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Dynamic interplay of depression, perfectionism and self-regulation on procrastination

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This study aimed at investigating the intercorrelation among affective, cognitive and behavioural components on procrastination. A total of 402 undergraduate students (115 males, 286 females, 1 not indicated) participated in the study. Students completed the General Procrastination Scale, Depression, Anxiety and Stress Scale, Frost Multidimensional Perfectionism Scale and Self-regulation Inventory. A constructed hypothesised model was tested by utilising path analysis. Overall, the analysis indicated that the model sufficiently explained the data. The findings showed the multicorrelation among the variables, ranging from 14 to 58. Squared multiple correlation coefficients (R^2) of procrastination revealed that endogenous and mediator variables explained 33% of the total variance in procrastination. The results demonstrated the importance of affect, cognition and behaviour on problematic delay referred to as procrastination.

Keywords: procrastination; affective; cognitive and behavioural components; depression; perfectionism; self-regulation

Procrastination, defined as a tendency to put off an intended task or decision (Ferrari, Johnson, & McCown, 1995), has received much research attention in the last two decades. The increased attention is attributed to its high prevalence in academic settings (Harriot & Ferrari, 1996). It appears to be a significant problem especially at university level (Bishop, Gallagher, & Cohen, 2000; Ellis & Knaus, 1977), with some recent studies showing that between 80 and 95% of university students reported procrastinating (Schowenburg, Lay, Pychyl, & Ferrari, 2004). To date, researchers have offered various explanations for procrastinating, some of them (e.g., Pychyl, Morin, & Salmon, 2001), for example, suggest it to be a habit; others (e.g., Johnson & Bloom, 1995) claim it is a personality trait. However, it is understood, procrastination seems to be associated with negative consequences for students such as poor grades, course withdrawal or time wasting with self-handicapping behaviour (Ferrari et al., 1995; Milgram, Gehrman, & Keinan, 1992). Due to this problem, university students frequently seek help from counsellors, complaining about how badly this habit makes them feel (Schowenburg

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et al., 2004; Stead, Shanahan, & Neufeld, 2010), contributing to an overall lower level of life satisfaction (Klingsieck, Fries, Horz, & Hofer, 2012).

Investigating the causes of procrastination has been of interest to psychological researchers who have produced several models to understand the significant psychological factors underlying procrastination (Dietz, Hofer, & Fries, 2007; Eun Hee, 2009; Seo, 2008). Furthermore, many have focused on various aspects of this dilatory phenomenon (Kachgal, Hansen, & Kevin, 2001; Schowuenburg et al., 2004) considering affective, cognitive and behavioural components. Some of them, for example, have focused only on *affective* aspects of procrastination (e.g., Chabaud, Ferrand, & Maury, 2010; Himrod, 1998; Nicholson & Scharff, 2007; Pychyl, Lee, Thibodeau, & Blunt, 2000; Stöber & Joormann, 2001). Specifically, they found that procrastination was associated with depression; where in some cases, negative emotions, when experienced at peak level, could lead to increased procrastination (Solomon, Murakami, Greenberger, & Rothblum, 1983; Steel, 2007). Studies of procrastination based on the *cognitive* perspective focused on why students make a conscious decision to procrastinate even though it has negative consequences (e.g., Karas & Spada, 2009). As one of the highly correlated cognitive components, perfectionism has been frequently found to be associated with procrastination (Stöber & Joormann, 2001). Pacht (1984) described perfectionism as the tendency to set excessively high personal standards for oneself, and therefore, perfectionists tend to have doubt about their actions. As associated with procrastination, perfectionists are not only unable to feel satisfaction, but they also report feeling anxious and emotionally drained before a new task has even been started (Hamachek, 1978). *Behaviourally* oriented researchers, on the other hand, have focused on the relative frequency of students' study behaviour or task delay (Beck, Koons, & Milgrim, 2000). They stress that procrastination is best understood as a behavioural problem. Moreover, some researchers (e.g., Ferrari & Tice, 2000; Van Eerde, 2003; Wolters, 2003) argue that self-regulation is one of the strongest behavioural predictors of procrastination. In this respect, students' self-regulation tendencies become important variables to address in understanding behavioural procrastination (Ariely & Wertenbroch, 2002; Howell, Watson, Powell, & Buro, 2006; Klassen, Krawchuk, & Rajani, 2008).

Taking all the components together, Ellis and Knaus (1977) suggested that procrastination is a self-defeating behaviour energised by fear formed by acting, thinking and developing strong feelings accordingly. To change the patterns of a maladjusted behaviour such as procrastination, the Affect-Beliefs-Cognition (Ellis & Knaus, 1979) model which is the cornerstone of rational emotive behaviour theory (Ellis, 1962) is considered by this study. Feeling, thinking and acting are not disparate entities, but they are multicorrelated and overlap significantly (Ellis, 1973). In this vein, numerous studies have shown intercorrelation among components (e.g., Solomon & Rothblum, 1984; Uzun Ozer, Demir & Ferrari, 2013). In a study conducted by Ferrari (1991), procrastinators reported feeling anxious, depressed and stressed when working on a task with time limitation. Therefore, it is proposed that in order to avoid such negative feelings, procrastinators generally try to avoid starting the project at hand (Ferrari & Beck, 1998; Lay, 1986). In addition to time limitations, the demands of complex multidimensional tasks (e.g., cognitive load condition) have produced self-regulation failures among procrastinators, as demonstrated in a series of studies by Ferrari and his colleagues (e.g., Ferrari & Dovidio, 2001); specifically, procrastinators failed to process information effectively in competing cognitive activities. Hence, perfectionism may play a leading role in this chain. People with perfectionistic tendencies have reported to be unable to

begin a project since the design would never be completely perfect (Hollender, 1965; Flett, Hewitt, Davis, & Sherry, 2004). Therefore, they may not only be unable to feel satisfaction but also feel anxious and emotionally drained before a new task begins (Hamachek, 1978).

In light of these research findings, we conclude that procrastination is more complex than time management difficulties involving the interplay of affective, cognitive and behavioural components (Solomon & Rothblum, 1984). Nevertheless, focusing on limited aspects has generated diverse results in previous studies. The variability in such findings has led to a new emphasis on the complexity of procrastination such as having various components and a need to understand it as a multidimensional phenomenon rather than unitary construct (Rothblum, Solomon, & Murakami, 1986; Watson, 2001). In this respect, in the present study, the authors aim to extend what previous research has found by examining procrastination in terms of intercorrelation among affective, cognitive and behavioural components. The set of affective, cognitive and behavioural variables representing procrastination selected for inclusion in the present study have been identified in the literature as important reasons why university students procrastinate. In this respect, first, a functional and a dysfunctional part of perfectionism were included to assess attributions of success and failure as a *cognitive* component (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Hewitt & Flett, 1989). Second, as the highest associated emotional construct with procrastination, depression was included as an *affective* component because of the salience of feeling as a factor hindering study behaviour in previous research (Stöber & Joormann, 2001). Finally, as a *behavioural* construct, a measure of self-regulation was included in order to assess reports of abilities to motivate and control responsibilities and complete tasks (Carey, Neal, & Collins, 2004). In this regard, a path analytic model (Figure 1) was proposed to identify the multiple correlations among the selected variables and to see to what extent the combination of these variables might account for engaging in procrastination. In order to test the proposed model, a path analysis, which is used for exploring the intercorrelations within a defined network, was utilised (Martinussen, 2010; Pittman,

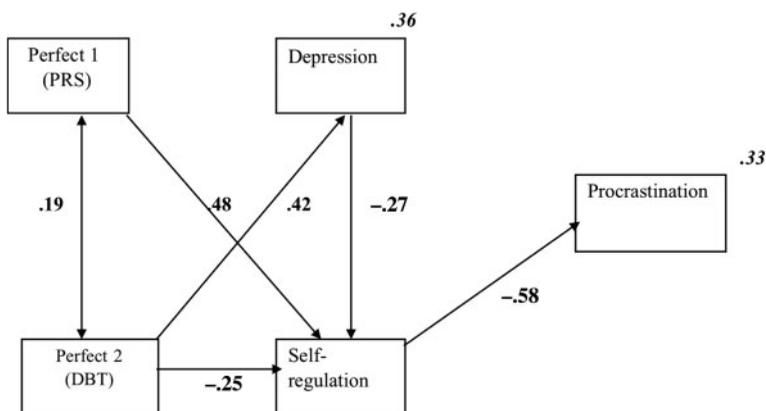


Figure 1. Path analysis for the cognitive–affective and behavioural model.

Indirect relations:

1. Perfect 1 – self-regulation–PROC.
2. Perfect 2 – self-regulation–PROC.
3. Depression–self-regulation–PROC.

$p < .05$.

2010). Considering the cognitive–affective–behavioural approach, the authors hypothesised that the cognitive construct (perfectionism) would be positively related to the endogenous variable (procrastination), through its positive relationship to affective constructs (depression), but negatively related to the behavioural construct (self-regulation) as mediators. Moreover, perfectionism was hypothesised to be positively related to depression through its positive relationship to self-regulation and its negative relation to self-regulation as mediators. Similarly, as a mediator, depression would have a positive effect on procrastination through its influence on self-regulation. On the other hand, self-regulation would be negatively related to procrastination. It was expected that the findings of the current study may provide important cues for both counsellors and university staff to develop new programmes to reduce the negative effects of procrastination on students' academic performance as well as their life satisfaction. Consequently, it may be significant for the students who would like to reduce the power of procrastination.

Methods

Sample

A total of 402 students (115 males, 286 females, 1 not indicated) participated in the present study. The participants were recruited from several universities and colleges in South London. Their mean age was 22.9 years ($SD = 5.4$) with a range from 18 to 51 years. Almost all of the subjects were unmarried (96.2%), 2.3% were married and 1.5% were divorced. In terms of their religious affiliations, 82.6% were Christians, 2.9% Muslims, 1.4% Buddhists and about 13.1% belonged to no religious organisations. As for the ethnic composition of the participants, 67.4% were White, 4.5% were mixed (i.e., White and Black Caribbean; White and Black African; White and Asian; Other Mixed Background), 13.2% were Asian/Asian British, 10.9% were Black/Black British and 2.7% were Chinese or other ethnic groups.

Measures

In the present study, cognitive, affective and behavioural factors were assessed by utilising the self-reported questionnaires outlined below.

The *General Procrastination Scale* (GPS; Lay, 1986) was used to assess participants' procrastination levels. The scale consisted of 20 items on a 5-point Likert scale (1 = false for me, 5 = true for me). Ten items are reverse-scored and high scores indicate high procrastination tendencies. Sample items include 'I often find myself performing tasks that I had intended to do days before'. This scale has good internal consistency (coefficient alpha 0.78; Ferrari, 1991) and temporal stability (retest reliability = 0.80, Ferrari, 1989), and with the present study the coefficient alpha was 0.87 (M score = 59.3, $SD = 12.5$).

The *Depression, Anxiety and Stress Scale* (DASS; Lovibond & Lovibond, 1995) is a 42-item scale to assess current symptoms of depression, anxiety and stress. The depression subscale, which was used in the present study, was the highest correlated subscale with procrastination, consisting of items related to dysphonic mood, hopelessness and lack of interest. Respondents are asked to rate the statements on 4-point scale, ranging from 0 (did not apply to me) to 3 (applied to me very much or most of the time). The sample items include 'I felt down-hearted and blue' and 'I find it hard to wind down'. Scores for subscales are calculated by summing the scores for the relevant items

(the items 3, 5, 10, 13, 16, 17, 21, 24, 26, 31, 34, 37, 38 and 42 for depression subscale). For the present sample, the DASS was demonstrated to have high internal consistency; Cronbach's alpha was 0.97 for the overall scale and 0.95 for the depression subscale.

The *Frost Multidimensional Perfectionism Scale* (FMPS; Frost et al., 1993) is a 35-item questionnaire that measures perfectionism across six dimensions: concern over mistakes, personal standards, parental expectations, parental criticism, doubts about actions and organisation. The subscales selected to use in the model were defined in terms of the correlations with procrastination. In this respect, the highest correlated subscales, personal standards and doubt about actions subscales were used for the present study. The sample items include 'Other people seem to accept lower standards from themselves than I do' and 'I usually have doubts about the simple everyday things I do'. The items are rated on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). The FMPS has a Cronbach's alpha of 0.90 (Frost et al., 1993). The overall perfectionism score can be calculated by adding all the subscales, except the organisation scale. The subscale score is calculated by computing-related items. The subscale items include 4, 6, 12, 16, 19, 24 and 30 for the personal standard and items 17, 28, 32 and 33 for the doubt about action. For the present sample, the Cronbach's alpha was found to be 0.90 for the overall scale. Internal consistencies of the subscales were also found to be acceptable as 0.81 and 0.70, for personal standard and doubt about action, respectively.

The *Self-regulation Questionnaire* (SRQ; Carey et al., 2004) is a 31-item instrument designed to measure generalised ability to regulate behaviour in order to achieve desired future outcomes. The items are rated on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). The sample items include 'I set goals for myself and keep track of my progress'. In the present study, the Cronbach's alpha was found to be 0.90 for the present sample.

Procedures

Demographic questionnaires including the explanation of the study and set of scales were administered to the participants during regular university lectures. After obtaining permissions from the Ethical Committee at the university and the tutors of each class, volunteer students were asked to respond to the scales. It took the participants approximately 20 minutes to complete the questionnaires.

The data were analysed through path analysis utilising AMOS 19 (Byrne, 2001). In the frame of the study, two path models were tested.

Results

Prior to analysing the data, variables of the study were checked in terms of missing values, univariate and multivariate outliers, and the assumptions like normality. Subsequently, eight cases were deleted from the data file.

Relationships among variables

Table 1 displays the correlation matrix for study variables. The correlations among the study variables were small to moderate in magnitude, ranging from .14 to .58. As expected, depression was positively related to the subscales of perfectionism, in particular, personal standards and doubt about action, but negatively associated with self-regulation. As expected, dimensions of perfectionism were both positively and

Table 1. Intercorrelations among study variables for the entire sample.

Variable	1	2	3	4	<i>M</i>	<i>SD</i>
1. GPS	1.00				59.32	12.46
2. DEPRESS	.17*	1.00			10.04	9.99
3. PER_PRS	-.26*	.14*	1.00		22.72	5.24
4. PER_DBT	.20*	.43*	.20*	1.00	11.77	3.33
5. SRQ	-.58*	-.32*	.39*	-.28*	105.25	15.55

Note: GPS, General Procrastination Scale; DEPRESS, Depression Subscale of Depression, Anxiety and Stress Scale; PER_PRS, personal standards subscale of Frost Multidimensional Perfectionism Scale; PER_DBT, doubt about action subscale of Frost Multidimensional Perfectionism Scale; SRQ, Self-regulation Questionnaire.

* $p < .001$.

negatively related to self-regulation. Specifically, the personal standards subscale was positively associated with self-regulation whereas doubt about action was negatively correlated. Self-regulation scores, on the other hand, were highly and negatively correlated with procrastination.

Path analyses for model testing

In the frame of the study, two path models were tested. The first saturated model including all paths from exogenous variables (perfectionism_personal standards and perfectionism_doubt about action) to both depression and self-regulation as mediator variables and to procrastination; paths from depression to self-regulation and procrastination; and a path from self-regulation to procrastination were tested. The paths from perfectionism_personal standards and perfectionism_doubt about action to procrastination; from personal standards to depression; and from depression to procrastination were not significant. Thus, these paths were removed to create a more parsimonious model. This second model was assessed in terms of overall goodness of fit, and then individual paths were tested for significance. Multiple goodness-of-fit indices (GFIs) were relied on, namely the chi-square statistics (χ^2), the ratio of chi-square to its degrees of freedom (χ^2/df), root means square of approximation (RMSEA), GFI, comparative fit index (CFI), adjusted goodness-of-fit index (AGFI) and normed fit index (NFI; Schumacker & Lomax, 1996). Overall, the analysis indicated that the model excellently explain the data, $\chi^2 = 5.63$; $\chi^2/df = 5.63/4 = 1.4$; RMSEA = .03; GFI = .99; CFI = 1.00; AGFI = .98; NFI = .99.

Direct and indirect effects

The significant direct and indirect paths in the model with respective beta weights are depicted in Figure 1. As shown in the figure, self-regulation was significantly negatively related to procrastination. Perfectionism as ‘doubt about action’ was positively related to depression ($\beta = .48$) while depression was negatively related to self-regulation ($\beta = -.27$). Alternatively, the personal standards variable was positively related to self-regulation ($\beta = .48$) whereas doubt for action was negatively associated with self-regulation ($\beta = -.25$).

As seen on the figure, path coefficients varied from .25 to .58. Cohen (1992) proposed effect size index and values around .30 as ‘medium’ and values of .50 or more ‘large’ effect. Accordingly, self-regulation ($\beta = -.58$, $p < .00$) had the largest direct effect on procrastination. The lowest direct effect on the model was from ‘doubt about action’ in relation to self-regulation. Squared multiple correlation coefficients (R^2) of self-

regulation was .36, suggesting that these three variables explained 36% of the total variance in self-regulation. More significantly, all these variables together explained 33% of the total variance in procrastination.

The standardised direct and indirect effects of the study variable and their statistical significance are presented on the Table 2. The indirect effects were estimated via bootstrapping, a statistical method of resampling from the original data-set providing significance of indirect effects (Kline, 2005). In this regard, bootstrapping (set at 1000) and 95% bias-corrected bootstrap confidence interval were requested.

Overall, the results of this analysis revealed that the variables included in the model were significantly related to procrastination among students in South London. Moreover, as hypothesised, depression and self-regulation were mediated by depression for predicting procrastination. Considering the acceptable values obtained from the multiple fit indices along with statistically significant parameters, the hypothesised model of procrastination was supported by the data.

Discussion

The aim of the present study was to investigate procrastination in terms of the intercorrelation of cognitive, affective and behavioural components in an academic setting. Using a broad rational emotive behavioural approach, a mediational path model was tested in which affective constructs of depression were proposed to interact with the cognitive construct of perfectionism (personal standards and doubt about action) and the behavioural construct of self-regulation to predict procrastination. As expected, the significant relationships between the endogenous and mediator variables and the prediction of endogenous variables to mediator variables were supported in relation to procrastination. The results, therefore, supported our hypotheses and demonstrated the importance of cognition, affect and behaviour on problematic delay referred to as procrastination. These findings suggest that to address students' problem with procrastination, it is important to take into account its relations with cognitive, affective and behavioural components. Ellis (1973) suggested that people develop behaviours interactively or transitionally. The tenet of the theory is that emotions are not directly caused by behaviour; instead, internal thoughts, perceptions and evaluations more directly determine a person's behaviour. Hence, when individuals change the appraisal of an event, they will likely feel differently about it and may change the way they behaviourally react to it (Dryden, 2000; Ellis, & Dryden, 1997). Similarly, Karas and Spada (2009) found recently that a cognitive-behavioural coaching programme was effective in reducing procrastination. In a group counselling programme conducted by Uzun Ozer et al. (2013), participants reported that they were able to control their procrastination after using cognitive-affective and behavioural coaching. Therefore, consistent with the theory,

Table 2. Direct and indirect effects, *p*-values and mediations of the study variable.

Type	Source	Estimate	<i>p</i>	Mediation
Direct	Self-regulation	-.46	.002	Full
Indirect	Depression	.16	.002	Partial
	PER_PRS	-.28	.002	Partial
	PER_DBT	-.21	.002	Partial

the present results statistically revealed the interrelationship of some cognitive, affective and behavioural components with procrastination.

When the relationship between endogenous and mediator variables was considered, the findings showed some agreement with previous studies in which perfectionism was found to be highly related to depression (Hewitt & Flett, 1991). In one study, depression was found to be significantly predicted by perfectionism (Hewitt, Flett, & Ediger, 1996). Similarly, from these findings, there appears to be a link between perfectionism and self-regulation, as Bieling, Israeli, Smith, and Antony, (2003) suggested, highlighting both the adaptive and the maladaptive styles of perfectionism. This is consistent with our findings, in which the personal standards subscale was found to be positively related to self-regulation whereas the doubt for action subscale was negatively related. According to self-regulation theory, it is proposed that people identify their standards or goals for their behaviour; they monitor their performance and evaluate the adequacy of their performance according to these standards. The results of their evaluation inform future behaviour (Alden, Bieling, & Wallace, 1994). Their high standards play a central role in their depression, and they tend towards doubts about their actions. In this line, the self-regulation studies involving of depression have focused on standard/goal setting.

Another important finding of the present study indicates that behavioural control as self-regulation may be the strongest predictor of procrastination. Consistent with previous studies (e.g., Dewitte & Schouwenburg, 2002; Klassen et al., 2009), students who had problems in regulating their behaviour reported high levels of procrastination. In line with self-regulation theory that has been understood in terms of will-power or effortful control, cognitive-affective processing is part of the dynamics of delaying gratification (Mischel & Ayduk, 2004).

Due to the present study being one of the first attempts to combine theoretical and statistical model of the causal factors for procrastination, these results might be considered to be preliminary. However, further studies with larger samples and more components should strengthen the argument for these findings. Further studies are suggested to include other measures of cognitive, affective and behavioural constructs such as self-efficacy, self-esteem and/or time management. It should also be advised that rational emotive behaviour approach was one of the multiple possible approaches to address the components related to procrastination and that other models such as putting emotional components as mediators or procrastination as mediators of different affects. It should be noted that these findings could only be generalised to the UK students; further studies are proposed to be conducted with students from different countries in order to further validate this model.

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Notes on contributor

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Cecilia Essau is a professor at the Department of Psychology at University of Roehampton. She is also the director of Center for Applied Research and Assessment in Child and Adolescent Wellbeing. She is the author of 180 articles and also the author/editor of 17 books in the area of youth mental health.

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