



**#TwitterMind - Social Media Use by People with Communication
Difficulties after Traumatic Brain Injury (TBI)**

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Bachelor of Applied Science (Speech Pathology)

Master of Health Science (Stroke Management Specialisation)

Submitted to the Graduate School of Health at the University of Technology Sydney in
fulfilment of the requirements for the degree of Doctor of Philosophy in Speech
Pathology

February 2020

CERTIFICATE OF ORIGINAL AUTHORSHIP

I, Melissa Brunner, declare that this thesis, is submitted in fulfilment of the requirements for the award of the degree of Doctor of Philosophy in Speech Pathology, in the Graduate School of Health at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

This research is supported by the Australian Government Research Training Program.

Production Note:

Signature: Signature removed prior to publication.

Date: 21/02/2020

Dedication

This thesis is dedicated to one of the strongest women I know. In navigating the challenges that life brings, she showed me how to survive, thrive, and be independent. Daily she demonstrated how to juggle, how to delegate, and how to think critically. She also instilled in me the importance of an education and kindness - regardless of a person's circumstances in life. She is my biggest supporter and always reminds me to "take a deep breath".

For My Mum

Maree Margaret Brunner

Acknowledgements

I would like to acknowledge the many peoples of the Bundjalung Nation – an area in which I grew up and still call home. In the lands and waters of Bundjalung I can breathe and just be in the moment in a way that I cannot anywhere else, and it was there that my love of stories was cultivated.

My heartfelt thanks go to all of the people who participated in this research for their time and willingness to share their experiences and perspectives on the use of social media after a traumatic brain injury and during rehabilitation. Without them, there would not be a story to tell in this thesis. I can only hope that this research can assist people with traumatic brain injury to be included in life, to enjoy interacting with others, and to feel connected.

In telling this story, many people have helped me. In particular, I would like to thank my PhD supervisory team of Professor Bronwyn Hemsley (gifted wordsmith and star builder), Professor Leanne Togher (wonderful role model and inaugural academic supporter), Doctor Stuart Palmer (visualisation creator and proof-reading extraordinaire), and Doctor Stephen Dann (risk navigator and Lego master) for their ongoing support and expertise in guiding me through this PhD process, helping me to become a better researcher through the consideration of issues and contexts from diverse perspectives and lenses. I am extremely grateful to have had the opportunity to learn from you all and work with you on this doctoral research and thesis. A special thank you to Bronwyn – it has been a pleasure to discover the truths to be found in my participants' stories and to discuss what life means with you over the past six years (particularly when we were floating in the oceans of Hawai'i doing so). You have taught me so much about being a strategic researcher whilst remaining authentic and caring. Thank you for pushing me to be a more considered researcher, one that looks deeper beneath the surface, questioning what it all means - and for always making me feel like a shining star.

I gratefully acknowledge the financial support I have received in the form of a Australian Government Research Training Scholarship, Higher Degree Research support funds and awards from the University of Newcastle and the University of Technology Sydney, a laptop computer from the University of Newcastle, and awards from the Australasian Society for the Study of Brain Impairment (ASSBI). Being able to access these funds throughout my candidature enabled me to support my family,

disseminate my research, and engage in valuable discussions nationally and internationally that both informed and enriched the findings presented in this thesis.

Thank you to my colleagues in the speechBITE committee (Kate Smith, Professor Leanne Togher, Associate Professor Natalie Munro, Professor Tricia McCabe, Associate Professor Emma Power, and Doctor Elizabeth Murray) for giving me the best foundation in research methods possible and encouraging me to move into research. Thank you to Cynthia Donato, Wendy Goonan, and Doctor Lucy Bryant in their roles as research assistants in data collection and coding, and to Doctor Katrina Blyth for proof reading this thesis. Thank you also to all of my colleagues at the University of Sydney, the University of Newcastle, and the University of Technology Sydney who, over the years, have provided me with advice, unwavering support and friendship, and a keen willingness to go on coffee adventures with me.

A never-ending thank you to my parents, Maree and Bob Brunner – who imparted a love of reading and stories, encouraging me to try things even when feeling anxious about it, and always supporting me to be an independent, strong, and intelligent woman.

A huge, special thank you to my Brewster Rooster (my son Kelvin), Drama Llama (my son Eddison), and Bickie Baker (my husband David) for keeping me well supplied in coffee, laughter, biscuits, and love. Over the last six years you have all lived with an oft tired and cranky Mummy (Liss). Yet, you all recognised the importance of writing this ‘book’ in order to help those who had hurt their brains. To my beautiful boys – I am hopeful that you will continue to share my love of investigating and helping others; and that you get to experience the joys of life-long learning with great people surrounding you.

Thank you also to my extended family for being a steady cheer squad throughout the process. To my Life Club (aka Book Club) crew – Leanna, Sarah, Karen, and Michelle – words cannot express what each of you bring to my life. Our shared love of books brought us together and our connection now binds us, although we may now chat mostly from afar. Thank you also to my training crew for helping me to stay strong and fit in body and mind; and to my disparate group of North Shore mums for our irregularly-organised-yet-full-of-laughter dinners and for providing help when I needed it.

And lastly, thank you to my Twitter community – too numerous to name individually, the people in my network have supported me immensely throughout my PhD candidature. From retweeting my research tweets, joining me in celebrating success, commiserating in navigating the challenges, encouraging me to persevere, and sharing my love of coffee – they have all helped me to create a positive and supportive community of connections that will endure long after I have submitted my thesis. For this, I am extremely glad to have found them in my Twittersphere.

Notes on Style

The thesis is written in accordance with the Publication Manual of the American Psychological Association (American Psychological Association [APA], 2010), using Australian English spelling. The term ‘speech pathologist’ is used throughout the thesis in accordance with Australian convention. Gender is a cultural construct and scientific writing should be as bias-free as possible, “recognising that differences should be mentioned only when relevant” (APA, 2010, p. 71). Therefore, in the interest of using gender-fair language, the singular pronouns ‘they’ and ‘their’ are used throughout the thesis to refer to a generic or hypothetical person (Bradley, 2020).

As per publisher requirements, the papers included as chapters in this thesis adhere to the formatting requirements of the journal in which they were (or are submitted) to be published. Where permission was given only for the inclusion of accepted manuscripts (Papers 1, 2, 3, and 7), the accepted manuscript was formatted to APA 6th in keeping with the overall formatting of unpublished chapters of this thesis. Papers appearing as in the published form are formatted according to the author instructions (Papers 4, 5, and 6).

Apart from published chapters, the text, tables, labels, lists, references, and appendices were 1.5 spaced in accordance with the University of Technology Sydney’s guidelines for doctoral research submission. Roman numerals were used to label the tables and figures, and single spacing was applied to some tables and appendices where this improved readability. Tables and figures are placed within the text close to where they are first referenced (i.e., at the conclusion of the paragraph or on the following page). References across chapters have been consolidated into one reference list (see page 342).

Ethical Approval

Ethical approval for this research was obtained from the University of Newcastle Human Research Ethics Committee [H-2015-0057], the University of Sydney Human Research Ethics Committee [2016/562], the University of Technology Sydney Human Research Ethics Committee [ETH18-2465], and the participating rehabilitation organisation Human Research Ethics Committee [17SSA10]. Ethical approval was also ratified by Deakin University and the Australian National University.

Funding Sources

The doctoral candidate was supported by an Australian Government Research Training Program scholarship.

Conference travel for the doctoral candidate was supported by (in reverse chronological order):

- Australasian Society for the Study of Brain Impairment (ASSBI) Student Conference Travel Grant Award (2019): \$1100
- University of Technology Sydney Vice-Chancellor's Postgraduate Research Student Conference Fund (2019): \$3000
- Australasian Society for the Study of Brain Impairment (ASSBI) Student Conference Travel Grant Award (2017): \$1100

Research support was also provided through the:

- Administration of Australian Government Research Training Program scholarship funding (University of Newcastle and University of Technology Sydney)
- Provision of a laptop computer (University of Newcastle)
- Access to higher degree research and training funds (University of Newcastle and University of Technology Sydney)
- Consultancy fees for the creation of data visualisations (Professor Hemsley's Discovery Early Career Research Award from the Australian Research Council)
- Open access publication fee for one research publication (Graduate School of Health, University of Technology Sydney).

Publications and Presentations Arising from this Research

Publications (in the Order they Appear in this Doctoral Research)

Paper 1 (Chapter Five)

Brunner, M., Hemsley, B., Palmer, S., Dann, S., & Togher, L. (2015). Review of the literature on the use of social media by people with traumatic brain injury (TBI). *Disability and Rehabilitation (Special Issue: Social Media and Communication)*, 37(17), 1511-1521. doi:10.3109/09638288.2015.1045992

Paper 2 (Chapter Six)

Brunner, M., Hemsley, B., Togher, L., & Palmer, S. (2017). Technology and its role in rehabilitation for people with cognitive-communication disabilities following a traumatic brain injury (TBI). *Brain Injury*, 31(8), 1028-1043. doi:10.1080/02699052.2017.1292429

Paper 3 (Chapter Seven)

Brunner, M., Hemsley, B., Dann, S., Togher, L., & Palmer, S. (2018). Hashtag #TBI: A content and network data analysis of tweets about traumatic brain injury. *Brain Injury*, 32(1), 49-63. doi:10.1080/02699052.2017.1403047

Paper 4 (Chapter Eight)

Brunner, M., Palmer, S., Togher, L., & Hemsley, B. (2019). 'I kind of figured it out': the views and experiences of people with traumatic brain injury (TBI) in using social media—self-determination for participation and inclusion online. *International Journal of Language & Communication Disorders (Special Issue: The use of technology in speech and language therapy)*, 54(2), 221-233. doi:10.1111/1460-6984.12405

Paper 5 (Chapter Nine)

Brunner, M., Palmer, S., Togher, L., Dann, S., & Hemsley, B. (2019). Content analysis of tweets by people with traumatic brain injury (TBI): Implications for rehabilitation and social media goals. *Proceedings of the Hawai'i International Conference on System Sciences (HICSS-52)*, Honolulu Hawai'i, USA: University of Hawai'i at Manoa. doi:10.24251/HICSS.2019.523

Paper 6 (Chapter Ten)

Brunner, M., Palmer, S., Togher, L., Dann, S., & Hemsley, B. (2020). "If I knew what I was doing on Twitter then I would use it more": Twitter experiences and

networks of people with traumatic brain injury (TBI). *Brain Impairment*, 21(1), 1-18. doi:10.1017/BrImp.2019.12

Paper 7 (Chapter Eleven)

Brunner, M., Togher, L., Palmer, S., Dann, S., & Hemsley, B. (2019). Rehabilitation professionals' views on social media use in traumatic brain injury rehabilitation: Gatekeepers to participation. *Disability and Rehabilitation*. Advance online publication. doi:10.1080/09638288.2019.1685604

Paper 8 (Chapter Twelve)

Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2020). *Supporting people to use social media after traumatic brain injury (TBI): a multilevel meta-synthesis of mixed methods research*. Manuscript submitted for publication.

Conference Papers and Posters (in Reverse Chronological Order)

International Conference Papers

- Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2020, May 8). *How can we help people with traumatic brain injury to use social media during rehabilitation and beyond?* Accepted paper for the 43rd Annual Brain Impairment Conference of ASSBI 2020, Perth, Australia.
- Brunner, M., Palmer, S., Togher, L., & Hemsley, B. (2019, May 4). *What role does social media have in rehabilitation after a traumatic brain injury?* Paper presented at the ASSBI/NZRA Inaugural Trans-Tasman Conference 2019, Wellington, New Zealand.
- Brunner, M., Palmer, S., Togher, L., Dann, S., & Hemsley, B. (2019, January 11). *Content analysis of tweets by people with traumatic brain injury (TBI): Implications for rehabilitation and social media goals.* Paper presented at the Hawai'i International Conference on System Sciences (HICSS-52), Honolulu Hawai'i, USA: University of Hawai'i at Manoa.
- Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2017, January 20). *Hashtag TBI: How do traumatic brain injury communities communicate and network in Twitter?* Paper presented at the International Cognitive-Communication Disorders Conference, Orange California, USA.
- Brunner, M., Hemsley, B., Togher, L., & Palmer, S. (2017, January 20). *Using technology in cognitive-communicative rehabilitation after TBI.* Paper presented at the International Cognitive-Communication Disorders Conference, Orange California, USA.

International Conference Posters

- Brunner, M., Palmer, S., Togher, L., & Hemsley, B. (2019, May 1-4). *What role does social media have in rehabilitation after a traumatic brain injury?* Poster presented at the ASSBI/NZRA Inaugural Trans-Tasman Conference 2019, Wellington, New Zealand.
- Brunner, M., Palmer, S., Togher, L., Dann, S., & Hemsley, B. (2019, May 1-4). *What's it like to use Twitter after a traumatic brain injury?* Poster presented at the ASSBI/NZRA Inaugural Trans-Tasman Conference 2019, Wellington, New Zealand.

Brunner, M., Hemsley, B., Togher, L., Palmer, S., & Dann, S. (2015, July 1-4). *Tweets and friends: Using social media after traumatic brain injury*. Poster presentation at the INS/ASSBI 5th Pacific Rim Conference 2015, Sydney, Australia.

National Conference Papers

Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2020, February 11).

Digital participation and the use of social media by adults with traumatic brain injury during rehabilitation? Paper presented at eHealth@Sydney, Sydney, Australia.

Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2017, June 3). *#Hashtag TBI: Communication and networking in Twitter by traumatic brain injury communities*. Paper presented at the Australasian Society for the Study of Brain Impairment (ASSBI) Conference, Melbourne, Australia.

Brunner, M., Hemsley, B., Palmer, S., & Togher, L. (2017, June 3). *Using technology in rehabilitation after TBI for cognitive-communication skills*. Paper presented at the Australasian Society for the Study of Brain Impairment (ASSBI) Conference, Melbourne VIC, Australia.

Brunner, M., Beadle, E., & Rietdijk, R. (2017, June 3). *Learn how to: Tweet. Using social media for research and rehabilitation*. Workshop presented at the Australasian Society for the Study of Brain Impairment (ASSBI) Conference, Melbourne, Australia.

Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2017, May 30). *A Hashtag study: How do traumatic brain injury communities communicate and network in Twitter?* Paper presented at the Speech Pathology Australia National Conference, Sydney, Australia.

Brunner, M., Hemsley, B., Togher, L., Palmer, S., & Dann, S. (2015, July 1). *TwitterMind: Twitter use by people with communication disabilities after traumatic brain injury (TBI)*. Paper presented at the Centre for Research Excellence in Brain Recovery Moving Ahead Student Meeting, Sydney, Australia.

National Conference Posters

Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2017, June 1-3).

#Hashtag TBI: Communication and networking in Twitter by traumatic brain

injury communities. Poster presented at the Australasian Society for the Study of Brain Impairment (ASSBI) Conference, Melbourne, Australia.

Brunner, M., Hemsley, B., Palmer, S., & Togher, L. (2017, June 1-3). *Using technology in rehabilitation after TBI for cognitive-communication skills*. Poster presented at the Australasian Society for the Study of Brain Impairment (ASSBI) Conference, Melbourne VIC, Australia.

Brunner, M., Hemsley, B., Togher, L., Palmer, S., & Dann, S. (2015, May 17-20). *Tweets and friends: Using social media for communication after traumatic brain injury*. Poster presented at the Speech Pathology Australia Conference, Canberra, Australia.

State/Local Conference Papers

Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2020, February 4). *Mixed methods research: Supporting people to use social media after traumatic brain injury (TBI)*. Paper presented at the University of Sydney's Inaugural Communication Sciences and Disorders Research Symposium, Sydney, Australia.

Brunner, M. (2019, May 31). *Using social media in research for engagement and impact*. Paper presented at the Graduate School of Health student seminar #GSHseminars, Sydney, Australia.

Brunner, M. (2018, August 22). *TwitterMind: Using social media after a traumatic brain injury*. Paper presented at the UTS 3 Minute Thesis competition, July-August 2018, Sydney, Australia.

Brunner, M., Hemsley, B., Togher, L., Palmer, S., & Dann, S. (2015, November 24). *Tweets and friends: Using social media after traumatic brain injury (TBI)*. Paper presented at the University of Newcastle Speech Pathology Research Symposium, Newcastle, Australia.

Brunner, M., Hemsley, B., Togher, L., Palmer, S., & Dann, S. (2014, November 28). *TwitterMind: Twitter use by people with communication disabilities after traumatic brain injury (TBI)*. Paper presented at the University of Newcastle Speech Pathology Research Symposium, Newcastle, Australia.

State/Local Conference Posters

Brunner, M., Hemsley, B., Togher, L., Palmer, S., & Dann, S. (2014, December 11). *TwitterMind: Twitter use by people with communication disabilities after*

traumatic brain injury (TBI). Poster presentation at the Global eHealth Research and Innovation Showcase, Newcastle, Australia. **Best PhD poster winner*.

Brunner, M., Hemsley, B., Togher, L., Palmer, S., & Dann, S. (2014, August 20).

TwitterMind: Twitter use by people with communication disabilities after traumatic brain injury (TBI). Poster presentation at the University of Newcastle FEDUA Honours and RHD Expo, Newcastle, Australia.

Invitations to Speak

International

Brunner, M. (2019, January 14). *Using social media in research and rehabilitation with people who have a traumatic brain injury (TBI)*. Invited speaker at the University of Hawai'i at Manoa for the Communication Sciences and Disorders Year 1 student cohort #TwitterMindUoH, at the Communication Sciences and Disorders Department in Kakaako, Oahu Hawai'i.

Brunner, M. (2016, January 24). *#TwitterMind research*. Invited speaker at the Institute on Development & Disability, at the Oregon Health & Science University in Portland, Oregon USA.

National

Brunner, M. (2017, November 21). *Using social media to enhance #TBI #ABI research: A skills-based workshop for researchers*. Invited speaker at the Moving Ahead Centre for Research Excellence in Brain Recovery, at The University of New South Wales in Sydney, Australia.

Brunner, M. (2017, June 28). *Engagement in social media for researchers: Using Twitter and blogs*. Invited speaker at the Heart Foundation NSW Cardiovascular Research Network #CVRNRisingStars event, at Macquarie University in Sydney, Australia.

Brunner, M. (2015). *Mobile apps for health*. Invited presenter for the University of Sydney's eHealth MOOC at the University of Sydney in Sydney, Australia. Available online at: <https://www.coursera.org/learn/ehealth>

Brunner, M. (2015). *Social media for health*. Invited presenter for the University of Sydney's eHealth MOOC at the University of Sydney in Sydney, Australia. Available online at: <https://www.coursera.org/learn/ehealth>

Brunner, M. (2015). *Evaluating health apps*. Invited presenter for the University of Sydney's eHealth MOOC at the University of Sydney in Sydney, Australia. Available online at: <https://www.coursera.org/learn/ehealth>

Brunner, M. (2015). *When healthcare and social media intersect*. Invited presenter for the University of Sydney's eHealth MOOC at the University of Sydney in Sydney, Australia. Available online at: <https://www.coursera.org/learn/ehealth>

Brunner, M. (2015). *Case study: eHealth and speech pathology*. Invited presenter for the University of Sydney's eHealth MOOC at the University of Sydney in Sydney, Australia. Available online at: <https://www.coursera.org/learn/ehealth>

State/Local

Brunner, M., Hemsley, B., Togher, L., Dann, S., & Palmer, S. (2017, May 24). *Hashtag TBI: How do traumatic brain injury communities communicate and network in Twitter?* Invited presentation for visiting academics and students from Duquesne University, Pittsburgh PA at the University of Sydney, Sydney NSW, Australia.

Brunner, M., Hemsley, B., Palmer, S., & Togher, L. (2017, May 24). *TechTalk: Technology in cognitive-communicative rehabilitation after TBI*. Invited presentation for visiting academics and students from Duquesne University, Pittsburgh PA at the University of Sydney, Sydney NSW, Australia.

Media and Online Publications (Research Translation)

Blog

From commencement of my candidature, I used online media or ‘grey literature’ to promote ongoing engagement with clinicians and discussion of scientific findings with other social media researchers. A blog was developed (see www.melissabrunner.wordpress.com) to disseminate experiences, reflections, and research findings on investigating the use of social media by people with Traumatic Brain Injury (TBI). I used this blog in conjunction with my Twitter account @LissBEE_CPSP to increase the impact of my published works on the use of social media by people with TBI. Additionally, I made conference paper and workshop slides available online using SlideShare (see <https://www.slideshare.net/melissabrunner750/>).

Media stories

During my candidature several opportunities have occurred to promote this research via more traditional media formats.

- More than a one liner: Social media and TBI (UTS Media). Available online at: <https://www.uts.edu.au/about/graduate-school-health/speech-pathology/news/more-one-liner-social-media-and-tbi>
- The Connecting Power of Twitter: How social media is enhancing the way people with traumatic brain injury communicate (Umag, UTS Media). Available online at: <https://www.uts.edu.au/news/health-science/connecting-power-twitter>
- UTS Makers: Liss Brunner (UTS Media). Available online at: https://www.youtube.com/watch?v=c7CVBXi_4mo&feature=youtu.be
- UTS 3 Minute Thesis competition 2018 (finalist). TwitterMind: Using Social Media after a Traumatic Brain Injury. Available online at: <https://youtu.be/xHsQMzNt0J4>

Twitter Account Curation and Hashtag Chat Moderation

My expertise in the areas of TBI and social media has led to invitations to curate international Twitter accounts and to moderate Twitter hashtag chats (live discussions using TBI-related hashtags).

- Brunner, M. (2017). *Information Communication Technologies (ICT) and Traumatic Brain Injury: Getting Organised in SLP/SLT*. Invited curator for the international Twitter account @WeSpeechies curated week and #WeSpeechies chat, May 7-13, 2017. Analytics: 76 participants, 1.877M Twitter impressions.

- Brunner, M. (2016, October 6). *Using technology in rehabilitation with people after ABI*. Invited moderator for the international Australasian Society for the Study of Brain Impairment (ASSBI) Twitter #assbichat on 6 October, 2016. Analytics: 14 participants, 154K Twitter impressions.
- Brunner, M. (2014). *Looking for evidence and using evidence-based practice*. Invited curator for the international Twitter account @WeSpeechies curated week and #WeSpeechies chat, July 06-12, 2014. Analytics: 33 participants, 466K Twitter impressions.
- Brunner, M. (2014). *Traumatic Brain Injury*. Invited curator for the international Twitter account @WeSpeechies curated week and #WeSpeechies chat, May 25-31, 2014. Analytics: 25 participants, 321K Twitter impressions.

Awards (in Reverse Chronological Order)

- Australasian Society for the Study of Brain Impairment (ASSBI) Student Conference Travel Grant Award (2019): \$1100
- University of Technology Sydney Vice-Chancellor's Postgraduate Research Student Conference Fund (2019): \$3000
- University of Technology Sydney 3 Minute Thesis Competition (2018), Finalist
- University of Technology Sydney Combined Faculties 3 Minute Thesis Competition, Winner Best Presentation Graduate School of Health (2018): \$200
- University of Technology Sydney Graduate School of Health 3 Minute Thesis Competition, Winner Best Presentation (2018)
- University of Technology Sydney Graduate School of Health 3 Minute Thesis Competition, Winner People's Choice (2018)
- University of Newcastle Faculty of Education and Arts HDR Achievement Award (2017): \$500
- Australasian Society for the Study of Brain Impairment (ASSBI) Student Conference Travel Grant Award (2017): \$1100
- University of Newcastle Faculty of Education and Arts HDR Achievement Award (2016): \$550
- University of Newcastle Faculty of Education and Arts HDR Publication Prize (2016): \$1000
 - Brunner, M., Hemsley, B., Palmer, S., Dann, S., & Togher, L. (2015). Review of the Literature on the Use of Social Media by People with Traumatic Brain Injury (TBI). *Disability and Rehabilitation*, 37(17), 1511-1521.
- University of Newcastle Global eHealth Research and Innovation Showcase PhD poster winner (2014): \$50
 - Brunner, M., Hemsley, B., Togher, L., Palmer, S., & Dann, S. (2014). TwitterMind: Twitter use by people with communication disabilities after Traumatic Brain Injury (TBI). Poster presentation: Global eHealth Research and Innovation Showcase 2014 (University of Newcastle), Newcastle.

Authorship Attribution Statement

I am the first and corresponding author for all publications included in this thesis as follows:

Chapter Five is published as Brunner, M., Hemsley, B., Palmer, S., Dann, S., & Togher, L. (2015). Review of the literature on the use of social media by people with traumatic brain injury (TBI). *Disability and Rehabilitation (Special Issue: Social Media and Communication)*, 37(17),1511-1521. I led the design of the study, completed the database search, data extraction and analysis, and wrote the drafts of the manuscript.

Chapter Six is published as Brunner, M., Hemsley, B., Togher, L., & Palmer, S. (2017). Technology and its role in rehabilitation for people with cognitive-communication disability following a traumatic brain injury (TBI). *Brain Injury*, 31(8), 1028-1043. I led the design of the study, completed the database search, data extraction and analysis, and wrote the drafts of the manuscript.

Chapter Seven is published as Brunner, M., Hemsley, B., Dann, S., Togher, L., & Palmer, S. (2018). Hashtag #TBI: A content and network data analysis of tweets about Traumatic Brain Injury. *Brain Injury*, 32(1), 49-63. I led the design of the study and completed data collection, data analysis (note: I completed the preliminary Gephi and KH Coder computational analyses and a consultant was engaged to create the final visualisations), and wrote the drafts of the manuscript.

Chapter Eight is published as Brunner, M., Palmer, S., Togher, L., & Hemsley, B. (2019). ‘I kind of figured it out’: the views and experiences of people with traumatic brain injury (TBI) in using social media - self-determination for participation and inclusion online. *International Journal of Language and Communication Disorders (Special Issue: The use of technology in speech and language therapy)*, 54(2), 221-233. I led the design of the study, completed data collection, interview transcription, data analysis, and wrote the drafts of the manuscript.

Chapter Nine is published as Brunner, M., Palmer, S., Togher, L., Dann, S., & Hemsley, B. (2019). Content analysis of tweets by people with Traumatic Brain Injury (TBI): Implications for rehabilitation and social media goals. *Proceedings of the Hawai'i International Conference on System Sciences (HICSS-52)*, Honolulu Hawai'i, USA: University of Hawai'i at Manoa. I led the design of the study, completed data collection, data analysis (note: I completed the preliminary Gephi and KH Coder

computational analyses and a consultant was engaged to create the final visualisations), and wrote the drafts of the manuscript.

Chapter Ten is published as Brunner, M., Palmer, S., Togher, L., Dann, S., & Hemsley, B. (2020). "If I knew what I was doing on Twitter then I would use it more": Twitter experiences and networks of people with traumatic brain injury (TBI). *Brain Impairment*, 21(1), 1-18. I led the design of the study, completed data collection, interview transcription, data analysis, and wrote the drafts of the manuscript.

Chapter Eleven is published as Brunner, M., Togher, L., Palmer, S., Dann, S., & Hemsley, B. (2019). Rehabilitation Professionals' Views on Social Media Use in Traumatic Brain Injury Rehabilitation: Gatekeepers to Participation. *Disability and Rehabilitation*, published online: 07 November 2019. I led the design of the study, completed data collection, focus group transcription, data analysis, and wrote the drafts of the manuscript.

Chapter Twelve has been submitted to a journal for consideration of publication as Brunner, M., Togher, L., Palmer, S., Dann, S., & Hemsley, B. (2020). *Supporting people to use social media after traumatic brain injury (TBI): a multilevel meta-synthesis of mixed methods research*, manuscript submitted for publication. I led the design of the study, completed data collection, interview and focus group transcription, data analysis, and wrote the drafts of the manuscript.

Preface

“Gather round people I’ll tell you a story”

Paul Kelly and Kev Carmody, ‘From Little Things Big Things Grow’

Stories and a sense of connection have always been an important part of my life. I was surrounded by a family that loved to read. To this day, we are most content sitting together reading, and discussing what we have read. Growing up in regional New South Wales in Bundjalung, I also spent a lot of time with my family and friends, listening to and telling stories. However, it was my maternal grandparents who infused a love of stories and connection into my life. My fondest memories of my ‘Nan’ and ‘Pop’ (also now affectionately known as ‘SuperNan’ and ‘SuperPop’ by their great grandchildren) involve them holding court with their friends and our extended families, talking and laughing. When they moved into a retirement village, they became founding members of ‘The ChatterBox’ - a meeting place established beside the village letterboxes. Nan and Pop would congregate with their neighbours to share their afternoons, telling stories and enjoying each other’s company. When Pop became unwell and moved into residential care support, The ChatterBox was a vital form of connection and support for Nan. When Pop was no longer able to talk or laugh with Nan - her friends rallied around and kept her talking and laughing. She kept on talking and laughing in her boisterous and unique ways right up until her stroke, which robbed her of her communication many years later.

I cherish making genuine connections and sharing stories. It was the connection, the stories, and the shared conversations over mealtime experiences that drew me to choose speech pathology as a career. Over the years, it was the sense of being able to support people who had lost their connection that became my *raison d’etre* for working with people who have acquired brain injuries. I worked clinically with this population for over a decade whilst travelling around Australia with my husband’s career being in the Navy. When living in Melbourne, I received my first research grant which opened a whole new world of clinical research to me. After finally moving back to Sydney, I completed a Master in Health Science, and then joined the speechBITE team working an online research speech pathology intervention database. It was during this time that I started using Twitter, and to be honest - I was sceptical at first. However, within the first week of using it I was a ‘convert’. I started to see the vast potential of using social media for communication and connection. I yearned to know whether this technology

could be a new form of The ChatterBox – a means for those who had lost their connections to regain many more, and a way for them to share stories. I wholeheartedly embrace and acknowledge the fact that my personal and professional background influenced my approach to this research as fundamentally surrounding a curiosity to understand how social media might help people to regain connectedness and shared stories. Indeed, it was through Twitter that I met two of my doctoral supervisors. I also believe that it was my strategic and ongoing engagement in social media throughout my doctoral candidacy that enabled me to bring authenticity to my interpretations of the participant stories forming the basis of this research. In its many connected chapters, I hope this thesis brings to life the stories and experiences of people with TBI so that others may reach out to them in social media with a deeper understanding of their lives.

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Abstract

Cognitive-communication disability following traumatic brain injury (TBI) is often wide-ranging in scope and associated with social isolation and significant loss of friendships. Social media is known to support people with communication disability to access information and social participation. With over 60% of Australians accessing mainstream social media daily, these platforms may offer an important way for people with a TBI to connect with their family and friends. Furthermore, social media might reduce some of the difficulty people with TBI encounter in the immediacy of face-to-face conversations. However, little is yet known about how people with TBI use social media or how it is used during rehabilitation. This doctoral research aimed to investigate the views and experiences of people with TBI and rehabilitation professionals on the role of social media use in cognitive-communication rehabilitation.

A multilevel mixed methods research design was used to gain an understanding of this issue. This involved multiple studies and meta-synthesis of data collected from several sources: (a) literature on use of social media and technology for communication and participation after TBI, (b) Twitter data and network analysis, (c) interviews with people with TBI, and (d) focus groups with TBI rehabilitation professionals. Data was drawn from 111 peer-reviewed articles, 36,073 tweets, interviews with 13 people with TBI, and focus groups with 11 rehabilitation professionals. The data was collected, analysed, and synthesised both qualitatively and quantitatively. Analysis of the results revealed that people with TBI use social media for connection, and need support for meaningful use to develop a sense of social media mastery. Although rehabilitation professionals want to assist people with TBI to use social media during rehabilitation, their concern and uncertainty regarding the potential risks meant social media use is not yet proactively included in TBI rehabilitation.

It was identified that TBI rehabilitation should target social media use and include explicit instruction for communication and participation, as well as risk management education and gathering a broader network of personnel to support people with TBI to work collaboratively on social media use. Results informed development of a proposed social media rehabilitation protocol, providing a framework for developing policy and guidance on using social media during TBI rehabilitation for the development of social communication and participation skills for people with TBI. The outcomes of this research provide valuable insights and timely guidance on the

resources needed for clinicians seeking to support the integration of social media goals into TBI rehabilitation programs.