Research paper

Further development and testing of the metacognitive model of procrastination: Self-reported academic performance

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ABSTRACT

Background: procrastination is highly prevalent amongst students and impairs academic performance. The metacognitive model of procrastination explains a significant proportion of unintentional procrastination variance. However, the model has yet to be tested using academic performance as the dependent variable. We tested whether the metacognitive model of procrastination explained self-reported academic performance (AP). Methods: a convenience sample of 204 current undergraduate and postgraduate students completed a battery of online questionnaires that measured intentional and unintentional procrastination, metacognitions about procrastination, AP, and depression. We conducted a series of correlation analyses and a path analysis (based on the metacognitive model of procrastination) that specified AP as the dependent variable. Results: the correlation analyses indicated that there are significant, negative associations between AP and depression, AP and negative metacognitions about procrastination, and AP and unintentional procrastination. The tested model was a good fit of the data and explained 13% of the variance in AP. Limitations: this study is cross-sectional. Conclusions: our findings provide further support for the metacognitive model of procrastination, indicating that novel interventions that target metacognitions may help to tackle procrastination and optimize AP.

1. Introduction

Procrastination is characterised by the postponement of engaging in, or the premature termination or completion of, an activity (or activities) pursued to achieve a goal (e.g., Fernie et al., 2016). In a sample drawn from the populations of six different nations (Australia, Peru, Spain, the United Kingdom, the United States, and Venezuela), the prevalence of 'arousal' procrastination (driven by a desire for more excitement and less boredom) was 13.5% and 14.3% for 'avoidant' procrastination (motivated by task aversiveness) amongst adults (Ferrari et al., 2016). The prevalence of chronic procrastination in students has been reported to be even higher: for example, Day et al. (2014) estimated rates of 32%. This is problematic given the findings of a recent meta-analysis that reported a negative relationship between procrastination and academic performance (Kim and Seo, 2015). However, procrastination is not only harmful to academic performance, but also to mental well-being: e.g., it is significantly associated with anxiety and depression (e.g., Spada et al., 2006; Stöber and Joormann, 2001).
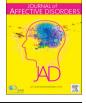
Procrastination may not always be problematic; instead, it can reflect an adaptive marshalling of resources and lead to better outcomes. To this end, procrastination has been variously delineated into two subtypes: e.g., functional and dysfunctional (Ferrari et al., 1995), active and passive (Chu and Choi, 2005), and intentional and unintentional (Fernie et al., 2016). Despite these different terminologies sharing many overlapping characteristics, there are important and nuanced differences. For example, intentional procrastination (IP) refers to a deliberate and conscious (i.e., active), but not necessarily advantageous (i.e., functional), behaviour. Whilst unintentional procrastination (UP) refers to a non-deliberate behaviour that is typically both dysfunctional and passive. UP has a stronger positive association with negative affect than IP (Fernie et al., 2016), supporting the discriminate validity of these two subtypes of procrastination.

For a little over a decade, several studies have investigated procrastination from a metacognitive perspective (de Palo et al., 2017; Fernie et al., 2017, 2016, 2015; Fernie and Spada, 2008; Fernie et al.,

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2009; Spada et al., 2006). Metacognitions (or metacognitive beliefs) are defined as beliefs that individuals hold (both implicitly and explicitly) about their own attentional strategies, behaviours, repetitive thinking processes (e.g., rumination and worry), and emotions. These studies employed the Self-Regulatory Executive Function (S-REF; Wells and Matthews, 1994, 1996) model as a framework to better understand procrastination. The Cognitive Attentional Syndrome (CAS) is key to building clinical formulations using the S-REF model. The CAS consists of a selection of cognitive processes (e.g., rumination, self-focused attention, and worry). According to the S-REF model, psychological disorder/distress occurs when metacognitive beliefs activate and maintain perseverative CAS configurations.

Metacognitive beliefs have been broadly delineated into positive and negative subtypes. For example, a positive metacognitive belief about procrastination is "Procrastination allows creativity to occur more naturally", whilst a negative metacognitive belief is "My procrastination is uncontrollable" (Fernie et al., 2009). Positive metacognitive beliefs about procrastination are positively associated with IP and (less so) with UP, whilst negative metacognitive beliefs about procrastination are more strongly positively associated with UP than IP (Fernie et al., 2017, 2016).

Recently, a metacognitive model of procrastination (based on the S-REF model) was tested and explained 46% of the variance in UP (Fernie et al., 2017). This model conceptualises UP, and to a lesser extent IP, as components of a CAS. In this model, an individual who strongly endorses positive metacognitive beliefs about procrastination is likely to activate IP as a coping strategy to deal with being given a task. IP is positively correlated with UP (Fernie et al., 2017, 2016). It is likely challenging to engage solely in IP without slipping into UP. If the individual strongly endorses negative metacognitive beliefs about procrastination, UP (and IP) will be assessed as harmful, dangerous, and/or uncontrollable. Such appraisals will lead to worsening mood (Fernie et al., 2017, 2016). To cope (i.e., to self-regulate their emotional functioning), CAS components are activated, including distraction, rumination, and worry. These processes are 'resource heavy' and contribute to cognitive or 'ego' depletion (Baumeister et al., 2000; Muraven and Baumeister, 2000). The activation of this CAS configuration means the individual's mental resources are mainly allocated to IP, UP, distraction, rumination, and worry processes. Consequently, the individual no longer has enough mental capacity to complete the original task. This paucity of mental resources makes more UP unavoidable. This aligns with a key conceptualisation of the S-REF model: i.e., psychological distress is a consequence of perseverative processes, such as UP.

1.1. Study aims

This study had two objectives. Firstly, we sought to replicate the findings of earlier studies regarding the relationships between positive and negative metacognitive beliefs about procrastination, depressed mood, IP, and UP (e.g., Fernie et al., 2017, 2016). Secondly, we aimed to test the metacognitive model of procrastination's ability to explain the mechanisms underlying the relationship between procrastination and academic performance. The current study operationalized these objectives with five experimental hypotheses (with hypotheses 1 to 3 addressing the first objective and hypotheses 4 and 5 the second). We hypothesised that: (1) positive metacognitive beliefs about procrastination would be positively and significantly related to IP and (less strongly) to UP, (2) negative metacognitive beliefs about procrastination would be positively and significantly associated with UP, (3) UP would have a stronger positive relationship with depressed mood than IP, (4) positive and negative metacognitive beliefs about procrastination would have significant and negative indirect effects on self-reported academic performance, and (5) the metacognitive model of procrastination, using self-reported academic performance as the dependent variable, would be a good fit of the data.

2. Method

2.1. Participants

Study eligibility criteria required that participants: (1) were at least 18 years of age, (2) were current undergraduate or postgraduate students, (3) had received at least one assessment for a piece of coursework or exam for their current course within the last 12 months, (4) possessed adequate English language skills, and (5) consented to participate. Two hundred and forty-six (191 female) participants were initially recruited from students at King's College London and the University of Liverpool (and, in addition, from the advertisements placed on social media by the first two authors). However, using listwise deletion to allow bootstrapping in the later analyses, 204 (160 female) participants contributed complete datasets for this study.

The mean age of participants were 23.60 years (ranging from 18 to 65; SD = 5.89). Most (138; 67.6%) participants self-identified as ethnically White, whilst the remainder as Asian (24; 11.8%), Black (4; 2.0%), Mixed (5; 2.5%), or preferred not to say (33; 16.2%). In terms of nationality, most participants (123; 60.3%) described themselves as British. The remaining sample self-identified nationalities from Africa, Asia, continental Europe, Oceania, and South America. 183 (89.7%) of the sample reported that they were currently attending universities located in the United Kingdom. The next largest group that contributed data stated that they were studying at universities based in Turkey (12 participant5.9% of the sample). Students studying at universities in Belgian, the Czech Republic, France, Singapore, Switzerland, and the United States also participated in this study. Despite the wide range of nationalities sampled, all participants rated their comprehension of written English as at least adequate. 128 (62.7%) participants reported that they were current undergraduate students whilst the rest (76; 37.3%) described themselves as current postgraduate students. Most were full-time students (193; 94.6%) and the remainder part-time (11; 5.4%). 84.8% (173) of participants were in the first three years of their course, with remaining 15.2% (31) being in their fourth or later year.

2.2. Measures

2.2.1. Measuring contemporaneous academic performance

Participants were asked to self-report between one and five of their most recent numbered marks for academic work received within the last 12 months. They were also asked to state what the highest achievable score was (i.e., out of 10, 80, 100, etc.). Each mark record was divided by the highest score possible to generate a ratio score. The number of ratio scores gathered for each participant (k) varied. Mean ratio scores were calculated for each participant by summing their ratio scores and dividing by k, generating a single variable to indicated current academic performance (referred to as 'AP' in the later analyses).

2.2.2. Self-report scales

We employed several validated psychometric questionnaires to assess intentional and unintentional procrastination, metacognitive beliefs, and depression. To measure procrastination we used the 'Intentional Decision to Procrastinate' (IDP) factor of the Active Procrastination Scale (APS; Choi & Moran, 2009) and the Unintentional Procrastination Scale (UPS: Fernie et al., 2016). The IDP factor of the APS was used to assess IP and contains four items, including "I intentionally put off work to maximize my motivation." and "To use my time more efficiently, I deliberately postpone some tasks". Participants are required to indicate the extent to which they agree with such statements on a four-point, Likert-type scale ranging from "disagree" (scoring one) to "agree" (scoring four). The responses are summed, so that higher scores reflect greater levels of IP. The IDP factor of the APS has been reported to possess good validity and adequate internal consistency (Choi and Moran, 2009). The UPS assesses UP and consists of six items, such as "Often I mean to be doing something, but it seems