

Can You Reduce Diabetes Symptomatology by Becoming Your 'Best Possible Self': The Role of Stress and Resilience

Study Protocol and Statistical Analysis Plan

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## Protocol

Title: Can You Reduce Diabetes Symptomatology by Becoming Your 'Best Possible Self'? The Role of Stress and Resilience.

### Research Question

How does the 'Best Possible Self' Task influence stress and resilience when used as a diabetes prevention tool?

### Background

Diabetes mellitus continues to be a global burden and it affects millions of people around the world (Bommer et al., 2017). Prevalence figures from 2015 revealed that approximately 5 million adults in England alone were at high risk of developing type 2 diabetes specifically (Public Health England, 2016), a form of the disease that is largely preventable via lifestyle changes (Klein, Sheard, Pi-Sunyer, Daly, Wylie-Rosett, Kulkarni, & Clark, 2004). Typically, education interventions are utilised in efforts to promote awareness and generate behavioural change prior to formal diagnosis (Lian, McGhee, Chau, Wong, Lam, & Wong, 2017; Roberts, Barry, Craig, Airoidi, Bevan, & Greenhalgh, 2017) but this is not always enough to motivate individuals to act (Horigan, Davies, Findlay-White, Chaney, & Voates, 2017). Research has demonstrated that emotionality plays a significant role not only in lifestyle change but also in symptom management (Rasmussen, Smith, Maxson, Bernard, Cha, Agerter, & Shah, 2013). Experiencing mental illness, distress, or even just a high frequency of negative emotions can negatively influence dieting and exercising behaviours (Ciechanowski, Katon, & Russo, 2000), for example, increasing risk. However, novel findings have shown that experiencing positive emotions (such as happiness, optimism, interest, feelings of strength, etc.) can have the opposite effect and may help empower the individual to make the changes they need to improve their health (Garland, Fredrickson, Kring, Johnson, Meyer, & Penn, 2010). Interventions designed to foster positive emotions specifically are in development across psychology and have shown to improve mental as well as physical health outcomes (Chew, Vos, Heijmanns, Metzendorf, Scholten, & Rutten, 2015). This has been supported by our own investigations whereby we discovered that one such "positive" intervention reduces certain diabetes symptoms regardless of the individual's level of risk.

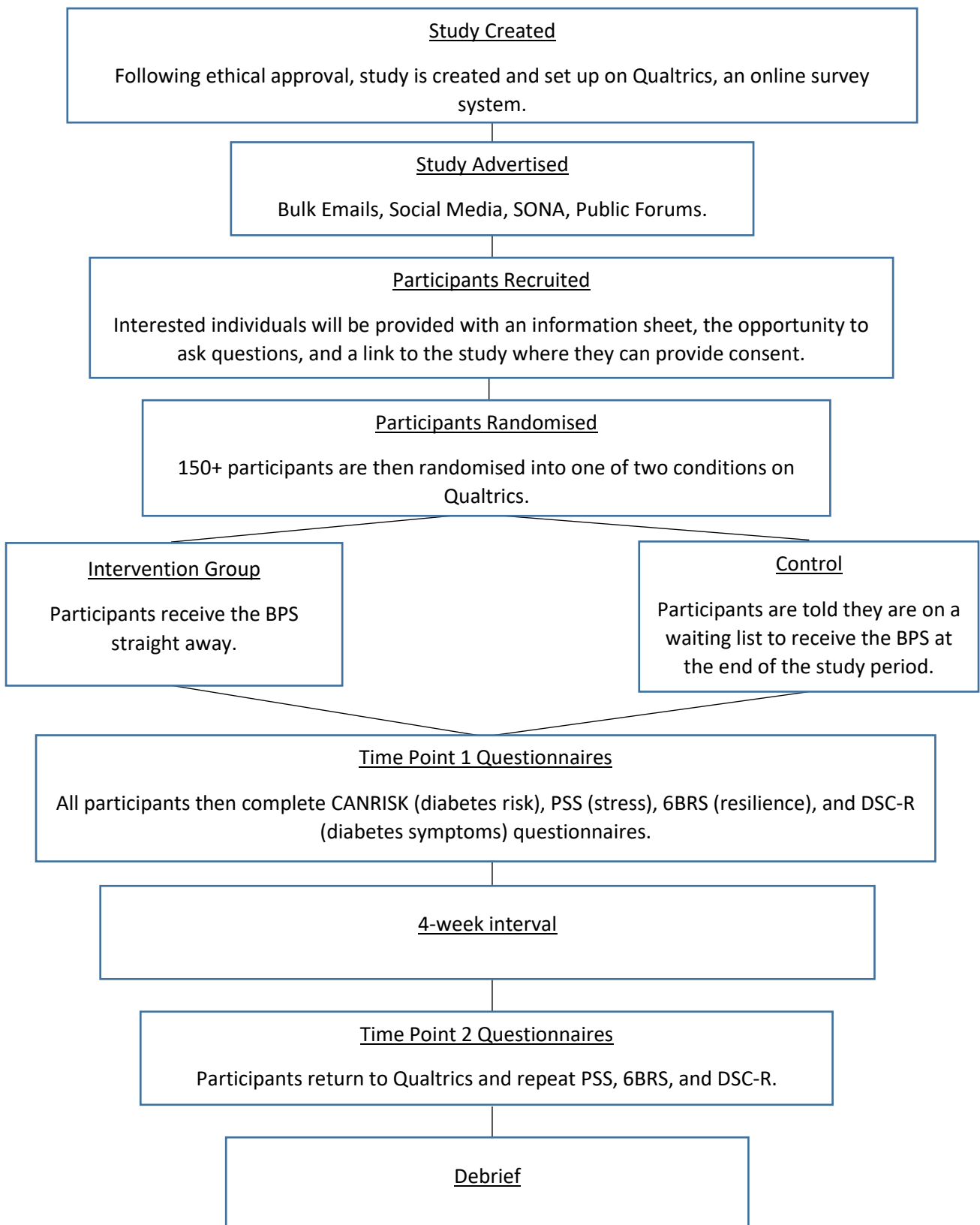
The positive intervention we have been using is an adapted version of the 'Best Possible Self' (BPS) task – a goal setting exercise that has shown to be effective in improving illness management and facilitating positive emotions (King, 2001). Its influence on diabetes symptoms is a novel finding, and with this study we are hoping to further investigate how it achieves this effect. According to the Stress Buffering Model of Physical Activity (Pressman & Cohen, 2005), psychological stress is the catalyst that triggers behavioural and physiological responses critical to health and positive emotions improve health by helping people to cope. The Broaden and Build Theory of Positive Emotions, meanwhile, suggests that this is because positive emotions allow people to build resilience (Fredrickson, 2001). Research around stress and resilience has shown these factors to be important not only in physical health of people with diabetes (Yi, Vitaliano, Smith, Yi, & Weinger, 2008) but for also decreasing illness symptomatology in non-clinical samples more generally (Steinhardt & Dolbier, 2008). As such, this proposed study aims to assess the role that stress and resilience may play in mediating the relationship between BPS and diabetes symptomatology.

### Hypotheses:

The 'Best Possible Self' task will increase resilience and alleviate stress in order to reduce symptoms of diabetes in a non-clinical sample.

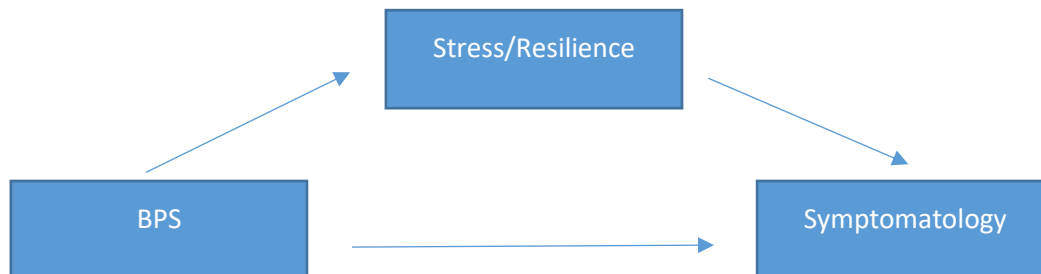
## Methodology

See flowchart below:



## Analysis

A series of MANOVAs will be used to assess the influence of the BPS on diabetes symptoms over time and across groups. MANCOVAs will be used to control for diabetes risk. A mediation analysis will be conducted using the PROCESS software (Hayes, 2012) to assess whether the relationship between the BPS and diabetes symptoms is mediated by stress and resilience.



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