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ORIGINAL ARTICLE

Procrastination Automatic Thoughts as a Personality Construct: An Analysis of the Procrastinatory Cognitions Inventory

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Abstract The present paper examines the nature of procrastination-related automatic thoughts by examining the correlates of the Procrastinatory Cognitions Inventory (PCI). The PCI was administered along with numerous other measures to three samples of students (two undergraduate samples and one graduate student sample). Analyses confirmed that the PCI is associated with elevated levels of neuroticism and low levels of conscientiousness but is a unique predictor of distress over and above the variance attributable to these broad personality traits. The PCI was associated significantly with negative automatic thoughts in general as well as automatic thoughts reflecting the need to be perfect. Tests of achievement goal orientation showed that students with high scores on the PCI are focused on performance avoidance goals. Elevated levels of procrastinatory cognitions among graduate students were associated with apprehension about writing, graduate student stress, low self-actualization, and feelings of being an impostor. Overall, the findings suggest that the experience of frequent procrastination-related thoughts contributes uniquely to increased levels of psychological distress and stress. Our findings point to the potential utility of incorporating an emphasis on procrastination cognitions when conducting assessments and when implementing cognitive-behavioral interventions focused on procrastination-related themes.

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Introduction

The trait approach to procrastination has predominated in the literature, even though there is ample evidence that other conceptualizations and ways of assessing procrastination deserve consideration. One unique approach is to focus on the cognitive processes and beliefs of procrastinators. Case accounts of actual procrastinators are particularly useful when considering a cognitive approach to the assessment and conceptualization of procrastination. Typically, these descriptions of distressed procrastinators emphasize the role of negative automatic thoughts in general as well as highlight the role of cognitions related to delaying tendencies. For instance, Leahy (2002) described Tom, a 41-year-old accountant in private practice, suffering from generalized anxiety disorder and co-morbid depression. He had difficulties with procrastination, work, decision-making, and assertiveness to the extent that he failed to complete and file his own taxes. Assessment revealed thoughts and assumptions related to personal feelings and beliefs about the self as "defective, incompetent, and pathetic." The close association between negative views of the self and thoughts about procrastination were reflected by such thoughts as "I am a total loser," and "Nothing I've done counts if I don't finish my own taxes."

More recently, Palmer and Gyllensten (2008) described the case of a 50-year old woman suffering from depression who was fired from her job as a civil engineer because she could not complete her work. Her tendency to procrastinate went back to her days of being a student when she got into the habit of completing tasks at the last minute. This tendency did not serve her well and was too stressful as it continued in the job context. Further examination showed that her distress was fuelled, in part, by a mixed pattern of automatic thoughts reflecting a negative self ("I am inadequate"), feeling a need to be perfect but also having an urge to procrastinate ("If I don't do a perfect job, I am inadequate." "I can't stand doing boring tasks") and realizing that her procrastination meant that she fell short on key projects ("I should have been able to do so much more"; "This is not good enough"). Again it is evident that the there is a close tie between the procrastination-related thoughts and the self-criticism and sense of having failed on tasks that matter.

Another recent case of Amanda, a university student with ADHD, illustrated how self-doubt and feelings of personal inadequacy and feelings of defeat can derail the academic progress of students who engage in procrastination (see Ramsay and Rostain 2005). This case of the "Girl, Repeatedly Interrupted" highlighted how procrastination and thoughts related to it can be linked inextricably with feelings of failure and shame.

Consistent with the contention that there is a cognitive component to many personality vulnerability factors (see Flett et al. 1998), Stainton et al. (2000) developed the Procrastinatory Cognitions Inventory in order to assess individual differences in the frequency of thoughts related to dilatory behavior. They reasoned that there is a cognitive aspect to procrastination in keeping with suggestions that many personality

vulnerabilities have a related pattern of automatic thoughts associated with them (see Flett et al. 1998). Stainton et al. (2000) postulated that certain procrastinators will experience a procrastination-specific form of rumination in the form of automatic thoughts about their own tendencies to delay. Stainton et al. (2000) suggested that "For the procrastinator, these ruminations may not only accompany or follow various forms of dilatory behavior, they may also precede task engagement. In this sense, such cognitions would constitute a form of worry, and may be viewed as a characteristic set of cognitions experienced by trait procrastinators… "(p. 299). Clearly, reducing the frequency of these cognitions ought to be an important treatment goal for distressed procrastinators who are motivated to engage in less dilatory behavior. Decreases in the tendency to procrastinate should also be reflected in reduced scores on the Procrastinatory Cognition Inventory.

Stainton et al. (2000) also noted that the concept of procrastination-related automatic thoughts is very much in keeping with incompleteness theories of cognition (see Gold and Wegner 1995). These theories are based on evidence suggesting that people are especially likely to ruminate and experience obsessional forms of thinking when they cannot perform instrumental behaviors that would move them closer to attaining their goals (see Martin and Tesser 1989; McIntosh et al. 1995).

Stainton et al. (2000) developed the 18-item Procrastinatory Cognitions Inventory (PCI) by creating a pool of items that reflected these theoretical notions, and the authors' understanding of the nature of procrastination, as well as case accounts and counseling experiences with troubled procrastinators. The PCI has several items that reflect not meeting personal or social expectations in the form of "should statements" (e.g., I should be more responsible) as well as ruminative brooding about procrastination itself (e.g., Why didn't I start earlier?). In addition, some item content reflects the self-deception of procrastinators (e.g., I can turn it in late. I'm behind in my studies this time, but next time will be different).

Initial research conducted by Stainton et al. (2000) illustrated the usefulness of this new instrument. Their first study was conducted with 208 university students. This investigation showed that the PCI was unifactorial with a high level of internal consistency of .94. There was a strong association between the PCI and trait procrastination ($r = .69$). The PCI was also correlated significantly with trait anxiety and a composite measure of current dejection and anxiety. Moreover, the importance of frequent thoughts about procrastination was shown by results indicating that trait procrastination was mediating by the PCI in predicting negative affect. That is, whether trait procrastination was linked with negative affect was due to the experiencing of procrastination-related automatic thoughts.

Stainton et al. (2000) also reported the results of a brief longitudinal study that involved the measurement of 66 students on two occasions separated by 3 weeks. At Time 1, participants provided an estimate of anticipated procrastinatory cognitions and this was correlated highly with the actual frequency of procrastinatory cognitions reported at Time 2. Moreover, both of these were associated with Time 2 indices of current distress and reports of dilatory behavior.

The PCI has not been used extensively thus far despite evidence of its utility. Davis et al. (2002) included the PCI as part of a broader investigation focused on the development of a multidimensional measure of problematic internet use. A battery

of measures including the PCI was administered to 211 university students. The PCI once again had a high level of internal consistency (alpha = .93). The PCI was linked strongly with indices of trait impulsivity, loneliness, and depression, as well as excessive use of the internet as a form of distraction.

Numerous issues involving the PCI remain to be investigated. In the current article, we summarize the results from three samples of university student participants who completed the PCI along with other relevant measures. The main purpose of this research was to further establish the usefulness and the construct validity of the procrastinatory cognitions concept by showing how the PCI relates to similar measures (i.e., a general measure of negative automatic thoughts and a measure of perfectionistic automatic thoughts) and broad personality traits reflecting the five-factor model. We anticipated that the PCI would have a strong association with a more general measure of negative automatic thoughts in keeping with Stainton et al.'s (2000) initial observation that measures of negative automatic thoughts include thoughts reflecting the need to stop delaying. Indeed, a measure of negative automatic thoughts in children includes the item "I can't get started" (Kazdin 1990).

Another specific goal of our research was to establish that the PCI is associated significantly with broad personality traits (i.e., reduced conscientiousness) but it still accounts for unique variance in psychological distress, above and beyond these general traits. This would be in keeping with evidence indicating that when pitted against conscientiousness, procrastination is a better predictor of specific dilatory behaviors (see Lay 1997). It is important to establish in general that the PCI can predict distress above and beyond the predictive utility of low conscientiousness and elevated neuroticism.

In addition, in the current research, we also examined the extent to which the PCI was associated with motivational measures and fear of failure. It was expected that students with frequent procrastinatory cognitions would have a performance avoidance orientation fuelled by a fear of failure. McGregor and Elliot (2002) have shown that trait procrastination is associated a performance avoidance orientation and it is not associated with mastery or performance-approach goals. We hypothesized that this same general pattern would emerge in terms of the correlates of the PCI.

Finally, we also examined the PCI in a sample of graduate students and assessed the extent to which procrastinatory cognitions relate to levels of stress, anxiety about writing, and negative views of the self in terms of feeling like an impostor and reduced levels of self-actualization. Stress is often linked with procrastination (Flett et al. 1995), while an association with feelings of being an impostor is in keeping with suggestions that procrastination is a self-worth protection strategy designed to compensate for and cover up negative feelings about the self (Covington 1984; Thompson 1993). An association with apprehensiveness about writing follows from the suggested link between procrastination and the performance avoidance orientation given data linking performance avoidance goals with reduced self-efficacy for writing and reduced self-efficacy for self-regulation in writing (Pajares et al. 2000).

Method

Participants

The participants in sample one were 67 university students from a second year personality class who volunteered to participate in the research. All but six participants were female. The mean age of the participants was 20.9 years (SD = 3.3).

The participants in sample two were 94 university students (76 women, 16 men, and 2 undeclared) who were volunteers from a second year psychology course. The mean age of the participants was 21.3 years (SD = 2.6).

Our third sample had 110 graduate students (73 women, 37 men) who volunteered for a study on personality and stress. Their mean age was 30.33 years (SD = 7.19).

Procedure

Participants in Sample 1 and in Sample 2 were asked to participate in a personality study. Participants in both samples provided their consent and completed measures at the start of the class prior to the actual lecture. As for Sample 3, professors in all graduate courses at the University of British Columbia were approached via email and asked if our study could be announced in their class. If so, an in class announcement was made and questionnaires were distributed to interested potential participants. Completed questionnaires and consent forms were then returned via campus mail.

The measures are described in more detail below. In addition to the PCI, Sample 1 participants completed the Automatic Thoughts Questionnaire, the Mood and Anxiety Symptom Questionnaire, and measures of dejection and agitation.

Sample 2 participants completed the PCI, the Perfectionism Cognitions Inventory, a fear of failure measure (Conroy et al. 2002), the CES-D Depression Scale (Radloff 1977), a five-factor measure (IPIP; Goldberg 2000), and Elliot and McGregor's (2001) classroom goals measures of mastery approach, mastery avoidance, performance approach, and performance avoidance.

Sample 3 participants completed the PCI and measures of graduate student stress, writing apprehension, self-actualization, and impostorism.

Measures

Procrastinatory Cognitions Inventory (PCI)

The 18 items that comprise the PCI require respondents to indicate the frequency of thoughts by making ratings ranging from 0 to 4 (0 = not at all, 1 = sometimes, 2 = moderately often, 3 = often, 4 = all of the time). All alphas in the current research were .88 or higher.

Automatic Thoughts Questionnaire (ATQ)

The ATQ (Hollon and Kendall 1980) is a widely used 30-item scale. It presents respondents with 30 negative thoughts about the self (e.g., I'm a loser. My life is a mess) and they indicate the extent to which they have experienced these thoughts over the past week.

Dejection and Agitation Measures

Participants completed 24 emotion labels to describe how they feel. These emotion labels have been used in previous work by Lay (1994) and were created originally by Higgins (1987) in his work on self-discrepancy. There were six positive emotion indicators for agitation (e.g., anxious, worried) and six reverse-coded terms (e.g., calm, secure). Similarly, there were six positive emotion indicators for dejection (e.g., discouraged, ashamed) and six reverse-coded items (e.g., energetic, happy). In contrast to Stainton et al., we examined the separate subscales rather than combine them into an overall distress measure.

Mood and Anxiety Symptom Questionnaire (MASQ)

The short version of the MASQ reflects the tripartite model (see Watson et al. 1988). It provides two general distress factors that are common to both anxiety and depression (referred to as general distress: anxiety and general distress: depression) (see Watson and Clark 1991). It also measures an anxious arousal factor with symptoms of somatic tension and hyper-arousal that are specific to anxiety and an anhedonic depression factor with items involving loss of interest and lack of pleasure. Extensive evidence attests to the reliability and validity of the MASQ subscales (see Watson et al. 1995).

Perfectionism Cognitions Inventory

The Perfectionism Cognitions Inventory (Flett et al. 1998) is a 25-item measure of the frequency of perfectionistic thoughts experienced over the past week. Note that these items were selected on the basis of extensive item analyses, including ratings of the appropriateness of scale content by perfectionism researchers (see Flett et al. 1998). It should be also noted that there is no content overlap between this instrument and the PCI, and similarly, neither of these measures has item content that overlaps with negative affect.

Performance Failure Appraisal Inventory (PFAI)

Fear of failure was assessed with the 25-item PFAI (Conroy et al. 2002). The PFAI taps a range of concerns including fear of upsetting important others and fear of experiencing shame and embarrassment. Only total scores are reported in the current work. Previous research with students has established that the PFAI has adequate internal consistency and test–retest reliability. Moreover, it is associated

with indices such as the degree of negative self-talk and performance anxiety (Conroy 2004; Conroy et al. 2002).

Achievement Goals Questionnaire (AGC)

The 12-item AGC has four three-item subscales tapping performance approach goals, performance avoidance goals, mastery approach goals, and mastery avoidance goals (Elliot and McGregor 2001). The creators of these subscales provided extensive evidence of their reliability and validity.

International Personality Item Pool (IPIP) Scales

The 50-item measure derived from the IPIP was included to assess levels of openness, conscientiousness, extraversion, agreeableness, and neuroticism. A subset of 50 items designed to tap the five factor model were taken from the 100 adjective markers selected by Goldberg (1992).

Centre for Epidemiologic Studies Depression Scale (CES-D; Radloff 1977)

The CES-D is a 20-item measure used to assess symptoms of depression in the past week. One example of an item is, "I felt sad." The CES-D has high internal consistency and validity (Radloff 1977).

Writing Apprehension Test

This instrument is a highly regarded 26-item measure of writing anxiety. Evidence attests to its reliability and validity (Daly and Miller 1975).

Graduate Student Stress Inventory-Revised (GSI-R)

The GSI-R is a 21-item measure of the perceived stressfulness of elements of a graduate student's life. The GSI-R taps themes involving the stress inherent in perceived academic responsibilities, the stressfulness of the university environment, and perceptions of stress related to financial and family responsibilities. The GSI-R is associated with elevated levels of trait anxiety (see Rocha-Singh 1994) and depression (Lee 2007).

The Short Index of Self-Actualization (SI)

The SI is a brief 15-item scale developed by Jones and Crandall (1986). The authors recommended using total scores and not exploring separate factors, despite evidence that factors can be identified that reflect tolerance of failure and disapproval, emotional expressiveness, and purpose in life (see Flett et al. 1991). Accordingly, total scores were used here. Higher scores reflect greater self-actualization.

Clance Impostor Phenomenon Scale

This is a 20-item scale developed by Clance (1985) to assess the extent of impostor feelings. This scale has been used extensively. For instance, Ferrari and Thompson (2006) established that elevated scores on this measure are linked with higher scores on the Perfectionism Cognitions Inventory.

Results

Sample 1

Pearson correlations were conducted with the PCI and the ATQ. The results are presented in Table 1. It can be seen that the PCI was highly related to negative automatic thoughts. It can also be seen that the PCI was associated to a similar degree with dejection and agitation. Furthermore, the PCI was correlated robustly with the MASQ measure of distress including General Depression, Anhedonic Depression, General Anxiety, and Anxious Arousal. Partial correlations controlling for the ATQ found that most of the correlations between the PCI and the MASQ were no longer significant; however, there was still a significant partial correlation between the PCI and MASQ general depression subscale ($r = .27$, $p < .05$).

Sample 2

Pearson correlations were conducted to examine the link between the PCI and the Perfectionism Cognitions Inventory. The results are presented in Table 2. Results indicate that the Procrastinatory Cognitions Inventory and the measure of perfectionistic automatic thoughts were substantially correlated and have similar, although not completely identical, associations with other variables. In keeping with our hypothesis, procrastinatory cognitions were highly associated with performance avoidance and not associated with performance approach or any other goal approach measure. As expected, both the PCI and the measure of perfectionistic automatic thoughts were associated significantly with fear of failure.

Hierarchical regressions predicting depressive symptoms were conducted to test whether the Procrastinatory Cognitions Inventory predicts depression over and about the Big Five correlates. The correlational results shown in Table 2 confirmed

Table 1 Sample 1: correlations with PCI and ATQ

	PCI	ATQ
Automatic thoughts	.70*	–
Dejection	.55*	.73*
Agitation	.54*	.70*
MASQ general depression	.67*	.79*
MASQ anhedonic depression	.56*	.81*
MASQ general anxiety	.47*	.60*
MASQ anxious arousal	.48*	.56*

* $p < .01$. Based on 67 participants

Table 2 Sample 2: correlations with PCI and the perfectionism cognitions inventory

	PCI	Perfectionism
Perfectionistic thoughts	.52**	–
Neuroticism	.29**	.29**
Conscientiousness	−.35**	−.01
Fear of failure	.44**	.44**
CES-D Depression	.43**	.38**
Mastery approach	−.20	.20
Mastery avoidance	.13	.26*
Performance approach	−.07	.16
Performance avoidance	.37**	.24*

** $p < .01$, * $p < .05$. Based on 94 participants

Table 3 Hierarchical regression predicting CES-D Depression in Sample 2

Predictor	R^2	ΔR^2	β	t
Trait block	.29	.29***		
Neuroticism			.50	5.55**
Conscientiousness			−.17	−1.88
PCI block	.37	.08**		
Procrastinatory Cog.			.32	3.43**

*** $p < .001$, ** $p < .01$. Based on 94 participants

that the PCI was associated with elevated neuroticism and reduced conscientiousness. The stronger association was with low conscientiousness, in keeping with the pattern reported in previous meta-analyses. No other big five correlates were found.

The results of the hierarchical regression analysis are presented in Table 3. Here it can be seen that the PCI does indeed predict depression over and above broader traits, as hypothesized. Overall, the block comprised of the variables from the five-factor model accounted for 29% of the variance, with only neuroticism accounting for significant variance. Subsequent entry of the PCI accounted significantly for an additional 8% of the variance in CES-D scores.

Sample 3

Descriptive results found that the overall PCI among graduate students was 22.92 (SD = 14.63). This was substantially lower relative to the mean of 28.70 (SD = 16.7) found by Stainton et al. (2000) in 208 undergraduate students. Thus, procrastination levels are lower among graduate students. Still, it is quite problematic for graduate students who do have elevated PCI scores, as indicated by the correlations presented in Table 4.

Table 4 Correlations with PCI in Sample 3

	PCI
Graduate student stress	.58**
Writing apprehension/writer's block	.22*
Self-actualization	−.54**
Impostor scale	.67**

** $p < .01$, * $p < .05$. Based on 110 graduate student participants

As predicted, the PCI was highly related to graduate student stress. Significant correlations with writing apprehension and impostor feelings were also observed. There was also a robust negative correlation between the PCI and self-actualization.

Discussion

The results of the current study addressed several issues involving the nature of automatic thoughts reflecting the procrastination theme as well as the overall procrastination construct. The results obtained with our first sample indicated that there is a very large association between procrastination-related automatic thoughts and more general negative automatic thoughts about the self. Clearly, an emphasis on negative self-evaluation is central to an understanding of cognitions about procrastination, and ruminating about their dilatory ways is perhaps one way that distress prone individuals make inferences about their personal failures and inadequacies. This association between the PCI and ATQ was strong enough to make it difficult for the PCI to account for unique variance in distress once variance attributable to the ATQ was considered, though a link with the MASQ depression subscale was still found. The strong association between the PCI and ATQ might lead some to suggest that the PCI is not useful, but this is clearly not the case. The overall evidence indicates that the PCI provides insight into the extent to which an individual is cognitively troubled by their dilatory ways. Moreover, this scale can be used to assess whether cognitive-behavioral interventions addressing procrastination have been successful, at least in terms of reducing the overall frequency of these thoughts.

Earlier research by Lay and associates on trait procrastination and dejection and agitation found mixed results in that dejection sometimes had a stronger link with trait procrastination (Lay and Schouwenburg 1993), while subsequent research found stronger links between trait procrastination and agitation than between procrastination and dejection (Lay 1994). The current research found that procrastination-related automatic thoughts had an equally robust link with agitation and dejection and this pattern was similar to the pattern found with the ATQ. However, there were some indications with the MASQ subscales that there were slightly stronger links between the PCI and the two subscales assessing depression versus the subscales assessing anxiety. Overall, an association with both depression and anxiety would be expected given that procrastination-related automatic thoughts could reflect past disappointments and personal failures to stop engaging in dilatory behaviors, but it should also reflect concerns going forward about anticipated deficiencies and associated failures. Clearly, the thoughts involving procrastination are linked with negative emotional reactions, and these thoughts and feelings can both contribute to dilatory behavior (for a related discussion, see Basco 2010).

The results from our second sample clarified several issues involving the PCI. Evidence of the instrument's validity was found in that students with elevated PCI scores also had elevated levels of perfectionistic automatic thoughts. While some researchers have concluded unequivocally that there is little to no association between perfectionism and procrastination (see Steel 2007), this is clearly a

premature conclusion given that there is a fairly robust link between these constructs at the cognitive level. We did not conduct person-centered analyses, but it is also important to not lose sight of the fact that procrastination and perfectionism are often found in troubled procrastinators, as reflected by the case example by Palmer and Gyllensten (2008) that was cited above.

Our findings comparing perfectionism and procrastination at the cognitive level showed that they share some factors, including fear of failure and distress. The association between the PCI and fear of failure is not surprising given longstanding evidence that fear of failure is one of the most frequently cited reasons for procrastinating on important tasks (see Haghbin et al. 2012). The five factor analysis further established that procrastination and perfectionism are both similar and different when assessed as automatic thoughts. Both are associated with neuroticism and this is in keeping with past perfectionism work (Flett et al. 1998), but only procrastination is associated significantly with low conscientiousness, a finding that accords with meta-analytic results of the five factor correlates of trait procrastination (see Steel 2007; Van Eerde 2003).

Given the link that the PCI had with broader personality traits, it was important to assess whether the PCI could predict unique variance in psychological distress beyond these broader traits. We found that the PCI did indeed predict significant unique variance in distress, thereby illustrating the usefulness of the PCI as a specific lower order personality feature.

Differences between automatic thoughts involving procrastination versus perfectionism were also found in terms of their links with motivational orientations. Measures representing the 2×2 hierarchical model of achievement motivation were completed by the undergraduate students in our second sample and we established that high PCI scorers are characterized by a performance avoidance orientation. No other motivational factors were linked with the PCI. These data accord with earlier research which found that procrastination was linked with performance avoidance and was unrelated to measures of mastery orientation and performance approach orientation (McGregor and Elliot 2002). No other motivational factors were linked with the PCI in the current study. In contrast, perfectionism was associated jointly with mastery avoidance and performance avoidance. This tendency for perfectionism to be linked with avoidance goal orientations distinguishes perfectionistic automatic thoughts about the need to be perfect from trait self-oriented perfectionistic strivings. Past research has found that perfectionistic strivings have been linked with all four AGC subscales, but especially with the two approach subscales (see Van Yperen 2006). Collectively, it is evident that at the cognitive level, perfectionism and procrastination are similar yet still quite distinguishable. The added association that perfectionism has with mastery avoidance orientation was postulated by Elliot and McGregor (2001) and suggests that in keeping with the conceptualization of mastery avoidance, perfectionists who experience thoughts about their need to be perfect are engaged motivationally in order to avoid deteriorations of competence or avoid missing opportunities for learning and self-development. However, the predominant orientation of procrastinators with frequent thoughts about their dilatory ways is that they are defensively engaged and are motivated primarily in order to avoid

demonstrations of low ability. Not surprisingly, this maladaptive orientation tends to predict multiple negative emotions in performance situations and diminished performance (see Pekrun et al. 2009).

Our final series of results showed that it is possible to assess meaningful individual differences in procrastination-related thoughts among graduate students, and these thoughts are associated with difficulties both in terms of performance and feelings about the self. A positive association was found between procrastination and apprehensiveness about writing, suggesting that the PCI is linked with actual performance differences, especially in situations that involve ego threat. While a link with writer's block is clearly important to establish, the main findings emerging from our third sample illustrate the profound negative self-conceptualizations that seem to accompany thoughts about procrastination among graduate students. Robust associations were found with feelings of being an impostor and negative appraisals of self-actualization. There was also a strong association between the PCI and graduate student stress, suggesting that procrastinating graduate students are likely prone to a host of stress-related illnesses.

While the current research helped illuminate the construct being tapped by the PCI, the limitations of this research should be acknowledged. First, all three samples provided us self-report data in a cross-sectional study. Thus, there can be no assumptions made about the causal direction, and clearly, longitudinal research in this area is needed. There is also the possibility that the data were influenced by biases in self-reports.

These limitations notwithstanding, the current work has important implications. At the theoretical level, models of procrastination and maladjustment need to be expanded to include an emphasis on this procrastination-specific form of rumination that is linked with elevated stress and psychological distress. It also seems that models of procrastination and negative health outcomes should allow for the role of chronic rumination and the stress associated with not getting things done on time.

Meanwhile, at the practical level, it is evident that clinical assessments and interventions would be enhanced by including an emphasis on procrastination-related cognitions. When it comes to assessments, procrastinators with low PCI scores may not have frequent thoughts about the need to stop procrastinating because their behavior is part of a motivated avoidance cycle. These individuals will be less motivated for treatment compared with high scorers who have suffered enough. While highly motivated, these high PCI scores may also feel that they lack the personal characteristics needed to put an end to their procrastination. As for treatment implications, existing cognitive-behavioral interventions are often more general and do not focus explicitly on these automatic thoughts (e.g., Karas and Spada 2009). Given that cognitions, behaviors, and moods are often synchronous and interdependent (see Persons 1989), it is quite plausible that removing thoughts about procrastination will facilitate positive changes in both affect and behavior. However, some clear challenges are likely ahead, given that those who experience procrastinatory cognitions also tend to have perfectionistic thoughts and very negative views of the self.

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