

## **Introduction and Problem Statement**

The Internet has proven itself to be a remarkable tool, providing countless benefits to those who wish to use it as a tool to further their academic studies, but with these positives come a host of negatives, such as its ability to facilitate procrastination, with one research group finding 7.2% of their participants to be “internet addicts”, and a further 26.7% to be “internet dependants”. (Geng et al., 2018) This is especially concerning, when considering the findings of Fernie et al. (2018), in which there was a reported “13% variance in academic performance” depending on the amount of procrastination the subjects experienced compared to their average. This research intends to find ways in which to reduce the impact of procrastination, especially in relation to social media use, which was found by Rozgonjuk et al. (2018) to “mediate the relationship between procrastination and problematic smartphone use” when used in a lecture setting. The way in which this research intends to combat this problem is through the development of a browser extension to help refocus students when they begin to procrastinate.

## **Hypothesis**

Students with the aid of an anti-procrastination browser extension spend less time on social media than students without such an extension.

## **Literature Review**

A search of Science Direct was conducted in order to find relevant research papers. The following term was used to query the online database: [Procrastination OR delaying tactics AND social media]. In order to find more high quality and relevant studies, a number of inclusion and exclusion criteria were also applied. The inclusion and exclusion criteria demanded that the studies be in the English language, have taken place in the last four years, record both the methods used as well as the results, and studies must be conducted only on those aged over 18. These processes resulted in the five studies shown in the table of results below.

‘Internet addiction and procrastination among Chinese young adults’, (Geng et al., 2019) conducted research on how internet addiction was related to core self-evaluation and self-control, as well as how this affected the relationship between procrastination and internet addiction. Social adjustment was also investigated, to determine whether or not it facilitated a link between internet addiction and procrastination as well as how it affected core self-evaluations. The researchers distributed questionnaires to 405 college student volunteers. These questionnaires included questions on topics such as internet addiction levels, compulsive and social health and procrastination problems. The research showed that internet addiction could be used as an identifier of those who were more likely to procrastinate, which was perhaps caused by the observed lower self-control levels compared to those who were less likely to procrastinate. Analysis of the results also showed

that internet addiction was linked with higher procrastination tendencies, and core self-evaluation skills showed a higher amount of self-control in an individual. Due to the dependence of quantitative data, this study provided little real insight into the links between the variables. The use of self-reporting in the questionnaires also means that subjects may rate themselves more favourably than they are in truth, potentially skewing these results.

‘Does it matter if students procrastinate more in some courses than others?’ was a research paper conducted by Kljajic et al. (2018), which aimed to examine the relationship between procrastination and the grades recorded among the students of courses, as well as between grades of individual students. These researchers gathered a sample group of 208 university students, who measured their levels of procrastination for each of their individual courses over a single semester, at the end of which, their final grades would be recorded. The results of this research showed that students can procrastinate on specific courses, as well as the fact that individuals who experience higher levels of procrastination are more likely to receive lower grades than peers who are less likely to procrastinate, and grade performance also varies in individuals, with students who procrastinate more in one course than average receiving lower than expected grades. The use of self-reported data in this study is comparable to the one led by Geng et al. (2018), as this means that students could rate themselves more favourable than they may be in truth, skewing the data. However, in this study, in person interviews were conducted in an attempt to mitigate this. Kljajic et al. (2018) also found students who procrastinated on some courses may not necessarily procrastinate on other courses, which can be seen to contradict the idea of procrastination being linked to lack of self-control.

‘Problematic Facebook use and procrastination’ (Przepiorka et al., 2016) is a research paper focused on whether or not the intensity and invasiveness of Facebook can be linked with procrastination. The sample group for this study consisted of 954 facebook users aged between 18 and 58 years. These participants took part in several questionnaires aimed at determining the level of intensity and intrusion that users experienced from the social networking site, as well as data on the procrastination tendencies of the participants themselves. The resulting data shows that females of a young age who described themselves as decisional procrastinators are the most likely demographic to become intense users of Facebook, which support the results presented by Geng et al. (2018). The study also showed that procrastinators in general were more likely to use Facebook intensely, and were more disposed to intrusion. The study also found that relations sex, age and procrastination tendencies were not significant. The reliance of this study on questionnaires was also similar to the first two studies, relying only on qualitative data. However, in this case, there is the additional use of what Przepiorka et al. (2016) describe as a “snowball effect”, in which users were prompted to share the questionnaires with social media friends. This opens up an entirely new level of data bias, as the researchers had little to no control over who would participate in the survey, meaning that fake accounts could have

been used to skew the data, as well as potential users who may wish to anonymously and maliciously skew the data through the submission of fake answers.

‘Social media use in lectures mediates the relationship between procrastination and problematic smartphone use’ is a study focusing on the relationship between problematic smartphone use and procrastination run by Rozgonjuk et al. (2018). 366 Estonian university students took part in the study, which consisted of these participants answering surveys based on the likelihood of becoming addicted to smartphones, as well as their tendency to procrastinate. A questionnaire with questions about smartphone usage in lectures was also required to be completed. The researchers used correlation analysis to find that those who procrastinated were more likely to be victims of problematic smartphone use, and that this relationship was facilitated by the use of smartphones in lectures. Unlike the study run by Kljajic et al. (2018), this study did not focus on the effects that problematic smartphone use during lectures would have on the grades, though the positive correlation between procrastination and social media use supports the findings of Przepiorka et al. (2016).

‘Further development and testing of the metacognitive model of procrastination’ was a research paper undertaken by Fernie et al. (2018). In this study, a group of 204 university students completed a wide range of questionnaires, measuring procrastination (intentional and unintentional) as well as self-awareness on procrastination as well as depression. The study showed that the meta-cognitive model of procrastination that was tested by this research group accounted for a 13% change in academic performance of the students that took place in the survey. This is a very good match for the findings of Kljajic et al. (2018), who also found that procrastination led to an overall decrease in academic performance in those who either chose to procrastinate or did so unintentionally. A limitation of this research paper is that similarly to the paper run by Przepiorka et al. (2016), the data was collected anonymously over the internet, which may lead to skewed results. However, in this case, there was a considerably larger amount of control over who could take part in the survey, limiting participants to those who matched the criteria, so the results may be more reliable in this case.

Author/Date	Aim of Study	Data Collection Methods	Main Findings
Geng, J. Han, L. Gao, F. Jou, M. Huang, C. C. (2018)	Researching the roles of social adjustment, core self-evaluations and self-control on internet addiction and procrastination.	Quantitative cross-sectional design using questionnaires.	Internet addiction was positively correlated with procrastination, and those with increased social adjustment were less likely to suffer from internet addiction.
Kljajic, K. Gaudreau, P. (2018)	Researching the link between procrastination and grades across students.	Qualitative in person interviews, and quantities surveys and questionnaires.	Students who procrastinated more than other students received lower grades than these students, and those who procrastinated more than their average received lower grades than their average.
Przepiorka, A. Blachnio, A. Diaz-Morales, J. F. (2016)	To examine whether procrastination is associated with increasing Facebook intrusion and intensity.	Only quantitative data, through a series of surveys and questionnaires.	Young females were the demographic most at risk of excessive Facebook use, whilst no link was found between sex, age and procrastination.
Rozgonjuk, D. Kattago, M. That, K. (2018)	Researching the relationships between problematic smart phone use, procrastination and social media use in lectures.	Only quantitative data, collected through the use of an online survey.	Social media use in lectures mediates the relationship between procrastination and problematic smartphone use.
Fernie, B. A. Kopar, U. Y. Fisher, P. L. Spada, M. M. (2018)	To test whether the metacognitive model of procrastination explained self-reported academic performance.	Quantitative data acquired through a series of questionnaires. Some qualitative data in the form of self-reports.	Interventions that target metacognitions may reduce the target's likelihood of procrastinating, which in turn raises their academic performance.

## Proposed Methods

In this study, data will be collected from a group of students. They will be given an online task to complete, using a device which records the amount of time spent on certain websites. This task is to be completed over the period of two hours, with a lecturer giving advice on how to complete the task. At the end of the allotted time, participants will be asked to fill out a questionnaire which aims to determine how well they thought they performed as well as other self-report data on how much they believe they procrastinated.

Data will also be collected from the web browser to acquire more reliable data on how long was spent on which sites, as well as task performance. A similar task will then be given to them after a rest period of a few days, this time with the aid of a web browser tool which reminds students of their task every five minutes not spent on the task website. At the end of the task, the same questionnaire is to be filled out and the same data is to be collected from the devices. The results of the two tests will be compared to find any patterns that may prove or disprove the hypothesis. This study is similar to the one run by Rozgonjuk et al. (2018), as it focuses on procrastination on devices in academic lecture settings.

## **Legal Ethical and Social Issues**

In order to avoid potential legal issues, the web browser recording tool is to be installed on devices provided to the students, as this is to prevent data being stolen from the participant's own devices unlawfully. Another precaution will be taken to ensure that the data captured from the devices is linked to the questionnaires they have filled in, but neither will be linked to the student, making the data anonymous. Whilst this may prove to possibly encourage skewed data, it is important to protect the anonymity of the students. In order to avoid another possible breach in data protection laws, devices will be wiped after each test so students who may have neglected to log out of their social media profiles will not have their accounts compromised.

## **Conclusion**

In conclusion, the project aims to use a research the effects of a web browser anti-procrastination tool on procrastination in university students. This would help to find reinforce the links found between social media use and procrastination, as found in Przepiorka et al. (2016), as well as the links between smart device usage in a lecture setting, as shown by the research proposed by Rozgonjuk et al. (2018). The addition of the task performance captured on the devices on the two test sessions could also help determine whether there is a similar amount of academic performance deviation to the 13% discovered by Fernie et al. (2018).

## Sources

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