# Research Plan - Exploring the emotional facial recognition from dynamic and static faces by people with Parkinson’s

Moudhi Al Twaijri, Ellen Poliakoff & Karen Lander

Division of Neuroscience and Experimental Psychology, University of Manchester

## Introduction

- People with Parkinson’s (PwP) have an impairment in emotional facial recognition (EFR) (Jacobs et al., 1995); and production (hypomimia) (Simons et al., 2003).
- The loss of facial movement in PwP may contribute to difficulties in EFR (Tickle-Degnen & Lyons, 2004).
- Some claim PwP have better EFR from dynamic expressions (Kan et al., 2002), while others believe static to be superior (Péron et al., 2011), although few studies compared the two (Bek et al., 2020; Kan et al., 2002).
- Bek et al. (2020) found increased EFR from dynamic compared to static expressions for controls only. Thus, further work is needed with bigger population and range of emotions.
- Researchers claim EFR impairment in PwP is specific to certain emotions (Assogna et al., 2010; Clark et al., 2010), while others believe it is not (Alonso et al., 2013; Baggio et al., 2012).
- It is unclear whether PwP can better recognise emotions from dynamic or static stimuli and whether specific emotions or all (or none) emotions are affected.

❖ **Aim:** To investigate EFR from dynamic and static expressions by PwP compared to healthy controls.

❖ To investigate how EFR may be influenced by type of emotion, mood (depression, anxiety, and apathy; see Argaud et al., 2018) and motor symptoms Parkinson’s

## Experimental Design

### Participants

[An a-priori power analysis was conducted using G*Power3 (Faul et al., 2007)].

- 42 participants with mild to moderate Parkinson’s disease.
- 42 age matched healthy control participants.
- All participants will have normal or corrected-to-normal vision.

### Materials and Methods

- Geriatric Depression Scale (GDS) for depression (Sheikh & Yesavage, 1986).
- Geriatric Anxiety Scale (GAS; Gould et al., 2014).
- Unified Parkinson’s disease rating scale (MDS-UPDRS; Goetz, 2010).

## Statistical Analysis Plan

❖ Two-way mixed ANOVA will be administered [group (Parkinson vs controls) and stimuli (dynamic vs static)] to test for the effects of dynamic versus static in the two groups.

❖ A linear mixed model will be used to investigate other factors that could affect EFR accuracy for dynamic and static expressions. The measures are anxiety, depression, apathy, severity of Parkinson’s motor symptoms, and dominant motor symptoms (left or right), as well as emotion type.

## Predictions

➢ Controls may have better EFR for dynamic images in comparison to static images (as found in Bek et al. 2020). The PwP may have reduced EFR overall and a reduced benefit of dynamic faces.

➢ High anxiety, depression and apathy will reduce EFR accuracy for both dynamic and static expressions of negative emotions.

➢ Increased motor symptoms of Parkinson’s will be associated with lower accuracy in EFR for dynamic when compared with static expression. Symptom asymmetry (left, right) may interact with emotion type.

## References