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Performance on a Time Restricted Task: 
Comparing Procrastinators to Non-Procrastinators

Kamila Misztal

Previous research has shown that procrastinators do not work as well under pressure as non-procrastinators. The present study set out to support this hypothesis. Under a time restricted task, it was hypothesized procrastinators would not perform as well as non-procrastinators. There were 40 participants that completed the study. Each of the participants completed the Adult Inventory of Procrastination and were then presented with the time restricted task. Performance was determined by speed and accuracy. The results showed that non-procrastinators completed more items (speed) but they made more errors (accuracy) then procrastinators. Therefore the original hypothesis was not fully supported.

Procrastination comes from the Latin word *procrastinare*, meaning to put off or postpones until another day (Desimone, 1993). A recent study found that 75% of university students procrastinate (Steel, 2007). There are various theories as to why people do procrastinate. One of which is avoidance model of academic procrastination (Rothblum, 1990). It is said that individuals procrastinate because they are afraid of failing at an upcoming task (eg. Exam). As the deadline for an assignment or an exam approaches these individuals experience anxiety and stress. To reduce their anxiety they partake in stimulus avoidance (procrastinate). The relief from anxiety and stress reinforces the procrastinating behaviour. Therefore, procrastinators will continue to procrastinate.
Even though the most individuals believe that procrastinators work best under pressure there are research studies within the area of procrastination that have shown that procrastinators perform worse under pressure than non-procrastinators. Ferrari (2001) conducted two experiments testing speed and accuracy in procrastinators vs. non-procrastinators. In the first experiment participants were given 2 minutes to place a ‘X’ accurately into as many circles as they could. The circles on the page varied in diameter. They were also set into high or low cognitive groups and presence or absence of self-awareness. It was believed that under time limitations the procrastinators would not perform as well as the non-procrastinators. The time limitation would induce stress on the procrastinators, thus leading to poorer performance. As well, procrastinators if in the high cognitive load and high self-awareness group would perform worse than non-procrastinators in the same group. The results showed that procrastinators did complete fewer circles (speed) and did make more errors (accuracy) than non-procrastinators. These results show that when procrastinators work under pressure they do not self-regulate between high performance speed and high quality performance accuracy (Baumiester, 1997a).

The second experiment conducted by Ferrari (2001) examined how procrastinators would perform (speed and accuracy) when they had limited time to review their answers. Again, there was a high and low self-awareness condition. Participants were put into the no time limit, 1 second, 2 second, or 4 seconds group. The task was to determine whether the pairs of geometric shapes on the page matched. A ‘Y’ indicated match and ‘N’ indicated no match. Results showed that in the 2 second time
second time limit. In the 10 second time limit non-procrastinators completed significantly more squares then in the 5 second time limit. No statistical significance was gathered when examining speed in procrastinators in the two time limits. The amount of squares procrastinators completed in the 10 second time limit and the 5 seconds time limit was not significantly different. Therefore, the significance between procrastinators and non-procrastinators with respect to the two time limitations can be attributed to the difference in the number of squares they completed.

It was also hypothesized that participants would perform (speed) better when given 10 seconds rather then 5 seconds. Again, the hypothesis was supported and yielded significant results. All of the participants completed more squares in the 10 second time limit. But, further testing showed that when looking specifically at procrastinators and non-procrastinators in the 5 second time limit there was no statistical significance between the two groups. There was also no statistical significance between procrastinators and non-procrastinators in the 10 second time limit. These results show that there is no relationship between time and the two types of procrastinators. This also supports the original results from the ANOVA that there is no interaction between time and whether one is or is not a procrastinator.

The second dependent variable that was looked at was accuracy. Accuracy is the average number of crosses that were marked within the boundaries of the squares. It was hypothesized that procrastinators would be less accurate than non-procrastinators. It was found that procrastinators were actually more accurate then non-procrastinators.
limit procrastinators paired less shapes and made more errors then non-procrastinators. Once again this supports the view that procrastinators do poorly under pressure.

In the present study, an experiment was conducted to determine performance (speed and accuracy) in procrastinators compared to non-procrastinators. A time restriction task was used to measure their performance. The restriction on the task was there to induce stress in procrastinators thus hindering their speed and accuracy. It was predicted that procrastinators would complete less of the task (speed) and would make more errors (accuracy).

Method

Participants

A total of 40 participants were randomly selected to take part in this study. It is inferred based on the consent forms that there were twenty-seven females and thirteen males. Each of the participants completed the research study in The Student Activity Center (SAC) at Huron University College. Therefore, it is speculated that the participants were undergraduate students at Huron University College. Huron University College is a small liberal arts college that is affiliated with the University of Western Ontario, Canada. Due to the fact that the participants who were asked to participate in this research were approached in a university setting it is viable to suggest that these participants were between the ages of 17 to 23. No descriptive details were obtained
regarding the participants demographic information, background, year of study or faculty
of study.

Materials

All of the participants in this study received a standard consent form. It indicated
that the study was on speed and accuracy. The consent form also stated that at anytime
the participants could withdrawal from the study without any penalty and that the
information given would be kept entirely confidential. The participants were then given
the Adult Inventory of Procrastination (McCowen & Johnson, 1989). This is a 15 item
inventory that is rated on a 5 point scale. Seven of the items on the inventory are reverse
scored. Each of the participants was then required to complete the time restricted task.
This consisted of 4 consecutive pages, where there were 10 squares on per page. The
squares from page to page became progressively smaller. Half of the participants were
allotted 5 seconds per page to complete the task and the other half was allotted 10
seconds per page. An example of the time restricted task is available in Appendix A.
Once the participants had completed the research study they were provided with a
debriefing statement.
Procedure

All of the participants were approached at The SAC and asked to take part in a study concerning speed and accuracy. They were first handed a consent form. Upon completion of the consent form participants were handed a booklet. The booklet contained both the Adult Inventory of Procrastination (AIP) and the time restricted task. All of the participants were also given oral instructions on how to complete the booklet. They were told to first complete the AIP, and once finished to inform the experimenter. When the participants completed the AIP, they were given further instruction on the time restricted task. Half of the participants were told they had 5 seconds per page to write in a cross (+) as accurately inside as many of the squares as possible. The other half were told they had 10 seconds per page to write in a cross (+) as accurately inside as many of the squares as possible. Participants were instructed to begin marking crosses in the squares upon hearing the experimenter say “start” and were instructed to cease when hearing “stop”. They were also informed that they would be given time to flip from one page to the next. Once the participants completed the study they were handed a debriefing statement and any questions they had were answered.
Results

Participants were identified as procrastinators or non-procrastinators based on their AIP score. A median split was used to determine the procrastinators from the non-procrastinators. Participants with scores equal to or greater than 38 were categorized as procrastinators (M = 43.8, SD = 5.09, n = 20). Participants with scores less than or equal to 37 were categorized as non-procrastinators (M = 32.05, SD = 3.93, n = 20). The number of male and female procrastinators or non-procrastinators in this study is unknown.

The present study looked at two dependent variables: speed and accuracy. Two 2 (procrastinators vs. non-procrastinators) × 2 (5 seconds vs. 10 seconds) ANOVAs were carried out. The first of which included speed (refer Table 1 for Analysis of Variance). Two main effects were found, one for procrastination type $F(1, 36) = 4.86$, $p < 0.05$ and another for time $F(1, 36) = 7.37$, $p < 0.05$. Table 3 presents means and standard deviations for speed. But, there was no significant interaction between time and procrastinators and non-procrastinators $F(1, 36) = 0.04$, $p > 0.05$. Further t-tests for the main effects were carried out to determine the direction of the relationships.

The first t-test examined the relationship in procrastinators between their score and time. There was no significant relationship found between the two, $t(18) = 0.464$, $p > 0.05$. There was significance in non-procrastinators between their score and time, $t(18) = -2.203$, $p < 0.05$. 
### Table 1  Analysis of Variance for Speed

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>90.00</td>
<td>1</td>
<td>90.00</td>
<td>4.85*</td>
</tr>
<tr>
<td>Time</td>
<td>136.80</td>
<td>1</td>
<td>136.90</td>
<td>7.37*</td>
</tr>
<tr>
<td>Interaction</td>
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<td>1</td>
<td>0.80</td>
<td>0.04</td>
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<tr>
<td>Error</td>
<td>668.60</td>
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<td>18.57</td>
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</tr>
<tr>
<td>Total</td>
<td>896.00</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* *p < 0.05

### Table 2  Analysis of Variance for Accuracy

<table>
<thead>
<tr>
<th>Source</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
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<td>44.00</td>
<td>0.42</td>
</tr>
<tr>
<td>Time</td>
<td>184.80</td>
<td>1</td>
<td>184.80</td>
<td>1.74</td>
</tr>
<tr>
<td>Interaction</td>
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<td>1</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Error</td>
<td>3186.00</td>
<td>36</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4044.80</td>
<td>39</td>
<td></td>
<td></td>
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</table>
### Table 3
Means and Standard Deviations for Speed

<table>
<thead>
<tr>
<th>Results</th>
<th>5 Seconds</th>
<th>10 Seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>32.30</td>
<td>35.6</td>
</tr>
<tr>
<td>SD</td>
<td>5.42</td>
<td>4.45</td>
</tr>
<tr>
<td>n</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Note. P stands for procrastinators and NP for non-procrastinators.

### Table 4
Means and Standard Deviations for Accuracy

<table>
<thead>
<tr>
<th>Results</th>
<th>5 Seconds</th>
<th>10 Seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>14.10</td>
<td>11.90</td>
</tr>
<tr>
<td>SD</td>
<td>7.67</td>
<td>8.47</td>
</tr>
<tr>
<td>n</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Note. P stands for procrastinators and NP for non-procrastinators.
When investigating the association within all procrastinators and time (5 seconds and 10 seconds) no significant relationship was obtained, $t(18) = -1.488, p > 0.05$. There was also no significant relationship within all non-procrastinators and time, $t(18) = -1.703, p > 0.05$.

Figure 1 illustrates the results for the dependent variable speed. Overall non-procrastinators average score was higher during both of the time trials compared to procrastinators. Both procrastinators and non-procrastinators obtained higher average scores on the 10 second trial as opposed to the 5 second trial.

The second ANOVA examined the dependent variable accuracy (refer to Table 2 for Analysis of Variance). There was no interaction between procrastinator and non-procrastinators and time, $F(1, 36) = 0.00, p > 0.05$. No main effects were reported for procrastinators or non-procrastinators, $F(1, 36) = 0.42, p > 0.05$ as well as for time, $F(1, 36) = 1.74, p > 0.05$. No further tests were conducted. Table 4 presents the means and standard deviations for accuracy.

Figure 2 illustrates results for the dependent variable accuracy. On the whole, the average score obtained by procrastinators was higher than non-procrastinators. Procrastinators and non-procrastinators both acquired higher average scores in the 10 second trials compared to the 5 second trials.
Figure 1 Speed
Figure 2: Accuracy

- ♦ Procrastinators
- □ Non-Procrastinators

Average Score vs. Time (secs)
Discussion

This study explored performance in procrastinators compared to non-procrastinators in a time restricted task. Previous research has shown that procrastinators perform poorer with regards to speed and accuracy then non-procrastinators when under time limitations and other conditions (high/low cognitive task; high/low self regulation). The present study focused on the difference between performance (speed and accuracy) in procrastinators and non-procrastinators only under time limitations. To determine procrastinators from non-procrastinators the AIP was administered. It was been reported that the reliability for AIP has a coefficient alpha of .79 (n = 40 adult students, M age = 38.3, and retest reliability (1 month) of .71 (n = 22, third year medical and social work graduate students) (Ferrari et al, 1995). The scores from the AIP have been related to Aitken’s (1982) procrastination scale (Ferrari et al, 1995).

The first dependent variable speed was the total number of crosses marked in the squares. It was hypothesized that procrastinators on average would mark down less crosses then non-procrastinators in both of the times allotted. The results obtained showed that the hypothesis was supported. Procrastinators in both the 5 second time limit and the 10 second time limit had a completed fewer squares then non-procrastinators in the 5 seconds time limit and 10 second time limit. The difference between the amount of squares completed by procrastinators and non-procrastinators was significant. Further testing looking specifically at non-procrastinators showed that there was a statistical significant difference on speed during the 5 second time limit and the 10
Therefore the hypothesis was not supported. The difference between procrastinators and non-procrastinators on accuracy was no statistically significant.

As well, it was hypothesized that the accuracy of both types of procrastinators would be better in the 10 second time limit compared to the 5 second time limit. It was found that the results gathered did support this hypothesis. But again, there was no statistical significance found.

The data acquired shows that even though procrastinators do not complete as much of the task as non-procrastinators, they do complete the task more accurately. Therefore, this suggests that procrastinators would rather complete a task correctly then rush through it and have it completed incorrectly. While non-procrastinators rather get a task finished within the time limit then worry about whether it is correct or not. Unlike Ferrari's (2001) findings, procrastinators within this study did in fact effectively regulate their performance accuracy under pressure. Again, they did not regulate their performance speed under pressure. Non-procrastinators did regulate their performance speed but did not regulate their performance accuracy.

The reason procrastinators were not found to perform poorer on both accuracy and speed may be do to several flaws within the study. One of the confounds is the way in which the oral instructions given to participants. The oral instructions given to all the participants were not scripted. Therefore, the wording was not always the same. Some of the participants might of misunderstood what they were meant to do when it came to the time restricted task. As well, the task itself has never been checked for reliability and validity. It is unknown whether or not this specific test would yield the same results
again. The time limit set for the task should also be tested several time prior to administering it to participants.

The testing area is also seen as a confound. All the participants did not have a complete flat surface to write on, therefore the speed and accuracy with which the task was completed by all participants is not necessarily the best of their abilities.

Further research in this particular area should continue to be conducted. Revisions to the task and where the task is administered could potentially yield better results.
References


