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Arousal, avoidant and decisional procrastinators: Do they exist?

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ABSTRACT

Procrastination is increasingly becoming a topic of interest across multiple fields, from finance (as people put off dealing with their money troubles) to health (as people delay seeing their doctors). Still, there is debate about what exactly procrastination is and how it should be operationalized. The fields of neuroscience and behavioral economics point to procrastination as an irrational delay, where we put off despite being worse off. A competing tripartite model has divided procrastination into avoidance, arousal, and decisional. The validity of the avoidance, arousal and decisional model is reviewed here, first meta-analytically and then factor analytically, using a large sample exceeding 4000 respondents. The evidence does not support the tripartite model, particularly the avoidant and arousal distinction, instead indicating that procrastination is indeed an irrational delay. A new scale consistent with this conceptualization, the Pure Procrastination Scale, is derived from the factor analysis, showing improved correlations with key constructs, such as SWB. This new scale provides the field of procrastination with an improved measurement base, likely increasing the usefulness of our future findings.

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1. Introduction

Procrastination is at the center of several societal problems (Ainslie, 2005; Critchfield & Kollins, 2001). From the environment to our health, we put off concerns and allow them to compound with time (Gallagher, 2008; Sirois, 2007). For example, at least 80% of Americans have put off saving for their retirement so long that they no longer can realistically make up for their procrastination (Byrne, Blake, Cairns, & Dowd, 2006; Venti, 2006). Given that the US government's social safety net, social security, is becoming increasingly less dependable, with benefits drastically reduced by the year 2040, this is a dire situation for many (Dunleavy, 2006; Pear, 2009). Unsurprisingly then, addressing procrastination is becoming of interest to the field of behavioral economics and is now starting to influence public policy (Lynch & Zauberman, 2006; Thaler & Sunstein, 2008).

Despite this rise in recognition and importance, the exact nature of procrastination is still being debated. There is a strong case to be made that procrastination is irrationally putting tasks off that it is "to voluntarily delay an intended course of action despite expecting to be worse off for the delay" (Steel, 2007, p. 66). Such a viewpoint is consistent with our neurobiology, that long-term intentions are made primarily in the prefrontal cortex but these can be superseded by impulses generated by our limbic system, which is particularly sensitive to concrete stimuli indicative of

immediate gratification (Kahneman, 2003; McClure, Ericson, Laibson, Loewenstein, & Cohen, 2007). The result is that we intend to work but put it off when the moment comes, finding that our preferences suddenly change as we pursue more readily enjoyable temptations. This would explain why impulsiveness is one of the traits most strongly associated with procrastination, on average obtaining a disattenuated correlation of .52 (Steel, 2007). We are putting off tasks with long-term rewards because we are impulsively distracted by short-term temptations.

On the other hand, the decisional, avoidant, arousal trichotomy of procrastination is also popular, first proposed by Ferrari (1992b). Ferrari was investigating procrastination using Lay's (1986) *General Procrastination Scale* (GP or GPS) and McCown and Johnson's (1989) *Adult Inventory of Procrastination* (AIP). Obtaining extremely low correlations between these two measures in three samples, he concluded that "both inventories may assess different forms of task delay" (p. 102). Investigating further, Ferrari suggested that the difference between the measures was due to the GPS assessing arousal procrastination, putting off to seek thrills, while the AIP assesses avoidance procrastination, putting off to protect self-esteem or due to fear of failure. Later, a third type of procrastination was incorporated, based on Mann's (1982) *Decisional Procrastination Questionnaire* (DPQ). Where both the GPS and AIP are considered examples of behavioral procrastination, where we put off tasks, the DPQ focuses on putting off decisions (e.g., Ferrari & Emmons, 1994; Ferrari & McCown, 1994; Harriott & Ferrari, 1996). Ferrari's model of procrastination forms the basis of scores of articles (e.g., Bao & Zhang, 2006; Díaz-Morales, Ferrari, & Cohen,

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2008b; Sirois, 2007), including an ambitious effort to establish the procrastination of nations. As described by Ferrari and his co-authors, “to estimate the prevalence rates of pure procrastination types among adults of each country (to compare independently GP and AIP scores), we regressed GP scores on AIP scores, and then vice versa, to obtain standardized *z* residual scores for the sole variance of the specific procrastination types” (Ferrari, Diaz-Morales, O’Callaghan, Diaz, & Argumedo, 2007, p. 462).

Ferrari’s model can be critiqued on conceptual grounds. As Lay (2009), the developer of the GPS, stressed, “to intend to put off some activity to protect one’s self-esteem is not procrastinatory behavior” (p. 13). Similarly, Anderson (2003) in his *Psychological Bulletin* article on doing nothing declares that “decision avoidance is not the same as procrastination” (p. 140). However, the focus here is on evaluating the measurement basis of Ferrari’s model, which preceded and gave rise to his taxonomy of procrastination. As will be shown, the empirical results provide scant support for the arousal, avoidance, and decisional model of procrastination, instead indicating that procrastination is predominantly considered an irrational delay. This is addressed in two studies. In the first study, I conduct a meta-analytic review of the prior evidence for the Ferrari model. In the second study, I use a new database based on over 4000 respondents to psychometrically evaluate the difference among the procrastination scales.

2. Study one

The basis of the Ferrari model of procrastination was formed in a 1992 study, where after administering the GPS and AIP procrastination scales, he found they correlated on average .07 across three samples. To determine the source of this difference, he concluded that the GPS was arousal based, positively related to sensation-seeking ($r = .23$), while the AIP was avoidance based, negatively related to self-esteem ($r = -.28$). Consistent with a popular line of thought that connects procrastination to evaluation anxiety (e.g., Burka & Yuen, 1983; Ellis & Knaus, 1977), the definition of avoidant procrastination was expanded to include other traits related to self-consciousness or worry about receiving harsh appraisal, particularly fear of failure (Ferrari, O’Callaghan & Newbegin, 2005). The core of the meta-analysis will focus on replicating these key correlates.

Less formally introduced but now routinely incorporated is decisional procrastination, assessed by the DPQ (e.g., Ferrari, Özer, & Demir, 2009; Hammer & Ferrari, 2002). The DPQ asks questions such as, “I delay making decisions until it’s too late”, focusing specifically on the domain of decision-making. This is an interesting avenue to pursue. Drawing on Gollwitzer’s model of action phases (e.g., Gollwitzer, 1996), van Hooft, Born, Taris, van der Flier, and Blonk (2005) discusses procrastination in terms of a predecisional or deliberative phase, where people deliberate on what behavior to pursue, and a postdecisional or implemental phase, where people consider how to achieve their goals. Given that decisional procrastination operates earlier in the action process, it may be different from procrastination that is more proximal to behavior. For example, people might procrastinate on their decisions but once they are made, they act. Alternatively, decisional procrastination may draw on the same roots as general procrastination and could prove to be the same essential phenomenon, just artificially constrained to a specific domain.

To establish the degree that decisional procrastination is worthy of separate study, I meta-analytically summarized the DPQ’s relationship along with the GPS, the AIP, and their critical correlates of sensation-seeking, self-esteem, and fear of failure. To provide further convergent or divergent validity, I also included other procrastination measures popular enough to permit meta-analytic

review: the Procrastination Assessment Scale – Student (PASS) and the Tuckman Procrastination Scale (TPS).

2.1. Method

2.1.1. Literature search, coding procedure, and analysis

This meta-analysis updates a previous procrastination database assembled by Steel (2007) but the overall meta-analytic procedure remains consistent. Based on a new literature search, 890 sources were identified from which 156 useable studies were extracted. Relevant studies employed five key procrastination scales and their revised versions, specifically: the AIP (15 items; McCown & Johnson, 1989), the GPS (20 items; Lay, 1986), and the DPQ (5 items; Mann, 1982) the PASS (12 items; Solomon & Rothblum, 1984), and the TPS (16 items; Tuckman, 1991). Of note, the PASS can be subdivided into two six-item subscales: frequency and problem. Only studies that reported the overall scale were included. Also, the TPS typically comes in a 16 item version but occasionally expands to a 35 item scale. Both were used. All indices were coded twice to ensure consistency and the absence of typographical errors.

Relevant data included reliability estimates (i.e., Cronbach’s alpha), means, and standard deviations. In addition, correlation coefficients were recorded for the relationships between different procrastination measures as well as sensation-seeking, self-esteem, and fear of failure. Means and standard deviations were computed by first converting all results to a common five-point scale and then weighting each by sample size. Reliability estimates and correlations were also weighted according to sample size. Corrections for unreliability of measures were employed for correlations in order to provide estimates of the convergence of measures in both attenuated and unattenuated form. Meta-analytic outliers were excluded, identified as effects six standard deviations or greater from the mean as per Beal, Corey, and Dunlap (2002).

2.2. Results and discussion

Table 1 summarizes the means, standard deviations, reliability estimates, and intercorrelations among the five procrastination scales. The number of studies used and total sample size is reported beneath each estimate. A most revealing result is the correlation between the AIP and GPS, which is .71 or .86 corrected for unreliability based on 17 studies and 3638 respondents. Excluded are Ferrari’s (1992b) initial results, proving to be outliers ($r = .07$, $K = 3$, $N = 326$). They are approximately 15 standard deviations outside the average, occurring by chance 1 in 2.87×10^{-51} times, as exemplified by Fig. 1. As can be compared with other procrastination measures, rather than being different, the AIP and GPS provide the strongest pairing among all procrastination measures, with the exception of TPS and AIP which is based on only one study. In fact, by many standards, correlations above .80 are sufficient to consider two tests as alternative or parallel forms of one another (Murphy & Davidshofer, 1998; Nunally & Bernstein, 1994). On the other hand, Table 1 gives mixed information regarding the separate status of decisional procrastination. Only the AIP and the GPS provide an established estimate, with the remaining scales based on two estimates or less. Corrected for unreliability, the DPQ correlates .57 with the AIP and .71 with the GPS. As Steel, Schmidt, and Shultz (2008) review regarding the commensurability of measures, personality traits that are viewed as equivalent often have correlations in this range. On the other hand, about a half to two-thirds of DPQ’s variance is unique to itself, providing room for practically different correlates. Consequently, the DPQ at least maintains the potential to be distinct.

Table 1
Correlates among Procrastination Scales.

| Procrastination | Mean | Std. | Alpha | 1 | 2 | 3 | 4 |
|-----------------|---------------------|--------------------|-------------------|----------------------|----------------------|--------------------|--------------------|
| 1 AIP | 2.41 (42/8820) | .64 (39/8278) | .83 (34/7678) | | | | |
| 2 GPS | 2.70 (57/11,030) | .67 (55/10,427) | .84 (47/9652) | .71/.86 (18/3638) | | | |
| 3 DPQ | 2.57 (30/7533) | .84 (25/4888) | .79 (29/8,188) | .46/.57 (20/3620) | .58/.71 (12/2033) | | |
| 4 PASS | 2.86 (24/4013) | .65 (23/3833) | .80 (13/2071) | – | .61/.74 (2/198) | .26/.33 (2/344) | |
| 5 TPS | 2.80 (26/2181) | .59 (24/1888) | .89 (25/4598) | .83/.97 (1/151) | – | – | .65/.77 (2/265) |

Note: Estimates are based on (total studies/total sample size). Correlations are reported uncorrected/corrected for attenuation due to reliability. All results are significant at $p < .05$.

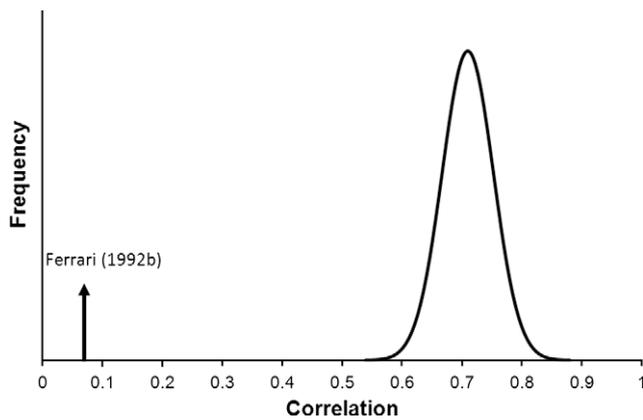


Fig. 1. Observed distribution of correlates between AIP and GPS excluding Ferrari's (1992b) results.

Table 2
Correlates between Procrastination Scales and Key Traits.

| Procrastination | Sensation-seeking | Self-esteem | Fear of failure |
|-----------------|----------------------|-------------------------|-----------------------|
| 1 AIP | .20/.26 (1/142) | -.21/-.25 (6/964) | .15/.18 (2/194) |
| 2 GPS | .17/.21 (9/1,662) | -.27/-.32 (16/2,668) | .20/.25 (25/4,485) |
| 3 DPQ | .37/.48 (2/262) | -.36/-.45 (6/809) | – |
| 4 PASS | .06/.08 (1/349) | -.26/-.31 (4/848) | .22/.27 (7/1,638) |
| 5 TPS | .27/.32 (2/297) | -.36/-.40 (1/418) | .17/.20 (5/1,543) |

Note: Estimates are based on (total studies/total sample size). Correlations are reported uncorrected/corrected for attenuation due to reliability. With the exception of the correlation between the PASS and sensation-seeking, all results are significant at $p < .05$.

Table 2 summarizes the relationship between the five procrastination scales and sensation-seeking, self-esteem, and fear of failure. All scales operate similarly with only modest but important differences in strength. As can be seen, GPS is supposed to be the scale that measures arousal procrastination but has the second lowest correlation with it, lower than the AIP. Similarly, AIP is supposed to have the strongest relationship with self-esteem and fear of failure, being a measure of avoidant procrastination, but actually has the weakest relationship with these two. Interestingly enough, the DPQ provides the strongest relationship for sensation-seeking and self-esteem.

These results indicate there are no substantive differences between the AIP and the GPS, with subsequent results, if anything, operating opposite as predicted. As Simpson and Pychyl (2009) concluded after partially replicating Ferrari's (1992b) study though not his findings, "the GP scale is not a measure of arousal procrastination and that there is little evidence linking the arousal-based personality traits to either procrastination or to the arousal-related beliefs that people endorse as a cause for their procrastination" (p. 18). Buttressing the point, two other studies show almost an identical constellation of correlations among the AIP and GPS with other traits. Ferrari and Díaz-Morales (2007b) found that the two scales have almost identical relationships with the construct of time orientation. Fee and Tangney (2000) obtained almost duplicate results for a wide range of scales, including conscientiousness, perfectionism, and self-conscious affect. Less consistent is the DPQ's relationships with these scales, which though similar to other procrastination measures has the potential to be somewhat stronger. Spada, Hiou, and Nikcevic's (2006) research provides a partial explanation in that they found "a link between positive beliefs about worry and decisional procrastination" (p. 322), positing that worry might hinder decision-making processes.

3. Study two

To confirm the prior meta-analytic findings, a new dataset was created, based on more respondents than all the previous studies combined. This allows factor analytic work that should reveal whether the AIP and GPS are functionally indistinguishable. Furthermore, this item-level analysis allows us to isolate items core to procrastination, getting rid of tangential items, to create a better measure of procrastination. One previous factor analytic study that simultaneously used the GPS, the AIP, and the DPQ has been conducted, albeit Spanish translations of them. As Díaz-Morales, Ferrari, Díaz, and Argumedo (2006) found, four factors emerged with the items comprising "the first component configuring a more 'pure' component of procrastination" (p. 135). Other factors dealt with indecision, lack of punctuality, and lack of planning, which are related to procrastination but are not procrastination per se. For example, one item from the GPS is "when it is time to get up in the morning, I most often get right out bed". Though morning versus eveningness circadian energy rhythms is related to procrastination (Digdon & Howell, 2008), the connection is not quite strong enough to be an indicator of procrastination itself.

The new "Pure Procrastination Scale" composed of items from the first factor should prove superior to the scales upon what it was based, in particular the GPS and AIP. To assess its improved validity, three other sets of scales were also administered that

tap into procrastination's core. As repeatedly stressed, procrastination is an irrational delay (e.g., Andreou, 2007; Simpson & Pychyl, 2009; Steel, 2007), where putting off is inherently dysfunctional by our own standards. One procrastination scale was devised explicitly to be consistent with this definition, the Irrational Procrastination Scale (IPS; Steel, 2002), and accordingly the Pure Procrastination Scale (PPS) should show improved correlations with it. Similarly, a stronger relationship should be shown with subjective well-being (SWB), being that procrastination is inherently a dysfunctional delay.

Finally, procrastinators are particularly impulsive, especially when it comes to resisting temptations (Steel, 2007). As Schouwenburg (2004) puts it, "various studies show a very distinct clustering of related traits: trait procrastination, weak impulse control, lack of persistence, lack of work discipline, lack of time management skill, and the inability to work methodically" (p. 8). Again, the Pure Procrastination Scale should show a stronger relationship with Susceptibility to Temptation than the DPQ, the GPS, or the AIP.

3.1. Method

3.1.1. Participants

A diverse sample of people completed an English language on-line procrastination measure in exchange for feedback on their level of procrastination. Participants included 4169 individuals, 57.4% females and 42.6% males, who had an average age of 37.4 years, 54.4% were employed full-time with 11.5% indicating they were employed part-time, 23.6% were students, 6.3% were unemployed, and 4.3% were retired. The sample included individuals reporting to be from 101 countries around the world, with the majority represented by the United States (68.1%), Canada (5.9%), and the United Kingdom (4.4%). Participants identified their ethnic background as Caucasian (78.7%), Asian (9.3%), Indian (3.3%), Hispanic (3.3%) and Black (2.7%).

3.1.2. Measures

Participants completed the core procrastination battery: the Adult Inventory of Procrastination (AIP; McCown & Johnson,

1989), the Decisional Procrastination Questionnaire (DPQ; Mann, Burnett, Radford, & Ford, 1997), the General Procrastination Scale (GPS; Lay, 1986) and the Irrational Procrastination Scale (IPS; Steel, 2002). To assess SWB, I used the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), and to assess impulsiveness, I used the Susceptibility to Temptation Scale (STS), comprised of 11 content valid items that deal with the tendency to become distracted or impulsively giving into diversions (Steel, 2002). Previous analysis based on 1707 respondents already indicates the STS correlates with IPS at .74 and that it shows the expected divergent and convergent correlations with several items from the Personality Research Form (Steel, 2009). Specifically, the STS does not correlate with Harmavoidance (i.e., withdrawing from danger), correlating at $-.04$, but does correlate at $-.43$ and $.43$ with Order (i.e., being systematic) and with Play (i.e., pleasure seeking), respectively (Steel, 2009). The Irrational Procrastination Scale and the Susceptibility to Temptation Scale are included in the Appendix. All measures were scored on a five-point scale.

3.2. Results and discussion

Through random selection, the dataset was divided in order to allow two independent factor analysis techniques: exploratory and confirmatory. Using the first dataset of 2081 participants, exploratory principal axis factor analysis was conducted using SPSS 16.0. Principal components analysis was selected as these analyses are intended to provide an examination of scores along basic underlying constructs (i.e., arousal, avoidance, and decisional procrastination), rather than an empirical summary of the data set (Tabachnick & Fidell, 2007). As study one above indicated significant intercorrelation among scales, an oblique rotation using direct oblimin was conducted with the delta value set to zero, allowing factors to correlate highly.

The number of factors to extract is rarely straight forward. Tabachnick and Fidell (2007) suggest examining the scree plot for a sharp break in continuity that is "a line drawn through the points changes slope" (p. 644). The scree plot indicates a break in the size of eigenvalues between the third and fourth factors, indi-

Table 3
Pattern matrix for three factor solution – factor one.

| | | Factor | | |
|-------|--|--------|-------|-------|
| | | 1 | 2 | 3 |
| DPQ4 | I delay making decisions until it's too late | .804 | | |
| DPQ2 | Even after I make a decision I delay acting upon it | .783 | | |
| DPQ5 | I put off making decisions | .778 | | |
| DPQ1 | I waste a lot of time on trivial matters before getting to the final decisions | .757 | | |
| GPS12 | In preparation for some deadlines, I often waste time by doing other things | .711 | | |
| GPS7 | Even jobs that require little else except sitting down and doing them, I find that they seldom get done for days | .702 | | |
| GPS1 | I often find myself performing tasks that I had intended to do days before | .695 | | |
| GPS19 | I am continually saying "I'll do it tomorrow" | .694 | | |
| DPQ3 | I don't make decisions unless I really have to | .678 | | |
| GPS9 | I generally delay before starting on work I have to do | .673 | | |
| AIP10 | I find myself running out of time | .667 | | |
| AIP5 | I don't get things done on time | .658 | | |
| AIP9 | I am not very good at meeting deadlines | .609 | | |
| AIP15 | Putting things off till the last minute has cost me money in the past | .561 | | |
| AIP6 | If someone were teaching a course on how to get things done on time, I would attend | .561 | | -.317 |
| AIP7 | My friends and family think I wait until the last minute | .518 | -.432 | |
| GPS18 | I usually accomplish all the things I plan to do in a day (R) | .497 | | |
| GPS20 | I usually take care of all the tasks I have to do before I settle down and relax for the evening (R) | .460 | | |
| GPS15 | I often have a task finished sooner than necessary (R) | .442 | | |
| AIP8 | I get important things done with time to spare (R) | .414 | | |
| GPS2 | I often miss concerts, sporting events, or the like because I don't get around to buying tickets on time | .411 | | |
| GPS8 | I usually make decisions as soon as possible (R) | .409 | | |
| GPS5 | A letter may sit for days after I write it before mailing it | .367 | | .308 |

Note: Shaded items included in the Pure Procrastination Scale. Items designated with an (R) are reverse scored.

Table 4

Pattern matrix for three factor solution – factors two and three.

| | | Factor | | |
|-------|---|--------|-------|------|
| | | 1 | 2 | 3 |
| AIP14 | When I have to be somewhere at a certain time my friends expect me to run a bit late | | -.850 | |
| AIP12 | I am more punctual than most people I know (R) | | -.830 | |
| AIP2 | I am prompt and on time for most appointments (R) | | -.777 | |
| AIP4 | I find myself running later than I would like to be | | -.748 | |
| GPS10 | When traveling, I usually have to rush in preparing to arrive at the airport or station at the appropriate time | | -.589 | |
| GPS11 | When preparing to go out, I am seldom caught having to do something at the last minute (R) | | -.423 | |
| GPS4 | When it is time to get up in the morning, I most often get right out of bed (R) | | -.342 | |
| GPS13 | If a bill for a small amount comes, I pay it right away (R) | | | .666 |
| AIP13 | I do routine maintenance (e.g., changing the car oil) on things I own as often as I should (R) | | | .654 |
| AIP11 | I schedule doctor's appointments when I am supposed to without delay (R) | | | .653 |
| GPS14 | I usually return a "RSVP" request very shortly after receiving it (R) | | | .597 |
| GPS3 | When planning a party, I make the necessary arrangements well in advance (R) | | | .528 |
| AIP1 | I pay my bills on time (R) | | | .526 |
| GPS6 | I generally return phone calls promptly (R) | | | .478 |
| AIP3 | I lay out my clothes the night before I have an important appointment, so I won't be late (R) | | | .436 |
| GPS17 | I usually buy even an essential item at the last minute | .354 | | .428 |
| GPS16 | I always seem to end up shopping for birthday gifts at the last minute | .315 | | .322 |

Note: Items designated with an (R) are reverse scored.

cating three factors, which is inconsistent with Díaz-Morales et al.'s (2006) Spanish language factor analysis. Though Tabachnick and Fidell recommend emphasizing the principle of parsimony, Díaz-Morales et al.'s four factor solution is not radically different, closely tracking the three factor solution provided here. If a fourth factor is added, its effect is primarily to break out the DPQ as a largely separate factor (i.e., their indecision factor), with only one of its items loading on the first factor and a second item cross-loading there.

The three factor solution is shown in Tables 3 and 4, where all loadings less than .30 are suppressed. The degree to which Ferrari's arousal versus avoidant model lacks content validity can be readily gauged by the reader. Simply cover the left column indicating the origin of the item and try and sort the items in avoidant (AIP) and arousal (GPS) categories by item description alone. The first factor, accounting for 36% of the variance, can best be described as a general procrastination factor, and contains items from all three scales. The highest loading items address either habitual delay (e.g., "I am continually saying 'I'll do it tomorrow'") or problematic delay (e.g., "I delay making decisions until it's too late"). Reverse-scored items, such as "I get important things done with time to spare", loaded lower on this factor.

The second factor, accounting for 7% of the variance, contains items that relate to rushing and appointment keeping, such as "I find myself running later than I would like to be". The third factor, accounting for 6% of the variance, primarily loaded with items associated with promptness, doing tasks immediately. Example items include "If a bill for a small amount comes, I pay it right

away" and "I usually return a 'RSVP' request very shortly after receiving it". Given the definition of procrastination that is to voluntarily delay an intended course of action despite expecting to be worse off for the delay, factors two and three are not necessarily procrastination. Being overly busy could inflate one's score of factor two's items, where one tries to fit more in an already full day. As for factor three, though being prompt necessarily precludes procrastination, failing to be prompt does not necessarily mean you are procrastinating either, especially since there are times when delay may be the more prudent course of action (e.g., "fools rush in where angels fear to tread").

Using the second half of the dataset comprised of 2088 participants, these exploratory results were contrasted with Ferrari's model using confirmatory factor analysis, run with Amos 17.0.2. Ferrari's model generates fit indices of: $\chi^2(737) = 11889$, GFI = .708, CFI = .758, RMSEA = .085, and AIC = 12055. The new three factor solution generates fit indices of: $\chi^2(732) = 11051$, GFI = .761, CFI = .776, RMSEA = .082, and AIC = 11228. Though none of these indices indicate a great fit, indicating that there is little empirical ground to consider procrastination as a three-dimensional construct of any kind, they uniformly report that Ferrari is the poorer fitting model. Still, Ferrari's work does point the way towards a better measure of procrastination.

Consistent with Ferrari's previous work with Díaz-Morales et al. (2006), the first factor in this analysis emphasizes dysfunctional delay and its items can be used to create a Pure Procrastination Scale (PPS). Of the 14 top loading items, 12 of them were selected, excluding two from the DPQ scale to ensure item diversity. The

Table 5

Correlates Among Procrastination Scales, SWLS, susceptibility to temptation and exploratory factors.

| Procrastination | Mean | Std. | Alpha | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------------|------|------|-------|------|------|------|------|------|------|-----|-----|-----|
| 1 AIP | 3.04 | .64 | .89 | | | | | | | | | |
| 2 GPS | 3.16 | .54 | .90 | .73 | | | | | | | | |
| 3 DPQ | 3.06 | .98 | .90 | .51 | .50 | | | | | | | |
| 4 PPS | 3.42 | .85 | .92 | .68 | .65 | .82 | | | | | | |
| 5 IPS | 3.63 | .83 | .91 | .59 | .56 | .69 | .87 | | | | | |
| 6 SWLS | 3.04 | .98 | .90 | -.26 | -.21 | -.41 | -.41 | -.41 | | | | |
| 7 STS | 3.23 | .73 | .89 | .47 | .47 | .59 | .69 | .69 | -.31 | | | |
| 8 Factor 1 | - | - | - | .67 | .65 | .87 | .98 | .86 | -.42 | .69 | | |
| 9 Factor 2 | - | - | - | .63 | .40 | .30 | .51 | .44 | -.19 | .32 | .45 | |
| 10 Factor 3 | - | - | - | .24 | .38 | .41 | .42 | .41 | -.28 | .33 | .42 | .33 |

Note: Sample size = 4169. All results are significant at $p < .05$.

items “I put off making decisions” and “I don’t make decisions unless I really have to” are very similar to the top loading item “I delay making decisions until it’s too late”. The specific items used to create the PPS are shaded in Table 3 and together have a reliability of .92. Providing convergent validity is the PPS’s correlation with the Satisfaction with Life Scale (SWLS), the Susceptibility to Temptation Scale (STS) and the Irrational Procrastination Scale (IPS). As Table 5 shows the PPS demonstrates higher correlations with these validation scales than the DPQ and particularly the AIP and GPS. Notably, the PPS closely tracks the scores of the IPS, which must be expected. After correcting for attenuation due to unreliability, the PPS and IPS correlate together at .96, effectively making them parallel forms, and allowing one to share the validation efforts for the other (e.g., Steel, 2002). Optionally, if a directional response bias is of more concern than scale length, adding the five reverse-scored items from factor one (i.e., GPS15, GPS18, GPS20, AIP8, and GPS8) to the Pure Procrastination Scale increases the reliability from .92 to .94 but provides essentially the same scale, correlating at .98 with the 12 item version from Table 3.

4. General discussion

To properly study any phenomenon, we must first understand and then accurately measure it. An increasingly common way to conceptualize and assess procrastination is dividing it into avoidant, arousal and decisional, having formed the centerpiece of Ferrari’s research program as well as being adopted by other researchers. As the meta-analytic review and factor analyses conducted here indicates, there is no empirical support for this trinity of procrastination scales, especially regarding avoidant and arousal. It appears to have been initiated by an errant 1992 study, an occurrence that happens occasionally. For example, Goldberg, Lee, and Ashton (2008) document other able researchers who published artificially low correlates based on incorrectly matching participants’ responses among personality scales.

The good news is that we do not have to replicate procrastination research in triplicate. Rather, a single factor that consistently explained most of the variance in the scales emerged. This factor is consistent with the dominant notion of procrastination as a dysfunctional delay and the Pure Procrastination Scale, based on this factor, shows improved convergent validity with other related measures. Use of the Pure Procrastination Scale or the Irrational Procrastination Scale, which proved functionally equivalent, should improve the speed at which we understand procrastination by providing a single model that we can work from. As Barrick and Mount (1991) conclude during their discussion of personality, “in order for any field of science to advance, it is necessary to have an accepted classification scheme for accumulating and categorizing empirical findings” (p. 23).

4.1. Future research

Though this article was critical of Ferrari’s model overall, his examination of decisional procrastination is of more interest. As Gollwitzer (1996) indicated, there can be a predecisional stage of procrastination that is potentially different from postdecisional or implemental procrastination. The DPQ could indeed investigate this but only after further refinement. As constructed, it has items for both pre- and postdecisional procrastination, as per “Even after I make a decision I delay acting upon it”. If procrastination differs in predecisional and postdecisional stages, it will likely indicate different treatment plans. Getting people to act upon their intentions is somewhat different from getting people to make intentions in the first place.

Appendix

Susceptibility to Temptation Scale.

- | | |
|----|---|
| 1 | I will crave a pleasurable diversion so sharply that I find it increasingly hard to stay on track |
| 2 | I feel irresistibly drawn to anything interesting, entertaining, or enjoyable |
| 3 | I have a hard time postponing pleasurable opportunities as they gradually crop up |
| 4 | When an attractive diversion comes my way, I am easily swayed |
| 5 | My actions and words satisfy my short-term pleasures rather than my long-term goals |
| 6 | I get into jams because I will get entranced by some temporarily delightful activity |
| 7 | It takes a lot for me to delay gratification |
| 8 | When a task is tedious, again and again I find myself pleasantly daydreaming rather than focusing |
| 9 | When a temptation is right before me, the craving can be intense |
| 10 | I choose smaller but more immediate pleasures over those larger but more delayed |
| 11 | I take on new tasks that seem fun at first without thinking through the repercussions |

Irrational Procrastination Scale.

- | | |
|---|---|
| 1 | I put things off so long that my well-being or efficiency unnecessarily suffers |
| 2 | If there is something I should do, I get to it before attending to lesser tasks (R) |
| 3 | My life would be better if I did some activities or tasks earlier |
| 4 | When I should be doing one thing, I will do another |
| 5 | At the end of the day, I know I could have spent the time better |
| 6 | I spend my time wisely (R) |
| 7 | I delay tasks beyond what is reasonable |
| 8 | I procrastinate |
| 9 | I do everything when I believe it needs to be done (R) |

Note: Items designated with an (R) are reverse scored.

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