

# Metacognitive Beliefs About Procrastination: Development and Concurrent Validity of a Self-Report Questionnaire

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This article describes the development of a questionnaire on metacognitive beliefs about procrastination. In Study 1 we performed a principal axis factor analysis that suggested a two-factor solution for the data obtained from the preliminary questionnaire. The factors identified were named positive and negative metacognitive beliefs about procrastination. The factor analysis reduced the questionnaire from 22 to 16 items, with each factor consisting of 8 items. In Study 2 we performed a confirmatory factor analysis that provided support for the two-factor solution suggested by the exploratory factor analysis. Both factors had adequate internal consistency. Concurrent validity was partially established through correlation analyses. These showed that positive metacognitive beliefs about procrastination were positively correlated with decisional procrastination, and that negative metacognitive beliefs about procrastination were positively correlated with both decisional and behavioral procrastination. The Metacognitive Beliefs About Procrastination Questionnaire may aid future research into procrastination and facilitate clinical assessment and case formulation.

**Keywords:** metacognition; metacognitive beliefs; procrastination; questionnaire development

**P**rocrastination is something familiar to most of us. At some point or another, we may have delayed starting or completing a task, when immediate task initiation would have been prudent. Procrastination, while not a diagnostic entity in its own right, has been shown

to be associated with both anxiety and depression (Beswick, Rothblum, & Mann, 1988; Stöber & Joorman, 2001). Research has shown that there are two types of procrastination (Ferrari, 1993; Milgram & Tenne, 2000): Behavioral procrastination, which is the delay of the completion of major and minor tasks, and decisional procrastination, described as the purposive delay in making decisions within some specific time frame.

According to cognitive behavioral therapy (CBT) conceptualizations, procrastinators delay or postpone action primarily because they doubt their ability to complete a task, and fear possible negative consequences of failing to adequately complete a task (Shoham-Saloman, Avner, & Neeman, 1989). Interventions based on CBT conceptualizations have traditionally focused on identifying and restructuring irrational beliefs and self-criticism as well as developing behavioral strategies to facilitate time and task management (Ellis & Knaus, 1977). Much of the treatment outcome data for procrastination are based on studies that have utilized student populations, with this type of intervention having been shown to be barely clinically meaningful in a meta-analysis by Saunders, Howard, and Newman (1988). One explanation for the limited effectiveness of CBT for procrastination may lie in the fact that this approach focuses primarily on the role of negative beliefs about the self in the maintenance of procrastination, thus disregarding the role beliefs may play in affecting and controlling the cognitive processing of procrastinators (Spada, Hiou, & Nikčević, 2006). A number of theorists (Teasdale & Barnard, 1993; Wells, 2000; Wells & Matthews, 1994; Wells & Purdon, 1999) have stressed the limitations of traditional "content-based" CBT, suggesting revised frameworks for conceptualizing cognition in psychological dysfunction that emphasize levels of meaning (Teasdale & Barnard, 1993) and metacognition (Wells & Matthews, 1994, 1996).

Metacognition can be defined as "stable knowledge or beliefs about one's own cognitive system, and knowledge about factors that affect the functioning of the system; the regulation and awareness of the current state of cognition, and appraisal of the significance of thought and memories" (Wells, 1995, p. 302). Theory and research in metacognition has evolved in the areas of developmental and cognitive psychology (e.g., Flavell, 1979; Nelson & Narens, 1990), and has recently been introduced as a basis for understanding and treating psychological dysfunction (Wells & Matthews, 1994, 1996).

The first metacognitive theory of psychological dysfunction was proposed by Wells and Matthews (1994, 1996). These authors argue that a psychological disturbance is maintained by a combination of perseverative thinking styles, maladaptive attentional routines, and dysfunctional behaviors that constitute a cognitive-attentional syndrome (CAS; Wells, 2000). The CAS is derived from an individual's set of metacognitive beliefs, which are activated in problematic situations and drive coping (Wells, 2000; Wells & Matthews, 1994, 1996). Metacognitive beliefs refer to the information individuals hold about their own cognition and internal states, and about coping strategies that impact on both (Wells, 2000; Wells & Matthews, 1994, 1996).

Metacognitive theory broadly specifies two subcategories of metacognitive beliefs that are central to the maintenance of psychological dysfunction; positive and negative metacognitive beliefs. Positive metacognitive beliefs refer to information individuals hold about coping strategies that impact on cognition and internal states. These may include beliefs such as "Worrying will help me get things sorted out in my mind" (Cartwright-Hatton & Wells, 1997) or "Rumination will help me solve the problem" (Papageorgiou & Wells, 2001). Such beliefs are conceptualized as antecedent to the initiation of maladaptive coping and central to its strategic selection. Negative metacognitive beliefs relate to the meaning and consequences of engaging in a given form of coping and related intrusive thoughts and feelings. These may include beliefs such as "My worry is uncontrollable" (Cartwright-Hatton & Wells, 1997) or "Ruminating will damage my mind" (Papageorgiou & Wells, 2001). Such beliefs are associated with an escalation of negative verbal activity that contributes to fixing attention on threat (depleting executive resources) so that individuals have difficulty switching to normal threat-free status (Wells, 2000). Furthermore

this dominance of verbal activity limits resources available for running imaginal simulations that normally present an effective way of strengthening plans and engaging in effective coping (Wells, 2000). The combined activation of positive and negative metacognitive beliefs thus leads to the perseveration of dysfunction because the individual engages in a coping strategy that generates information concerning a general inability to control thoughts and emotions in a desired way (Wells, 2000).

Metacognitive beliefs have been implicated in a variety of psychological problems including anxiety (Spada, Mohiyeddini, & Wells, 2008), depression (Papageorgiou & Wells, 2003), hypochondriasis (Bouman & Meijer, 1999), obsessive-compulsive symptoms (Wells & Papageorgiou, 1998), pathological worry (Wells & Papageorgiou, 1998), perceived stress (Spada, Nikčević, Moneta, & Wells, 2008), post-traumatic stress disorder (Roussis & Wells, 2006), predisposition to auditory hallucinations (Morrison, Wells, & Nothard, 2000), problem drinking (Spada & Wells, 2005, 2008), psychosis (Morrison, Wells, & Nothard, 2000), smoking dependence (Spada, Nikčević, Moneta, & Wells, 2007), and test anxiety (Spada, Nikčević, Moneta, & Ireson, 2006).

Metacognitive theory has led to the development of disorder-specific models of depression (Papageorgiou & Wells, 2003), generalized anxiety disorder (Wells, 2000; Wells & Matthews, 1994), obsessive-compulsive disorder (Wells, 2000; Wells & Matthews, 1994), post-traumatic stress disorder (Wells, 2000), and social phobia (Clark & Wells, 1995).

Recent research has provided preliminary evidence that metacognitive beliefs play a role in procrastination. Spada and colleagues (2006) found that metacognitive beliefs about cognitive confidence ("My memory can mislead me at times") predicted behavioral procrastination, and that positive metacognitive beliefs about worry ("Worry can help me solve problems") predicted decisional procrastination. Further research undertaken by Fernie and Spada (2008) has identified the existence of specific positive and negative metacognitive beliefs about procrastination in chronic procrastinators. Positive metacognitive beliefs (e.g., "Procrastination helps creative thinking") concern primarily the usefulness of procrastination in improving cognitive performance. From a metacognitive standpoint these beliefs may be involved in the delay of task initiation as a form of coping (Fernie & Spada, 2008). Negative metacognitive beliefs (e.g., "Procrastination is uncontrollable") concern primarily the uncontrollability of procrastination. From a metacognitive standpoint these beliefs may play a role in propagating procrastination (Fernie & Spada, 2008) through the initiation of verbal activity that fixes attention on procrastination itself and simultaneously consumes executive resources necessary for increasing flexible control over thinking and coping.

In view of these recent findings indicating a possible role of metacognitive beliefs in procrastination the purpose of this research is to report two studies on the development of the Metacognitive Beliefs About Procrastination Questionnaire. The development of this measure will (a) facilitate further quantitative research investigating the role of metacognitions in procrastination (for example in disorder-specific model building), and (b) provide the first assessment tool to help identify key metacognitive beliefs to be targeted in the treatment of procrastination. It is hypothesized that two separate factors (positive and negative metacognitive beliefs about procrastination) will be identified and that these will be positively correlated with decisional and behavioral procrastination.

## STUDY 1: CONSTRUCTION OF THE METACOGNITIVE BELIEFS ABOUT PROCRASTINATION QUESTIONNAIRE

### Method

**Participants.** A convenience sample of 230 individuals (147 females) agreed to take part in the study that was approved by an ethics committee at a London university. For purposes of inclusion

in the study, the participants were required to speak English and be at least 18 years of age. The mean age for the sample was 37.0 years ( $SD = 10.6$  years) and the age range was 20 to 63 years.

**Materials.** Items representing metacognitive beliefs about procrastination were derived from the responses given by participants in the Fernie and Spada (2008) study, from the authors' clinical experience, and from deduction based on theory. A total of 22 items were framed in terms of statements to which participants could express their level of agreement on a 4-point Likert-type scale ("Do not agree," "Agree slightly," "Agree moderately," and "Agree strongly"). The items were presented to participants after the following preamble:

*This questionnaire is concerned with beliefs people have about procrastination. Listed below are a number of beliefs that people have expressed. Please read each item and say how much you generally agree with it by selecting the one appropriate number. There are no right or wrong answers.*

The questionnaire contained positive and negative metacognitive beliefs about procrastination such as "Procrastination allows creativity to occur more naturally" and "My procrastination is uncontrollable."

**Procedure.** Participants were recruited from e-mail contacts in a viral-like fashion. Participants who received the e-mail request to visit the online questionnaire study were also asked to send the web address of the online questionnaire study to individuals in their e-mail address books and ask those individuals to do the same.

When participants first visited the Web site, the first webpage explained the purpose of the study: "To develop a questionnaire to assess how people think about their procrastination." A simple definition and examples of procrastination were offered. Participants were then directed, if consenting to participate in the study, to a second webpage containing the questionnaire and basic demographic questions. Participants indicated their response to the items on the questionnaire by selecting one of a series of "radio buttons." Once the questionnaire was completed participants were again informed that, should they consent to participate in the study, they should click on the "submit" button. Once participants had clicked on "submit," their data was forwarded to a generic postmaster account. This ensured that participants' responses were anonymous. If on clicking "submit," participants had omitted any items from the questionnaire or demographic questions, a window would appear informing the participant of the item that they had not completed and their data would not be e-mailed. This ensured that only complete data were used for the analysis.

## Results

A principal axis factor analysis was conducted on the scores of the original 22 items. The Scree test suggested a two-factor solution (eigenvalues of 5.4 and 4.8), and this indication was supported by parallel analysis (Henson, & Roberts, 2006) using ViSta-PARAN (Young, 2003).

We assessed the items as indicators of the latent variables using a Promax rotation adopting  $kappa = 4$ . An oblique rotation was chosen in order to also assess the correlation between factors. The two factors together accounted for 46.6% of the variance, and the estimated correlation between the two factors was .001.

Items that loaded less than .4 on either factor were discarded, as were items that loaded on both factors. If an item loaded more than .4 on one factor, and failed to load onto the other factor, but was within approximately .2 of the loading on the first factor, it was also discarded. This arbitrary figure was used in order to exclude items that influenced both factors. The revised questionnaire consisted of 16 items, reduced from the original 22 items, with 8 items loading on to each factor. A two-factor solution (eigenvalues of 4.3 and 3.8) of the scores of the selected 16 items accounted for 50.7% of the variance, and the estimated correlation between the two factors was  $-.053$ ; Table 1 shows the factor loadings of the individual items. Finally, we repeated the item selection procedure using a Varimax rotation and obtained the same final subset of items.

TABLE 1. FACTOR LOADINGS FOR INDIVIDUAL ITEMS OF THE MBPQ

	Factor 1	Factor 2
Factor 1: Positive metacognitive beliefs about procrastination		
1. Procrastination allows creativity to occur more naturally	-.12	.65
2. Procrastination stops me from being bored	-.09	.64
3. When I procrastinate, I am focusing on other tasks so learning something new	-.06	.66
4. Procrastination stops me from doing things when I am not ready	.02	.74
5. Procrastination ensures that I do not forget stuff	.02	.74
6. Procrastination helps me cope	-.02	.71
7. When I procrastinate, I am unconsciously mulling over difficult decisions	.05	.66
8. Procrastination stops me from making poor decisions when I am feeling anxious	.12	.71
Factor 2: Negative metacognitive beliefs about procrastination		
1. Procrastination makes me feel down	.80	.01
2. Procrastination is stressful	.79	-.21
3. When I procrastinate, I find it difficult to concentrate on other tasks	.80	.04
4. Procrastination is mentally tiring	.74	-.04
5. When I procrastinate, I waste a lot of time thinking about what I am avoiding	.67	-.04
6. Procrastination can be harmful	.65	-.08
7. My procrastination is uncontrollable	.53	.23
8. Procrastination increases my worry	.72	-.01

The two factors identified were named positive metacognitive beliefs about procrastination (PMBP) and negative metacognitive beliefs about procrastination (NMBP), as this was reflective of their content. The internal consistency of the PMBP and the NMBP factors was calculated resulting in Cronbach's alpha of .87 and .84, respectively.

## STUDY 2: CONFIRMATION OF THE FACTOR STRUCTURE OF THE METACOGNITIVE BELIEFS ABOUT PROCRASTINATION QUESTIONNAIRE

### Method

**Participants.** A convenience sample of 281 university students (141 females) agreed to take part in the study that was approved by an ethics committee at a London university. For purposes of inclusion in the study, the participants were required to speak English and be at least 18 years of age. The mean age for the sample was 22.7 years ( $SD = 7.3$  years) and the age range was 18 to 59 years.

## Materials

**Metacognitive Beliefs About Procrastination Questionnaire (MCPQ).** This is the questionnaire developed in Study 1. It consists of two-factors of eight items each measuring metacognitive beliefs about procrastination. The first factor represents positive metacognitive beliefs about procrastination, while the second factor represents negative beliefs about procrastination. Higher scores on both factors indicate higher levels of maladaptation in metacognitive beliefs.

**General Procrastination Scale (GPS; Lay, 1986).** This scale consists of 20 items and examines behavioral procrastination. Items include: "In preparing for deadlines, I often waste my time by doing other things" and "I often miss concerts, sporting events, or the like, because I don't get around to buying tickets on time." Higher scores indicate higher levels of behavioral procrastination. Several studies have demonstrated that the scale possesses good psychometric properties (Ferrari, 1989; Lay, 1986).

**Decisional Procrastination Scale (DPS; Mann, 1982).** This scale consists of five items and examines indecisiveness as it relates to handling conflicts in decision-making situations and includes statements as: "I put off making decisions" and "I waste a lot of time on trivial matters before getting to the final decision." Higher scores reflect greater decisional procrastination. The scale has been found to possess good psychometric properties (Effert & Ferrari, 1989).

## Procedure

Participants were approached and asked if they were willing to take part in a research project aimed at investigating the relationship between beliefs, emotion, and procrastination. After giving informed consent, participants were instructed to provide demographic details and complete the questionnaires. The questionnaires were administered in paper-and-pencil format with instructions given in writing. No opportunity was given for response correction. All participants were debriefed following the completion of the questionnaires.

## Results

A confirmatory factor analysis (CFA) was conducted on the data obtained from the factor-validation sample using LISREL 8.8 (Jöreskog & Sörbom, 1996). We defined PMBP and NMBP as latent variables and the 16 items as congeneric indicators of the latent variables. We specified the factors to be uncorrelated, and we did not allow the item error terms to correlate with one another. We first evaluated the model defining the items as continuous indicators, and using maximum likelihood estimation that assumes multivariate normality of the item scores. The Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Non-Normed Fit Index (NNFI) were employed to evaluate the data fit. The minimally acceptable fit is indicated by threshold values of .08 or below for the RMSEA, and close to or above .95 for the CFI and NNFI. The CFA of the two-factor solution suggested by the principal axis analysis from Study 1 resulted in a RMSEA of .058 ( $p$  of test of close fit = .12), a CFI of .96 and a NNFI of .95. This provided confirmation that the two-factor solution was a reasonable fit to the data. We then evaluated the model defining the items as ordinal indicators, using as input the matrix of polychoric correlations with asymptotic weights, and using robust weighted least squares estimation, which is robust to violations of multivariate normality of the item scores. The Satorra-Bentler scaled  $\chi^2$  statistic (Satorra & Bentler, 2001), which incorporates a scaling correction for the  $\chi^2$  statistic when distributional assumptions including nonnormality are violated, was employed to evaluate the data fit. The Satorra-Bentler scaled  $\chi^2$  was nonsignificant ( $\chi^2 = 45.91$ ,  $df = 104$ ,  $p > .05$ ), further supporting the fit of the two-factor solution.

The internal consistency of the PMBP and the NMBP factors was calculated resulting in Cronbach's alpha of .81 and .85, respectively. Cronbach's alpha was also calculated for all of the items if any single item was removed from the two factors, but this did not result in an improvement in internal consistency (see Table 2). Additionally, Pearson Product-moment correlations between the individual items and the total scores were calculated. All of these item-total correlations were above .3, suggesting that each item correlates well with the overall score.

Pearson Product-moment correlations between the factors and measures of procrastination (see Table 3) indicated there was a positive correlation between NMBP and both decisional and behavioral procrastination, and between PMBP and decisional procrastination. A positive correlation was observed between decisional and behavioral procrastination.

**TABLE 2. INTERNAL CONSISTENCY OF THE MBPQ: ITEM-TOTAL CORRELATIONS AND LIST OF CRONBACH'S ALPHA IF DELETED**

	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Factor 1: Positive metacognitive beliefs about procrastination		
1. Procrastination allows creativity to occur more naturally	.50	.79
2. Procrastination stops me from being bored	.49	.79
3. When I procrastinate, I am focusing on other tasks so learning something new	.55	.78
4. Procrastination stops me from doing things when I am not ready	.51	.78
5. Procrastination ensures that I do not forget stuff	.52	.78
6. Procrastination helps me cope	.64	.77
7. When I procrastinate, I am unconsciously mulling over difficult decisions	.39	.80
8. Procrastination stops me from making poor decisions when I am feeling anxious	.55	.78
Factor 2: Negative metacognitive beliefs about procrastination		
1. Procrastination makes me feel down	.68	.82
2. Procrastination is stressful	.70	.81
3. When I procrastinate, I find it difficult to concentrate on other tasks	.61	.83
4. Procrastination is mentally tiring	.69	.82
5. When I procrastinate, I waste a lot of time thinking about what I am avoiding	.53	.84
6. Procrastination can be harmful	.48	.84
7. My procrastination is uncontrollable	.35	.85
8. Procrastination increases my worry	.64	.82

**TABLE 3. MEANS, STANDARD DEVIATIONS, RANGES, AND INTERCORRELATIONS OF VARIABLES**

	Mean	SD	Range	2	3	4
1. Decisional procrastination scale <sup>a</sup>	13.3	4.4	5–25	.41**	.19**	.21**
2. General procrastination scale <sup>b</sup>	61.6	9.9	29–97	–	.09	.16**
3. Positive metacognitive beliefs about procrastination <sup>c</sup>	14.4	4.5	8–29	–	–	–.12
4. Negative metacognitive beliefs about procrastination <sup>d</sup>	19.1	5.6	8–32	–	–	–

Note.  $n = 281$ .

\* $p < .05$ . \*\* $p < .01$ .

<sup>a</sup>Range of scale 5–25. <sup>b</sup>Range of scale: 20–100. <sup>c</sup>Range of scale: 8–32. <sup>d</sup>Range of scale: 8–32.

## DISCUSSION

Extrapolating from Wells and Matthews's (1994, 1996) metacognitive theory of emotional disorders and recent evidence supporting the existence of specific metacognitive beliefs about procrastination (Fernie & Spada, 2008), we conducted two studies aimed at developing and validating a self-report questionnaire of metacognitive beliefs about procrastination.

In the initial study an exploratory factor analysis using the data obtained from the questionnaire construction sample suggested a two-factor solution for the questionnaire. These factors were subsequently named positive and negative metacognitive beliefs about procrastination. The CFA confirmed the factor structure suggested by the principal axis analysis described in Study 1. Not only is this encouraging support for the factor structure suggested in the exploratory factor analysis but it also validates data obtained from a sample drawn from the internet. The data from questionnaire validation sample used in Study 2 revealed that both the positive and negative metacognitive beliefs about procrastination factors possessed adequate internal consistency.

Although a positive correlation was observed between negative metacognitive beliefs about procrastination and both decisional and behavioral procrastination, positive metacognitive beliefs about procrastination were only found to be positively correlated with decisional procrastination. This finding is in line with the metacognitive theoretical tenet that positive metacognitive beliefs should be proximal to strategy selection (i.e., decisional procrastination that is likely to occur prior to behavioral procrastination). The relatively low correlations observed between both metacognitive factors and dimensions of procrastination can be explained in terms of participants not being drawn specifically from a pathological sample and the data not being collected in specific contexts of activity where time pressure and tight deadlines are most likely to activate metacognitive beliefs concerning procrastination.

These results confirm the utility of the MBPQ (see Appendix). In terms of assessment, for example, information could be gathered about metacognitive beliefs regarding procrastination. With regards to treatment, it is plausible to assume that the modification of these beliefs may be a valuable add-on intervention to restructuring traditional cognitions. Finally, in case of relapse of procrastination, it may be helpful to derive and illustrate the role of metacognitive beliefs about procrastination in the given episode together with other relevant cognitive-behavioral constructs.

The present results are preliminary in nature. Clearly future studies are required to further establish the psychometric properties of the MBPQ. In particular, it would be necessary to determine the structure and reliability over time and with other samples. In addition, studies are



required to examine the sensitivity of the questionnaire to treatment effects and recovery if it is to prove useful as a treatment evaluation tool. The role of high levels of positive metacognitive beliefs about procrastination in predisposing individuals to engage in procrastination, and of negative metacognitive beliefs about procrastination in maintaining procrastination, could also be investigated through longitudinal designs.

Results of this study must be considered with regard to design limitations. Social desirability, self-report biases, context effects and poor recall may have contributed to errors in self-report measurements. However, despite these limitations, we believe that the MBPQ may already be useful for eliciting positive and negative metacognitive beliefs about procrastination in clinical assessment and case formulation, and in providing a further step toward the development of a metacognitive conceptualization of procrastination.

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**APPENDIX: METACOGNITIVE BELIEFS ABOUT PROCRASTINATION QUESTIONNAIRE (MBPQ)**

This questionnaire is concerned with beliefs people have about procrastination. Procrastination refers to when we put off or delay making a decision, or starting or completing some task or activity. Listed below are a number of beliefs that people have expressed. Please read each item and say how much you generally agree with it by selecting the one appropriate number. There are no right or wrong answers.

	Do not agree	Agree slightly	Agree moderately	Agree very much
1. Procrastination allows creativity to occur more naturally	1	2	3	4
2. Procrastination stops me from being bored	1	2	3	4
3. When I procrastinate, I am focusing on other tasks so learning something new	1	2	3	4
4. Procrastination stops me from doing things when I am not ready	1	2	3	4
5. Procrastination ensures that I do not forget stuff	1	2	3	4
6. Procrastination helps me cope	1	2	3	4
7. When I procrastinate, I am unconsciously mulling over difficult decisions	1	2	3	4
8. Procrastination stops me from making poor decisions when I am feeling anxious	1	2	3	4
9. Procrastination makes me feel down	1	2	3	4
10. Procrastination is stressful	1	2	3	4
11. When I procrastinate, I find it difficult to concentrate on other tasks	1	2	3	4
12. Procrastination is mentally tiring	1	2	3	4
13. When I procrastinate, I waste a lot of time thinking about what I am avoiding	1	2	3	4
14. Procrastination can be harmful	1	2	3	4
15. My procrastination is uncontrollable	1	2	3	4
16. Procrastination increases my worry	1	2	3	4

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