# Shadows of Emotion:

Emotional processing deficits in Parkinson's disease and their impact on social relationships.

Sharon L. Buxton

A thesis submitted in partial fulfilment of the requirements of the degree of Doctor of Philosophy in Psychology.
The University of Auckland, February, 2011.

## Abstract

Evidence suggests individuals with Parkinson's disease (PD) may be impaired at production and recognition of affective prosody and facial expressions of emotion. When united with social psychology's assertion that nonverbal cues, including facial expressions and voice tone, facilitate effective communication within social relationships, it suggests that these impairments impact negatively on quality of life for individuals with PD. This thesis aimed to investigate emotional processing deficits in PD, systematically, and their possible affect on social relationships. Thirty PD and 30 closely-matched control participants participated in three studies. Study 1 found that raters were less able to recognise emotional expressions from facial expressions and affective prosody in the PD group than the Control group. Study 2, using the Aprosodia Battery (Ross et al., 1997), found PD participants were impaired at recognition of affective prosody. A novel task was developed to assess recognition of facial expressions, comprising prototypical facial expressions and more subtle facial expressions. The PD group was impaired at recognition of subtle facial expressions but not prototypical facial expressions. Positive associations were found between performance on some recognition and production tasks in the PD group, providing support for an overall impairment in emotional processing in PD. When the PD group was subdivided based on side of symptom-onset, the group who developed right-sided symptoms first were more impaired compared to the Control group, than those who had left-sided onset of symptoms, suggesting a possible left-hemispheric lateralisation of emotional processing. Study 3, using a semi-structured interview, found that individuals with PD were less satisfied with their relationships with close others and acquaintances than the Control group, and that this was associated with how well the PD participants felt that others understood their facial expressions and affective prosody. Findings support the contribution of the basal ganglia to emotional processing, possibly as part of the thalamo-cortical loops, specifically, the skeleto-motor circuit, the lateral orbito-frontal circuit and the anterior cingulate circuit.

## Acknowledgements

I would like to unreservedly thank my supervisor, Dr. Lynette Tippett, for her wisdom, intelligence, and generous spirit. She endeavoured to patiently read my work, to diligently make changes and to constantly encourage me. Thanks for completely broadening my mind and heart to the world of clinical neuropsychology. Also, because of your painstaking editing, this should be the last place in this body of work examiners have to agonizingly read a split-infinitive!

I also want to thank Lorraine Macdonald, Movement Disorders Nurse Specialist at Auckland District Hospital, who administered the UPDRS motor assessments. Not only did she assist my research but also offered help to my participants, generously, wherever possible.

Thanks to the field officers of the PD Society who assisted in the recruitment of participants. A special thank you goes to Kay McGarry, who went often beyond the call of duty in helping me. Thanks to Stephanie Allison, for helping recruit Control participants.

I will always be indebted to the many volunteers who participated in this study, for sharing a small part of their lives with me. Especially, the participants with PD who spent hours in my company and remained gracious throughout. You are generous, open, warm-hearted and such a lot of fun to work with.

I am also grateful to the University of Auckland Doctoral Scholarship for assisting me financially through this endeavour. To the unsung heroes, the technical and computer experts, Peter Johnson and Margaret Francis, for hours of assistance - Thanks!

I would also like to thank the many peers and colleagues, who became friends that shared this journey; Christina, Lucy, Ruth, Sandra, Anna and Roshini. But most of all, Aileen, who helped me to laugh and enjoy spending time in the office. I miss you every day!

I also want to thank friends both far away and near who helped me to maintain a good work-play balance, especially Beck who is the most beautiful friend, both inside and out, I could ever wish for. Thanks, Haidee, for assisting with formatting and taking me for coffee frequently. My sanity thanks you! I am also thankful for my parents who instilled in me an earnest desire to understand the world and the people living in it.

Finally and unreservedly I thank my husband, who is my lover, my joy, my strength and my best friend. He supported and believed in me, on this PhD journey and this thesis is as much his as it will ever be mine. Thank you for sharing this life journey with me and for enabling me to become a better, more centred person. I thank God continually for your presence in my life!

## List of Tables

## List of figures