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CONFERENCE PROGRAM, ABSTRACTS, AND PARTICIPANT LIST

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A diagnostic measure of procrastination
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Making sense of our assumptions about procrastination: Value discounting versus visceral avoidance
Emrah Eren & Timothy A. Pychyl
Department of Psychology, Carleton University, Ottawa, Ontario, Canada

In the psychological research literature, procrastination has been defined as a distinct form of delay. For example, in his meta-analysis, Steel draws together various construct definitions and concludes, “Combining these elements suggests that to procrastinate is to voluntarily delay an intended course of action despite expecting to be worse off for the delay” (2007; p. 66, emphasis added). Of particular importance is the voluntary nature of delay that is a necessary condition of procrastination. What is obvious from this is that procrastination inherently involves the individual’s conscious choice to delay.

Interestingly, despite the necessary condition of choice, and the implication of the individual’s free will in making this choice, the bulk of psychological research takes a more deterministic approach to the study of this form of self-defeating delay by focusing on factors that determine or, at the very least, influence, this choice. For example, relatively stable personality traits such as conscientiousness have been discussed as the source trait of chronic procrastination (Lay, 1997), and, most recently, notions of temporal discounting (Steel, 2007) and aspects of task construal (e.g., McCrae, Liberman, Trope & Sherman, 2008) have been explored as causal factors.

In this paper, I contend that these inherently deterministic approaches are unable to provide an adequate account of procrastination. I argue that our theorizing and research must involve a more specific focus on the person as an active agent and take into account notions of responsibility, choice, autonomy and authentic engagement. To make this argument, I draw on classic works in existential philosophy (Heidegger, Sartre) and psychology (e.g., Biswanger, 1956; Fromm, 1941; May, 1969; Yalom, 1980), more recent conceptualizations of an experimental existential psychology (Greenberg, Koole & Pyszczynski, 2004), current psychological theories about Self-Determination (e.g., Ryan & Deci, 2000a&b) and Temporal Self-Regulation (Fong & Hall, 2007), as well as recent debates in the philosophy of action on the nature of free will and determinism (e.g., Aguilar, Buckareff & Frankish, 2011).

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processes (e.g., unconscious), while at the same time acknowledging the individual’s responsibility to choose and for the possibility of situational transcendence through conscious choice.

With this fundamental philosophical issue addressed and the “person” as the focus of my attention, I then explain how our psychological research and explanations of procrastination would benefit from a renewed emphasis on what are essentially humanistic themes. Although the last decade has seen the reemergence of humanist themes in psychology under the banner of a “positive psychology,” this renaissance of humanistic concepts has not specifically addressed key existential constructs upon which many humanist theories were built.

One exception to this has been Self-Determination Theory (SDT) where Ryan & Deci document the clear conceptual congruity between the basic human need of autonomy and earlier elements of existentialism (e.g., Ryan & Deci, 2004). I draw on SDT in particular as an example of how further exploration of autonomy may help explain why an individual may choose to make the self-sabotaging choice that we know as procrastination. Examples of recent research that involve components of SDT such as Ryan’s and Deci’s “Organismic Integration Theory” (e.g., van Hooft, 2009) are discussed in relation to the foundational philosophical concept of authenticity.

This discussion of agency and self-determination speaks directly to key elements of self-regulation failure of which procrastination is one example. Given this, I then explain how the renewed emphasis on agency and responsible free-choice is essential to understanding successful self-regulation. I support these assertions by drawing on recent research that underscores how our personal theories and beliefs about willpower (e.g., Job, Dweck & Walton, 2011) and processes such as self-affirmation (e.g., Schmeichel & Vohs, 2009) clearly reveal the central role of the self, transcendence and agency in our ability to self-regulate our behaviour.

I conclude the paper by outlining the therapeutic implications of this renewed emphasis on personal responsibility from a more existential-humanistic perspective (e.g., Cooper, 2003; Scheider & Krug, 2010), while drawing on contemporary research in personality psychology with Personal Projects Analysis (e.g., Pychyl & Binder, 2004). Directions for future research are also presented, highlighting the need for a psychology of personal responsibility.

References


**A diagnostic measure of procrastination**

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Temporal Motivational Theory is based upon the observation that three major factors increase people’s likelihood of procrastination. First, we procrastinate when we have lower expectancy of success at a task. Diminished self-efficacy or self-confidence is associated with lower levels of motivation. Second, we procrastinate when the task has low value (i.e., unpleasant or boring), despite larger but later rewards for completion. The less enjoyable the work becomes, the more likely we are to put it off. Third, we procrastinate when we impulsively act upon short-term temptations that distract us from our long-term goals. The more we are susceptible to temptations, the greater the likelihood that there will be a gap between our intentions and actions.

Despite the empirical support for these factors being critical in determining procrastination, what is lacking is a way of determining which ones are operating in any individual procrastinators. People’s procrastination can be driven by just one factor or all three simultaneously. To provide a diagnostic measure, nine items were developed for each major factor: expectancy, value and impulsiveness. Following Burisch’s (1984) methodology for the constructing personality inventories, new items were developed for the expectancy and value constructs.

The expectancy or self-efficacy items focused on assessing the degree that people believe that their efforts are rewarded. For example, “I can overcome difficulties with the necessary effort” and “When I put in the hours, I am successful.” The value items focused the meaningfulness and enjoyableness of tasks and responsibilities. For example, “I don’t find my work enjoyable” and “Work bores me.” For impulsiveness, nine of the highest loading items were drawn from the Susceptibility to Temptation Scale (Steel, 2010). Example items include, “It takes a lot for me to delay gratification” and “My actions and words satisfy my short-term pleasures rather than my long-term goals.”

To assess the ability of these scales to predict procrastination, they were administered along with the Irrational Procrastination Scale (Steel, 2010) and the UPPS impulsive behavior scale (Whiteside & Lynam, 2001) to 1,279 respondents, with an average age of 33 years old and 50.3% male. After eliminating the lowest loading item per scale, reliability for each eight item scale was .83 for Expectancy, .84 for Value, and .83 for Impulsiveness. Using a Principal Component Analysis with Varimax rotation identifies three factors that accounts for 49% of the variance. Each item loaded on the appropriate factor, though four of the value items had significant cross-loadings with the impulsiveness factor.

Correlations with procrastination were: -.29 with Expectancy, .59 with Value, and .63 with Impulsiveness. Of note, higher scores of Expectancy and Impulsiveness indicate more of the construct. Higher scores of value indicate work is less enjoyable or interesting. Multiple regression produced an $R^2$ of .485, $F(3, 1275) = 400.84$, $p < .0001$, with all variables significantly predicting. The addition of UPPS impulsiveness scales increased $R^2$ to .566, a significant increase $F(4, 1271) = 58.85$, $p < .000$, but also reflecting that most of the variance has already been captured.

Of note, the UPPS is comprised of four scales: Urgency (intense cravings), Premeditation (thinking acts through), Sensation Seeking (enjoying the new and exciting) and Perseverance (finishing what you start). Sensation Seeking and Premeditation demonstrated low associations with procrastination, generating correlations of .08 and -.02 respectively. Urgency and Perseverance correlated at .48 and -.64 respectively with procrastination, and at .65 and -.55 respectively with the diagnostic impulsiveness scale.

In its entirety, the results confirm that though procrastination is influenced by considerations of expectancy and value, overwhelmingly, the behavior is driven by impulsiveness. In particular, impulsiveness in the form of both intense cravings or lack of perseverance is critical to understanding why we procrastinate. Procrastination as a form of thrill-seeking or sensation seeking is not an influential...
construct. Also, of importance is the low association with premeditation. This suggests that procrastinators are capable of appreciating the consequence of their actions as much as anyone else. It is getting people to act upon their early assessments and subsequent intentions where the challenge lies.

References

Making sense of our assumptions about procrastination: Value discounting versus visceral avoidance
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It is generally agreed that procrastination is the voluntary delay of an intended course of action despite awareness of potential negative consequences for acting later than one thinks one should (Ferrari, Johnson, & McCown, 1995; Lay, 1986; Milgram, Sroloff, & Rosenbaum, 1988; Steel, 2007; White, 2009). The critical question as to why humans engage in this form of needless delay has given rise to numerous disparities with regard to the nature of procrastination. For example, although psychologists, philosophers, and behavioural economists all agree that procrastination entails an irrational delay of an intended action, there is significant disagreement as to what is meant by irrational. Behavioural economists have proposed that procrastination is a rational defect of the human tendency to discount future rewards — a time-inconsistent model otherwise known as hyperbolic discounting (e.g., Ainslie, 2005). From this perspective, procrastination is a function of an irrational bias in calculating the perceived utility of future events in which the discounted future reward leads to preference for more immediately rewarding actions and needless delay of tasks related to longer-term goals. In this paper, we argue, as White (2010) has recently suggested, that this behavioural-economic perspective is incomplete, and we reach a similar conclusion to Heath and Anderson (2010) that this perspective does more to model procrastination than it does to explain it. In contrast to the focus on utility, we maintain that procrastination needs to be understood as a particular form of delay which entails the more “visceral” avoidance of emotionally evocative and generally aversive tasks. Accordingly, we explain this process of self-regulation failure as one involving short-term mood repair and contend that we must account for this process of avoidance in our understanding of procrastination as “irrational” delay.

References
PRESENTATION SESSION 2: Academic procrastination
Friday: 11:15-12:30

Antecedents and consequences of academic procrastination: A student counselors’ perspective
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Procrastination and mentally simulating the what, where, and when, of academic tasks: Implications for health and well-being
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Overcoming academic procrastination: Investigating the course of change based on the Transtheoretical Model
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Antecedents and consequences of academic procrastination: A student counselors’ perspective
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As academic procrastination can result in a variety of negative consequences like minor academic success and stress (e.g., Tice & Baumeister, 1997), it is not surprising that academic procrastination is the students’ most prevalent personal concern for which they indicate needing help (Gallagher, Golin, & Kelleher, 1992). Consequently, many university counselling services offer programmes to help students overcome academic procrastination (Schouwenburg, Lay, Pychyl, & Ferrari, 2004). In order to offer effective intervention programmes a thorough understanding of antecedents and consequences of this phenomenon is essential because they serve either as triggering or maintaining factors. Although research has been conducted on the antecedents and consequences of academic procrastination (e.g., Steel, 2007; van Eerde, 2003), most studies used convenience sampling and have not taken into account whether the investigated students could cope with their procrastination behaviour or whether they were concerned about it and sought help to overcome it. This study is the first to broadly explore antecedents and consequences of academic procrastination of students who are concerned about their procrastination behaviour and seek help to overcome it. We identified student counsellors as an important source of information to accomplish this goal. In this study, we took advantage of their broad store of knowledge concerning procrastinating students which is based on observations of different cases.

The recruitment at two German universities resulted in in-depth interviews with 12 student counsellors, three of which were male. They indicated being experienced in counselling procrastinating students. The student counsellors held university degrees in different subjects (e.g., psychology, sociology) and collectively represented a variety of counselling disciplines (e.g., systemic, person-centred). On average, they have worked for 11.00 (SD = 8.9) years as student counsellors.

We interviewed each student counsellor by using a standardized interview protocol containing several open-ended questions in specified order. During the interview we asked them to consecutively describe up to three students they counselled because of academic procrastination. These descriptions contained information about the intended and alternative actions and the antecedents and consequences the counsellors perceived concerning the students’ procrastination behaviour. On average, the interviews took 49 minutes.

To analyse the mentioned antecedents and consequences we conducted a qualitative content analysis (Mayring, 2000). We performed the following steps: First, the interviews were segmented into 1701 idea units. Second, coding was performed through an iterative process of deducing categories from literature and inducing categories from the interview material. Third, to investigate overall quality of
coding, multi-coder agreement of 4 coders based on 10% randomly chosen segments from each interview was calculated and was good (Fleiss' Kappa = .74).

The qualitative content analysis resulted in one category system containing the antecedents and one category system containing the consequences of academic procrastination. The mentioned antecedents were differentiated into internal and external antecedents. Whereas the internal antecedents related to the students’ person, the external antecedents related to the students’ environment. The internal antecedents were further differentiated into the following categories (subsumed themes are presented in brackets): personality-related (e.g., negative self-image), competence-related (e.g., study skills), affective (e.g., anxiety), cognitive (e.g., worries) and physical (e.g., illness) antecedents as well as antecedents related to previous learning experience (e.g., negative learning experience) and perceived task characteristics (e.g., importance). External antecedents were organised into individual working conditions (e.g., lack of social networks) and university-related antecedents (e.g., lecturers’ qualities).

The mentioned consequences were differentiated into no consequences, positive consequences and negative consequences. Positive consequences were, for example, further distinguished into the categories release of stress and enjoying university life. The negative consequences were further differentiated into the following categories (subsumed themes are presented in brackets): personality-related (negative self-image), affective (e.g., shame), motivational (e.g., no motivation to change) consequences as well as consequences related to the mental and physical well-being (illness), social networks (reactions of others), course of study (e.g., poor study performance) and living conditions (e.g., financial loss).

According to the student counsellors, the antecedents and consequences of academic procrastination of students who are concerned about their procrastination behaviour and seek help to overcome it can relate to the students’ person, their personal and learning situation as well as the university context. Since some themes were inductively developed (e.g., negative learning experience, financial loss), this study allows for formulating new research ideas. Further, the results point to the need to broaden current interventions in order to address not only personality-related factors but also the external circumstances surrounding the students.

References

Procrastination and mentally simulating the what, where, and when, of academic tasks: Implications for health and well-being
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Background. Implementation intentions are mental simulations about the when, why, where, or how of behaviour that can help translate goals into action (Gollwitzer, 1999). Similarly, counterfactuals, mental simulations about better or worse outcomes, are posited to be an integral part of behaviour regulation by providing self-regulatory feedback loops that help link actions to outcomes by simulating alternate outcomes had a certain action not taken place (Epstude & Roese, 2008). Not everyone generates these “functional” counterfactuals. In one study maladaptive perfectionists generated counterfactuals that were less controllable and less specific following failure on an academic task, and therefore less functional with respect to identifying and activating a corrective course of action (Sirois, Monforton, & Simpson,
To date the functionality of counterfactuals associated with procrastination has not been fully investigated, nor their association with implementation intentions. It is also possible that poor behaviour regulation strategies in one domain reflect a more general tendency towards behaviour regulation difficulties in other domains.

**Objectives.** The purpose of this study was to examine the functionality of the counterfactual thoughts generated by procrastinators with respect to an academic task. A secondary aim was to assess possible associations with goal planning strategies and specifically implementation intentions, and their implications for health and well-being.

**Methods.** Undergraduate students (N = 190) completed an electronic survey in the researchers’ lab that included measures of procrastination, stress, wellness behaviours, and perceived health (T1). Participants then read a fictitious scenario and were asked to imagine themselves as the main character. The scenario involved a student who procrastinated on studying until the last minute and then while cramming the night before an exam, gave in to temptation and went out with friends instead of studying which resulted in poor performance on the exam. Following this they were instructed to generate counterfactual thoughts with respect to things that might have improved the outcome. Participants then responded to a checklist about the types of strategies they used for studying, with half the strategies reflecting common goal planning strategies such as prioritizing goals and setting aside time, and the other half reflecting implementation intentions such as specifying where and when they would study or visualizing themselves following through the steps necessary to accomplish their academic tasks. Two weeks later (T2) they completed a second brief online survey that included measures of stress, wellness behaviours and perceived health.

**Analyses.** Upward counterfactual thoughts were coded by two independent raters on three dimensions: controllability, specificity, and structure (additive or subtractive). Disagreements were resolved by a third coder and the number of each type of counterfactual was summed and then divided by the total number of counterfactuals generated to create a proportion index for each dimension.

**Results.** Bivariate correlations revealed that procrastination was negatively associated with the use of goal planning strategies and implementation intentions. Procrastination was also linked to making fewer controllable and fewer specific counterfactuals in response to the hypothetical academic scenario in which studying behaviour was disrupted by situational temptations. Similar to previous research procrastination was associated with poor self-perceived health at T1 and T2, and higher stress. Low use of goal planning strategies was also associated with higher stress and poor perceived health at T1 and T2, and a t-test of those who believed they did and didn’t use implementation intention strategies revealed higher scores on trait procrastination, and poorer self-rated health (T1 and T2) for those who didn’t use implementation intentions compared to students who did. With respect to wellness behaviours, both the use of goal planning and implementation intentions were associated with the practice of more wellness behaviours at T1 and T2. A t-test of those who said they use implementation intentions showed significantly higher scores on wellness behaviours at T1 and T2.

**Conclusions.** Consistent with previous theory and research on the role of counterfactuals for regulating behaviour we found evidence that the counterfactuals generated by procrastinators may lack the behaviour regulating functionality that would allow them the insights to correct their future behaviour. In addition, procrastination was associated with poor goal planning strategies and less use of implementation intentions. The finding that poor use of goal planning strategies and implementation intentions was also associated with poor health and well-being is unique to this study and warrants further research clarify the implications of poor planning for health a well-being.

**References**


Overcoming academic procrastination: Investigating the course of change based on the Transtheoretical Model
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Academic procrastination is a highly prevalent phenomenon among students and may result in harmful consequences (Steel, 2007). It is not surprising that a vast amount of students reported wishing to reduce their dilatory behaviour (Solomon & Rothblum, 1984). So far, little is known about the course of changing academic procrastination. However, knowledge about factors playing a role in the course of change can foster the development of effective interventions to reduce academic procrastination.

In the present study, we used the Transtheoretical Model (TTM), a prominent and comprehensive model of behaviour change (Prochaska, DiClemente, & Norcross, 1992), to investigate the course of changing academic procrastination. According to the TTM, behaviour change is a result of passing five discrete stages: (1) precontemplation (no consideration to change behaviour), (2) contemplation (intention to change within the next six months), (3) preparation (serious intention to change in the next 30 days), (4) action (initiation of overt behavioural change), and (5) maintenance (stabilisation of the modified behaviour for at least six months). The variables self-efficacy, pros and cons of changing are assumed to vary depending on the stages of change. Self-efficacy, showing the designated behaviour even in high risk situations, should increase over the stages. Cons of changing should outweigh the pros in the precontemplation stage, whereas the inverse effect is assumed for the last three stages. In the contemplation stage pros and cons should be equal.

The central aim of our study was to test the TTM assumptions about self-efficacy, pros and cons of changing in the context of academic procrastination. Additionally, students’ distribution on the stages of change was explored and validated by the development of academic procrastination and students’ motivation to change across the stages.

Participants (N = 380 students; 266 female; mean age = 24.0, SD = 4.1) were recruited for an online survey at two German universities and via social network websites. They were enrolled in different fields of study and had been studying for 7.0 semesters (SD = 5.3) on average.

All participants categorised themselves to one of the stages of change by selecting one of five possible answers of a categorical measure describing the five stages of change (Prochaska et al., 1992). Academic procrastination was measured by the German translation of the Tuckman Procrastination Scale (Tuckman, 1991; 5-point-scale; α = .92). Students’ motivation to change academic procrastination was assessed by a modified subscale from a clinical measure (Nübling & Bengel, 2008; four items; 4-point-scale; α = .89). Following the TTM guidelines, items for measuring self-efficacy, pros and cons of changing were developed in the context of academic procrastination. Self-efficacy was assessed by 10 items (5-point-scale; α = .89). Pros and cons of changing were assessed by five multifaceted items each (5-point-scale; Pros: α = .64; Cons: α = .66).

Table 1 summarises all results. Overall, 15% of the students categorised themselves to the precontemplation, 20% to the contemplation, 18% to the preparation, 11% to the action and 36% to the maintenance stage.

As expected, ANOVAs yielded a significant main effect for the stages of change regarding the variables of interest. Post-hoc tests revealed the assumed pattern of results: Academic procrastination was significantly higher in the first three stages compared to the action and maintenance stage and significantly lowest in the maintenance stage. Students’ motivation to change was highest in the preparation stage and significantly lower in the precontemplation and maintenance stage compared to the other three stages. Self-efficacy was significantly lower in the first three stages compared to the action and maintenance stage. The pros of changing were significantly lower in the precontemplation stage compared to the maintenance stage compared to the other four stages and highest in the preparation stage. The cons of changing were significantly higher in the first three stages compared to the maintenance stage and significantly higher in the contemplation stage compared to the action stage.

In sum, we applied the TTM successfully to the context of academic procrastination. Students in the contemplation and preparation stage showed the highest tendency to procrastinate academic tasks and the highest motivation to change. Their self-efficacy was lower and they perceived more cons of changing compared to students in the action and maintenance stage. However, both groups perceived pros of changing similarly. Thus, self-efficacy and cons of changing play an important role in the course of changing academic procrastination and deliver the groundwork for developing effective interventions. In future studies, further variables that may differ between the stages (e.g., psychological strain) should be investigated, then the variables’ predictive strength regarding change should be analysed.
Table 1
Descriptive Statistics, Results of the ANOVA and Post-hoc Comparisons of the Dependent Variables for the Stages of Change

<table>
<thead>
<tr>
<th>Variable</th>
<th>PC ($n=57$)</th>
<th>C ($n=76$)</th>
<th>PR ($n=68$)</th>
<th>A ($n=42$)</th>
<th>M ($n=137$)</th>
<th>ANOVA $F$ ($4, 375$)</th>
<th>Eta$^2$</th>
<th>Post-hoc comparisons</th>
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<tbody>
<tr>
<td>AP</td>
<td>3.33 (.65)</td>
<td>3.64 (.57)</td>
<td>3.60 (.60)</td>
<td>2.94 (.57)</td>
<td>2.47 (.65)</td>
<td>64.54** .41</td>
<td></td>
<td>PC &lt; C*</td>
</tr>
<tr>
<td>MC</td>
<td>2.42 (.82)</td>
<td>3.28 (.53)</td>
<td>3.34 (.54)</td>
<td>2.98 (.70)</td>
<td>2.18 (.76)</td>
<td>51.93** .36</td>
<td></td>
<td>C, PR &gt; A**</td>
</tr>
<tr>
<td>SE</td>
<td>2.75 (.72)</td>
<td>2.66 (.56)</td>
<td>2.91 (.63)</td>
<td>3.32 (.52)</td>
<td>3.40 (.53)</td>
<td>27.62** .23</td>
<td></td>
<td>PC, C, PR &lt; A, M**</td>
</tr>
<tr>
<td>POC</td>
<td>3.55 (.62)</td>
<td>3.95 (.62)</td>
<td>4.13 (.49)</td>
<td>3.96 (.66)</td>
<td>3.98 (.57)</td>
<td>8.43** .08</td>
<td></td>
<td>PC &lt; C, PR, M**</td>
</tr>
<tr>
<td>COC</td>
<td>3.05 (.68)</td>
<td>3.19 (.68)</td>
<td>2.95 (.42)</td>
<td>2.75 (.69)</td>
<td>2.72 (.62)</td>
<td>8.73** .09</td>
<td></td>
<td>PC &lt; A*</td>
</tr>
</tbody>
</table>

Note. All displayed post-hoc comparisons by Games-Howell tests indicate statistical differences between the stages of change. AP = academic procrastination; MC = motivation to change; SE = self-efficacy; POC = pros of changing; COC = cons of changing; PC = precontemplation; C = contemplation; PR = preparation; A = action; M = maintenance. * = p < .05 ** = p < .01.

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Investigating domain-specificity of procrastination
Katrin Birte Jorke, Laura Meike Thau, & Stefan Fries
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Research on procrastination has focused almost exclusively on procrastination in the academic domain. The purpose of this contribution is to investigate procrastination in other life-domains and to find out whether procrastination is domain-general or domain-specific. For this purpose, we adopted the following notion of the two terms: If procrastination is domain-general, it displays similar characteristics (e.g., frequency, correlations with other constructs, reasons, consequences) in all domains. If, however, procrastination is domain-specific, these characteristics vary as a function of domain. Investigating domain-specificity in the case of procrastination has far-reaching implications for diagnosis of and interventions for procrastination. If procrastination is more domain-general, then general measurement and more generalized interventions are appropriate. If, however, procrastination is more domain-specific, then instruments and interventions must be more targeted and nuanced.

The domains (derived from a literature research and a qualitative study concerning commonly applied classifications of life-domains) were: academic, daily duties, health, leisure, family, and social contacts. We assumed four different perspectives on domain-specificity: (1) comparing model fit between a domain-general and a domain-specific model via confirmatory factor analysis, (2) assessing differences of procrastination frequency between domains, (3) examining differences between domains in correlations’ strength of procrastination frequency with other constructs which represent commonly assessed correlates of procrastination (self-efficacy, stress, mental health, and life satisfaction), and (4) exploring reasons and consequences of procrastination in each domain.

Participants were recruited via different social network websites for an online survey. They were 260 university students (mean age = 23.56, \(SD = 3.74\)), 66.9% of which were female. They were enrolled in different fields of study and had been studying for five semesters on average (\(M = 5.57, SD = 3.93\)). The following instruments were used to assess the aforementioned constructs: Generalized Self-Efficacy Scale (Schwarzer & Jerusalem, 1995), Trier Inventory for Assessing Chronic Stress (Schulz, Schlott & Becker, 2004), Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977; Hautzinger, 1988), and Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Schumacher, 2003). High scores on the scales represent high values regarding the constructs. Each domain’s content was briefly explained before participants proceeded to fill out the part of the survey concerning procrastination in the different domains. For each domain, the procrastination frequency (adapted version of the Procrastination Scale for Students; Glöckner-Rist, Engberding, Höcker & Rist, 2009; 7 items, \(\alpha > .90\) for all domains), 12 reasons of procrastination, and four consequences (general negative, general positive, psychological strain, motivation to change) were assessed.

In terms of model fit in confirmatory factor analysis, the data demonstrated that procrastination frequency is domain-specific. The domain-specific model yielded the best fit (\(\chi^2 = 2107.75, df = 805, RMSEA = .08\)). The fit was significantly better (based on differences in \(\chi^2\) and fit indices) than the fit of the domain-general model (\(\chi^2 = 5722.28, df = 819, RMSEA = .15\)). Concerning our second perspective,
the results of a series of paired-samples \( t \)-tests suggested domain-specificity as well in that significant mean-level differences in procrastination frequency between domains emerged for 12 of 15 pairs. The third hint for domain-specificity was that although procrastination in all domains was negatively related to self-efficacy and life satisfaction and positively related to stress and mental health, these correlations differed significantly in strength from one domain to another. Regarding our fourth perspective, a few reasons were reported in almost all domains (e.g., distractibility, lacking time) or at least in more than one domain (e.g., self-discipline, laziness). However, a reasonably distinctive pattern concerning the reasons of procrastination did emerge, which might be seen as yet another hint for domain-specificity. For all domains, procrastination was seen as having significantly more negative consequences than positive consequences. Nevertheless, the results of a series of paired-samples \( t \)-tests indicated that procrastination did entail a different extend of negative consequences in the different domains. Procrastination in the academic domain displayed by far the most negative consequences while procrastination in the daily duties domain displayed by far the least negative consequences.

Results show that procrastination is domain-specific in that the characteristics of procrastination vary as a function of domain. Although this domain-specificity was not very pronounced, it could be detected according to the four perspectives that led our research. Further studies should extend the four perspectives in order to gain a deeper understanding of the nature of domain-specificity in the case of procrastination. The results, however, do already support the idea of developing an instrument which assesses the individual procrastination pattern across domains in order to help tailoring interventions accordingly.

References

**Personalities and time delay among arbitrators**
Daphne Taras, Piers Steel, & Allen Ponak
Haskayne School of Business, University of Calgary, Canada

The labor arbitration setting is a unique and exciting venue for developing an understanding of the nexus between personality and task completion. Arbitrators are highly-autonomous professionals who have an incentive to render their decisions as expeditiously as possible. They review evidence, analyze submissions, and reach and write a decision, activities that lie almost entirely within their control. In this study, we examine various factors that explain the elapsed time between hearings and the issuance of awards. In particular, we use two sources of data: (1) a content analysis of 1957 Canadian cases issued after 2002; and (2) the personalities of arbitrators, based on an extensive questionnaire completed by 38 Canadian arbitrators. As the data collection is ongoing, we report only preliminary results.

While arbitration deadlines are rarely explicit and can be perceived as “slippery” rather than fixed, arbitrators feel an obligation to dispense justice quickly, as they are well aware of the adage “justice delayed is justice denied.” An arbitrator’s future acceptability may be harmed by a reputation for tardiness, providing an added incentive to avoid delay (Berkeley 1989). There is a sense of alarm among practitioners that time delay is the most serious fault in the arbitration system (Trudeau 2002, Foisy 1998,
A substantial literature exists on the causes, consequences, and solutions for undue delay (reviewed by Lewin 1998, pp. 154-55) including many professional articles with such colourful titles as “Delay: The Asp in the Bosom of Arbitration” (Seitz, 1981). The National Academy of Arbitrators [NAA] contains a section in its Code of Professional Responsibility devoted to “Avoidance of Delay” and arbitrators have been sanctioned for undue delay. There also is a financial incentive for arbitrators to work expeditiously, as the issuance of an award allows the presentation of final invoices.

Empirical investigations have demonstrated that delay has increased alarmingly in the past decades in both Canada and United States (Ponak & Olson 1992; Thornicroft 1995; Foisy 1998; Trudeau 2002). In an empirical study of using event history analysis, Ponak et al. (1996) disaggregated total delay into components: 1) pre-arbitration grievance steps; 2) arbitrator selection; 3) hearing scheduling; and 4) preparation of the arbitration award (which we measure in this study). This final stage accounts for approximately 20 percent of the overall elapsed time from the filing of the grievance to the arbitrator’s decision (Ponak & Olson 1992; Stieber, Block & Nichol 1990). Figure 1 illustrates the four stages and their associated elapsed time.

Compared to the other stages of the industrial justice process, only the final stage is almost entirely controllable by the arbitrator, and so it is of greatest interest to researchers investigating the effects of personality on timely task completion. All other stages are subject to the input of multiple parties, often with competing interests. A recent summary of arbitrator decision time reported averages ranging from 37 days to 101 days depending on time period covered and region (Thornicroft 2001, p. 372). Ponak et al. (1996) found that characteristics of the arbitration process that predicted faster decision time were: a discharge dispute, fewer pages of written decision (a proxy for complexity), the use of legal counsel, and the use of a sole arbitrator rather than a three-person panel. The study also examined one job-related characteristic of the arbitrator -- his or her workload -- and found that the busiest arbitrators took longer to render their decisions.

In this study, we expand the list of possible procedural factors that might predict decision time and add a number of demographic, work-related, and dispositional variables that should influence decision time. The most important contribution will come from a survey of the arbitrators themselves, matched to their actual decision time performance.

Testing Two Competing Hypotheses. Our study was motivated by the desire to test the following hypothesis:

H1. Personality will significantly explain variability in time delay.

According to literature that supports this hypothesis, we expect that arbitrators’ observed delays correlates well with their self-assessment of procrastination. Then, we expect to show, as Funder (2001) indicates, individual difference variables can have an equal effect on outcomes as situational variables. We were particularly interested in testing the robustness of a scale measuring procrastination, developed by Steel (2007) and validated by him in 2010 (forthcoming). Specifically, As Steel’s (2007) literature review finds, we expect that those who put off their decisions tend to have lower expectancies regarding their own abilities, as measured by self-efficacy. They should also have less enjoyment in their decision-writing work. Previous research indicates that the most important features affecting procrastination -- and hence task completion -- are impulsiveness, distractibility and task aversion. Each of these traits will be tested separately but are also components of a procrastination measure.

However, one of the problems of studying arbitrators is the possibility that similarities among arbitrators remove the explanatory potential of personality. This is known as the “gravitational hypothesis,” that people select and are successful in certain careers because they already have a strong match. Only those arbitrators who are consistently accepted by both union and management can remain “successful” arbitrators; those people who are not fit will not be selected by the parties and will eventually be forced to leave the field of arbitration. Those individuals who “stay” may constitute a more homogeneous group than those who were initially attracted to the field of labor arbitration. Specifically, the Attraction-Selection-Attrition framework (Schneider, 1987) proposes that attraction to an organization and attrition from it produce restriction in range in the kinds of people in an organization. There is a
Further body of literature examining the professions and why people identify with them (e.g., Ashforth & Mael, 1989; Dutton et al, 1994; Schneider, 1987, p. 443). Hence, it is quite plausible that:

H2. Personality will not significantly affect time delay, as successful arbitrators are too much alike for personality to have explanatory effects.

Obviously, these are two competing hypotheses, each with its own supporting literature and underlying logic.

Methodology: Three Phases. Phase 1: The Sample. First, we build a sample frame of appropriate arbitrators in order to limit the number of arbitration cases to be analyzed. Approximately 60 Canadian arbitrators, representing all provinces and jurisdictions, are members of the NAA. Targeting NAA arbitrators ensured a certain level of experience, reputation and reliability. Only those arbitrators who consistently did not report the hearing dates of their arbitration cases were excluded from the current study. There also are distinguished arbitrators who do not belong to the NAA because they have not applied, or their advocacy work disqualifies them from meeting the NAA’s stringent membership requirements. Interviews with members of the NAA helped us identify additional arbitrators, bringing the total number of arbitrators to 70, and we are still gathering data. Note that although this seems to be a small group, the labor arbitration “business” is highly concentrated. A small group of arbitrators do a disproportionate share of the cases. For example, in Quebec, Trudeau (2002, p. 38, citing earlier work by Blouin and by Hébert) found that fewer than 10 arbitrators render 25 percent of all awards, while half of the arbitrators produce less than 10 percent. Our research found between 31 and 35% of all Canadian cases are decided by NAA members.

Phase 2: Content Analysis of Arbitration Cases. By law, arbitrators in Canada must file their decisions with a Ministry of Labour or an equivalent body and these decisions are publicly available. We acquired all cases produced by our arbitrator sample over a three-year period (2003-2005, inclusive). Three years worth of cases enabled us to develop an accurate portrait of the “normal” work flow of any arbitrator, and the years are lagged somewhat in case arbitrators “procrastinate” in reporting their cases for the public record. The comprehensive data set of cases is a significant advantage of doing research in the Canadian setting; by contrast, American arbitrations are not routinely filed and are considered to be private documents. LexisNexis® QuicklawTM Research Service provided full-text retrieval of all 1957 cases.

The most important variable – our dependent variable – was the measure of elapsed time between the date of the final hearing and the issuance of the award. We found that the average time delay was about 53 days, and that there was extremely wide variability among decisions, with some arbitrators having ranges such as 13 days to 719 days. As post-hearing briefs are virtually unknown in Canada, the clock starts ticking with the end of the hearing. Delay is a wonderfully unobtrusive and concrete measure, as arbitrators routinely include this information without any notion that researchers will make use of it.

In addition, we coded the same types of variables used in other studies, e.g. regular or expedited case, public or private sector, federal or provincial jurisdiction, case complexity as measured by a number of proxy variables such as page length and number of issues, sole arbitrator or panel, discipline and discharge or policy grievance, presence of lawyers, gender of grievant, outcome of case, and the number of other cases rendered by the arbitrator in order to measure workload.

Phase 3: Survey of Arbitrators to Gather Personality and Situational Factors. We achieved 38 usable on-line or hard copy questionnaires, a response rate of about 70 percent among the Canadians we contacted. This high response rate resulted from the personal contacts of our co-author, and likely could not be duplicated by other researchers. Responses were kept confidential. Particular attention was paid to assure participants that neither Taras nor Ponak could access individual arbitrator results, as these members of the research team are peers of many of the arbitrator respondents.

We asked respondents over 200 questions about themselves, and most of these involved questions that build into multi-items scales that have been validated in previous research and have acceptably high internal reliability coefficients. The scales are listed in Table 1, with arbitrators’ mean scores and standard deviations, compared to general population measures of working adults. We also provide two illustrative graphs that contrast the normal curve for arbitrators against the general population measures.

The first two columns of Table 2 report the Cronbach’s alpha measure of each scale, and the number of items used to compose each scale.

Findings. Like other researchers before us, we explained 30 percent of the variance in time delay through our content analysis of case characteristics. There were no particular surprises. Expedited grievances are issued more quickly than regular grievances. Use of nominees significantly increases time delay. Dismissal grievances are issued slightly faster than other types of grievances, and complex grievances take longer to issue. Busy arbitrators have longer time delays. There were no effects based on age, gender of arbitrator or grievant, or presence of lawyers. In the survey directed to arbitrators, we also
asked whether they worked solo or in offices with others, and whether they had secretarial support. There were no significant differences based on how arbitrators organized their work situations.

**Table 1: Comparing Arbitrators to Population (where 1=low and 5=high)**

<table>
<thead>
<tr>
<th></th>
<th>Arbitrators (N=338)</th>
<th>General Population (N=602)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
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<tr>
<td>Self Efficacy</td>
<td>4.07</td>
<td>0.5</td>
</tr>
<tr>
<td>Need for Achievement</td>
<td>3.58</td>
<td>0.57</td>
</tr>
<tr>
<td>Lack of Energy</td>
<td>2.22</td>
<td>0.54</td>
</tr>
<tr>
<td>Sensitivity to Temptation</td>
<td>2.6</td>
<td>0.55</td>
</tr>
<tr>
<td>Attention Distractibility</td>
<td>2</td>
<td>0.62</td>
</tr>
<tr>
<td>Procrastination</td>
<td>2.13</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Table 1: Comparing Arbitrators to Population (where 1=low and 5=high)

Now we come to the crux of our project: does personality matter? We showed in Table 1 and the illustrative graphs the remarkable similarities of arbitrators. Clearly, there is support for the notion of a gravitational pull towards arbitration by people whose personalities match the job demands. While lawyers, for example, are more like the general population norms on procrastination, arbitrators are extraordinarily likely to be non-procrastinators. We also know from our questionnaires, that arbitrators are working pretty much flat out; that is, when arbitrations cancel, they use the time to write up their other decisions. When travelling out of town, they use hearing interruptions and evenings to work on their arbitration practices. There is remarkable similarity among arbitrators. Indeed, arbitrators are even so conscientious that we never found a single anomalous response to any of dozens of personality items; that is, arbitrators never made the error of filling out any measure that was reverse-coded so it read in the negative rather than the positive. This is quite unusual for personality surveys.

With the restriction of range of arbitrators’ responses to our personality variables (as shown by the low standard deviations), we had little expectation that Hypothesis 1 could be confirmed. To our surprise, bivariate regressions testing each of the personality dimensions on Table 2 against the natural logarithm of time delay, and weighted by the number of cases heard by each arbitrator, showed strong and significant effects of personality. (Multivariate regressions were not possible because of the small sample size.) In particular, the self-reported procrastination measure, based on an amalgamation of 10 questionnaire items, explained almost 30% of the variance in time delay. Each of the scales for temptation, distractibility, aversiveness to the task of writing decisions, and lack of energy, produced significant results, and each explained some portion of time delay. However, care should be taken not to add the R-squares, as the procrastination scale can be decomposed using these other items, and so they are not additive.

**Table 2: WLS Bivariate Regression of Personality Scales with LogDelay**

<table>
<thead>
<tr>
<th>Scale</th>
<th>Alpha</th>
<th>Item #s</th>
<th>R</th>
<th>R Square</th>
<th>Significance</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procrastination</td>
<td>0.85</td>
<td>10</td>
<td>0.538</td>
<td>0.29</td>
<td>0.001</td>
<td>0.294</td>
</tr>
<tr>
<td>Temptation</td>
<td>0.78</td>
<td>8</td>
<td>0.377</td>
<td>0.142</td>
<td>0.023</td>
<td>0.207</td>
</tr>
<tr>
<td>Distractibility</td>
<td>0.82</td>
<td>6</td>
<td>0.417</td>
<td>0.174</td>
<td>0.011</td>
<td>0.224</td>
</tr>
<tr>
<td>Aversiveness</td>
<td>0.76</td>
<td>2</td>
<td>0.341</td>
<td>0.117</td>
<td>0.042</td>
<td>0.118</td>
</tr>
<tr>
<td>Lack of Energy</td>
<td>0.73</td>
<td>6</td>
<td>0.384</td>
<td>0.148</td>
<td>0.023</td>
<td>0.21</td>
</tr>
</tbody>
</table>

*Not Significant but trending in the expected direction:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Alpha</th>
<th>Item #s</th>
<th>R</th>
<th>R Square</th>
<th>Significance</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td>0.88</td>
<td>10</td>
<td>0.013</td>
<td>0</td>
<td>0.939</td>
<td>-0.008</td>
</tr>
<tr>
<td>Need for Achievement</td>
<td>0.85</td>
<td>16</td>
<td>0.274</td>
<td>0.075</td>
<td>0.106</td>
<td>-0.136</td>
</tr>
</tbody>
</table>

In future, with a larger sample, we will be using Hierarchical Linear Modeling (HLM) to blend our two sources of data from the cases and the personality survey. For example, using HLM we will be able to determine if cases are delayed because they are complex, because the arbitrator is impulsive, or because impulsive arbitrators delay complex cases. This is the direction of our future analysis.
Conclusions. This study has shown that conventional, case-based coding can explain about 30% of the variance in time delay. Another 30% is likely due to the personality predispositions of arbitrators, confirmation of our Hypothesis 1. We believe that if case characteristics and personality can be added together – since they are likely to be uncorrelated – then we have been able to explain at least 60% of the variance in time delay. As our data collection continues and as we have a number of additional variables from the survey that need incorporation into the statistics (e.g. whether the arbitrator endured significant personal trauma that impeded the practice, whether the arbitrator is busy doing non-arbitration work, and so on), we may be able to present an even more complete portrait of time delay. Although Hypothesis 2, that arbitrators’ similarities would negate the effects of personality on time delay, was refuted, nevertheless, we have assembled a portrait of an occupation that shows support for the gravitational thesis. Clearly there is a strong personality profile for arbitrators!

A final caveat is necessary in discussing time delay. It could well be that a certain level of time delay is normal, and perhaps even optimal. Aggressive efforts to reduce delay by flooding the system with new arbitrator entrants would put business pressure on the more established, full-time arbitrators, who might then diversify their arbitration practice, take on other types of business, or leave the field entirely. This loss of expertise is not a good outcome, and it obviously is not desired by the parties to the collective agreement, who seem to tolerate significant delay to have experienced arbitrators of their choosing rather than appoint new arbitrators. Alternatively, to bring down time delay, we could work on ways of training experienced arbitrators so that they procrastinate less, but since they already barely procrastinate in relation to the general population, it is not likely that our efforts would be met with a warm reception.

Indeed, there seemed to be very little actual squandering of time among arbitrators. The very term “time delay” seems to have the connotation of culpability, which our research does not support. Perhaps some arbitrators who have a mild aversion to writing awards are more efficient at case scheduling, or perhaps at mediating. They may be “productive procrastinators” in the sense that they still use their time wisely, albeit not as diligently at writing awards. On an ongoing stock and flow basis, successful arbitrators are extremely efficient at managing their practices. They could not be faster at any one award without being slower at others, meaning there is little they could do to change their average time delay.

Acknowledgements. This research was funded by a grant from the Social Sciences and Humanities Research council of Canada. Our appreciation to Caroline Manchot, who gathered the bulk of the data used in this study, and to Tracey MacCorquodale, who continued to code arbitration cases. We are greatly indebted to the many arbitrators for its members’ participation in this study.

References

**Decisional procrastination and perceived locus of control among Pakistani public and private sector executives**

Saadia Aziz & Naeem Tariq
National Institute of Psychology, Quaid-i-Azam University, Islamabad, Pakistan

Real-life decision making is a dynamic, ongoing process, where one is supposed to formulate a set of values or ideas that can substantiate their decisions. In case of taking a decision or carrying out a task individuals judge whether they have sufficient resources to handle the situation or not, and if they perceive their resources as inadequate, they try to cope with the perceived anxiety that ensues, and avoid the situation by delaying the task or decision-making. Decisional procrastination (Ferrari, Johnson, & McCown, 1995; Mann, 1982) is a maladaptive style of deferring a decision in case of encounter with conflicts and choices. Substantial evidence suggests that people higher in decisional procrastination take longer time in making decisions. Two principal categories of decisional procrastination were provided by Mann (2000), one category highlights the social context in which the decision is to be made and other deals with individual factors and correlates. Milgram and Tenne (2000) demonstrated that locus of control affects how much a person procrastinates. A moderate level correlation was found between self-reported procrastination and locus of control (Beswick & Mann, 1994). People with an internal locus of control view successes as their own ventures and for that reason are optimistic (Ariely & Wertenbroch, 2002; Armenakis & Bedeian 1999; Pettigrew, Woodman, & Cameron, 2001) while people with an external locus of control are more likely to procrastinate as they believe that outside people or the environment has power over their destiny (Milgram & Tenne, 2000).

The cognitive process of decision making is influenced by the features of the perceived target, the perceiver, and the context (Bouckenooghe, Debussche & Warmoes, 2006; Robbins, 2001). Hull and Lio (2006) viewed that public and private sectors have dissimilarities regarding ownership, vision, market values, performance expectations or strategic constraints and these differences shape the context of both sectors such as public sector environment is marked by lack of competitiveness, an open systems character, and control of political forces rather than market forces (Rainey, 1983; Backoff & Levine, 1976). Devos and Bouckenooghe (2006) noted that public sector employees were low in readiness to change, internal locus of control and risk-taking reward orientation but had higher level of participation in decision making as compared to private sector. The feelings of personal and internal control increase with the hierarchy in job (Batool, 1999; Batool, 2003).

The aim of the present study was to investigate decisional procrastination and perceived locus of control among Pakistani public and private sector executives. Research was carried out in two parts; part I aimed for translation of DPS into Urdu through back translation method and in part II data collected from public and private sector executives was analyzed. The participants were 120 executives from public ($N = 60$) and private sector ($N = 60$), with equal number of executives ($N = 40$) at different level of hierarchy (i.e., grade 17, 18, 19 and above) and job experience (i.e., less than 3 years, 3-5 years, 5 years and above). Urdu version of Decisional Procrastination Scale (Mann, 1982) and Levenson’s Locus of Control scale (1973) were used.

Findings revealed no significant association between decisional procrastination and internal locus of control, yet the direction of inverse relationship between variables was in predicted direction. Significant positive relationship was found between decisional procrastination and powerful others and chance locus of control. Results showed significant difference between public and private executives in decisional procrastination, internal, powerful others, and chance locus of control. Findings also reflected significant difference among executives with varied job tenure (i.e., less than 3 years, 3-5 years, and 5 years and above) in their decisional procrastination and different facets of perceived locus of control. One way ANOVA revealed significant differences in decisional procrastination and internal locus of control in executives at different levels of hierarchy. Significant difference was also found among executives with varied job tenure (i.e., less than 3 years, 3-5 years, and 5 years and above) in their decisional procrastination and different facets of perceived locus of control. Moreover $2 \times 3$ ANOVA showed significant effect of organization and job hierarchy independently but their interaction turned out to be nonsignificant. Limitations of the study and recommendations for further analysis in the field of decisional procrastination are highlighted.
PRESENTATION SESSION 4: Psychopathological perspectives on procrastination
Friday: 16:00-16:50

**Procrastination and adult Attention-Deficit-Hyperactivity-Disorder: Two sides of the same coin?**
Fred Rist, Angelika Glöckner-Rist, Anna Höcker, & Margarita Engberding
Institute of Psychology, University of Muenster, and GESIS (Mannheim)

**Is procrastination a symptom or a disorder like other Axis-1-disorders in the DSM?**
Steps towards delineating a case definition
Margarita Engberding, Eva Frings, Anna Höcker, Johanne Wolf, & Fred Rist
Institute of Psychology, University of Muenster, Germany

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Fred Rist, Angelika Glöckner-Rist, Anna Höcker, & Margarita Engberding
Institute of Psychology, University of Muenster, and GESIS (Mannheim)

**Background.** According to campus-wide surveys at our university, up to 14 % of the students suffer from such severe procrastination that academic performance is considerably impeded and treatment appears mandatory. Professionals from the fields of psychology and psychiatry, but also the concerned students themselves, often assume that such severe procrastination is a consequence of an Attention-Deficit-Hyperactivity-Disorder (ADHD). In contrast, procrastination researchers see procrastination as an independent disorder characterized by impaired volitional processes. Only a study of Ferrari (2000) directly addressed this issue by presenting an ADHD checklist together with measures of procrastination, boredom proneness and self esteem to N=142 students. Correlations between procrastination and attentional deficits surpassed those between procrastination with boredom susceptibility and self esteem, but a factor analysis allocated attention and procrastination to different factors. Ferrari concluded that there is no relation between procrastination and attentional deficits. However, when we focus on severe forms of procrastination, procrastinators and adults with ADHD seem to share quite a number of symptoms and consequences. Therefore we applied measures of past and present symptoms of ADHD together with measures of state and trait procrastination in several surveys. Using both dimensional and categorical analyses, we will present data on the overlap of ADHD and procrastination.

**Study questions.** How are procrastination and ADHS related? Is procrastination a symptom of ADHS or is it an independent disorder?

**Methods.** In three successive online surveys at our university (N > 2 000), students answered standard instruments for the assessment of procrastination and ADHD (APS: Aitken Procrastination Scale; Aitken, 1982; German version by Helmke & Schrader, 2000; APSI: Academic Procrastination State Inventory; Schouwenburg, 1995; German version by Helmke & Schrader, 2000; ADHD-SB: Attention Deficit Hyperactivity Disorder self rating scale; Rösler & Retz, 2004; WURS-K: Wender-Utah-Rating Scale; Rösler et al., 2008). Students were randomly selected and sent an E-mail invitation containing the link to the survey measures. For both ADHD instruments validated cut scores are available for screening purposes. As cut score to screen for procrastination, the mean answer score for the Aitken Procrastination Scale (APS) of all students treated for procrastination in our outpatient clinic (N > 300) was used. The relation between ADHD and procrastination was determined a) by applying cut scores to categorically define the presence of ADHD and the presence of procrastination, and b) relying on the continuous sum scores, by structural equation model (SEM) analyses.

**Results.** The APS was correlated $r = .13$ with the retrospective ADHD assessment (WURS) and $r = .24$ with the assessment of current ADHD symptoms (ADHS-SB). The highest correlations of the APS with subscales of the ADHD measures were found for attention symptoms ($r = .25$ and .40). In the categorical approach, 6% of the students fulfilled ADHD criteria and 50% of these ADHD students also scored above our procrastination cut score. According to the SEM analysis, procrastination was associated strongly with ADHD inattention, but negatively with ADHD hyperactivity, while it was not related to ADHD impulsivity. These analyses will be repeated with the most recent survey data.
Conclusion. Dimensional measures of ADHD and of procrastination were only weakly correlated. Apparently, they do not operationalise the same construct. In addition, SEM results confined the association between ADHD symptoms and procrastination exclusively to the inattention domain, assigning hyperactivity symptoms a protective status with respect to procrastination. Although we found a considerable overlap between the groups defined by cut scores for procrastination and ADHD, this overlap is by no means complete. Also, we have to take into account that several items of the ADHD measures tap the procrastination domain. Thus, item overlap between procrastination and ADHD measures will artificially enhance the association between both constructs and the overlap between groups defined as procrastinators and as suffering from ADHD, respectively. Thus, we conclude that procrastination cannot be considered a consequence of ADHD, but exists besides ADHD as a disorder in its own right.

Is procrastination a symptom or a disorder like other Axis-1-disorders in the DSM? Steps towards delineating a case definition
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Background. Procrastination, in the sense of delaying personally relevant actions to a pathological extent, is not only a problem of university students, but is also common among the general population, according to epidemiological studies. However, a categorical case definition is still missing. Ferrari asked for such a case definition already in 1995. A categorical case definition is the prerequisite to investigate procrastination as a psychological disorder like other disorders in the Diagnostic and Statistical Manual of the APA (DSM). These case definitions consist of obligatory criteria (A-criteria), i.e. symptoms that have to be present in each case for assigning the diagnosis of a psychological disorder. Further criteria describe defined groups of symptoms, from which only a certain number has to be present in addition (B, C, D-criteria). Also, exclusion criteria have to be provided. In several surveys with students of the University of Muenster (N > 300) information was collected regarding occurrence and personal and academic consequences of procrastination, reasons for delaying actions, correlations with depression, ADHD and neuroticism. A preliminary case definition including frequency, magnitude and consequences of procrastination was validated with these data.

Study Questions. To arrive at a practically relevant case definition for procrastination, we have to answer two questions: First, is procrastination a dimensional construct, or is it possible to distinguish between pathological procrastination and variants within the norm by means of a case definition? Second, which criteria can be combined to reliably and validly identify individuals with clinically relevant procrastination?

Methods. The preliminary case definition was rather liberal so that too many subjects were wrongly classified as suffering from clinically relevant procrastination. Thus, our most recent survey (2011) was conducted to optimize discriminatory power and specificity of our preliminary case definition (N = 990). With these data, a more precise case definition will be tested. The difficulty of the criteria relating to personal importance of delayed actions, distress, and reduced performance caused by procrastination has been increased. The experience of procrastination was assessed with respect to a) the aversive quality of the task, and b) the active search for competing activities, and c) bodily and cognitive complaints when important tasks were delayed. Potential criteria related to the extent of procrastination, to the experience of procrastination and to its consequences were tested for sensitivity and specificity by means of logistic and best subset regression models and ROC-analyses. A procrastination cut score for separating cases and non-cases was derived from the patients treated for procrastination in our outpatient clinic (N > 300). The most sensitive and specific criteria will be combined to form a case definition, analogous to the A-, B-, C-, and D-criteria of the DSM.

Results. A preliminary case definition based on the earlier surveys differentiates between pathological procrastination and variants within the norm. Four relevant criteria were found: constant feeling of time pressure and not completing tasks (OR 4.86), reduced quality of work products (OR 2.06), frustration of personal goals (OR 2.29), and degradation of social relations (OR 2.0). The data of the present study are currently being analyzed to test a tightened case definition to maximize sensitivity and specificity of the suggested case definition. According to the earlier surveys, procrastination is highly associated with fear of failure and depression. There is a categorical overlap of procrastination and depression and ADHD, respectively. However, the overlaps are too small to conclude that procrastination can be defined as a mere symptom of these disorders.
**Discussion.** The numerous publications concerning procrastination to date do not differentiate between clinically relevant procrastination - i.e. pathological, treatment-requiring forms - and less severe, situational or transient variants within the norm. According to our findings, pathological procrastination can be defined as an extreme of a dimensional construct as well as in form of A-, B-, C- and D-criteria in analogy to case definitions of the DSM. Accepting such a categorical case definition should greatly benefit research and treatment of this disorder.
The choice of temptation and the coincidental delay of our better intentions  
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Re-establishing the freedom of choice: A causal model of academic procrastination based on the theory of psychological reactance  
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Active procrastination, passive procrastination and personality context  
Mgr. Andrea Slivjaková & Mgr. Helena Klimusová, Ph.D.  
Masaryk University, Brno, Czech Republic

Utilisation of an internet based self test for procrastination  
Johanna Schulte, Anna Höcker, Karoline Krumm, Margarita Engberding, & Fred Rist  
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Validation of thesis writing procrastination scale  
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Measuring procrastination: A generic instrument assessing delaying, aversion and active distraction  
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Procrastination is commonly defined as the voluntary delay of an intended course of action despite awareness that acting later will have negative consequences (Steel, 2007; White, 2009). Although essential to the definition, research on the intentions of procrastinators is lacking. This is evident not only by the absence of a standardized instrument to measure prior intentions and actual outcomes, but apparent in our lack of understanding as to why procrastinators fail to follow-through despite their better intentions. Accordingly, one objective of the following study was to examine the nature of procrastinators’ intentions in regard their plans to study over a two week period. Specifically, we explored how realistic their intentions were and the proportion of follow-through they were able to achieve relative to what they had intended, and to those with lower procrastination scores.

Procrastinating also implies that an “other” course of action (or inaction) is necessarily taking place if the intended act is not. Accordingly, rather than examine various relationships as they related to the nature of what is intended and the task that is delayed, this study examined why procrastinators were not following through with their intentions by examining temptations which have previously been shown to derail them from their better judgement (Dewitte & Schouwenburg, 2002; Schouwenburg & Groenewoud, 2001). In other words, we hypothesized that a vulnerability to temptations might explain why procrastinators have difficulty meeting deadlines, and in this case, deadlines they set for themselves.
Finally, we explored whether various participant characteristics (i.e., a sense of mastery), would play a protective role despite an apparent vulnerability to temptations or procrastination.

Overall, 190 participants (141 female, 49 male) were recruited from the University of Windsor. At Time 1, participants were asked to report the amount of time they were planning to study for various academic tasks in the upcoming two weeks. They also completed Lay’s (Lay, 1986) (1986) General Procrastination Scale and the Self-efficacy for Self-regulated Learning Scale (Zimmerman, Bandura, & Martinez-Pons, 1992). In an attempt to capture behavioural measures of both procrastination and temptation, we contacted all participants two weeks after their initial participation and asked them to report the actual time they spent studying and whether or not they were faced with a conflicting temptation while doing so. The nature of the temptations to which they were prone was assessed using Plummer et al. (Plummer et al., 2001) Situational Temptations Questionnaire which we revised for academic purposes.

Results revealed that an overestimation of intentions was strongly related to how much students intended on studying in the first place. Interestingly though, procrastinators are unique in this sense, initially intending less to begin with. Despite these trends in data, increases in procrastination significantly predicted less intention follow through, suggesting that although procrastinators have fewer intentions than their peers; proportionally, they still follow through less with their intentions. Results also demonstrated that a vulnerability to “positive-social” temptations predicts less intention follow through and is associated with higher procrastination scores. A sense of mastery over ones academic tasks played a protective role when students were faced with tempting alternatives.

Employing a two time point methodology not only resulted in behavioural measures of procrastination and temptation, but further allowed for a deeper exploration in to the nature of those tempting alternatives that procrastinators choose. As such, this study provides evidence that procrastination need not be limited by definitions which posit a singular and at times problematic relationship between delayed task and agent. Rather, in the context we explored, it is apparent that an exploration of what the procrastinator is doing while procrastinating may enhance our understanding of the problem. These findings also suggest that interventions targeting regulatory processes should consider the role of temptations. Indeed, one of the weaknesses of using temptations as a predictive measure is that it is very dynamic and relative to context. What is tempting may very well be dependent on the task at hand or how appealing it seems at any given moment. Although using a student sample limited the generalizability of our findings, it in many ways held constant the dynamic of temptations because of the similarity our participants shared in context and type of work.

The following study provides evidence that the “delay” entailed in procrastination becomes only coincidentally related to the construct of procrastination if the agent was tempted to act against their better intentions. In other words, when an intended course of action becomes “delayed” in this way, it does so as a consequence of a series of other choices which are then only loosely related to the “delay” of what was previously intended.

References

Re-establishing the freedom of choice: A causal model of academic procrastination based on the theory of psychological reactance

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The primary purpose of the study was to develop and test a new causal model of academic procrastination based on the implications of Brehm’s theory of psychological reactance. Supplementing the current motivational models of procrastination, which rely on task aversiveness as the primary triggering factor, the model is an attempt to provide an explanation for phenomena such as putting off non-aversive (even attractive) tasks, putting of tasks despite the threat of punishment, sudden increases in the preference for mundane and unattractive distractions, and compulsive distractedness in procrastinators. According to the theory of psychological reactance, a change in preferences for different activities might occur situationally as an effect of the motivational tendency of the individual to re-establish an eliminated or restricted freedom of choice.

In order to test the basic applicability and relevance of the model for further research, a pilot study was conducted on the sample of 105 undergraduate and graduate students, concerning the relationship of various aspects of procrastination and psychological reactance. The level and nature of academic procrastination were determined by several measures, including Solomon & Rothblum’s Procrastination Assessment Scale – Students, the Aitken Procrastination Inventory, and Schouwenburg’s Academic Procrastination State Inventory. Apart from these, the students provided information about concrete tasks they had recently worked on, including approximate timing of various steps in dealing with the task, as well as self-reported levels of procrastination, anxiety, interest/aversion, and result quality associated with the task. As a measure of trait reactance the Hong Psychological Reactance Scale was used. Finally, an additional self-reporting set of statements – a “Reactant Procrastination Scale” – was devised to estimate the occurrence of behaviour and experiences hypothesised to be the aspects of the “typical reactant procrastination experience” (preference oscillation; increased attractiveness of otherwise uninteresting activities; compulsive attraction towards banal distractions; increased task aversiveness merely due to the presence of a deadline; increase in task attractiveness after the deadline; etc.). The results suggest that even though there is a clear positive relationship between procrastination and trait reactance (correlations ranging from .28 to .33), the structure of this relationship is a more complex one. Reactance – as measured by the HPRS – emerged as a three-factor construct with the three factors having different effects on procrastination: While the factor expressing explicit aversion towards external regulations and influences over one’s behaviour correlated positively with procrastination, the remaining two factors, representing a more abstract and general need of freedom and autonomy, were unrelated to procrastination. The compulsive attraction towards distractions, however, was related to all of the factors at least partially. The results suggest that psychological reactance is truly associated with situational preference change, which, however, tends to be rather subliminal and quite common for both procrastinators and non-procrastinators. While non-procrastinators are able to cope with this distracted state of mind through self-regulation, procrastinators, who are more likely to find external restrictions of their freedom of choice unacceptably intrusive, are not.

In the final stage of the data analysis, the relationships between various factors found in the measures used were examined to provide a basis for a new and more complex hypothetical causal model of procrastination and task orientation, which involved task attractiveness/aversiveness, psychological reactance, achievement motivation, and anxiety, as relevant components. A cluster analysis with chosen factors confirmed there were three distinct types of procrastinators distinguishable by these four dimensions: aversive procrastinators with high anxiety levels, reactant procrastinators with high (either positive or negative) arousal levels and presumably high need of achievement, and reactant procrastinators with low arousal levels and surprisingly positive attitudes towards academic tasks.

Active procrastination, passive procrastination and personality context

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In our research we define procrastination as an irrational but at the same time deliberate postponement of a planned action that includes involvement in different (and originally not planned) activities. This personality trait is mostly considered to be relatively stable and dysfunctional. However
there are authors who suppose that procrastination can lead to desirable outcomes. Choi and Moran (2009) distinguish between two different forms of procrastination. Passive procrastination is the traditional procrastination and is considered to have negative consequences. Active procrastination is the intentional decision to procrastinate. It leads to desirable outcomes and it means that the person is willingly utilizing increased motivation under time pressure. Our research is focused on the possible existence of the above mentioned two types of procrastination and on the possible existence of a relationship between one type of procrastination and a personality profile. Our preliminary findings in 2010 (Sliviaková, Klimusová) supported this premise. Therefore we are extending our sample to reach at least 600 respondents. They are filling out the General Procrastination Scale (Lay, 1986), New Scale of Active Procrastination (Choi, 2009) and selected scales of the 16 PF Fifth Edition (Cattell, 1994). Poster shows the results and conclusions.

Utilisation of an internet based self test for procrastination
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Background. Procrastination in terms of pathological delay is a severe and comparatively frequent problem of self-regulation. Little is known about its prevalence in the general population, as most of the research takes place in the academic context. Apparently, procrastination is neither qualitatively different nor less frequent in other work contexts (Harriott & Ferrari, 1996). Its prevalence and also the increasing general interest turned procrastination into a frequently discussed issue on the internet. However, offers for self-diagnosis of procrastination, similar to those available e.g. for depression and alcohol problems via internet, are not well established. On the website presenting our special outpatient clinic for the diagnosis and treatment of procrastination at the University of Muenster (www.arbeitsstoerungen.de) we offer such a test. During the last 3 years, several thousand persons have turned to this site to receive individualised feedback on the extent of their procrastination and also to receive counsel with respect to treatment options. We will present a) the diagnostic procedures established, b) general characteristics of this group of users, c) screening results obtained for procrastination, depression and ADHD, which were also assessed to provide clues to differential diagnoses.

Methods. The self test is presented on the website of the special psychotherapeutic outpatient clinic for procrastination of the University of Muenster. The self test can be performed voluntarily and without costs. A total of N = 11 049 people opened the link to the test during the interval from February 2008 until June 2010. After data cleansing (drop-outs, response time and possibly inconsistent answers), the answers of N = 8 655 participants were analysed. The test offers questionnaires for demographic data and the assessment of procrastination (first subscale of the Aitken Procrastination Scale (“procrastination”), Aitken, 1982; German version by Helmke & Schrader, 2000), depression (German version of Patient’s health questionnaire PHQ-D; Löwe et al., 2002) and retrospectively reported childhood ADHD (German short version of the Wender Utah Rating Scale, WURS-K; Rösler et al., 2008). For screening purposes, validated cut scores are provided for the depression and for the ADHD instruments. To screen for procrastination, we used as a cut score the mean of the APS scores from all students who applied for procrastination treatment in our outpatient clinic.

Results. The users were heterogeneous with respect to age, education, occupation and family status. The majority of the participants who began the test also finished it to obtain their feedback (80%). Only 35% were students. The participants appeared considerably burdened: 32% of the respondents screened positive for procrastination. 45% of this group also scored above the cut score for depression, and 38% of this group above the cut score for ADHD. The majority of the procrastinating persons were students, pupils and unemployed persons. However, 30% were employed in non-academic contexts. Characteristics of the user of our self report will be reported in our poster.

Conclusion. The self test presented in this study drew a large number of participants with a low rate of drop-outs. This illustrates the interest and motivation of numerous people to participate and receive feedback on their personal problems related to their work behaviour. The participants suffered to a considerable extent from symptoms of procrastination, depression and ADHD. This result encourages attempts to reach people with procrastination problems through internet offers also outside the university. Also, it is obvious that there is a need for diagnostic and psychotherapeutic offers focusing on procrastination problems.
Validation of thesis writing procrastination scale
Ide Bagus Siaputra
Faculty of Psychology, University of Surabaya, Indonesia

Study Purpose. Developing and validating a single self report which can measure all of the proposed components by temporal motivation theory (TMT; Steel, 2007).

Contribution. Availability of a standardized and valid measurement of thesis writing procrastination.

Theory. Temporal Motivation Theory (TMT) consist five components (Steel & König, 2006; Steel, 2007; Gröpel & Steel, 2008), such as subjective utility (U), expectancy (E), value (V), sensitivity to delay (Γ), and time delay (D). Inter-component relations presented at formula 1.

\[ U = \frac{E \times V}{1 + (Γ \times D)} \]  

(Formula 1)

Note: 1 = constant number, to prevent equation producing infinite number when \( WT = 0 \) (zero)

Subjective utility in the TMT approach categorized as a multifaceted construct (Carver, 1989; Hull, Lehn, & Tedlie, 1991). Carver stated there were two approaches in perceiving multifaceted construct, as latent variable model or as multiplicative model. Hull, Lehn, and Tedlie have suggested the third model, additive model. In the additive model, each component has unique contribution, but rejecting components multiplicative interaction. In multiplicative model, correlation tests using multiplicative composite scores are prohibited (Bagozzi, 1984; Busemeyer & Jones, 1983; Evans, 1991; Lubinski & Humphreys, 1990). One of the reason was those composites often concealed unique contribution of each facet and miss out the most important information about the multiplication effect (J. Cohen, P. Cohen, West, & Aiken, 2003). In that case, Hierarchical Linear Regression/HLR are more considered as a more appropriate statistical data analysis technique.

Method. Subjects are undergraduate student at FP UBAYA. Total number of student who were doing their thesis at the time of this study are 357. Number of the participants are 232, so the response rate is about 65%. Thesis writing procrastination manifested as low score of U, which consisted four components. Standardized instrument were used to measure value (V) and sensitivity to delay (Γ). Items used to measure expectancy (E) and time delay (D) constructed using conceptual model and item writing principles (Azwar, 1999; APA, 2010). In order to speed up data collection and improving accuracy of data processing, a computer-based measurement were prepared. The program named Tes Kegunaan Skripsi (Thesis Utility Test). This automaticity can reduce data processing period and eliminate chances of typing error. The results were tested for internal reliability and internal structure. Reliability testing were conducted using two models, Alpha Cronbach and Mosier composite reliability (1943). All data analysis performed using non-parametric techniques, due to the violation of normality assumption.

Findings. Self-report results have high internal reliability (α Cronbach=0.834 and Mosier composite reliability= 0.775). The internal structure evidences have supported the theoretical framework.

Discussion. Reliability of Self-Report: Self-report results have high internal reliability rate. This conclusion were taken after considering that all reliability indices were already surpass the acceptance level.

Validity Evidences Based upon the Internal Structure of Self-Report. There is large correlation between expectancy and value (\( r = 0.960 \)), value and sensitivity to delay (\( r = -0.770 \)) and expectancy and sensitivity to delay (\( r = -0.410 \)). In contrast, Time delay only has minor and insignificant correlation with three other components. The existence of four error covariance at six sub-components (E1, E2, V1, V2, Γ1, and D2), suggested the existence of unique association which not yet represented by four TMT
components. However, this model has been supported by data, which can be seen from the low level of chi square $\chi^2 = 17.335$ ($p = 0.239$; $DK=14$), low level of RMSEA = 0.032, and high level of CFI = 0.990.

**Validity Evidences Based upon the Relation with Another Self-Report.** Supporting evidence were manifested in the high correlation between self-report scores and standardized procrastination inventory (PASS; Solomon & Rothblum, 1984). On the other hand, evaluation of the multiplicative model conducted using Hierarchical Linear Regression/HLR. Results of the HLR confirmed that the addition of multiplicative composite scores, as predictors were not statistically significant. It proved that there is not any multiplicative interaction between TMT’s components.

**Validity Evidences Based upon the Relation with Academic Performance.** Model fitness showed by low chi square ($\chi^2=5.034$; $DK=4$; $p=0.284$), low RMSEA (0.036), and high CFI (0.992). Unique contribution of WT on criterion suggested that it could be used to improve TKSS prediction power on latency of thesis completion. Nevertheless, low factor loading of TKSS on WT has made WT’s score could not been added in computation of KSS score.

$$U_1 = \left( \frac{E + V - T}{3} \right)$$

By retaining D’s unique contribution and latent variable model, a new composite score $(U++)$ was formulated as combination of $U++$. $U++ = U1 - D$

**References**


**Measuring procrastination: A generic instrument assessing delaying, aversion and active distraction**

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**Background.** Definitions of procrastination vary considerably, by focusing on different aspects. Procrastination may be seen as an outcome of different processes which are, among other things, determined by the characteristics of the task (van Eerde, 2003). People typically procrastinate more often on tasks which are perceived as unenjoyable, unpleasant or boring ((Blunt & Pychyl, 2000; Ferrari, Doroszko & Joseph, 2005). Delaying important tasks is generally accompanied by engaging in more pleasant activities (Van Eerde, 2000). Also, distractibility and procrastination are correlated ($r = .45$; Steel,
The aversive nature of the delayed important task on the one hand, the active search for distracting activities on the other hand thus are relevant facets of procrastination, but they are not covered in typical measuring instruments. Therefore, we attempted to develop a generic instrument to assess the extent of pathological delay, the aversion of the delayed tasks, and the active search for other activities on separate subscales, across various work contexts. We will present the development and the psychometric characteristics of this general procrastination questionnaire (APROF: Allgemeiner Prokrastinationsfragebogen).

**Method.** In a cross-sectional study in 2009, N = 1528 students of the University of Muenster completed several questionnaires, including the first version of the APROF. An exploratory factor analysis suggested a three factor solution for the APROF (“delaying”, “aversiveness” and “seeking distraction”). Based on results of confirmatory factor analysis some items were modified or replaced. In our most recent online-survey N = 990 students completed the revised version of the APROF. The questionnaire consists of 18 Items with a 5-stage response format (hardly ever-almost always). Students also completed the Aitken Procrastination Scale (APS; Aitken, 1982; German version by Helmke & Schrader, 2000), Academic Procrastination State Inventory (APSI; Schouwenburg, 1995; German version by Helmke & Schrader, 2000), procrastination scale of the Melbourne Decision Making Questionnaire (Mann, Burnett, Radford & Ford, 1997) and questionnaires about ADHD (WURS-K; Rösler, Retz-Junginger, Retz & Stieglitz, 2008; ADHS-SB; Rösler & Retz, 2004) and depression (PHQ-D; Löwe, Spitzer, Zipfel & Herzog, 2002).

**Results.** An exploratory factor analysis reproduced the previously obtained three-factor structure. “Delaying” explains 25.7 % of the variance, “Aversiveness” 22.3 %, and “Seeking Distraction” 17.5 % (65.5 % in total). Cronbach’s Alpha values are .92, .89, and .84. Correlations between the three factors are in the medium range (.46 ≤ r ≤ .58). Evidence for convergent and discriminant validity will be presented via correlation and regression analyses with the other instruments.

**Conclusion.** The instrument APROF meets high psychometric standards. It differentiates between a general tendency to delay work on personally relevant tasks, between appraising this task as aversive and between actively searching for distracting activities. Measuring the two additional facets of procrastination in addition to the sheer tendency to delay should help to differentiate between clinically relevant forms of procrastination in need of treatment and other, transient or situation-specific variants.
PRESENTATION SESSION 5: Procrastination and health
Saturday: 9:30-10:45

**Procrastination, stress, and health: Exploring the role of self-compassion**
Fuschia M. Sirois  
Department of Psychology, Bishop’s University, Sherbrooke, Quebec, Canada

**Procrastination and healthy life-style: Some health behaviours and five-factor personality traits in relation to procrastination**
Asja Videčnik & Eva Novak  
Educational Research Institute, Ljubljana, Slovenia

**When knowing better doesn’t mean doing better: Understanding the roles of procrastination and self-blame in the health and well-being of nurses**
Fuschia M. Sirois & Dale Stout  
Department of Psychology, Bishop’s University, Sherbrooke, Quebec, Canada

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**Background.** There is growing evidence that procrastination can have negative consequences for not only psychological well-being but also physical well-being, and that stress may play a central role (Sirois, 2004, 2007a, 2007b; Sirois, Melia-Gordon, & Pychyl, 2003). However, the sources of procrastinators’ stress remains debatable and can be viewed as arising from behavioural regulation failure and/or from internal sources such as negative self-talk. Indeed one study found evidence for the latter view as low mindfulness – a critical and non-accepting attitude towards oneself - was found to mediate the links between procrastination and stress, and procrastination and health (Sirois & Tosti, in press). Self-compassion – taking a kind and understanding stance toward oneself in instances of pain or failure rather than being harshly self-critical (Neff, 2003) – is conceptually similar to mindfulness and therefore may provide insight into the internal sources of stress associated with procrastination. If failure to followthrough with intended behaviours is viewed judgementally and harshly rather than with understanding and acceptance then this may exacerbate the stress associated with procrastination. The links between self-compassion and procrastination in the context of health and well-being have not been previously explored.

**Objectives.** Using data from four different studies, this paper explores the role of self-compassion in understanding the associations among procrastination, health and well-being. Given previous evidence suggesting that procrastinators are self-critical it is expected that procrastination will be associated with low levels of self-compassion which in turn will be linked to high levels of stress. A secondary aim is to explore the possible role of self-compassion for explain the poor health behaviours of procrastinators, as taking care of oneself often requires first being selfcompassionate.

**Methods.** Study 1 data was collected from 145 undergraduate students who completed a survey including measures of procrastination, stress, and self-compassion. For Study 2 (N = 190) and Study 3 (N = 339) data was collected from undergraduate students who completed measures of procrastination, self-compassion, stress, rumination, wellness behaviours, and perceived health. Study 4 data was collected from 94 community-dwelling adults who completed surveys initially (T1) and at a 6 month follow-up (T2) in a study of intended healthy changes. Measures of procrastination, wellness behaviours, and stress, were completed at T1, and measures of self-blame, self-compassion, stress, and wellness behaviours were completed at T2.
**Results.** Across all four studies procrastination was negatively correlated with self-compassion as expected, and positively correlated with stress. Self-compassion was also negatively correlated with stress suggesting a buffering role. Regression analyses predicting stress from procrastination and self-compassion entered simultaneously for the data from Studies 1, 2, and 3 found that both procrastination and self-compassion were unique predictors of stress; however, there was some evidence of partial mediation of the effects of procrastination on stress by self-compassion as hypothesized. For Study 4, evidence for the mediating role of selfcompassion in the procrastination-stress relationship was found with self-compassion mediating the link between procrastination and Time 2 stress. Study 2 and 3 provided further evidence for the role of internal sources of stress as procrastination was positively and self-compassion was negatively associated with brooding rumination. Procrastination was negatively associated with the practice of wellness behaviours and perceived health whereas self-compassion was linked to better wellness behaviours and perceived health in these two studies. However, there was no evidence of self-compassion mediating the effects of procrastination on wellness behaviours.

**Conclusions.** Taken together the findings from these four studies are consistent with previous research indicating that procrastinators’ view themselves self-critically. The current findings are unique, however, in that they provide some support for the notion that taking a critical, uncompassionate view of the self may generate stress and this tendency may partially account for the high levels of stress experienced by procrastinators which contribute to their poor health. Previous research on a related construct, self-forgiveness, found that self-forgiving for procrastination was linked to less procrastination on future related tasks by reducing the negative affect associated with procrastination (Wohl, Pychyl, & Bennett, 2010). Thus, interventions to enhance self-compassion may provide a similar reduction in procrastination as well as stress and therefore be beneficial for the overall health and well-being of procrastinators.

**References**


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**Procrastination and healthy life-style: Some health behaviours and five-factor personality traits in relation to procrastination**

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**Introduction.** The goal of this study was to explore procrastination and physical activity (exercise), along with other indicators of a healthy life style. Past studies have examined the relationships between personality traits and health behaviours, many of them focusing on personality dimensions. The relationship between conscientiousness and health behaviours (exercise, alcohol use, drug use, unhealthy eating, tobacco use …) has been meta-analytically investigated by Bogg and Roberts (2004) and shows negative relationship between the factors. Further studies indicate trait procrastination to be associated and related to conscientiousness (Johnson & Bloom, 1995; Lay, Kovaæs & Danto, 1998; Schouwenburg & Lay, 1995; Videčnik, 2009, Watson, 2001).

In this domain the relationship between health behaviour and procrastination has been somewhat covered (e.g. Tice & Baumeister, 1997; Sirois, Melia-Gordon & Pychyl, 2003; Sirois, 2004). Current theoretical and empirical research on the relationship between personality and health offers some support for the associations between procrastination and health suggested by Tice and Baumeister (1997), leaving out the motivational aspect. Or as Solomon and Rothblum (1984) put it “procrastination involves far more
than deficient time management and (study) skills.” (p. 503). Reasons for this behaviour pattern seem of great importance.

Our study had three objectives: (a) to determine the frequency of procrastination with health behaviours among pilates workout clients, (b) to investigate possible sets of reasons for and against procrastinating with the workout and (c) to explore the relationship between these reasons and the big five personality factors (McCrea in Costa, 1999).

We used the PASS (Procrastination Assessment Scale Students; Solomon & Rothblum, 1984) as a template, and formed a scale, including 6 areas of health behaviours – I. EXERCISE (adequate physical activity), II. DIET (healthy eating habits), III. SLEEP (sufficient sleep quantity), IV. TREATMENT DELAY (in cases of illness), V. SMOKING (quitting in case of tobacco use) and VI. ALCOHOL (quitting in case of excessive alcohol use). For the second part of the scale we formed different possible reasons for and against procrastinating with pilates workout. In this second part we acknowledge previous research on motives for exercise (Davis, Fox, Brewer & Ratusny, 1995; Pelletier, Vallerand & Sarrazin, 2007), and partly tried to parallel reasons from the original PASS.

Method. Participants, Measures and Procedures. A sample of 169 pilates workout clients (163 females) between the ages of 18 and 72 years (M = 35.8) completed measures of big five personality factors (TIPI; Ten-Item Personality Inventory; Gosling, Rentfrow, and Swann, 2003), procrastination (PHLSS; Procrastination with Healthy Life-Style Scale; conducted for this study by the authors) and demographic information.

Data were collected with an on-line survey, sent to pilates clients from 4 different exercise centres in Slovenia.

Some results and findings. Principal component analysis (PCA). We conducted two Principal component analyses. Extracted four components (eigenvalues > 1) and rotated them (Varimax) (Table 1 and Table 2).

![Table 1](image)

Even though the first component referred to as Insecurity can explain the largest part, it is not the items in this factor that were highly endorsed. Rather it was items from the third and fourth components that were most often marked as reasons why not to go to pilates.

![Table 2](image)

The first component highly loads items which are also among those highly endorsed by subjects as reasons why they go to pilates and do not procrastinate. In Table 3 some significant correlations...
between the big five and reasons against procrastination can be found. Extraversion also negatively correlates with procrastination with exercising and healthy diet. Some correlations among different reasons for and against procrastination are significant.

**Discussion.** Our study examined procrastination on the domain of some behaviour associated with healthy life-style. Our results show that adequate physical activity is the area where subjects from our sample procrastinate most frequently (50 %). Trying to identify reasons for their procrastination, PCA derived four different sets of reasons why not to go to pilates workout in a given scenario. Data indicates laziness and reasons referring to poor health and busyness as most common excuses (Table 1). A further investigation of reasons against procrastinating (Table 2) seemed to yield interesting findings and has been an important contribution of this study. Both sets include relevant aspects of motives a person has for exercise and barriers a person perceives.

Some correlations among different reasons for and against procrastination (Table 3) are significant, and they offer some support of construct validity of the two scales of reasons. Correlation analyses also indicate some relationships between big five and procrastination variables. All significant correlations are low to moderate and offer some support to previous research - extraversion is positively related to exercise participation and adherence (Szabo, 1992; Yeung & Hemsley, 1997; Courneya & Hellsten, 1998). Our results show some reasons for going to pilates to be positively related to extraversion. Courneya and Hellsten (1998) reported that of the Big Five traits, conscientiousness was most strongly related to engaging in exercise behaviors and this factor is also one of the big five in our study that was found to be positively correlated to satisfaction after workout and regular routine as reasons for going. The preliminary nature of this study still leaves a lot of room for broader as well as more specific research.

**References**


When knowing better doesn’t mean doing better: Understanding the roles of procrastination and self-blame in the health and well-being of nurses

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Background. Previous research has established the deleterious effects of procrastination for health across a variety of health outcomes and with adult and student populations (Sirois, 2004, 2007a, 2007b; Sirois, Melia-Gordon, & Pychyl, 2003; Sirois, Voth, & Pychyl, 2009, August). Although this research indicates that procrastination primarily affects health through a direct, stress-mediated route, the reasons for procrastinators’ stress are only beginning to be examined. A study conducted with students found that low mindfulness – a tendency to be non-accepting and judgemental towards oneself – explained the link between both procrastination and health, and procrastination and stress (Sirois & Tosti, in press). Whether these results would replicate with an adult population and with a related construct, self-blame, has yet to be tested. Moreover, it is unknown if stress moderators such as social support can make a difference in the effects of procrastination on stress and health, and in a high stress context.

Objectives. The purpose of this study was to replicate and extend the procrastination-health model by examining the potential mediating role of self-blame, and by testing the possible moderating effects of social support on the links between procrastination, stress, and health in a sample of nurses using structural equation modelling. Because nursing is a highly stressful and demanding occupation we expected that chronic procrastination would be a “double edged sword” for nurses, creating further stress and putting them at risk for poor health while at the same time generating self-blame for not having better health given that they are health-care professionals who believe they should know better.

Methods. Nurses and nursing students were recruited via notices on online nursing boards (N = 335) and through a random mailing list of nurses provided by a provincial nursing association (N = 264). The resulting sample of 599 nurses completed a survey that included the Adult Inventory of Procrastination, revised (AIPR; McCown & Johnson, 2001), and measures of stress, self-blame, perceived social support and perceived overall and comparative health and illness vulnerability. Cases with missing data on the variables of interest were removed leaving a final sample of 567 nurses (93% female; M age 40.7 yrs.).

Results. Univariate analyses revealed the expected associations between procrastination, stress, and health, with procrastination significantly linked to higher stress across all three measures of stress, poorer perceived overall health, and poorer health relative to other nurses, the general public, physicians and family members. Procrastination was also linked to higher levels of illness vulnerability compared to other nurses and physicians. Similar to previous findings, procrastination was associated with higher levels of self-blame across three indicators, which in turn was linked to higher stress and poor health. Procrastination was also associated with lower perceived social support.

Latent variables were created for stress, self-blame, and perceived health and the fit of the proposed model to the data was tested using AMOS 19.0. The fit indices for a model with stress and self-blame covarying indicated a good fit to the data for the entire sample of 567, RMSEA = 0.08, CFI = 0.95. Further analyses of the nested models supported mediation of the procrastination-health link via self-blame and stress. Moderation of the models by social support was tested by comparing model fit across those with high social support (N = 344) versus those with low perceived social support (N = 223). Mediation was supported for both groups; however, significant differences in the paths between self-blame and social support, and between procrastination and health indicated that higher perceived social
support weakened the link between procrastination and perceived health, and between self-blame and stress (See Figures 1 and 2). This pattern of results supported the moderating effects of social support on the procrastination-health model.

**Conclusions.** The findings from the current study provide further evidence of the harmful effects of procrastination on health and suggest that critical self-blame can generate stress and negatively impact perceived health especially among health-care professionals who work with a lot of stress. That social support can lessen the negative impact of procrastination on health is a novel and promising finding that warrants further research and the development of possible interventions to reduce the health risk associated with procrastination, especially among vulnerable populations.

**References**
Procrastination is a widespread phenomenon, occurring regularly at school, at work, and in our daily lives (see Ferrari, Johnson, & McCown, 1995; Steel, 2007; Van Eerde, 2000). Procrastination is a self-regulatory failure, defined as the voluntary delay of an intended course of action despite the negative consequences of the delay (Steel, 2007). Such negative consequences of procrastination relate to missing deadlines (Ferrari, 1993; Van Eerde, 2003), poor performance (Ferrari, 2001; Steel, 2007), feelings of guilt (Pychyl, Lee, Thibodeau, & Blunt, 2000), and decreased mental health (Sirois, 2007; Tice & Baumeister, 1997).

Previous research on procrastination has exclusively studied the phenomenon at the individual level. However, people do not always operate individually; both at school and at work we often collaborate in groups or teams on tasks and projects. Teams are distinguishable groups of two or more people who work interdependently toward a common and valued goal (Salas, Dickinson, Converse, & Tannenbaum, 1992). Given the prominence of working in teams as well as the prevalence and negative consequences of procrastination at the individual level, it is important to examine to what extent procrastination occurs in teams. In other words, do teams engage in collective procrastination when working towards a shared goal? And if so, what are the predictors and outcomes of team-level procrastination? Theoretically, this study aims to extend our understanding of motivation and self-regulation in teams by synthesizing procrastination literature and team motivation literatures, and building theory on team-level procrastination. Practically, this study may contribute to work team effectiveness by yielding guidelines on how to decrease procrastination of teams.

Team procrastination is conceptualized as the unplanned voluntarily delay of intended goal-directed activities by the team. As related to previous theorizing on team motivation (e.g., Chen & Kanfer, 2006), team procrastination refers to the goal-striving system, and is proposed to be an indicator of team regulatory failure or counterproductive team behavior during goal-striving. In the present study, we hypothesized that team procrastination is predicted by both individual-level personality variables and team-level motivational state variables. More specifically, we propose that teams with team members that have a strong disposition to postpone that which is necessary to reach some goal (i.e., trait procrastination; Lay, 1986), will be more likely to engage in team procrastinatory behaviors. Furthermore, we propose that the team’s motivational states in terms of their goal commitment, team efficacy, and team goal orientation
are predictive of the team’s procrastinatory behaviors. Lastly, team procrastination is expected to relate to increased levels of stress and lower team performance.

Participants were 367 undergraduate students (78.7% female, $M_{age}=20.8$, $SD=2.8$) enrolled in a debating course, constituting of 133 debating teams of 2-3 members. Team members worked together to develop debating skills, complete a written assignment and give an oral presentation. Team performance measures reflected the team’s average grade for the written assignment and the presentation. Survey data were collected at four points in time during the course. Team procrastination was assessed twice with items like: “Our team postponed the preparations for the oral debate until the last minute”, and “Despite our intentions to start timely with the preparations for the oral debate, we had to do a lot still at the last moment”. We performed team-level analyses, aggregating all survey measures to the team level. ICC1-values suggest that team goal commitment accounted for considerable and significant variance in team procrastination at both Time 1, ICC1 = .65, $F(132, 225) = 5.97, p < .001$, and Time 2, ICC1 = .42, $F(132, 234) = 2.97, p < .001$, suggesting that team members share a common perception of the procrastinatory behaviors in their team. The correlation between Time 1 and Time 2 team procrastination was .55 ($p < .001$), suggesting that teams who procrastinated on their written assignment were also more likely than other teams to procrastinate on the preparation of the oral debate. This finding suggests that team procrastination may be interpreted as a climate-like team-level construct that has some stability over time. Further, Time 1 team procrastination was significantly negatively related to the time left between the hand in time of the written assignment and the deadline, $r = -.42, p < .001$, indicating that teams higher on Time 1 team procrastination were more last minute in handing in their written assignment. This finding presents further evidence for the validity of the construct of team procrastination.

Correlations further demonstrate that team procrastination significantly and positively relates to stress, but not to team performance. Regression analysis predicting team-level procrastination, demonstrated that on average teams with more men reported higher levels of team procrastination. Furthermore, teams with more team members high on individual trait procrastination, reported higher levels of team procrastination. The teams’ levels of goal commitment, debating efficacy, and learning-approach goal orientation were found to negatively predict team procrastination, whereas the teams’ levels of performance-approach and learning-avoid goal orientation positively predicted team procrastination.

In conclusion, the present study introduced the concept of procrastination to the team motivation literature, showing that some teams procrastinate, and that collective procrastination relates to increased levels of stress among the team members. Team procrastination was found to depend not only on characteristics of the individual team members, but also on the teams’ shared motivational states (i.e., team efficacy, team goal commitment, and team goal orientation). These motivational states may offer important leads to reduce team-level procrastination.

References


The effect of goal conflict on procrastination
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In the current presentation, we put forward the argument that individuals procrastinate in times of goal conflict. That is, people procrastinate when they have more than one objective at a given moment, and the prioritization of those goals is not clear. On the one hand, having two goals at the same time should motivate behavior. Because there is more to do, the actor should get started! However, an ironic consequence of having more to do is that the actor must then figure out which of the goals to pursue first. We expect that this assessment process will lead to (partial) paralysis, such that the decision regarding what to do prevents the person from actually doing anything (or as much as would otherwise be the case). This prediction was originally put forward by the 14th-century philosopher Jean Buridan, who argued that the presence of two equally desirable alternatives leads to a lack of progress on both. This position was elaborated in the parable of Buridan’s Ass, where a hungry ass stands between two appetizing bales of hay, but starves to death due to the inability to decide which bale to eat. While this hypothesis and the associated parable are quite well known, we do not know of any research testing these claims.

Note that the hypothesis presented here is quite strong. We are predicting that participants with two goals will spend less time overall pursuing those two goals than participants who only have one goal. A weaker version of this hypothesis has been put to the test already. Shah and Kruglanski (2002) found that priming an accessible alternative goal pulled resources away from a focal goal, reducing commitment, progress, and means generation with respect to the focal goal. This research suggests that, at the very least, having multiple things to do at a given moment is resource demanding. Yet, these findings do not provide evidence for the paralysis prediction. These findings are akin to finding that the ass reduces his eating of the first bale of hay when he realizes that a second bale of hay also is available. It may very well be the case that the overall magnitude of goal-directed behavior is still equal or greater in the two goal condition. That is, the resources pulled from the first goal may be allocated to the second goal, meaning that the same (or more) amount of action is enacted in the goal conflict situation. Our prediction goes beyond this research by suggesting that goal-directed behavior will be lower in the two goal condition than the one goal condition. We expect this to occur even though (and in fact, precisely because) in the multi-goal condition actors have more things to do.

In addition to the research on goal pulling, evidence for our proposed mechanism can be gleaned from research on the effortful nature of making choices. Research has found that individuals who are required to make choices experience a reduction in subsequent resources for goal pursuit, and that they engage in less successful self regulation, including an increase in observed procrastination (Vohs et al., 2008). Therefore, it seems that engaging in effortful decision making negatively impacts subsequent performance and leads to procrastination. Yet again, while generally supportive of our hypothesis, this research falls short of testing the strong argument of the paralysis hypothesis. In the Vohs and colleagues (2008) work, cognitive resources were first depleted by having them engage in decision making unrelated to the behavior to be performed. Would the same effect occur when the presumed depletion of cognitive resources occurs because they are thinking about the goal they would like to make progress on?

We predicted that when actors have two goals active at the same time, they would engage in less behavioral activity in pursuit of these goals than when they have only one goal active, even when routes to goal attainment were easily accessible. We expected that the conflict present in a two-goal situation would cause actors to spend less time acting on their goals. One way to reduce this conflict is to attach the two goals to one superordinate goal. In this way, action directed toward either of the goals has the potential to satisfy the alternative goal as well. Therefore, we provided all participants with two goals and
Reducing procrastination by scaffolding the formation of implementation intentions

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Theoretical Approach: Procrastination, Implementation Intentions, and Scaffolding.
Procrastination is the dysfunctional but voluntary delay of an intended action. It is a common phenomenon in all societal groups (although it is especially prominent in the academic domain, e.g. Senecal, Koestner, and Vallerand (1995)) and has been suggested to be the quintessential self-regulatory failure (Steel, 2007). It has been shown that procrastination can have severe effects on people's lives: it can for instance negatively affect school performance (Beswick, Rothblum, and Mann, 1988; Steel, 2007), or even have serious repercussions for one's health (Strongman and Burt, 2000).

Research shows that to overcome procrastination, it helps to form concrete and specific implementation intentions (Gollwitzer, 1993, 1996; Gollwitzer and Brandstatter, 1997; Owens, Bowman, and Dill, 2008). The use of implementation intentions has already proven its value, for instance as a means of facilitating response inhibition in children with Attention Deficit/Hyperactivity Disorder (ADHD) (Gawrilow and Gollwitzer, 2008), in increasing job seeking activities (Hooft, Born, Taris, van der Flier, and Blonk, 2005) and in establishing a more healthy diet (Verplanken and Faes, 1999; Adriaanse, Oettingen, Gollwitzer, Hennes, De Ridder, and de Wit, 2010). A problem, however, is that people often also procrastinate about forming effective implementation intentions. Usually, people are all-too-happy to settle for anemic intentions (Stroud, 2010). Thus, what is needed, are ways of supporting the task of forming effective implementation intentions.

The paper to be presented is part of a research program that aims to investigate different ways in which individuals can be supported in forming effective implementation intentions. It describes the development of a software application that aims to reduce procrastination caused by computer game overuse.1 Because the intended application not only aids people in forming implementation intentions, but also assists people to carry them out, it may be classified as scaffolding for the will (Heath and Anderson, 2010). Drawing on work on the “extended mind” (Clark and Chalmers, 1998), we have recently developed a model of extended volition that provides a useful framework for thinking about how to leverage and support self-regulatory capacities. This includes both harnessing the existing environment (or behavioral tendencies) in ways that decrease the likelihood of delay and introducing new, tailor-made forms of volitional supports, such as the application central to our study.

The Domain: Computer Game Overuse. For millions of people all over the world, computer game playing is an entertaining way of procrastinating, both at home (Porter, Starcevic, Berle, and Fenech, 2010) and at work (Block, 2001). We chose this domain because, owing to the immersive phenomenology of many computer games, it is probable that intentions ‘not to play too long’ will be particularly ineffectual. The application aims to provide the necessary scaffolding to ensure that people form effective implementation intentions prior to playing games.

The Application. The application will allow people to select programs (games) on their computer for which they, from then on out, will have to design implementation intentions about the conditions under which they will stop using that program. These can vary from ‘when the clock strikes 12.00 hours, I will quit this program’, to ‘when I have advanced three levels, I will save the game, exit the game, and start doing the next item on my to-do list’. Depending on the user's preferences, the implementation intention may be enforced by the application, either by attracting the user's attention with the sound of a bell, or by temporarily suspending the game and presenting the user with their implementation intention, or by quitting the game altogether without the user's intervention. To make the use of the application more attractive, a competitive game element will be introduced to motivate the user to comply with his or her own implementation intentions.
Future Work. In subsequent experimental studies that are currently being designed, several variants of the described application will be tested for effectiveness. Our presentation in Amsterdam will include a discussion of the different experimental designs for testing the effectiveness of the application and the underlying approach.

1 Computer game overuse is just one domain in which people can benefit from having effective implementation intentions in place. The concept of assistive technology that aids people in forming implementation intentions can (and will) be applied to other domains as well.

References


My Sims is Better than Me: The Defense Mechanism of a Procrastinator
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Study Purpose. Developing and validating procrastination measurement using behavior observation method, which incorporating computer games The Sims.

Contribution. Availability of a standardized and valid procrastination measurement using behavior observation method. Enrichment of procrastination nomological network, especially in the aspect of projective measurement.

Theory. The Sims creator (Will Wright) admitted that he had studied and applied psychology in studying and designing The Sims dan The Sims 2 (Kosak, 2004). He coined simology as a term to reflect sim’s psychology (Kramer, 2005). Many players project their life into The Sims world (Griebel, 2006), reflected through similarities in appearance, habit, until value (Curlew, 2005; Sicart, 2005). Griebel (2006) reported statistically significant correlation between Big Five personality profile and Schwartz Value Survey with The Sims game play. Those behavior might be perceived as adaptation, consciously or unconsciously. As a conscious action, those efforts were based upon Conservation value structure (Schwartz, 1992, 2007). Unconscious adaptation often labeled as defense mechanism (Gleser & Ihilevich, 1969; Zeigler-Hill & Pratt, 2007).

In The Sims world, sim can only execute one order at a time. It means, there are always be activities that brought forward and delayed. Temporal Motivation Theory/TMT suggested that determination of activities order based upon their subjective utility. The Sims 2 Game play Pattern Scale been developed to complement understanding about sim’s procrastination. This scale has three components, sim’s control (PS), sim’s academic performance (PA), and self-projection (PD). PA component developed to measure subjective utility of sim’s academic activity.

Results of procrastination measurement using self-report expected to be align with sim’s behavior observation. Both of them also expected to be aligning with measurement results using standardized instrument and thesis writing latency. However, results of multi-method measurement of thesis writing procrastination expected to reveal contradictory pattern between procrastinators and non-procrastinators. This condition believed to be embedding at value incongruence and defense mechanism.

Method. Based upon early registration, there were 56 students who want to participate. Unfortunately, until the final session of data collection only 48 subject (85,714 %) who were actually participate. Observation of sim academic activity were conducted on write term paper, do assignment, go to class, and go to final exam activities. Observation focused on duration and latency of academic activity. All information obtained through digital recording of subject’s game play using TechSmith ® SnagIt ©: the Windows Screen Capture Utility (version 8.1.0).

Reliability testing for behavior observation conducted using Spearman-Brown split-half model. As a mono-trait and multi-methods measurement, data analysis were also conducted to test congruence between of self-report and behavior observation.

Findings. Reliability testing suggested that most reliability indices were not good enough. However, as a whole, duration of academic activity was still acceptable ($\alpha=0.728$). Result of The Sims 2 Game play Scale has quite good reliability, especially on sims control ($\alpha=0.753$) and self-projection ($\alpha=0.652$). For academic achievement component, reliability index was not good enough ($\alpha=0.533$). Research results can be summaries into the following empirical model, which presented at Figure 1.
Discussion. Validity evidences based upon observation on sim’s behavior. There were three sources of evidences on observation of sim’s behavior, started from negative correlation with latency of term paper completion \((r=0.575, p<0.001)\), positive correlation with sim’s GPA \((r=0.577, p<0.001)\), and positive correlation with sim’s attitude to academic achievement \((r=0.308, p<0.05)\). Latency of term paper completion was also significantly correlated with all indicators. Beside duration of academic activity, latency of term paper completion were also correlated with sim’s GPA \((r=-0.494, p<0.001)\) and attitude to sim’s academic achievement. It means, the sooner a subject completing his/her term paper, the higher GPA his/her sim will get, and also the better his/her attitude to sim’s academic achievement.

Validity evidences based upon the relationship between sim’s behavior and real-world activities. Almost none significant correlation was found between observation on sim’s behavior and thesis procrastination and latency of thesis completion. Significant negative correlation were only found between latency of term paper completion and latency of thesis completion \((r=-0.351, p<0.05)\). Second, negative correlation between subject’s responses on item PA3 ("My sim often missed class or part-time job") and PASS-S score \((r=-0.258, p=0.038)\). Third, negative correlation were found between subject’s response on item PA3 and PASS-S2 \((r=-0.249, p=0.044)\). Overall, sim’s behavior were not related with procrastination measurement or latency of thesis completion.

References


The Latent Classes of Multidimensional Perfectionism and Self-Determination: Differences in Academic Procrastination
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This study was to identify distinctive classes in perfectionism (self-oriented perfectionism, others-oriented perfectionism, and socially-prescribed perfectionism) and self-determination (autonomy, competence, relatedness) and to explore the between-class differences in procrastination. A total of 359 college students participated in the study. A latent class analysis was performed resulting in three latent classes: Adaptive Perfectionism, Non-Perfectionism, and Expectation Correspondence. Adaptive Perfectionism Class is characterized by high self-oriented perfectionism and high self-determination. Non-Perfectionism is characterized by low self-oriented perfectionism but high socially-prescribed perfectionism as well as high self-determination. Finally, Expectation Correspondence is characterized by the high socially-prescribed perfectionism but low self-determination. Significant differences in procrastination were found among the three classes. In particular, people classified into Expectation Correspondence Class showed significantly high procrastination tendency, implying that those who believe others imposed them high standards along with a low level of self-determination may exert more procrastination behaviors than other people. Implications are discussed for educators to intervene procrastinating behaviors of college students.
Experience sampling of academic procrastination in students’ everyday life
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The relationships between perfectionism, depression and academic achievement in university students
Stojiljkovic, S., Todorovic, J., Todorovic, D., & Doskovic, Z.
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Switching to the bachelor and master format in the German university system - does it affect procrastination?
Karoline Krumm, Julia Patzelt, Carolin Spieker, Inez Frank, Margarita Engberding, Anna Höcker, & Fred Rist
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Routine clinical treatment for procrastinating students: Clinical routines established, characteristics of patients treated, and treatment success
Eva Frings, Lena Beck, Karoline Krumm, Anna Höcker, Margarita Engberding, & Fred Rist
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Focused clinical treatment of procrastination by means of working time-restriction
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Delayed or done: About goal focus as a self-regulatory mechanism to reduce procrastination
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Experience sampling of academic procrastination in students’ everyday life
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**Background.** Procrastination is usually assessed by self-report questionnaires. However, a precise definition of the construct requires multiple measures, in particular behavioral indices. An example is the study of Pychyl et al. (2000), which used for the first time the experience-sampling method (ESM) to assess procrastination: Students were paged several times a day to report their current procrastination behaviour, mood and activity. They were found to delay during 36% of their waking time, and to refrain from unpleasant, stressful and difficult tasks in favour of more pleasant activities. The present study used ESM a) to explore the extent of procrastination and the choice of alternative activities of German students, b) to determine the relation between direct behaviour assessments and answers to procrastination questionnaires.

**Method:** Following a practice session, 30 students of our university carried an electronic pager for seven days. At random intervals during the day, the device paged the participants with an acoustic signal. By pressing labelled buttons of the pager, they had to answer a) if they were at that moment delaying work on their academic main project, b) which kind of activity they were engaged in. The data were descriptively analysed. Correlations between the frequency of procrastination, the choice of alternative activities and the
responses to the APS and APSI questionnaires were established. In addition, indicators of usability, reliability and acceptance of the method were analysed.

**Results.** The students delayed work on their main task on average during 23% of their waking hours. Half of this time was spent as solitary leisure time, a fourth was devoted to social leisure, the remaining time to less salient duties. Strong associations with the procrastination questionnaires were found. State procrastination (APSI) improved significantly for the more procrastinating participants, but not for the less procrastinating participants.

**Discussion.** ESM assessment of procrastination provides data about the phenomenon’s extent in everyday life and allows conclusions about the correlation between procrastination behaviour and everyday activities. ESM appears to be a reliable and valid method to survey procrastination behaviour. Reactivity as the method’s potential pitfall could, beheld from another perspective, open up new vistas for the ESM’s application in the context of clinical interventions.

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**The relationships between perfectionism, depression and academic achievement in university students**

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Perfectionism always involves the tendency of individual to achieve high standards set in what he does although there is no generally accepted definition of this construct. Some authors stress that a key aspect of perfectionism is ‘striving for excellence’ in everything what a person is doing, especially in that important for him. According to that, perfectionist person is trying to avoid mistakes at any cost, so he is constantly worried over mistakes. That is the reason why perfectionism is often perceived as intrinsically unhealthy. For example, Pacht (1984) views perfectionism as an inherently destructive pursuit of the unattainable which might be the cause of psychological maladjustment. Burns (1980) shares this view, seeing perfectionism as a compulsive pursuit of impossible goals. Hamachek (1978) makes a distinction between two types of perfectionism – the normal and the neurotic one. Normal perfectionists are those who derive pleasure from doing well something that is difficult (and important for them). Neurotic perfectionists are those unable to experience pleasure as a result of their efforts, because they never feel their accomplishments are good enough. Despite the differing conceptions of the construct, there is agreement that perfectionists are characterised by the striving for flawlessness and setting high standards (Flett & Hewitt, 2002). Those characteristics of both healthy and unhealthy forms of perfectionism might be important in academic settings.

Procrastination is often defined as an irrational tendency to delay tasks that should be completed (Lay, 1986). Some authors consider that there is a link between procrastination and perfectionism because of the fact that procrastinatory behavior stems from excessively high standards of performance. This could be strongly associated to fear of failure and that is why a person might try to do everything to avoid situations of testing his knowledge (i.e., school exams). Although empirical findings suggest that both perfectionism and procrastination could be related to depression, there is still a need to investigate the nature of relationships found among these constructs.

The purpose of our study was to examine the relations between perfectionism, depression and academic achievement of university students. The sample consisted of 300 undergraduate students studying at The University of Nis, Serbia, aged from 19 to 24. Perfectionism is defined as high standards of performance with the accompanying predisposition to be self-critical, according to Frost, Marten, Lahart and Rosenblate (1990) and it is measured by Multidimensional Perfectionism Scale -FMPS (Serbian version of this instrument was adapted in The Institute for Educational Research in Belgrade, by Stojiljkovic, Maksic and Ristic, 1998). It produces an overall perfectionism score as well as six subscores: Concern over mistakes (CM), Personal standards (PS), Parental expectations (PE), Parental criticism (PC), Doubts about actions (D) and Organization (O). The incidence of symptoms of depression was measured by Beck’ Depression Inventory. The reliability of the instruments used was acceptable.

Statistical analysis was aimed to compare the perfectionism and depression among students of low, medium and high academic achievement. The success in studying is treated as a variable with three categories: a) the average grade 6.00-7.00, b) 7.01-9.00, and c) 9.01-10.00. The other questions we posed were: 1) what is the relationship between self-esteem and depression, on the one hand, and positive aspects (PS, O) and negative aspects of perfectionism (CM, PE, PC, D), on the other hand? 2) Are there any sex differences?
The correlation analysis proved that negative aspects of perfectionism (CM, PE, PC, D) were positively related to students depression (0, 47, 0, 33, 0, 35, 0, 51, p<, 000). Females were higher than males in Parental criticism, and lower in Organization. Low academic achievement students were higher scored than the best ones at PC and PE aspects, though high academic achievement students had higher scores at Personal standards and Concern over mistakes. The research findings are discussed in the light of differences between healthy perfectionism and the dysfunctional one. The results could be viewed from the point of connection between perfectionism and procrastination in university students. Future studies should include scales intended to measure academic procrastination and achievement goals and some other personality characteristics.

Switching to the bachelor and master format in the German university system - does it affect procrastination?

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Theoretical Background. Results of the 19th survey (2010) of the Deutsches Studentenwerk show that about 12% of German students seek counseling for work or study organization problems. According to a campus- wide survey at the University of Muenster (n=840) in 2003, 10 % of the students suffer from procrastination and require psychological treatment. Procrastination was significantly more prevalent in fields of study characterized by a lower level of structure (e.g. sociology, language) than in those with higher levels of structure (e.g. dentistry), and more prevalent in men than in women. With the introduction of the bachelor / master format in German universities in 2006/2007, the diverse fields of study acquired a more equivalent level of structure. Did this reorganization influence the prevalence of procrastination and its relation to depression and anxiety?

Method. In two cross-sectional studies in 2003 (N=840) and 2010 (N =675), students of the university of Muenster completed questionnaires on depression (German version of Patient’s health questionnaire PHQ-D-9), fear of failure (measured with scale LHA of the German version of the Prestatie Motivatie Test) and procrastination (Aitken Procrastination Scale (APS) and Academic Procrastination State Inventory (APSI), German versions). As a cut-off score for the classification of pathological procrastination we used the mean of the first subscale of the APS („procrastination”) in a sample (N=350) of students, who were seeking treatment in our out clinic for procrastinators.

In the study of 2010 we asked students to assess their field of study’s level of structure. Based on these assessments we compared two subgroups, one with high-structured and one with low-structured fields of study.

Results. About 10% of the student sample of 2010 met criteria for the major depressive syndrom and about 7% showed pathological procrastination values. There was no significant correlation between the extent of procrastination and the study field’s structure (r=-.17 for high structured and r=-.08 for low structured classes). Compared to the results of 2003, we did not find significant differences in the prevalence of procrastination (10% in 2003) and depression (12% in 2003), nor in the extent of fear of failure. However, men and women seem to react on the adjustments of their subjects in different ways: Women partially benefit from the new structure, but not men.

Discussion. Procrastination is a clinically relevant dysfunction of self-regulation and is not substantially influenced by the increase of requirements or structure. The extent of procrastination, depression or fear of failure did not increase significantly subsequent to the introduction of the bachelor/ master format. Thus, procrastination remains a considerable problem among students. Its notable prevalence reveals the urgent need for specific offers of treatment of these problems.
Routine clinical treatment for procrastinating students: Clinical routines established, characteristics of patients treated, and treatment success

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Background. According to surveys from our university, up to 14% of the students procrastinate so severely that study performance is impaired and the completion of academic studies is at risk. The problem is well known in student counselling facilities. However, there is a lack of well evaluated cognitive-behavioural interventions for the routine diagnosis and treatment of procrastination in these settings. To address this problem, our psychotherapy outpatient clinic at the University of Muenster started a procrastination outpatient clinic which offers specialized diagnosis and treatment. Both the procedures established in this unit and the results of a continuous evaluation are presented here.

Method. The standardized diagnostic routine comprises instruments assessing the symptoms both of procrastination and of several other disorders, to allow differential diagnosis. For routine treatment we developed standardized cognitive-behavioral interventions. One intervention targets beginning to work on time and planning realistically. Another intervention restricts the duration of learning sessions. Both treatments are carried out in five weekly sessions, each lasting for 90 minutes, in an individual setting or in a group setting with 5-8 students per group. Treatment efficacy is evaluated routinely with standard procrastination measures (Academic Procrastination State Inventory [APSI]; Schouwenburg, 1995; Aitken Procrastination Scale [APS]; Aitken, 1982).

Results. We will present the work organization and procedures developed for the procrastination outpatient clinic. Since 2004, more than 460 patients were seen for diagnostic evaluations, and more than 415 were assigned to our treatment. We will present clinical characteristics of the patient sample and the results of the pre-post comparisons. Preliminary analyses produced effect sizes of about $d=1.45$. The data of the whole sample are currently being analyzed.

Discussion. The offer of diagnosis and treatment for procrastination has been in demand since the start of this special unit. We have established special guidelines standardizing clinical routines for diagnosing and treating procrastination. According to the evaluation of our routine clinical treatment, the treated students profit greatly. These findings clearly emphasize both the need and the possibility of specialized treatments for procrastination.

Focused clinical treatment of procrastination by means of working time-restriction

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Background. From a clinical point of view, procrastination in terms of pathological delay is a severe problem of self regulation. Based on surveys conducted at our university, up to 14% of the students suffer from clinically relevant procrastination with severe personal consequences. This is a condition which requires treatment. Cognitive-behavioral strategies can reduce delay in different settings (Ferrari et al., 1995; Schouwenburg, 2004; van Eerde, 2003). However, intervention studies do not focus specifically on pathological levels of procrastination. Therefore we developed and evaluated several treatment components in our psychotherapeutic outpatient clinic at the University of Muenster to target severe procrastination. In the present study, we introduce a short intervention based on the principle of working time-restriction.

Methods. 116 participants took part in our study. 14 dropped out during the intervention; 17 participants did complete the intervention but did not take part in the post assessment. The final analysis sample was N = 85.

Treatment characteristics. Five weekly 90 minute group sessions (5-7 participants). Duration of working sessions at home was restricted to specified time intervals which were derived from the individual mean working time per working day, as assessed during a preceding baseline week. Patients were allowed to increase their working time per working day only after their working efficiency improved. Working behavior was assessed with daily entries in an online-diary and with procrastination questionnaires (Academic Procrastination State Inventory [APSI; Schouwenburg, 1995] and Aitken Procrastination Scale [APS; Aitken, 1982]). Patients were assessed before the baseline (t1), before the intervention (t2) and after the intervention (t3).
Findings. Both self-reported procrastination and behavioral performance measures improved significantly. Comparing t1 and t3 we found effect sizes of $d = 1.30$ for the APS and $d = 2.24$ for the APSI. Working efficiency increased from 42% to 85% ($d = 1.55; p < .001$), delay was reduced from 127 to 11 minutes ($d = 1.04; p = .000$).

Discussion. A short cognitive-behavioral group intervention using time-restriction strategies significantly improves clinically relevant self-reported procrastination and working behavior. In an evaluation of the intervention in the group format we found convincing pre-post effect sizes. Particularly in comparison with longer group interventions, it seems worthwhile to continue research on this approach.

**Delayed or done: About goal focus as a self-regulatory mechanism to reduce procrastination**

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Procrastination, defined as the subjectively aversive inability to initiate or complete a task or pursue a given goal, is highly common in academic contexts. The current research investigates which aspects of the a given goal make procrastination more or less likely. We hypothesize that the cognitive representation of a goal might play an important role for procrastination in an academic context. More specifically, goal focus might influence the degree to which students delay working on preparing for an exam. Goal focus is defined as the cognitive representation of a goal primarily in terms of its means (process focus) or its outcome (outcome focus). We posit that focusing on the process of a given goal provides guidelines for action and thus facilitates actual goal pursuit. This should be particularly true when fear of failure is high. Focusing on the means rather than the outcome of goal pursuit should decrease the salience of performance outcomes and, thereby, decrease fear of failure. This, in turn, should make it easier to start and keep working on the goal. A stronger process focus should also be positively related to well-being and academic performance. When means are perceived as unpleasant (high task aversiveness), however, a stronger outcome focus should reduce procrastination. Attention is directed away from the means while stressing the importance of goal achievement. In contrast, focusing on the more distal outcome might highlight the importance of achieving the goal but also the fear of failure.

These hypotheses were tested in two longitudinal studies with samples of university students preparing for an exam. In Study 1, a sample of $N=50$ (82% female) answered 2-3 online questionnaires a week over a period of 5 weeks. Participants rated procrastination, goal focus, fear of failure, task aversiveness, subjective well-being, and performance across 9 measurement points. As expected, process focus was negatively correlated with procrastination, task aversiveness, and fear of failure. Furthermore procrastination was negatively correlated with subjective well-being. Multilevel regression analyses showed that process focus predicted a decrease in procrastination over time. Contrary to hypotheses, there was no moderating effect of fear of failure or task aversiveness on the relationship between process focus and procrastination.

In Study 2, a sample of law students ($N=170$, 74% females) preparing for an exam answered 2 online questionnaires per week over a period of 9 weeks. The same variables as in Study 1 were assessed but here we experimentally manipulated goal focus. Preliminary analyses support our hypotheses that process focus reduces procrastination. Results are discussed in a framework of successful life-management.
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