

Investigating Language Profiles in Behavioural Variant Frontotemporal Dementia

Ohnmar Aung (B. Psych. Hons)

The thesis is presented in partial fulfilment of the requirements for the degree of Master of Clinical Psychology at the School of Psychological Sciences, College of Engineering, Science and Environment, The University of Newcastle, Australia.

November, 2023

Declarations

Statement of Originality

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis being made available worldwide when deposited in the University's Library*, being made available for loan and photocopying subject to the copyright Act 1968.

*Unless an Embargo has been approved for a determined period.

Acknowledgement of Collaboration

I hereby certify that the work embodied in this thesis has been done in collaboration with other researchers and uses data collected by the FRONTIER Frontotemporal Dementia (FTD) Research Clinic. I have contributed to the development of the research questions, data cleaning, the statistical analysis, the interpretation of results and writing of the manuscript. Dr Sharon Savage contributed to the research project by providing guidance on the development of research questions and preparing the data. Both Dr Sharon Savage and Dr David Foxe provided feedback on the statistical analysis, interpretation of results and contributed to the editing of the manuscript.

Statement of Manuscript Style

The manuscript section of this submission has been written in accordance with publication instructions for Cortex (see Appendix A). All else has been written in accordance with the Publication Manual of the American Psychological Association – Seventh Edition (2020).

Ethical Approval

The conduct of this reported research was approved by the University of Newcastle Human Research Ethics Committee (HREC) (Approval No. H-2021-0399). See Appendix B for approval letter.

Ohnmar Aung (Research Student)

Date: 06.11.2023

Dr. Sharon Savage (Research Supervisor)

Date: 07.11.2023

Acknowledgements

I would like to express my deepest gratitude to my research supervisor Dr Sharon Savage for her continual guidance, patience, and unwavering support throughout the last two years. I am grateful for your understanding when coursework and placements were extremely hectic and thank you for checking in consistently and keeping me on track to complete this thesis. This thesis would not have been possible without your invaluable advice, and encouragement. Your knowledge and passion for the field of clinical neuropsychology has been very inspiring, and your mentorship and words of wisdom have been instrumental in my personal and professional growth in my journey to become a psychologist and researcher.

I would also like to show my gratitude to Dr David Foxe for his help with data extraction, and guidance and feedback of my statistical analyses and manuscript. Thank you for your time, words of encouragement, and input into this research project.

I would also like to thank my fellow MCP cohort for your continual moral support. It has been a pleasure getting to know every one of you, and I am extremely thankful for the friendships that we have built. These two years have been far from easy, and your support, encouragement, and companionship have kept me sane throughout this arduous journey. I am confident that every one of us will grow into amazing clinical psychologists.

Lastly, thank you God for your presence and sustenance. Your grace and providence have been pivotal in the face of daunting challenges, moments of self-doubt, and completion of my academic journey.

Table of Contents

Declarations	ii
Statement of Originality.....	ii
Acknowledgement of Collaboration	ii
Statement of Manuscript Style.....	ii
Ethical Approval	iii
Acknowledgements.....	iv
Table of Contents.....	v
List of Tables	viii
List of Figures	ix
Title Page	10
Abstract.....	11
1. Introduction.....	13
1.1 Diagnostic certainty in Behavioural Variant Frontotemporal Dementia	15
1.2 Single-word processing in Frontotemporal Dementia	16
1.3 Mechanisms for Changes in Language Profile in bvFTD	18
1.4 The Current Study.....	20
2. Materials and Methods.....	21
2. 1 Participants.....	21
2.2 Inclusion and Exclusion Criteria.....	22
2.3 Assessment of Dementia Severity	22

2.4 General Cognition.....	23
2.5 Executive Functioning	23
2.6 Assessment of language.....	24
2.7 Statistical Analysis.....	24
3. Results.....	26
3.1 Demographics	26
3.2 General cognitive and executive functioning profile.....	29
3.3 Language performance within bvFTD.....	34
3.5 Mechanisms underlying bvFTD language deficits in bvFTD.....	39
Note: Significant results indicated in bold.....	40
4. Discussion.....	43
4.1 Clinical Implications.....	47
4.2 Strengths and Limitations	48
4.3 Future Directions and Recommendations.....	50
5. Conclusions.....	51
Funding Source	51
Credit author statement	51
Acknowledgements.....	51
Declaration of Interests: None	52
Data Statement.....	52
References.....	53

Appendix A.....	63
Appendix B.....	83
Appendix C.....	86
Appendix D.....	88
Appendix E.....	89
Appendix F.....	90
Appendix G.....	91
Appendix H.....	92
Appendix I.....	93
Appendix J.....	94

List of Tables

Table 1. Demographic Characteristics, Functional Impairment, and General Cognitive Functioning Test Scores in Probable and Possible bvFTD, SD and Healthy Controls	27
Table 2. General Cognitive and Executive Functioning Tests in Possible and Probable bvFTD, SD and Healthy Controls.....	31
Table 3. SYDBAT Test Scores in Possible and Probable bvFTD, SD and Healthy Controls.	35
Table 4. Percentage of Probable and Possible bvFTD Patients who are Classified as Impaired (Below 2 Standard Deviation of Mean) Categorised by SYDBAT Subtest	37
Table 5. Pairwise Comparisons Between SYDBAT Subtests for Possible and Probable and SD Groups Using Wilcoxon Rank Sum Tests.....	37
Table 6. Regression Analyses on Language and Executive Functioning Variables for Prediction of SYDBAT Subscales Performance for Probable and Possible bvFTD.....	40

List of Figures

Figure 1. SYDBAT Language Performance of Possible and Probable bvFTD Groups and SD-left Group.....	38
Figure 2. SYDBAT Language Performance of Possible, Probable bvFTD and SD-left Patients.....	41