

Assessment and procrastination: How to overcome this common hurdle in university

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PSB3E-BT15: Bachelor Thesis

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Month 01, 2022

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Abstract

The aim of this study was to investigate whether there is a relationship between assessment type and the students' tendency to procrastinate. The assessment types looked at were summative assessment, meaning assessment solely with the aim to provide a final grade, and formative assessment, which is focussed on giving the student feedback on their performance without grading them on this performance. The participants in this study consisted of 215 in the Bachelor of Psychology at the University of Groningen. They all filled out a questionnaire containing questions on multiple aspects on their experience with university assessment. The results of the current study show that formative assessment outperforms summative assessment on all investigated factors. Procrastination was reported to be significantly lower in classes that provide formative assessment. These findings are in line with previous research that also state that formative assessment may increase the overall student experience. Adding formative assessments to the curriculum may lead to a decrease in procrastination in students and increase their overall experience in university.

Keywords: Formative assessment, summative assessment, procrastination, student experiences.

Assessment and procrastination: How to overcome this common hurdle in university

Students' experience in higher education may be influenced by many different factors. One such factor can be the assessments used in the courses the student follows. This study investigates whether there may be a relation between assessment types used in higher education and student experience, in particular whether it helps solve the common issue of procrastinating on coursework.

Procrastination is defined as the behaviour of delaying or putting off things one must do until the very last minute. According to Harriott and Ferrari (1996) 20% of adults report dealing with procrastination. More worryingly, between 50% to 95% of students report procrastinating on assignments, exams or readings related to their coursework (O'Brien, 2002). Procrastination can be either passive or active (Chu and Choi, 2005). Passive procrastination is colloquially referred to as just procrastination. It is defined as overall indecision and paralysis in the face of tasks and deadlines, which leads to failure to complete tasks on time. Passive procrastination is reported to be a major problem in university, as it leads to lower grades, higher drop-out rates and lower overall success in university for the students who tend to procrastinate (Chu and Choi, 2005). Additionally, students who procrastinate are reviewed more negatively by peers according to Ferrari and Patel (2004). Overall, procrastination is negatively associated with a successful university trajectory (Chu and Choi, 2005). However, another form of procrastination exists, known as active procrastination. Active procrastination means that a student is aware of their tendency to leave their coursework to the last minute and actively engages in this behaviour (Chu and Choi, 2005; Choi & Moran, 2009). One reason suggested for the use of active procrastination is that some students report working better under pressure (Choi & Moran, 2009). They achieve this by waiting until the last moment before starting to work on their assignments or studying for their exams. Another reason, more relevant to the current study, is that

procrastination helps to preserve a students' self-esteem (Lay, Knish, & Zanatta, 1992; Barutçu Yıldırım & Demir, 2019). In this case, procrastination can be defined as a form of self-handicapping. The student creates their own obstacles which prevent successful performance in their coursework, thus providing an explanation as to why the results may be less favourable than expected (Barutçu Yıldırım & Demir, 2019). This explanation for a bad grade after active procrastination or self-handicapping is that the student did not have sufficient time or spend sufficient energy preparing for an exam or a deadline, instead of the explanation being that the student does not have sufficient skill or capability to keep up with the coursework.

According to Barutçu Yıldırım and Demir (2019) using active procrastination as a form of self-handicapping may also stem from a lack of self-esteem. The student who uses this self-handicapping may not have sufficient confidence in their own ability to perform well on the assignment or on the exam. This type of student may benefit from a form of assessment which is called formative assessment.

Multiple types of assessment are used in higher, among which are summative and formative assessment. Summative assessment is used during and at the end of a semester to provide a student with an evaluation of their performance through the assignment of a grade to the work done by that student (Dixson & Worrell, 2016). This differs from formative assessment, as this type of assessment aims to facilitate student learning by providing feedback on the assignment without providing a grade (Simon, 2019; Sadler, 1989). Most educators are used to only providing summative assessments for their courses, for example in the form of a writing assignment, an essay exam or a multiple-choice exam (Simon, 2019). While educators can and sometimes do provide feedback on the performance of the student on the particular assessment, this feedback is attached to a received and definite grade. Student evaluation is the main goal of this type of assessment. Formative assessment can help

improve learning, as it gives a direction to what the student already grasps and on what topics the student needs to spend more time on. According to Sadler (1989) this type of assessment may improve self-regulated learning, which can have long term benefits for the student. For formative assessment to be successful, it is important that the feedback is received soon after handing in the assignment and that the feedback not only focuses on how the student can improve in the specific course on which they receive this feedback, but also how they can improve their overall learning skills (Sadler, 1989).

Formative assessment can take different forms. Some examples are class exercises that facilitate active learning (Gikandi, Morrow & Davis, 2011), or practice questions with explanations of the correct answers that help the student understand which topics need more focus to be successful in the final exam. In addition, written or verbal feedback on performance in a practise test or on a written essay can be a type of formative assessment. The important factor remains that there is no evaluation which informs the grade received in this type of assessment. Improvement of skill or knowledge is the aim of this type of assessment.

Formative assessment may be quite beneficial for students who have a tendency to procrastinate in a number of ways. According to Clariana, Gotzens and Badia (2011) continuous assessment can help students with a tendency to procrastinate to keep up with their coursework. This was investigated by implementing five continuous assessments in a twelve-week course of various types, such as oral presentations and written essays. At the end of the course the students anonymously answered a questionnaire in which they were asked to report on their procrastination in this course as well as a different course of their choosing in the same year. In this study, students both procrastinated less and received a higher grade in classes that provided continuous assessment compared to classes that provided a single final exam (Clariana et al., 2011). In addition, according to McGann, King and Sillence (2008)

undergraduates find continuous assessment more enjoyable and according to Isaksson (2008) continuous assessment can help students be more prepared during classes and increases the received grade for the course. Assessment types such as continuous assessment thus may prevent the need for cramming just before the exam. Continuous assessment and formative assessment differ greatly in their aim, as continuous assessment can be a multitude of smaller summative assessments. As mentioned before the aim of summative assessment is to provide a final grade, whereas formative assessment aims to facilitate learning. Continuous assessment may therefore still have the same performance pressure as a single summative assessment. However, frequent formative assessments can be used similarly to continuous assessment, thus providing the student with multiple smaller deadlines throughout the course instead of one large deadline at the end.

For students who use active procrastination as a form of self-handicapping, the feedback on formative assessments may help to build confidence in their capabilities and direct them to the topics they may need to spend more time on. It allows them to practice their final assessments without consequences for their final grades, relieving the need to avoid studying to retain their self-esteem.

So far, research in the field of student assessment is still lacking. There is not much research that suggests that particular types of assessment may be beneficial for different types of students and why. The aim of this study is to explore whether formative assessment may be related to less acts of procrastination, thus perhaps leading to better outcomes such as better student experiences or better received grades.

The aim is that the outcome of this exploration may give direction to educators on how they may improve their assessment methods. This could lead to students being more confident in their ability to pass courses, increase their grades and overall improve their experiences with assessments.

The main question of the current study is whether students tend to procrastinate less on classes that provide formative assessment, possibly in addition to a final exam, compared to classes that provide only summative assessment. The hypothesis is that students procrastinate less on classes that provide formative assessment compared to classes that provide summative assessment.

Method

Participants

The participants in this study consisted of 147 first year students and 68 students in higher years in the Bachelor of Psychology at the University of Groningen. The participants included 49 males (22.8%) and 164 females (76.3%) between the ages of 17 and 28 years with median age of 20. Participation in the study was voluntary. Of the participants 147 were first year bachelor students participating in exchange for credit while the remaining 68 participants were recruited through social media. These students received no compensation, monetary or otherwise. For 157 (73%) participants the Bachelor of Psychology was their first programme. 58 (27%) participants indicated they were enrolled in another programme before their current Bachelor of Psychology. On average these participants were enrolled in another programme for 2 years.

Materials

Demographics information was gathered regarding age, gender and nationality. In addition, participants were asked in which year they started their psychology bachelor, and whether the psychology bachelor is their first college/university programme.

Questions on general study habits were specifically designed for this questionnaire, aimed at investigating students habits independent of assessment method. This scale consisted of 6 items. They were stated in a straightforward manner, reverse coding was used on the item "I use the same study habits I have used in high school."

Procrastination tendency was assessed using an adapted version of the Procrastination Assessment Scale - Students (PASS; Solomon & Rothblum, 1984). Items pertaining general procrastination tendency, and specific procrastination on studying for exams were used. Both consisted of three items. In addition, several items pertaining the reasons for procrastination were used from the original PASS. This consisted of 9 items. The original PASS consists of 44 items and has a 0.80 overall reliability and good concurrent validity. The reliability and the validity of the adapted version of the PASS in the current study is not assessed. No reverse coding was used in any of the questions.

The following items were used in both used for assessing student opinions for classes with summative and formative assessment. All the following items had a five-point Likert-type scale range from 'Strongly Agree' to 'Strongly disagree' as answer options.

Self-efficacy was measured using an adapted version of the motivated strategies for learning questionnaire (MSLQ; Pintrich, Smith, Garcia & McKeachie, 1991). The original validity and reliability scores may no longer be relevant due to the adaptations made. The scale consisted of 5 items. Reverse coding was used on the items "I expect to have problems with understanding the most difficult material presented in the readings." and "I expect to have problems with understanding the most difficult material presented by the instructors."

Engagement was measured with a newly created questionnaire. The questionnaire consisted of items from both the First Year Experience Questionnaire (FYEQ; Krause & Coates, 2008) and self-constructed items by Schaufeli, Salanova, González-Romá and Bakker (2002). In addition, some novel items were created. Therefore, no validity or reliability scores exist for the current questionnaire. The scale consisted of 6 items. Reverse coding was used on the items "I do the bare minimum of work to pass the course (or obtain my desired grade)." and "I usually cram before an exam."

Perceived retention was measured using a novel scale based on modes of learning that determine the depth of processing and the degree of integration of knowledge (Simpson et al, 1994). Actual retention could not be measured as this is usually done by testing retained knowledge through questions with correct or incorrect answers. The questionnaire consisted of 4 items. No reverse coding was used in this scale.

Learning approaches was measured using a questionnaire that was inspired by the Approaches and Study Skills Inventory for Students (ASSIST; Entwistle et al., 1997), which originally encompasses 52 items and reports reliability scores from 0.65 to 0.82 depending on learning approach. The items adapted to an extent to which the original reliability and validity scores may no longer be relevant. The final scale consisted of 10 items, of which “I often wonder whether the work I am doing is really worthwhile.”, “Much of what I am studying makes little sense: it is like unrelated bits and pieces.”, “I concentrate on just memorising a good deal of what I have to learn.” and “I wish I could study differently for this type of course.” are reverse coded.

Student satisfaction was measured using items from the Students Evaluation of Educational Quality Questionnaire (SEEQ; Marsh, 1982). Due to the adaptations, original reliability and validity scores may no longer be relevant. The final scale consisted of 9 items, none of which were reverse coded.

Student wellbeing was measured using a self-constructed questionnaire that inquired about perceived stress, workload and anxiety. Previous research found that these constructs most related to assessment types. (Struyven, Dochy & Janssens, 2005). Wellbeing was assessed using 6 items, no item needed reverse coding.

General cheating behaviour was assessed in exams and assignments. Participants were generally asked whether they engaged in any cheating behaviours in the different assessment forms. For that, specific behaviours were listed, that were partly based on the Academic

Dishonesty Scale (Bashir & Bala, 2018) including cheating behaviours in examinations, engaging in plagiarism, using outside help and falsifying assignments. Participants were informed that a coin toss method was used to ensure anonymization, that was based on the randomised response research method initially developed by Warner, 1965. It allows for the assessment of sensitive topics where a coin toss decides whether the question must be answered truthfully to prevent socially desirable answers.

The full questionnaire can be found in appendix A.

Design and procedure

The study used a correlational design investigating the association between procrastination and assessment type. The primary variable used in this study was the level of procrastination, rated on the adapted version of the PASS, comparing the PASS score in the general section of the questionnaire to the PASS scores in the summative and formative assessment questionnaires.

The participants were recruited using an advertisement on a website accessible for first-year psychology students (SONA Systems, Estonia), where these students could sign up for a variety of research for credit. In addition, WhatsApp was used to reach students in higher years of the Bachelor of Psychology. This was done through advertisement messages in large year-groups on WhatsApp, and through direct messages to people known to be in the Bachelor of Psychology.

After recruitment through the advertisement on a website accessible for first-year psychology students (Sona systems, Estonia) or through WhatsApp, the participants received a link to the online environment on which the questionnaire was executed (Qualtrics). Before the questionnaire started, participants saw a page with an information form giving details on the procedures, benefits and risks of participating, an explanation on the voluntary participation and contact information of the researchers. The purpose of the study could also

be found on the information form. If they had any questions beforehand, they were directed to the researchers using the researchers' email addresses and phone number. Afterwards the participants were directed to a consent form. They provided consent by clicking forwards on the Qualtrics questionnaire, should they not consent the participants were instructed to close the page. Participants completed the questionnaire starting with the demographic information, followed by the study habits questions and the procrastination questions. After these questions they received an information page on summative and formative assessment. They then received two very similar questionnaires about their experience with classes that have summative and classes that have formative assessment. The two similar questionnaires were given to the participants in a random order to control for order effects. In the blocks the participants were first asked about self-efficacy, engagement and general retention of information in these classes. Then they received questions about learning approaches and procrastination behaviours for these particular types of courses. After that they were asked about their satisfaction with these types of courses and their mental well-being in relation to the courses. Finally, the students were asked about their cheating behaviour in the classes using a coin toss method to increase anonymity. When they finished the block about either courses on formative or summative assessment, they were directed to the questions on the other type of class. After finishing the participants were asked whether they answered the questions truthfully and whether they had anything to add, or any comments they would like to share. They were then thanked for their time and either redirected to SONA or they could close the page.

Results

Study habits

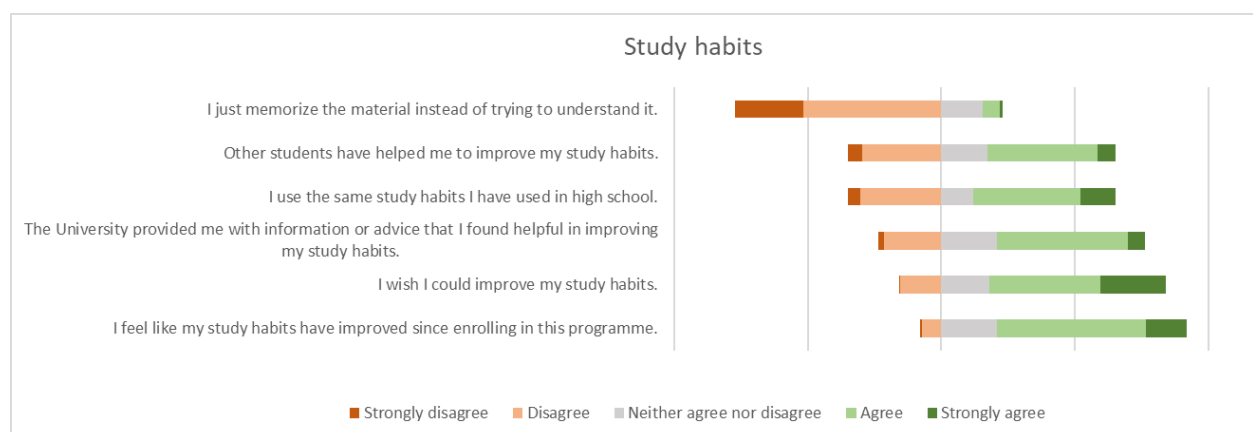
Table 1 represents the mean scores and standard deviations for the individual items on study habits. Due to low internal reliability scores (Cronbach's $\alpha = 0.248$) on the study habits

scale, no overall mean score can be given to this subscale. Higher scores represent more agreement with the given statement. Overall, students tend to agree with the statement that their study habits have improved since they enrolled in the programme. They also tend to agree with the sentiment that they wish to improve their study habits. A lower agreement can be found with the statement that students just try to memorize the material. An overall distribution can be found in the graph below.

Table 1

Means and standard deviations for study habits.

Item	Mean	SD
I feel like my study habits have improved since enrolling in this programme.	3.78	0.81
Other students have helped me to improve my study habits.	3.14	1.08
The University provided me with information or advice that I found helpful in improving my study habits.	3.36	0.97
I wish I could improve my study habits.	3.74	1.01
I use the same study habits I have used in high school.	3.27	1.16
I just memorize the material instead of trying to understand it.	2.06	0.87



Procrastination

The average score on procrastination tendencies unrelated to specific assessment type was 3.66 (SD = 1.09). The Cronbach's alpha was $\alpha = 0.897$ for the procrastination subscale in the general part of the questionnaire. The same questions had an $\alpha = 0.910$ in the summative block and $\alpha = 0.889$ in the formative block.

The hypothesis that students procrastinate less on classes that provide formative assessment compared to classes that provide summative assessment was tested using a paired sample t test. The assumption of normal distribution was violated, but not to the extent that a paired samples t test was completely contraindicated. The other assumptions were not violated. There was a significant difference in the scores for procrastination in classes with solely summative assessment (M = 3.51, SD = 1.19) and procrastination in classes with formative assessment (M = 3.20, SD = 1.18); $t(214) = 4.810$, $p < 0.001$. The effect size of this analysis is small ($d = 0.328$). This suggests that students may procrastinate a little less on classes which provide formative assessment. These results held when excluding the first-years students from the sample. The means were M = 3.53 (SD = 1.23) for summative and M = 3.18 (SD = 1.18) for formative respectively. These results are significant with $t(67) = 2.607$, $p = 0.006$, the effect size was high at $d = 1.12$

Table 2

Difference procrastination in classes with summative and formative assessment.

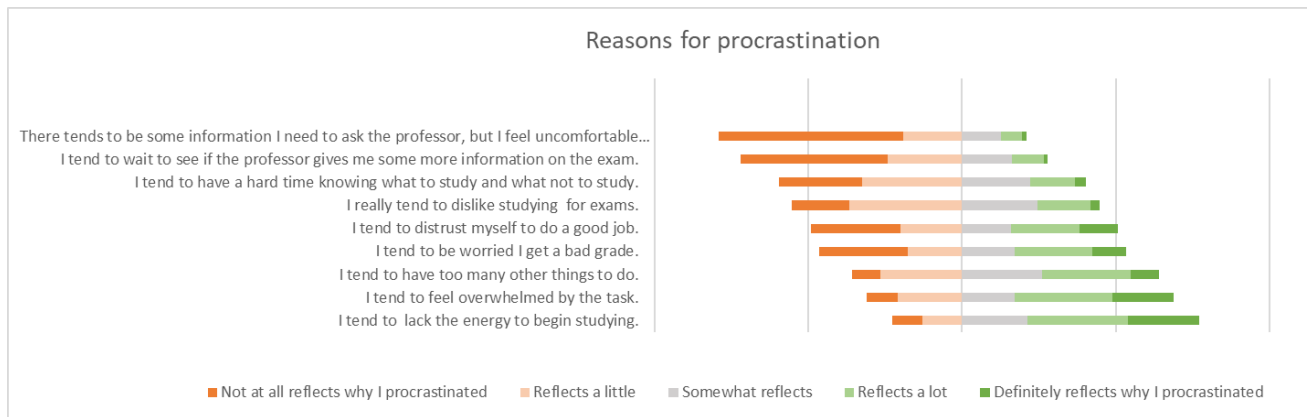
	Paired Differences				Significance	
	Mean	SD	t	df	One-Sided p	Two-Sided p
Procrastination summative – procrastination formative	0.31628	0.96417	4.810	214	<0.001	<0.001

The reasons for procrastination are summarised in Table 3. These scores suggest that lacking energy and being overwhelmed by the task may prevent a student from starting to study for their exams. Waiting for communications from teachers seems to be less of a reason for procrastination.

Table 3

Reasons for procrastination

	Mean	SD
I tend to have a hard time knowing what to study and what not to study.	2.35	1.134
I tend to have too many other things to do.	3.02	1.142
There tends to be some information I need to ask the professor, but I feel uncomfortable approaching them.	1.71	1.024
I tend to be worried I get a bad grade.	2.72	1.400
I really tend to dislike studying for exams.	2.49	1.067
I tend to feel overwhelmed by the task.	3.30	1.285
I tend to distrust myself to do a good job.	2.69	1.418
I tend to lack the energy to begin studying.	3.47	1.252
I tend to wait to see if the professor gives me some more information on the exam.	1.93	1.085



Self-efficacy

The internal consistency for self-efficacy was $\alpha = 0.797$ for summative assessment and $\alpha = 0.682$ for formative assessment. The average score for self-efficacy for classes that provide only summative assessment $M = 3.32$ ($SD = 0.70$). This score is significantly lower than the average for self-efficacy in classes with formative assessment ($M = 3.64$; $SD = 0.57$), $t(214) = 6.862$, $p < 0.001$. The effect size was a medium $d = 0.68$. These effects held when excluding the first-year students from the sample. In this sample the mean for self-efficacy in summative assessment was $M = 3.46$ ($SD = 0.72$) and for formative assessment was $M = 3.85$ ($SD = 0.53$). These results were significant with $t(67) = 4.320$, $p < 0.001$, with an medium to high effect size of $d = 0.75$.

Engagement

The internal consistency for engagement was $\alpha = 0.555$ for summative assessment and $\alpha = 0.479$ for formative assessment. The average score for engagement for classes that provide only summative assessment $M = 2.96$ ($SD = 0.60$). This score is significantly lower than the average for engagement in classes with formative assessment ($M = 3.16$; $SD = 0.57$), $t(214) = 5.227$, $p < 0.001$. The effect size was a medium $d = 0.56$. These effects held when excluding the first-year students from the sample. In this sample the mean for engagement in summative assessment was $M = 2.85$ ($SD = 0.66$) and for formative assessment was $M = 3.15$.

(SD = 0.58). These results were significant with $t(67) = 3.534$, $p < 0.001$, with an medium effect size of $d = 0.69$.

Retention

The internal consistency for retention was $\alpha = 0.687$ for summative assessment and $\alpha = 0.598$ for formative assessment. The average score for retention for classes that provide only summative assessment $M = 3.54$ (SD = 0.65). This score is significantly lower than the average for retention in classes with formative assessment ($M = 3.82$; SD = 0.50), $t(214) = 6.067$, $p < 0.001$. The effect size was a medium $d = 0.65$. These effects held when excluding the first-year students from the sample. In this sample the mean for retention in summative assessment was $M = 3.45$ (SD = 0.72) and for formative assessment was $M = 3.82$ (SD = 0.49). These results were significant with $t(67) = 3.834$, $p < 0.001$, with an medium to high effect size of $d = 0.78$.

Learning Approaches

The internal consistency for learning approaches was $\alpha = 0.736$ for summative assessment and $\alpha = 0.697$ for formative assessment. The average score for learning approaches for classes that provide only summative assessment $M = 3.24$ (SD = 0.55). This score is significantly lower than the average for learning approaches in classes with formative assessment ($M = 3.45$; SD = 0.49), $t(214) = 5.716$, $p < 0.001$. The effect size was a medium $d = 0.55$. These effects held when excluding the first-year students from the sample. In this sample the mean for learning approaches in summative assessment was $M = 3.20$ (SD = 0.59) and for formative assessment was $M = 3.49$ (SD = 0.53). These results were significant with $t(67) = 3.544$, $p < 0.001$, with an medium effect size of $d = 0.67$.

Satisfaction

The internal consistency for satisfaction was $\alpha = 0.786$ for summative assessment and $\alpha = 0.778$ for formative assessment. The average score for satisfaction for classes that provide

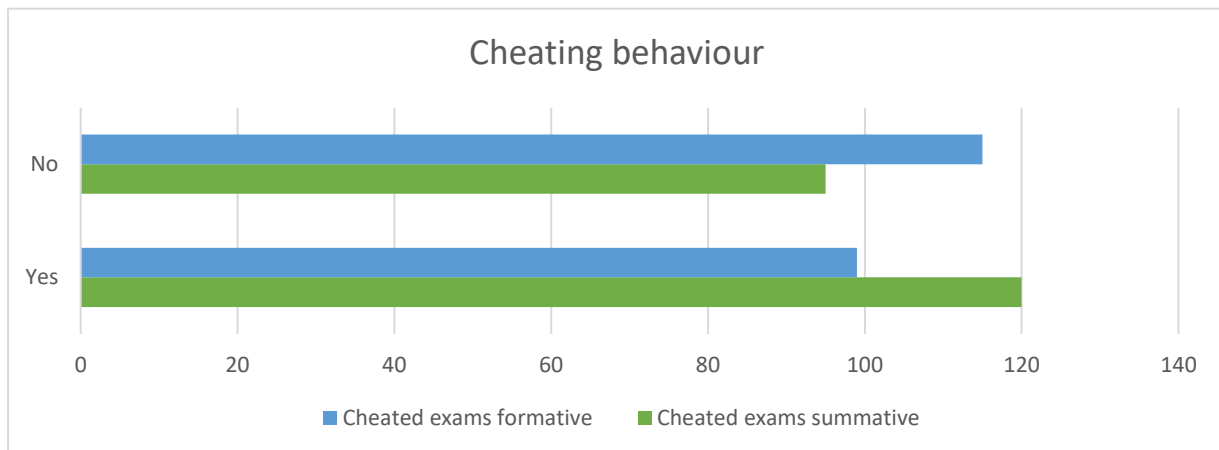
only summative assessment $M = 3.29$ ($SD = 0.57$). This score is significantly lower than the average for satisfaction in classes with formative assessment ($M = 3.79$; $SD = 0.51$), $t(214) = 10.013$, $p < 0.001$. The effect size was a medium $d = 0.73$. These effects held when excluding the first-year students from the sample. In this sample the mean for satisfaction in summative assessment was $M = 3.19$ ($SD = 0.54$) and for formative assessment was $M = 3.86$ ($SD = 0.47$). These results were significant with $t(67) = 7.390$, $p < 0.001$, with an medium to high effect size of $d = 0.74$.

Wellbeing

The internal consistency for wellbeing was $\alpha = 0.689$ for summative assessment and $\alpha = 0.646$ for formative assessment. The average score for wellbeing for classes that provide only summative assessment $M = 3.48$ ($SD = 0.64$). This score is significantly higher than the average for wellbeing in classes with formative assessment ($M = 3.36$; $SD = 0.59$), $t(214) = 2.876$, $p = 0.002$. The effect size was a medium $d = 0.58$. These effects held when excluding the first-year students from the sample. In this sample the mean for wellbeing in summative assessment was $M = 3.5$ ($SD = 0.74$) and for formative assessment was $M = 3.24$ ($SD = 0.60$). These results were significant with $t(67) = 2.945$, $p = 0.002$, with an medium effect size of $d = 0.72$.

Cheating

As cheating was measured using a coin toss method for increased anonymity, only an overall overview on cheating tendency can be determined. The graph below shows that less students tend to cheat on exams for classes that have provided formative assessments in addition to their final exam.



Discussion

On all subscales, classes that provided formative assessment in addition to or instead of summative outperformed classes that provided solely summative assessment as the form of performance evaluation. These findings are in line with previous research that stated that formative assessment is beneficial to students (Clariana et al., 2011). More specifically, the current results show that students procrastinate significantly less on classes that provide a form of formative assessment. These findings are in line with previous research by Clariana et al. (2011), who found that continuous assessment is related with a lower rate of procrastination, compared to a single summative assessment. Although there are no explicit theories yet as to why formative or continuous assessment may help decrease the tendency to procrastinate, some answers may be found when looking at the overall experience the student has in classes with such assessments. The current results show that students experience higher levels of engagement and self-efficacy in classes that provide formative assessment. In addition, the students in the current study reported feeling more satisfied with classes that provide this type of assessment. This could in turn lead to a lower tendency to procrastinate. The proposed model would be that students find formative assessment more enjoyable, which is supported by McGann et al. (2008), which may both increase motivation and lower

procrastination. As for the overall findings that formative assessment, reasons could be that the feedback provided in formative assessment improves the student teacher relationship which in turn could improve on engagement in the course. The idea that formative assessment can be beneficial for student teacher relationships has been suggested before by (Crimmins et al., 2016). Another reason for the outperformance of formative assessment could be that formative assessments provide students with a better idea of their performance so far, thus giving them more confidence in the final exams. This may very well improve the students' self-confidence and better their university experience.

Interestingly, the current study does not fully support the research on the two types of procrastination as mentioned by Chu and Choi (2005). When asked about the reasons for procrastination, students in the current sample agreed more with the statements that are in line with passive procrastination, such as that they were overwhelmed by the task or lacked the energy to begin studying. On average, students disagreed with the statement that fear for a bad grade prevented them from studying, which would be in line with active procrastination. However, creating full procrastination profiles is beyond the scope of the current study, so no hard conclusions should be drawn from these results.

It is also unclear how continuous assessment and formative assessment can be compared in different studies. The previously mentioned study by Clariana et al. (2011) found that students tend to procrastinate less on classes that provide continuous assessment compared to classes that provide a single summative assessment. The findings from that study are similar to the results from the current study, in that procrastination is reduced in classes with multiple assessments. It is unclear whether the decrease in procrastination is related to the number of smaller assessments leading up to a final assessment, or whether the formative aspect of the assessment has additional benefits.

Regardless of whether the continuous assessment or the formative assessment is the most beneficial in decreasing procrastination, the current findings in addition to previous research could mean that teachers in higher education have one simple tool to improve overall student experiences, being their assessment methods. Based on the findings it would be recommended that teachers add smaller assignments throughout their course and provide feedback on those assignments.

Limitations

Some limitations should be considered when interpreting the results of this study. Firstly, due to the explorative nature of the research, many t-tests were used to test for significant differences in the performance in classes with summative and with formative assessment. The high number of t-tests brings with it the increased risk of false positive outcomes. However, since the effect sizes were moderate-to-high, it is somewhat safe to assume that the significant results follow actual difference in performance in the assessment types. Another limitation that should be considered is the high percentage of first year students in the current sample. At the time of data collection for the current study, the first-year students had only experienced one exam period during their Bachelor of Psychology. Although there are classes in the first term that provide both solely summative assessment and formative assessment in addition to summative assessment, it is likely that the students did not yet fully form their opinions on these differences. To avoid biased results because of the skewed sample, all tests were run on both the full sample as well as a sample of only non-first year students. However, as noted before, the significant effects held when only including this smaller sample in the tests. A final limitation that should be considered when interpreting the results is that the students that participated spent a large portion of their university years during the COVID-19 pandemic. It is safe to assume, based on multiple studies, that the overall student experiences have worsened due to the pandemic (browning et al., 2021;

Hamza, Ewing, Heath & Goldstein, 2021; López-Castro, Brandt, Anthonipillai, Espinosa & Melara, 2021). This would likely have an influence on the results of the current study, and it is unwise to assume that all results would definitely hold when studying a university cohort that has not experienced a worldwide pandemic.

Recommendations for future research

As mentioned in the introduction, not much research has been carried out on assessment methods in university. Therefore, the current results, though supportive of previous research, still are somewhat standalone. It would be highly informative to see if these results are replicated in other studies. For one, the large number of t-test could be avoided in such replications, if the replication has less of an exploratory nature. In addition, replicating this study in a more experienced student sample may resolve the problem of possible bias from first-year students in the current study. Finally, the current research has been conducted at the University of Groningen on just psychology students. Repeating this study in other faculties and at other universities could give a more generalizable view of the student experiences with university assessment. Additionally, it would be interesting to see if the proposed model of procrastination will be supported by future research.

Conclusion

The current study falls in line with the little previous research done on student experiences with university assessments. Overall, these experiences improve when formative assessment is added to the curriculum. Particular attention should be drawn to the lowering of the tendency to procrastinate. As stated before, between 50% and 95% of students report struggling with procrastination (O'Brien, 2002), which in turn leads to lower grades, higher drop-out rates and lower overall success in university for the students (Chu & Choi, 2005). Solving the procrastination problem could therefore be a good first step to improving

university success for students. Adding formative assessments to the curriculum may be a beneficial move towards solving this issue.

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Appendix A

Full questionnaire

Student Assessment

“Student experience of University assessment: is the exam still relevant?”

PSY-2122-S-0060

Dear participant, welcome to this study!

In the following, we would like to understand **your** experiences of different assessment types as a student majoring or minoring in Psychology.

Ultimately, we would like to give a **recommendation to the faculty** as to what kind of courses are most beneficial for the students in this programme, which is why **your help matters**.

In order to do this, we kindly ask you to fill out our questionnaire. This will take you about **20 minutes**.

Which gender do you most identify with?

- Female
- Male
- Other
- I would rather not say

What is your age (in years)?

What is your nationality?

- Dutch
- German
- Other (please indicate): _____

Which year did you start your Psychology Bachelor?

- 2021
- 2020
- 2019
- 2018
- 2017
- Other: _____

Is the Psychology Bachelor your first college/university programme?

- Yes
- No (please indicate for how many years you were enrolled in other programmes):

Please reflect on your **study habits in general** since starting higher education.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I feel like my study habits have improved since enrolling in this programme.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other students have helped me to improve my study habits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The University provided me with information or advice that I found helpful in improving my study habits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could improve my study habits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the same study habits I have used in high school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I just memorize the material instead of trying to understand it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The questions on this page concern your **procrastination behaviour** on university activities **in general**.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I often procrastinate on university activities in general.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procrastination on university activities is a problem for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to decrease my tendency to procrastinate on university activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How much does each of the following reasons reflect **why** you tend to procrastinate?

	Not at all reflects why I procrastinated	Reflects a little	Somewhat reflects	Reflects a lot	Definitely reflects why I procrastinated
I tend to have a hard time knowing what to study and what not to study.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to have too many other things to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There tends to be some information I need to ask the professor, but I feel uncomfortable approaching them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to be worried I get a bad grade .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really tend to dislike studying for exams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to feel overwhelmed by the task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to distrust myself to do a good job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to lack the energy to begin studying.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to wait to see if the professor gives me some more information on the exam .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We will now ask you to fill out two very similar questionnaires; both are about your experiences with assessment at university.

One of them will be about courses in which your grade is determined only by a **final exam** (which may be in two or more partials) and there are **no other mandatory assignments**.

The other one will be about courses that **include mandatory assignments, quizzes, or exercises throughout** the block (possibly in addition to a final exam). The purpose of these may be to help you study or learn the subject better or as a requirement or determinant of the final grade.

You will find some further instruction at the beginning of each block of questions.

The following questions will ask you about your experience with courses in which your grade was determined **only by a final exam** (which may be in two or more partials) and there were **no other**

mandatory assignments. Please answer with all the courses of this type in mind, rather than a specific one.

When participating in this **type** of course...

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am confident that I will pass .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to have problems with understanding the most difficult material presented in the readings .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can understand the basic concepts taught.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to have problems with understanding the most difficult material presented by the instructors .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am certain that I can master the skills being taught.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When participating in this **type** of course...

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am enthusiastic about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do the bare minimum of work to pass the course (or obtain my desired grade).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I regularly work with classmates on the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually cram before an exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I attend lectures or watch the recordings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I contact lecturers regarding the material, for example via the discussion forum or via email.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Below are some statements regarding your **retention** of course material. Please rate them in terms of how closely they reflect your experience with this type of course.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I tend to remember the general topic and learning goals in this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to remember most of the central concepts and theories that were explained and applied in this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could explain the central theories and concepts that were taught in this type of course to a friend .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I generally receive a high grade in a course like this.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions will **still** ask you about your experience with courses in which your grade was determined **only by a final exam** (which may be in two or more partials) and there were **no other mandatory assignments**. Please answer with all the courses of this type in mind, rather than a specific one.

Below are statements concerning your **learning approaches** for this type of course.

Please rate them in terms of how close they are to your own thoughts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It is important for me to follow arguments, or to see the reason behind course contents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While reading course literature, I try to find out exactly what the author means .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often wonder whether the work I am doing is really worthwhile .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Much of what I am studying makes little sense : it is like unrelated bits and pieces.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I concentrate on just memorising a good deal of what I have to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My study habits are appropriate for this type of assessment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my study habits for this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could study differently for this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I study in order to master the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I study regularly .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions concern your **procrastination behaviours** while **preparing for exams** in courses in which your grade is determined only by a final exam.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I often procrastinate while preparing for exams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procrastination on preparing for exams is a problem for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to decrease my tendency to procrastinate on preparing for exams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions will **still** ask you about your experience with courses in which your grade was determined **only by a final exam** (which may be in two or more partials) and there were **no other mandatory assignments**. Please answer with all the courses of this type in mind, rather than a specific one.

Below are statements regarding your **satisfaction with this type of course**. Please rate them in terms of how close they are to your own thoughts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The aims of this type of course are clear to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am given helpful feedback on how I am doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This type of course is challenging and interesting .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effective opportunities for active student participation in learning activities are provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This type of course is effective for developing my thinking skills .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was provided with clear information about the assessment requirements for this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The assessment methods and tasks in this type of course are appropriate given the course aims.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Approaching deadlines are well communicated .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy the structure of courses with this assessment type.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Below are some questions concerning courses with this **assessment type** and how they affected your **wellbeing**. Please rate them in terms of how close they are to your own thoughts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
The overall workload is too much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Studying for the exam is stressful .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I struggle to keep up with these courses.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I feel like there is nothing to study for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the exam period the workload is a lot heavier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel anxious before the exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For the next question, a **coin toss method** (please find detailed information down below) is used to ensure that your answers to this question are **fully anonymous**.

Please use [this webpage](#) to flip a coin **before** answering the question and answer the question according to the **outcome** of the coin toss.

If the coin comes up **heads**, then answer the question **truthfully**; if it comes up **tails**, just say 'yes' no matter what you would have answered.

Follow this [link](#) for more information on the coin toss method.

The question concerns your **general cheating behaviour in exams**.

Please indicate whether you have ever done any of the following:

- I used prohibited things like **hidden notes, calculators and other electronic devices**.
- I **tried to copy** answers from another person.
- I **successfully copied** answers from another person.

- **Someone else** completed an exam in my name.
- I **collaborated** with others during an exam.

Yes

No

The following questions will ask you about your experiences with courses that include **mandatory assignments, quizzes, or exercises** throughout the block (possibly in addition to a final exam). The purpose of these may be to help you study or learn the subject better or as a requirement or determinant of the final grade.

Examples of such assignments are: Slimstampen, statistics homework, holding a presentation, or completing regular quizzes.

Please answer with all the courses of this type in mind, rather than a specific one.

When participating in this **type** of course...

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am confident that I will pass .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to have problems with understanding the most difficult material presented in the readings .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can understand the basic concepts taught.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to have problems with understanding the most difficult material presented by the instructors .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am certain that I can master the skills being taught.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



When participating in this **type** of course...

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am enthusiastic about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do the bare minimum of work to pass the course (or obtain my desired grade).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I regularly work with classmates on the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually cram before an exam or deadline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I attend lectures or watch the recordings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I contact lecturers regarding the material, for example via the discussion forum or via email.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Below are some statements regarding your **retention** of course material. Please rate them in terms of how closely they reflect your experience with this type of course.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I tend to remember the general topic and learning goals in this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to remember most of the central concepts and theories that were explained and applied in this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could explain the central theories and concepts that were taught in this type of course to a friend .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I generally receive a high grade in a course like this.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions will **still** ask you about your experiences with courses that include **mandatory assignments, quizzes, or exercises** throughout the block (possibly in addition to a final exam). Please answer with all the courses of this type in mind, rather than a specific one.

Below are statements concerning your **learning approaches** for this type of course.

Please rate them in terms of how close they are to your own thoughts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It is important for me to follow arguments, or to see the reason behind course contents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While reading course literature, I try to find out exactly what the author means .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often wonder whether the work I am doing is really worthwhile .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Much of what I am studying makes little sense : it is like unrelated bits and pieces.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I concentrate on just memorising a good deal of what I have to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The regular assignments help me structure .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My study habits are appropriate for this type of assessment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my study habits for this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could study differently for this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I study in order to master the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I study regularly .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions concern your **procrastination behaviours** in courses that include mandatory assignments, quizzes, or exercises throughout the block (possibly in addition to a final exam).

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I often procrastinate on these activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procrastination on these activities is a problem for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to decrease my tendency to procrastinate on these activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions will **still** ask you about your experiences with courses that include **mandatory assignments, quizzes, or exercises** throughout the block (possibly in addition to a final exam). Please answer with all the courses of this type in mind, rather than a specific one.

Below are statements regarding your **satisfaction with this type of course**. Please rate them in terms of how close they are to your own thoughts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The aims of this type of course are clear to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am given helpful feedback on how I am doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This type of course is challenging and interesting .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effective opportunities for active student participation in learning activities are provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This type of course is effective for developing my thinking skills .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was provided with clear information about the assessment requirements for this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The assessment methods and tasks in this type of course are appropriate given the course aims.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Approaching deadlines are well communicated .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy the structure of courses with this assessment type.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Below are some questions concerning courses with this **assessment type** and how they affected your **wellbeing**. Please rate them in terms of how close they are to your own thoughts.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The overall workload is too much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Studying for the exam is stressful .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I struggle to keep up with these courses.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I feel like there is nothing to study for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the exam period the workload is a lot heavier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel anxious before an exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The mandatory assignments help me understand the course content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For the next questions, a **coin toss method** (please find detailed information down below) is used to ensure that your answers to this question are **fully anonymous**.

Please use [this webpage](#) to flip a coin **before** answering **each** question and answer the question according to the **outcome** of the coin toss.

If the coin comes up **heads**, then answer the question **truthfully**; if it comes up **tails**, just say '**yes**' no matter what you would have answered.

Follow this [link](#) for more information on the coin toss method.

The next question concerns your **general cheating behaviour** in the **assignments**.

Please indicate whether you have ever done any of the following:

- I received **help** for completing an individual assignment.
- I used resources (sentences/lines/words) **without citing the author**.

- I used answers (copying the whole or parts) **from someone** who did the assignment earlier.
- I let **someone else** complete an assignment in my name.

Yes

No

Please use [this webpage](#) again.

The next question concerns your **general cheating behaviour** in the **exams** of courses using additional assignments.

Please indicate whether you have ever done any of the following:

- I used prohibited things like **hidden notes, calculators and other electronic devices**.
- I **tried to copy** answers from another person.
- I **successfully copied** answers from another person.
- **Someone else** completed the exam in my name.
- I **collaborated with others** during an exam.

Yes

No

Not applicable

Press the → button at the end of the page to get your SONA credits and to close the survey correctly.

This is the end of our questionnaire on assessment methods. We highly appreciate that you spent your time answering our questions. Thank you!

We would like to know if you **answered the questions truthfully and followed the instructions on**

the questions about cheating. Your response to this question has no negative effects for you, but it would help us ensure that the quality of the data is high.

- I answered truthfully
- I answered mostly truthfully
- I did not answer truthfully

Do you have any additional comments you would like to share with us? Please write those down below.

If you would like information about the results of the study, please contact one of the researchers by emailing a.sarampalis@rug.nl.

Thank you again for your time.

Press now the → button to get your SONA credits and to close the survey correctly.