

Psychometric Validation of Two Procrastination Inventories for Adults: Arousal and Avoidance Measures

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Lay's (1986) General Procrastination (GP) and McCown and Johnson's (1989) Adult Inventory for Procrastination (AIP) measures were evaluated across two studies. In Study 1, both inventories were administered to two groups of college students (Sample 1 n = 52; Sample 2 n = 59), who were asked to return completed scales before the end of the semester. Students' attendance rates at study groups, test grades, and time required to complete multiple choice items on two exams also were recorded. Results indicated that high procrastination scores were related to a higher number of days to return completed inventories but not attendance, exams scores, or test-taking time. In Study 2, nontraditional age university students (n = 215) were asked to complete procrastination measures as well as sensation-seeking, need for cognition, and self-esteem inventories. Factor analysis indicated that scores on Lay's (1986) scale loaded on sensation-seeking, while McCown and Johnson's (1989) scale loaded negatively with need for cognition and self-esteem variables. It would appear that although the scales assessed procrastinatory behavior, one inventory is indicative of sensation-seeking and the other the avoidance of poor self-esteem.

KEY WORDS: procrastination; sensation-seeking; self-esteem.

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INTRODUCTION

Probably one the least understood minor human miseries, affecting 15–25% of the population during their lifetime, is procrastination (Larwood, 1990). Defined by clinicians and researchers as the purposive delay in beginning or completing a task to the point of experiencing subjective discomfort (Ellis & Knaus, 1977; Solomon & Rothblum, 1984), procrastination may be a tactic to protect a vulnerable self-esteem. Correlational studies have reported a relationship between procrastination and low self-confidence and self-esteem, high states of anxiety, depression, neurosis, forgetfulness, disorganization, noncompetitiveness, and lack of energy (Beswick, Rothblum, & Mann, 1988; Effert & Ferrari, 1989; Ferrari, 1989a; Lay, 1986, 1987, 1988).

A growing body of literature suggests that habitual procrastination is not an effective technique for life success, and may be a maladaptive personality tendency (Ferrari, 1991). Procrastinators appear to be more likely than nonprocrastinators to engage in self-handicapping behavior (Ferrari, 1991b), employ impression management techniques (Ferrari, 1991c), and avoid self-relevant diagnostic information (Ferrari, 1991d). Together, these studies suggest that frequent procrastination involves affective, behavioral, and cognitive components.

The present studies evaluated the validity and appropriate use of two psychometric inventories designed to assess the frequency with which people postpone a number of activities. One instrument, developed by Lay (1986), is called the General Behavioral Procrastination (GP) Scale. A 20-item unidimensional inventory, it contains statements such as "I generally return phone calls promptly" and "I usually buy even an essential item at the last minute." Responses across items are summed to obtain a single score. The scale has a Cronbach alpha of .82 (Lay, 1986) and a retest reliability of .80 (Ferrari, 1989b). The 5-point item (1 = low, 5 = high) version of the scale was used since it yields higher item variance, and high scores reflect procrastinatory behavior.

This version was found effective at measuring characteristics of procrastinators across a variety of situations (see Ferrari, 1991b, 1992a, b). For example, Lay (1986) reported construct validity information such that GP scores were related to disorganization, tardiness, and independent of need for achievement, energy level, and self-esteem. Furthermore, construct validity was examined with airplane passengers who were asked to return a self-addressed, stamped copy of the scale by a designated date. High scorers on the procrastination scale delayed more often than nonprocrastinators. Lay (1988) examined construct validity with adult university students who were preparing to write an essay. Procrastinators were more likely than

nonprocrastinators to anticipate setbacks in writing the paper (e.g., misplaced notes, lack of library resources, writer's block) representing the generation of excuses.

The second instrument was developed recently by McCown and Johnson (1989) and is called the Adult Inventory of Procrastination (AIP). The 15-item unidimensional 5-point scale (1 = low, 5 = high) includes statements such as "I am not very good at meeting deadlines" and "I don't get things done on time." Procrastination scores are obtained by summing responses across items, with seven items reversed scored. The authors report an internal reliability of .79 and a retest reliability (1 month) of .71, with high scores indicating frequent procrastination.

Validity measures on the AIP are scarce, but high scores have been related to inefficient time management and inversely related to impulsivity independent of depression (McCown, Johnson, & Carise, 1991; McCown & Johnson, 1989; McCown, Johnson, & Petzel, 1989). McCown and Johnson (1989) also reported that scores on the AIP were predictive of delays in paying telephone bills, filing tax returns, and returning postage paid surveys, and Johnson and McCown (1990) found that high AIP scores were predictive of fewer hours spent studying among adult university students.

Study 1 assessed construct and discriminative validities in different populations and with different types of behaviors than reported in previous studies. This study evaluated *both* inventories with the same criteria and with the same participants. In Study 1, participants were college students who were either nontraditional-age working adults (Sample 1) or traditional-age, young adults (Sample 2) asked to complete both inventories. The construct and discriminative validities of each scale were assessed by comparing these samples in the length of time it took them to return the completed inventories and to complete time-limited exams as well as their knowledge evaluated by the exams.

Study 2's participants were all working, nontraditional-age students ($n = 215$) who were asked to complete both procrastination scales in an attempt to examine different motives behind procrastination. For instance, it is possible that some people procrastinate as a thrill-seeking, "rush" experience. These individuals delay task for an *arousal* experience which may occur when working against a deadline. On the other hand, it is possible that some people frequently procrastinate as a tactic to *avoid* task information about personal ability in order to protect their self-esteem. In fact, Ferrari (1991d) found evidence that procrastinators actively avoid diagnostic cognitive ability information. The aim of this second study, then, was to examine the differential motivations that may underlie procrastination and that are assessed by these two inventories. A factor analysis involving scores on procrastination, sensation-seeking, need for cognition, and self-

esteem inventories was performed. In short, these two studies were performed to enhance what is already known on the validity of these procrastination measures and to investigate whether these scales assess similar motives for procrastinatory behavior.

STUDY 1: RETURNING INVENTORIES

Both the GP and the AIP scales were developed to assess the frequency with which people postpone everyday activities.² Study 1 used two groups of individuals who differed in educational settings, age, and background. The target behaviors in this study may be characterized as academic given these settings and have not been examined previously with both self-report measures. Specifically, the behaviors included the length of time it took participants to return a folder containing both procrastination scales, test-taking time, test scores, and, for one sample, review-class attendance. The degree of control individuals had over the time frame in which an activity was completed (turning in inventories versus completing a time-limited exam) and the degree to which procrastination would be expected to influence performance (time to turn in questionnaires versus knowledge on an exam) may be moderating variables.

To the extent that the scales measure task delay, it was expected that high scores on both inventories would be related to a high number of days to return completed scales. To the extent that students are anxious before exams (even moderately), it might be possible that high procrastination scores would be related to high amounts of time to complete a test, low test scores, and high attendance at review classes. In contrast, it is possible that test anxiety might cause students to avoid spending time on an exam or attend a review class. Therefore, it is possible that procrastination scores would be related to low test-taking time and review-class attendance.

Method

Participants and Setting

Sample 1. This group consisted of 30 female and 22 male nontraditional college students (age, $M = 32.0$ and $SD = 4.1$). These individuals

²Solomon and Rothblum (1984) developed the "Procrastination Assessment Scale—Students" (PASS) as a measure of academic procrastination among college students. The scale has adequate reliability and validity for a research tool on situation-specific procrastination (e.g., delays in completing term papers, returning assignments).

held full-time day jobs and attended evening courses at a large urban, commuter, public university located in New York City. They were enrolled in a 7-week introductory psychology course in the summer, which met 4 evenings per week.

Sample 2. This group consisted of 44 female and 15 male traditional college students (age, $M = 19.5$ and $SD = 1.1$). These individuals resided on the campus of a small, rural, private college in central New York state and attended day classes. None of the students held full-time employment. Participants in this group were enrolled in a 12-week introductory psychology course during the fall semester which met 3 days per week.

Procedure

At the third class meeting, all students were given a folder containing a consent form, demographic items (age, sex, employment status), and both procrastination measures (in counterbalanced order) along with other measures.³ Students were asked to volunteer for a correlational study conducted by the author. They were asked to return the completed folder anytime before the third (and final) exam. Completed folders were collected and scored by a research assistant, and the author was not told each student's score till after the semester. After the third exam, all students were told the specifics of the study.

The number of days it took participants to return completed folders was used as the primary behavioral measure of procrastination. Two other academically related indices were used for each sample, namely, (1) their test score and (2) the length of time it took students to complete the exam items on each of their first two exams. Each course content and schedule followed the same lecture-discussion format. Both classes took the same multiple-choice exams (written before the study began), composed of 30-items which were selected randomly from both a test bank and past exams.

Students in Sample 2 were encouraged to attend 1-hr weekly psychology review sessions which were held in the evening and supervised by a professional tutor. Attendance at these sessions was recorded and used as an additional indice of procrastination behavior for Sample 2. The academic measures (i.e., exam score, test-taking time, and attendance rates) were used to determine whether scores on either or both procrastination scales would be a predictor of academic procrastination.

³These other scales are discussed elsewhere (see Ferrari, 1992a, b).

Results and Discussion

There were no significant gender difference on procrastination scores for either scale across or within each sample. This fact was consistent with previous studies (e.g., Ferrari, 1991a, c; McCown & Johnson, 1989) which report no gender differences on procrastination scores. Quite interestingly, scores on the procrastination scales were *not* significantly related with either student population (Sample 1 $r = .04$; Sample 2 $r = .01$). This finding suggests that both inventories may assess different forms of task delay.

Table I presents the correlation coefficients between each procrastination scale score and behavioral indices of procrastination. Among the group of nontraditional-age, working college students (Sample 1), both procrastination measures were significantly related to delays in returning completed folders. Procrastination scores, however, were not significantly related to the length of time it took students to complete test items or to their test scores. With the group of traditional age, residential college students (Sample 2), procrastination scores on both inventories again were significantly related to delays in returning completed folders, and not related significantly to test-taking time or test score. Also, procrastination scores for Sample 2 were not significantly related to attendance at the weekly adjunct-review classes.

Comparing Samples 1 and 2, the correlation coefficients between scores on the GP inventory and the number of return days were not significantly different. In contrast, the coefficient between the AIP inventory scores and the number of return days was significantly different between samples ($z = 3.02, p < .01$). The working adult students obtaining a higher coefficient than the younger, traditional-age students. Perhaps the students in Sample 1, who worked during the day and attended school at night, had less available time to complete tasks than regular day students in Sample 2, thereby heightening their coefficient value on the AIP. However, a significant difference between coefficients was not obtained on the GP scale which Sample 1 students also completed, suggesting that busy life-styles alone could not account for this result. It is unlikely that the length of the semesters (7 vs. 12 weeks) affected these data since both groups had nearly the same number of class meetings in which to return their folders (28 vs. 31 sessions). Instead, the AIP inventory may be a better predictor of task delay for older, working adults than for use with traditional-age college students, as claimed by McCown and Johnson (1989).

As expected, procrastination scores on both inventories were related to delays in returning completed scales. Although the coefficients were in the direction reported by others who examine academic procrastination (e.g., Solomon & Rothblum, 1984), scores on the GP and AIP inventories

Table I. Correlations Between Procrastination Scores and Behavioral Measures for Samples in Study 1

	Return days	Attendance rate	Exam 1		Exam 2	
			Time	Score	Time	Score
Sample 1 (<i>n</i> = 52)						
General, Behavioral Procrastination Inventory	.58*		.17	-.26	.23	-.23
Adult Inventory of Procrastination	.65*		.17	-.20	.12	-.26
Sample 2 (<i>n</i> = 59)						
General, Behavioral Procrastination Inventory	.40**	.11	.14	-.23	.18	-.20
Adult Inventory of Procrastination	.33**	.07	.02	-.23	.08	-.23

* $r > .35$, $p < .01$.** $r > .32$, $p < .01$.

were not related significantly to the other academic behaviors measured in the present study (i.e., test score and time and review-class attendance). In fact, very few students from Sample 2 attended the weekly review sessions (usually the same three or four individuals). Nevertheless, both scales were adequate predictors of procrastinatory tendencies on time to return completed inventories among nontraditional-age students. In addition, the results found that with both samples, scores on the procrastination scales were not related. This fact suggests that the GP and AIP inventories may tap different domains of procrastination behavior. Study 2 examined what domains or motives underlie procrastination as assessed by each scale.

STUDY 2: MOTIVES FOR PROCASTINATORY BEHAVIOR

This study involved a factor analysis of scores on both procrastination scales and several other self-reported psychometric inventories. These other scales assessed affective and cognitive variables which might relate to frequent procrastination. Since GP and AIP inventory scores not significantly interrelated in Study 1 (replicated with two independent samples), it was expected that scores on both procrastination measures would load on different factors. No a priori hypothesis, however, was made concerning which inventory would load on which factor.

It seems plausible that some people delay task completions as a way of self-imposing a requirement to rush at the last minute. The amount of

activity required at the “eleventh hour” may induce increased arousal which is pleasurable for the individual. Procrastinatory behavior becomes a rewarding activity since it produces a “rush” sensation adding drama to life. The individual continues to procrastinate on future occasions to obtain this pleasurable sensation. Thus, it was expected that one factor would contain loadings of procrastination and sensation-seeking.

In contrast, it is possible that frequent procrastination is motivated by avoidance tactics. Some individuals may postpone activities as a means to avoid situations perceived as unpleasant. Ferrari (1991d) found that procrastinators, when compared to nonprocrastinators, chose to complete easy, nondiagnostic cognitive tasks when performance feedback was provided, presumably as a way to avoid self-affirmation about their ability. Perhaps procrastination as an avoidance strategy may be a way to protect a “vulnerable self-esteem” (Burka & Yuen, 1983). Therefore, it was expected that procrastination scores would load on a factor containing a low need for cognition and low self-esteem.

Method

Participants

A total of 215 nontraditional-age ($M = 34$, $SD = 4.4$) college students (81 men, 134 women) participated in this study. These individuals worked full-time and were enrolled in lower- or upper-division psychology courses at a large urban university. Most participants (96.9%) indicated that they had never been in a psychology research study. Although they were attending the same university, none of these individuals participated in Study 1, Sample 1.

Procedure

While in class, students were approached about completing inventories as part of a correlational study. Students who agreed to participate were given a folder containing a consent form, demographic items (age, sex, research participant experience, and employment status), and the set of measures including both procrastination scales (in counterbalanced order). After signing and returning their consent form, participants completed the folders within a 50-min class period. After all participants had completed the folders, they were provided with an explanation of the purposes of the study.

One inventory that all participants completed was Zuckerman, Eysenck, and Eysenck's (1978) Sensation-Seeking Scale (Form V). This scale measures the level of stimulation or arousal a person will seek and postulates that four 10-item factors are involved in sensation-seeking: (1) seeking of *thrills and adventures*, (2) *disinhibition* (i.e., tendency to express impulses), (3) seeking of varied *experiences*, and (4) *susceptibility to boredom*. In a review of the scale's use in research, Zuckerman, Buchsbaum, and Murphy (1980) reported good internal and retest reliabilities for the first three scales (.60 to .80) but only fair internal reliability for the boredom subscale (.50). Studies show that sensation-seekers are more likely to use drugs, become involved in sexual experiences, be drunk in public, and volunteer for high-risk activities and unusual experiments (Carol, Zuckerman, & Vogel, 1982; Horvath & Zuckerman, 1990; Kohn, Barnes, & Hoffman, 1979; Malatesta, Sutker, & Treiber, 1981).

Another inventory implemented was Cacioppo and Petty's (1982) Need for Cognition Scale.⁴ The authors of this scale describe it as a measure which is effective in assessing individual differences in the chronic tendency to engage in elaborate thought and "enjoy thinking." Low-need for cognition people are poor problem solvers (Heppner, Reeder, & Larson, 1983), persuaded by strong or weak message arguments (Cacioppo, Petty, & Morris, 1983), uncurious (Olson, Camp, & Fuller, 1984), and unlikely to think about issue-relevant information when forming attitudes (Cacioppo, Petty, Kuo, & Rodriguez, 1986). Recently, Tanaka, Panter, and Winborne (1988) factor analyzed the 25-item version of this scale and found three reliable and valid subscales accounting for 25% of the total observed variance. These subscales involved (1) *cognitive persistence* (10 items), involving the degree to which an individual enjoys engaging in cognitive tasks (internal reliability = .72); (2) *cognitive complexity* (8 items), which refers to the preference for complex relative to simple information processing demands (internal reliability = .66); and (3) *cognitive confidence* (7 items), used to describe the degree of confidence about engaging in cognitive activities (internal reliability = .63).

The last inventory included in the folder was Rosenberg's (1979) Self-Esteem Scale. This 10-item, 4-point scale asks respondents about affective issues in relation to one's self-image and social comparison of ability. Rosenberg (1979) states that the inventory has a satisfactory internal consistency (.87) and retest reliability (.88) and is related to a number of behavioral indices including effective leadership and peer respect.

⁴Cacioppo, Petty, and Kao (1984) also developed an 18-item version of the need for cognition scale. The item overlap between the versions is reasonable and not excessive. The initial, longer version was used in Study 2 since it was factor analyzed into three reliable subscales.

Results and Discussion

Consistent with Study 1, there were no significant gender difference on procrastination scores among respondents. In addition, scores on both procrastination measures were not significantly related ($r = .10$). Study 2, then, replicates the finding of Study 1 that the GP and AIP inventory assess different constructs.

Zero-order correlations were computed with scores on each procrastination inventory and the total score on the other three measures. Scores on the GP inventory were positively related only to sensation-seeking scores ($r = .23, p < .001$). AIP scores were negatively related to scores on need for cognitions ($r = -.31, p < .001$) and self-esteem ($r = -.28, p < .001$) scores.

A factor analysis of the two measures of procrastination and the subscales of the other three psychometric inventories extracted two principal factors with eigenvalues greater than one, and these two factors accounted for 43.6% of the total variance. After the initial factor extraction, the common factors were rotated by an oblique (promax) transformation. Rotated Factor 1 was related to Factor 2 at .12 for this sample. Table II shows the loadings and communalities of each personality variable. GP inventory scores loaded with sensation-seeking, while AIP inventory scores loaded negatively with a need for cognition and self-esteem.

It would appear that both procrastination measures assess different motives behind habitual task delays, although the factor loadings and correlation coefficients were low. Lay's (1986) inventory measures procrastinatory behavior motivated by sensation-seeking. This individual delays task

Table II. Loadings of Two Rotated Factor Patterns (Standard Regression Coefficients) and Communalities for Personality Variables^a

Variable	Factor 1	Factor 2	Commonality
Behavioral procrastination	.3029*	-.0914	.0934
Adult form of procrastination	.1505	-.4260*	.1886
Thrill-seeking	.5865*	.0913	.3653
Experience-seeking	.6403*	.1309	.4475
Disinhibition	.7139*	-.0627	.5027
Boredom susceptibility	.5947*	-.0805	.3485
Cognitive persistence	-.0126	.6808*	.4616
Cognitive confidence	-.0369	.7333*	.5325
Cognitive complexity	.0665	.4240*	.1911
Self-esteem	.0751	.4670*	.2323

^a $n = 215$.

*Factor loading greater than .30

completion in order to increase arousal (to get a “thrill” from working against a deadline). McCown and Johnson’s (1989) inventory appears to measure procrastination motivated by *avoidance*. This individual may seek to avoid cognitively demanding situations and is not persistent when working on these tasks, perhaps because of low self-confidence and self-esteem. In sum, it appears that both psychometric measures are valid assessment tools for procrastinatory behavior, yet they assess different motives. Further research is needed in which correlational and experimental paradigms examine how these two inventories may be useful research instruments.

GENERAL CONCLUSION

Together, these studies indicate that Lay’s (1986) General, Behavioral Procrastination Scale and McCown and Johnson’s (1989) Adult Inventory of Procrastination have appropriate discriminant and construct validities for measuring habitual task delays. Study 1 demonstrates that both scales are related to delays in returning completed scales (particularly among older adults with the AIP measure) but are not related to other indices of academic-related behaviors. Perhaps procrastinators delayed filling out the scales in accordance with Bem’s (1972) self-perception theory. That is, participants may have filled out the inventories *after* observing themselves procrastinating at the task. A follow-up study should be conducted in which half the participants are pretested on the procrastination scales, and then the length of time it takes individuals to return completed scales on other measures is recorded. This study would test directly whether the inventories are truly predictive of procrastination.

It also may be argued that the personal perception of control influenced the correlations in Study 1. That is, perhaps procrastination would be more likely to correlate with behavior in situations wherein individuals are in control of the time line (e.g., turning in questionnaires whenever finished) instead of situations in which individuals have external time limits imposed upon them (e.g., a test-taking situation). In addition, it is possible that, for some people, procrastination might correlate more strongly with behavior that does not interfere with performance evidence (e.g., late questionnaires did not influence course grades) than when the behavior interferes with such an evaluation (e.g., procrastinating on test items will more likely produce a lower test grade). Future research should address these alternative issues concerning procrastinatory behavior.

Both arousal and avoidance have been discussed as motives for procrastinatory behavior (Burka & Yuen, 1983; Ellis & Knaus, 1977; Solomon & Rothblum, 1984). Some people may habitually delay tasks in order to

self-impose a need to rush at the last minute. The hyperactivity can be a pleasurable experience for the person since it may produce an arousal state. Other people may delay in order to avoid the (perceived) unpleasantness of a task or the possibility of public and/or private task failure. The factor analysis performed in Study 2 suggests that both measures differentiate these motives. The GP measure was indicative of arousing the sensation-seeking of some participants, while the AIP measure was representative of the avoidance of poor self-esteem in other procrastinators.

The fact that scores on both procrastination measures were not significantly related in either sample in Study 1 or with the participants in Study 2 is interesting. It is unlikely that either scale lacks validity since each scale was related with task delays across different populations. The inventories may have been open to other response biases, such as "nay-saying" or "faking good," and further research should explore the effects of these confounds.

Follow-up studies should explore whether physiological changes actually occur when procrastinators, as assessed by Lay's (1986) GP Scale, work against a deadline. In addition, it might be informative to know in what types of situations an individual may use procrastinatory behavior, as measured by McCown and Johnson's (1989) AIP scale, as an avoidance technique. These inventories also should be correlated with a measure of social desirability, since the concept of procrastination seems to be socially undesirable. In each of these situations, the present studies suggest that the appropriateness of either scale to measure procrastinatory behavior must be considered.

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