Impaired perception of facial expressions of emotion in Parkinson’s disease

Michelle Marneweck (michelle.marneweck@uwa.edu.au), School of Psychology, University of Western Australia
Romina Palermo (romina.palermo@uwa.edu.au), ARC-CCD and School of Psychology, University of Western Australia
Geoff Hammond (geoff.hammond@uwa.edu.au), School of Psychology, University of Western Australia

(‘ARC-CCD’ refers to the ARC Centre of Excellence in Cognition and its Disorders)

The ability to perceive facial expressions of emotion in others is central to the regulation of social behavior. There is some evidence that perception of emotion is impaired in Parkinson’s disease (PD). We measured across two experiments in those with PD and controls (Exp 1: PD n = 34, control n = 32; Exp 2: PD n = 25, control n = 24) the basic perceptual processes of the ability to discriminate (1) graded intensities of emotional expressions from neutral expressions (2) graded intensities of expressions of the same emotion (3) discrepant emotional facial expressions from two similar emotional expressions, and the more complex ability to label emotional expressions. Those with PD were as a group impaired compared to controls in the ability to perceive facial expressions of emotion across basic and complex tasks. However, some with PD performed as well as controls. We next assessed whether those with PD were impaired in their ability to voluntarily contract facial muscle, which we predicted to correlate with their ability to perceive expressions of emotion. We also investigated whether those with PD were impaired at extracting information from faces other than facial expression of emotion, using a measure of the ability to detect graded changes in facial distinctiveness. Individual variation in the ability to perceive facial expressions of emotion was positively and moderately correlated with the ability to voluntarily contract facial muscle and with the ability to perceive graded changes in facial distinctiveness. All abilities in perception of emotion, facial distinctiveness and the ability to voluntarily contract facial muscle correlated strongly with the severity of motor symptoms of PD. The findings provide evidence that most with PD are impaired in the basic and more complex perception of facial expressions of emotion, which relate to the basic perception of facial distinctiveness and the ability to voluntarily contract facial muscle, all of which relate to disease severity.