.1	10	0	
Verbal aspect (n=55)	18.8	1.6	0.4	47.4	4.1	-0.2	54.4	1.1	-1.6
Paralinguistic aspect (n=25)	14.8	4.5	0.2	22.0	3.4	-2.4	24.7	0.5	-1.9
Non-verbal aspect (n=20)	7.9	4.0	0.7	18.2	2.5	-2.1	19.8	0.5	-2.3
Expressive pragmatics (n=100)	41.5	12.8	0.4	87.5	7.3	-0.9	98.9	1.5	-1.4
Total pragmatics (n=110)	45.9	13.9	0.4	96.8	7.7	-0.7	108.9	1.5	-1.4

Table C5.2: **Kruskal-Wallis test results for pragmatic analysis**

	Chi-Square	Df	p
Comprehension (understanding conversation) (n=10)	62.6	2	<.0001
Verbal aspect (n=55)	68.1	2	<.0001
Paralinguistic aspect (n=25)	53.1	2	<.0001
Non-verbal aspect (n=20)	57.2	2	<.0001
Expressive pragmatics (n=100)	67.8	2	<.0001
Total pragmatics (n=110)	68.0	2	<.0001

Table C5.3: **Between means values for Bonferroni t test for pragmatic analysis**

	HFPDD-SLI	HFPDD-NDD	SLI-NDD
Comprehension (understanding conversation) (n=10)	4.9 *	5.5 *	0.7
Verbal aspect (n=55)	28.6 *	35.7 *	7.1 *
Paralinguistic aspect (n=25)	7.2 *	9.9 *	2.8 *
Non-verbal aspect (n=20)	10.3 *	11.9 *	1.6
Expressive pragmatics (n=100)	46.0 *	57.5 *	11.5 *
Total pragmatics (n=110)	50.9 *	63.0 *	12.2 *

* indicates significant difference between these two groups at the 0.05 level.

APPENDIX C6: COGNITIVE ASSESSMENT SYSTEM (CAS) RESULTS

Table C6.1: **Descriptive statistics for CAS results**

	HFPDD			SLI			NDD		
	Mean	SD	Skewness	Mean	SD	Skewness	Mean	SD	Skewness
Planning – standard score	76.8	20.9	1.0	96.6	14.8	0.3	110.5	8.9	0.04
Simultaneous – standard score	107.1	19.6	-0.1	107.3	12.7	0.1	120.1	9.2	0.4
Attention – standard score	86.1	19.8	0.3	107.4	9.4	-0.2	116	9.2	0.5
Successive – standard score	103.2	13.2	1.2	87.3	12.2	0.3	112.3	8.9	0.3
Full scale-standard score	90.9	21.0	0.6	99.1	13.7	0.2	119.0	9.3	0.5

Table C6.2: **Analysis of variance results for CAS results**

		SS	Df	MS	F	p
Planning – standard score	Between	14877.6	2	7438.8	30.5	<.0001
	Within	18320.7	75	244.3		
Simultaneous – standard score	Between	2895.5	2	1447.7	6.9	0.0018
	Within	15704.0	75	209.4		
Attention – standard score	Between	12295.6	2	6147.8	32.6	<.0001
	Within	14130.5	75	188.4		
Successive – standard score	Between	8346.3	2	4173.2	31.1	<.0001
	Within	10068.0	75	134.2		
Full scale – standard score	Between	10864.7	2	5432.4	22.8	<.0001
	Within	17896.2	75	238.6		

Table C6.3: **Between means values for Bonferroni t test for CAS results**

	HFPDD-SLI	HFPDD-NDD	SLI-NDD
Planning – standard score	19.8 *	33.7 *	13.9 *
Simultaneous – standard score	0.2	13.0 *	12.8 *
Attention – standard score	21.2 *	29.9 *	8.7
Successive – standard score	15.9 *	9.2 *	25.0 *
Full scale – standard score	8.2	28.1 *	19.9 *

* indicates significant difference between these two groups at the 0.05 level.

APPENDIX C7: THEORY OF MIND RESULTS

Table C7.1: **Descriptive statistics for all results included in the total theory of mind score**

	HFPDD			SLI			NDD		
	Mean	SD	Skewness	Mean	SD	Skewness	Mean	SD	Skewness
Understanding perception	6.9	4.1	-0.2	13.2	1.1	-1.5	13.9	0.3	-3.4
Mental significance of the eyes	12.4	6.7	0.7	24.2	1.5	-1.6	24.8	0.4	-1.7
Belief	1.5	2.4	2.1	5.2	1.9	0.7	7.9	1.5	-0.4
Deception	1.3	1.7	0.8	4.0	0.2	-5.1	3.6	1.1	-2.5
Emotion	9.9	5.9	0.2	19.0	4.2	0.1	22.5	4.5	-1.2
Pretence true	7.2	4.2	0.3	16.2	4.8	-0.2	17.7	4.6	0.03
Total theory of mind score	39.0	20.0	0.3	81.9	8.5	0.7	90.4	6.6	-0.1

Table C7.2: **Descriptive statistics for results of pretence measure**

	HFPDD			SLI			NDD		
	Mean	SD	Skewness	Mean	SD	Skewness	Mean	SD	Skewness
Pretence true	7.2	4.2	0.3	16.2	4.8	-0.2	17.7	4.6	0.03
Pretence attempts	16.2	6.5	0.3	22	5.8	-0.08	19.9	5.7	0.1
Pretence ratio	0.4	0.2	-0.03	0.7	0.1	-0.4	0.9	0.08	-1.0

Table C7.3: **Analysis of variance results for theory of mind results**

		SS	Df	MS	F	P
Understanding perception	Between	782.5	2	391.3	63.4	<.0001
	Within	463.1	75	6.2		
Mental significance of the eyes	Between	2557.9	2	1278.9	80.8	<.0001
	Within	1187.3	75	15.8		
Belief	Between	528.2	2	264.1	68.8	<.0001
	Within	287.7	75	3.8		
Deception	Between	110.3	2	55.1	42.0	<.0001
	Within	98.4	75	1.3		
Emotion	Between	2234.6	2	1117.3	46.4	<.0001
	Within	1806.8	75	24.1		
Pretence true	Between	1695.1	2	847.5	41.3	<.0001
	Within	1537.5	75	20.5		
Pretence ratio	Between	2.8	2	1.4	64.5	<.0001
	Within	1.6	75	0.02		

Table C7.4: **Between means values for Bonferroni t test for theory of mind results**

	HFPDD-SLI	HFPDD-NDD	SLI-NDD
Understanding perception	6.4 *	7.0 *	0.7
Mental significance of the eyes	11.8 *	12.5 *	0.7
Belief	3.7 *	6.4 *	2.7 *
Deception	2.7 *	2.3 *	0.4
Emotion	9.2 *	12.7 *	3.5 *
Pretence true	9.1 *	10.5 *	1.5
Pretence ratio	0.3 *	0.5 *	0.2 *

* indicates significant difference between these two groups at the 0.05 level.