

**“I seem to take away way more” – A Comparison of Student Perceptions of Summative  
and Formative Assessment Methods**

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### **Abstract**

Assessment types can be conceptualized as either summative, which refers to most traditional assessments with only a final exam at the end or formative, referring to courses that implement (regular) assignments, feedback and tend not to have an exam at the end. So far, research on these two assessment types in respect to student wellbeing, learning approaches and satisfaction has gathered ambiguous findings. Many studies identified formative teaching as superior to summative assessment, however student reports depict a more nuanced picture with calls for consideration of aspects such as workload and clarity of the newly implemented assessment form. Through a survey (N = 211), we investigated how students in the psychology department at the University of Groningen perceive these two assessment methods, in regards to their wellbeing, learning approaches and satisfaction. We conducted paired samples t-tests to compare their responses and found that the ratings were consistently in favor of formative teaching elements on all subscales. In line with other research, students in our survey indicated a similar perceived workload as well as similar clarity of assessment for both assessment types. We conclude that careful implementation of formative teaching elements can be beneficial for students, as it is related to lower stress, more deep learning, and retention as well as higher satisfaction.

*Keywords:* formative assessment, summative assessment, student, wellbeing, learning approaches, satisfaction

## **“I seem to take away way more” – A Comparison of Student Perceptions of Summative and Formative Assessment Methods**

With increasing academic demands, academic-related stress is at an all-time high (Hetrick & Parker, 2019). University students' mental health has been reported to be continuously deteriorating over the last decade, even before the start of the COVID-19 pandemic (Thorley, 2017). It is well established by now that the student's learning environment affects their wellbeing and study habits, with the employed assessment methods playing a central role (Hughes & Spanner, 2019). The type of assessment has a big influence on the student's learning experience in regards to their stress levels, course enjoyment as well as learning approaches (Struyven et al., 2005). For one, because different forms of assessment have been shown to foster different ways of learning (McSweeney, 2014). Investigating student experiences and perceptions of different assessment methods may therefore yield fruitful information on how to improve course and assessment structures. To start off, two common types of assessment methods will be introduced which also play a foundational part for the current study.

### **Summative and Formative Assessment**

Assessment methods may be conceptualized as formative and summative, with summative methods encompassing most traditional assessments such as multiple choice exams or essay questions. Summative assessment can be described as measuring students' knowledge at a specific point in time, often only at the end of a course. Summative assessment therefore represents an assessment of learning, whereas formative assessment aims to provide a learning experience to students in itself (Cowan, 2009). The idea is to (regularly) gain knowledge on a student's learning progress through some form of assignment

and in turn adapt one's teaching with the goal to optimize the student's learning (Mandinach, 2012). Feedback has been described as an integral element of formative assessment, as formative methods intend to provide opportunities for students to reflect on their understanding and in turn adapt and improve their learning to the course demands and their own goals (Wingate, 2010). The two assessment methods are often conceptualized as two distinct concepts, however, in reality it is sensible to view them as two ends on a continuum, with many currently employed assessment forms fitting somewhere on this continuum (Bloom, 1969; Wiliam, 2006).

Numerous studies in the past have investigated student experiences of different assessment methods, with the results often reporting students to prefer alternative, formative assessment over traditional methods (Buyukkarci & Sahinkarakas, 2021; Kumari et al., 2020; Perera-Diltz & Moe, 2014). Yousefi and Rezaei (2022) for example identified formative assessment as the underlying factor enhancing students' self-efficacy and self-regulatory learning strategies, ultimately improving students' wellbeing. In connection with the aforementioned fostering of deep learning, formative assessment appears beneficial for almost all areas of a students' learning experience. Some research on university student's learning experiences is under criticism however, due to a lack of context consideration in regards to the field as well as institutional policies and practical considerations (Jones, 2021). In fact, many student reports on their wellbeing, satisfaction and learning approaches in connection to formative assessment depict a much more nuanced picture. These apparent moderators of anticipated positive effects of formative assessment will be described in the next paragraphs.

### **Learning Approaches**

To conceptualize learning approaches of students, a distinction between deep and surface learning is often made in research. This distinction originates from qualitative studies in the 1970's during which adults were broadly asked what they understood under the term 'learning' (Säljö, 1979). Over the following decades through more studies and further analysis, researchers identified a category of students who approach academic tasks to derive meaning from it and be able to *transform* this information, also called the deep learning approach. Another category of students who view learning as memorizing and *reproducing* knowledge is called the surface approach (Ramsden, 2003). Surface learning students tend to approach studying with the goal to pass the assessment, and that with minimal effort. In turn, students who adopt a deep learning approach tend to have more intrinsic motivation for studying. These students aim to fully understand course contents and try to relate different topics to each other to acquire a full picture on it. Even though distinct classifications can be made, a student's learning approach is in no way fixed and can vary. That is, learning approaches are heavily task-dependent, with some assessment characteristics being more successful in fostering deep learning than others (Bloxham & Boyd, 2007).

Many studies have also noted that formative assessment appears to increase deep learning approaches in students (Chapman, 2005) as the use of feedback, the regularity of assessment and the novelty and creativity of assessment appears to foster retention, critical thinking and stronger involvement with the course (Ruston, 2005; Wingate, 2010). In addition, formative assessment has been shown to enhance student's self-awareness concerning their performance, a mechanism Nicol and Macfarlane (2006) coined as "internal feedback" (p.3). Iverson et al. (1994) conducted a study in which they assigned university students to either a group with formative assessment or with traditional assessment to

compare the experiences. They found that significantly more students indicated a preference for frequent testing over the course of the whole class.

### **Workload of Assessment**

Struyven et al. (2005) evaluated student perceptions concerning assessment methods in higher education. While inquiring about student perceptions concerning a portfolio assignment for example, the opinions appeared to be quite positive.

Students thought that they would remember much better and longer what they were learning, compared with material learned for other assessment formats, because they had internalized the material while working with it, thought about the principles and applied concepts creatively and extensively over the duration of the course. Students enjoyed the time they spent on creating portfolios and believed it helped them learn. (Struyven et al., 2005, p. 332).

While the portfolio as a form of formative assessment resulted in enjoyment and self-reported deep learning for many students, others noted however that this type of assessment demanded too much time. The heavy workload prevented them from working on the portfolio in depth, as some students felt stressed and overwhelmed. Similar findings were obtained in the study of Gijbels and Dochy (2006), who investigated the relationship of formative assessment methods and students' learning approaches. They found that their intended fostering of deep learning approaches through student-activating assessment actually had quite the opposite effect. Gijbels and Dochy (2006) observed: "Students do change their approaches to learning after hands-on experience with the formative assessment, but this is towards a more surface approach to learning". They hypothesized this finding could be explained by the higher workload of their formative teaching methods, resulting in students adopting surface learning

to manage the workload better. In line with these results are the observations of López-Pastor et al. (2013), who specifically investigated (perceived) workload of formative assessment for tutors and students. Students in their study similarly reported that the formative assessment methods appeared to cause a higher overall workload. All these results highlight the importance of considering workload as a factor influencing student perceptions of assessment methods and also possibly moderating anticipated effects of certain assessment types.

### **Novelty of Assessment**

The novelty factor of most formative assessments also appears to be a hurdle for the implementation of such new methods (Nieminen & Tuohilampi, 2020). According to the findings of McSweeney (2014), students in her study reported being more prepared for traditional assessment methods than alternative ones. Students felt more confident about what was expected from traditional assessments, making it easier and less anxiety evoking to prepare for them. Similarly, Jones et al. (2021) have conducted a study in which they invited university staff and students from all over the UK to discuss various topics relating to learning and teaching. Five key tension areas could be identified from these discussions, one of them being the tension between traditional and novel assessment methods. A particular issue seemed to lay in the unfamiliarity that students experienced when encountering new, formative assessment methods. One teacher described:

I have a module I teach which is no-exam just because of the nature of the module. I get lots of complaints from students saying ‘couldn’t we have an exam instead?’ [...] It’s unfamiliarity. They’re used to exams, even though they might not like them. [...] So when I ask them, “Could you do a podcast?” it’s new, it’s unfamiliar to them. They panic, they don’t like it. (Jones et al., 2021, p.10)

Such reports arose in various discussion groups in the study, with students appreciating that they knew what to expect from summative assessment, even if they might not like it. These results suggest that educators implementing new assessment methods need to focus on communicating clear instructions, and the purposes of their methods to their students.

Struvyen et al. (2005) reported the same results, as students in their study also held multiple choice exams in quite high regard. These students rated multiple choice exams specifically as rather easy to pass compared to other assessments. Most research findings concerning assessment types and learning are in line however, in that “multiple-choice questions and short-answer questions are the worst offenders” in terms of enabling surface approaches to learning in students (Entwistle, 2000, p.9). Based on such findings, should we conclude students base their assessment preferences merely on how “passable” an assessment seems?

### **Utility and Meaningfulness of Assessment**

Again, other student impressions in the study of Struvyen et al. (2005) add new insight. A portion of students who favored alternative, formative assessment methods over traditional ones explained how they perceived these new methods to measure skills and qualities that would be useful even out of the academic context. Assessments such as portfolios, simulations or presentations felt interesting and meaningful to students, sometimes also handy for future career plans. These students in particular, although not exclusively them, described traditional assessment as “routine, dull, artificial behavior” to obtain grades (Struvyen, 2005, p.333). Students in the study of Jones et al. (2021) similarly expressed appreciation for assessments fostering employability skills, such as presentations, posters, or policy briefs. Students appreciated assessments where they could “apply knowledge in the real-world context” while describing summative assessment as preventing meaningful opportunities for them (Jones et al., 2021, p.12). According to these findings, for some



students creativity and real-life applicability are highly valuable, however also very rare in summative assessment.

It is still unclear how summative and formative assessment differ in their effects on student satisfaction, learning approaches, and wellbeing. This might also depend on the fact that summative and formative assessment cannot be considered as two mutually exclusive methods. Teachers in the classroom as well as researchers might very well employ methods which are actually a fusion of both methods- possibly unknowingly to them. The function of feedback which is central to formative assessment, can vary strongly depending on the way and depth the feedback is provided to the student.

### **The Current Study**

With our descriptive study we will investigate how students at the psychology department at the University of Groningen (RUG) experience learning with different assessment types. Although the line between formative and summative assessment can be blurry, in our study we distinguish between courses in which the grade is determined exclusively by a final exam (summative) and courses that integrate mandatory assignments, quizzes, or exercises throughout the block, possibly in addition to a final exam (formative elements). Through a survey, we will inquire how students perceive their wellbeing, their satisfaction, and their learning approaches in connection to the two types of courses. We will pay special attention to the factors workload, clarity of assessment requirements and development of general thinking skills in relation to formative assessment since other research has identified these as potential influences on students' assessment preferences.

Especially in our case where formative and summative assessment are rather closely linked, developing hypotheses based on research findings is difficult, making this study at our faculty even more intriguing. Investigating student perceptions of courses that might only

have formative elements, also enables us to observe whether formative assessment throughout the block has an effect on the experience of an exam for that course. Weurlander et al. (2015) for example found that formative elements in addition to summative assessment can help students study regularly and cope with stress.

Since students in the psychology faculty are seldom asked in depth about their experience with courses, the aims of this study are to gain an understanding of student experiences with different assessments, namely formative and summative, to ultimately formulate advice to the program's educators on how to improve courses to increase student wellbeing as well as their learning experience.

## **Method**

### **Participants**

A total of 211 students from the University of Groningen's psychology department were recruited to participate in the survey as participants. Of the 211 students, 144 were first year psychology students and 67 were enrolled for at least two years or longer in the program. In our sample, 162 people indicated female as their gender (77%), 47 people indicated male (22%), one person indicated other and one person preferred not to say their gender. The students' ages ranged from 17 to 28 with a median age of 20. The mean age, gender ratio and number of higher year students are summarized below in Table 1. For first year students, participation in studies is a course requirement that is compensated with credits. Our first year participants are therefore students who chose our survey to fulfill their course requirements. Students in higher years were recruited by fellow psychology students and did not receive any compensation. This recruitment took place over WhatsApp, where students were asking in study and friend group chats for participants. The study was reviewed and approved by the Ethical Committee of Psychology of the University of Groningen.

**Table 1***Participants' mean age, gender ratio and number of higher year students*

	First year students	Higher year students
<i>N</i>	144	67
Gender ratio (% female)	81	67
Age (Mean, SD)	19.7 (1.9)	22.2 (1.4)

**Materials**

The questionnaire assessed 10 subscales in total which were presented to participants in the following order: General study habits since starting university, general procrastination behavior in university activities, self-efficacy beliefs in relation to studying, retention of course content, learning approaches, procrastination behavior in relation to exams, satisfaction with courses, perceptions about own wellbeing and course workload and lastly cheating behavior in exams. We assessed all subscales except for cheating behavior by providing statements to which participants could indicate their agreement. Answer possibilities on a five-point scale were provided ranging from 'Strongly Agree' to 'Strongly Disagree'. For a comprehensive overview of all items in the questionnaire, the complete survey can be found in the appendix of this paper.

**Satisfaction**

We included nine items to assess students' satisfaction with the course type of which seven were adapted from the "Students Evaluation of Educational Quality" – Questionnaire (SEEQ) (Marsh, 1982). The SEEQ is employed by many universities to assess factors such as learning/value, enthusiasm, organization, group interaction, individual rapport, breadth of coverage, examinations /grading, assignments, and workload/difficulty which have all been found to be significantly associated with satisfaction (Marsh, 1982). The seven items are

therefore quite diverse, measuring different aspects of student satisfaction in line with the SEEQ. For instance, we included items stating, “I am given helpful feedback” or “This type of course is challenging and interesting”. Furthermore, we shortened the phrasing of the original items to make them easier to read. The remaining two items “Approaching deadlines are well communicated” and “I enjoy the structure of courses with this assessment type” were added to suit our specific interests in this study. Both items were intended to capture possible differences between formative and summative assessment, with the factor deadline communication often reported as influential in regards to satisfaction (McSweeney, 2014). To evaluate the influence of novelty in regards to clarity of assessment, we have included the items “I received clear information about the assessment requirements” and “The aims of this type of course are clear to me”. To evaluate whether the assessment types were aiding in the development of general skills and competencies, we have included the item “This type of course is effective for developing my thinking skills”. Agreement to items on the self-efficacy scale and therefore a higher mean, corresponded to more satisfaction with the assessment type.

### **Perceived Retention**

To assess students’ perceived retention of course materials, we developed four items which were based on modes of learning that determine the depth of information processing and the degree of integration of knowledge (Simpson et al, 1994). Essentially, we inquired how well students felt that they remembered and still understood course concepts to later on compare students perceived retention between the two assessment types. Items stated for example: “I tend to remember the general topic and learning goals in this type of course” or “I could explain the central theories and concepts that were taught in this type of course to a friend”. More agreement and therefore also a higher mean corresponded to more retention.

## **Learning Approaches**

Statements relating to learning approaches were partly based on the Approaches and Study Skills Inventory for Students (*ASSIST*), which originally encompasses 52 items and reports reliability scores from 0.65 to 0.82 depending on learning approach (Entwistle et al., 1997). The number of items were reduced heavily to 11 with the following two items being reverse coded: “I often wonder whether the work I am doing is really worthwhile” and “Much of what I am studying makes little sense: it is like unrelated bits and pieces”. Next to these changes, the original phrasing was simplified to suit the broad interests and purpose of our study, with the main intention for these items to distinguish between surface and deep learning approaches in university courses. As an example, the item “When I'm reading an article or book, I try to find out for myself exactly what the author means” from the original *ASSIST* was slightly changed to “While reading course literature, I try to find out exactly what the author means” in our survey. Some items only took inspiration from the *ASSIST*, with the purpose to investigate whether previous and current experiences with higher education as well as experiences with different assessment changes how people study. Thus, the reliability scores of the original *ASSIST* might not be applicable in this questionnaire. Agreement to the learning approaches items corresponded to more deep learning, whereas disagreement corresponded to more surface learning.

## **Procrastination**

Questions concerning students' procrastination habits were adapted from the Procrastination Assessment Scale - Students (*PASS*; Solomon & Rothblum, 1984). The original *PASS* consists of 44 items and has good overall reliability ( $\alpha = 0.80$ ) and good concurrent validity. We have included three items to assess general procrastination tendencies, as well as nine items to assess students' reasoning for procrastinating, such as “I

tend to feel overwhelmed by the task” or “I really tend to dislike studying for exams”. The reliability and the validity of the adapted version of the PASS in the current study was not assessed.

### **Self-Efficacy**

Self-efficacy items were inspired by the Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ) which originally encompasses 44 items. In line with our interests regarding the self-efficacy subscale, the MSLQ investigates students’ confidence and self-appraisals of their own ability to master tasks. We have included five statements to assess student’s self-efficacy from which the following two were asked in a reversed manner: “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”. More agreement and a higher mean corresponded to more self-efficacy beliefs in our participants.

### **Engagement**

The engagement scale items were mostly adapted from a questionnaire assessing Australian first year university students’ experiences (Krause & Coates, 2008) as well as the questionnaire of Schaufeli et al. (2002), with the remaining engagement items being self-constructed. The scale consisted of six items in total which all inquired about students’ interactions with their peers and professors, as well as how much time and energy they put into the two types of courses. Items stated for example: “I regularly work with classmates on the material” or “I attend lectures or watch the recordings”. More agreement and a higher mean on engagement items corresponded to more engagement with the assessment type.

### **Wellbeing**

Wellbeing items were all self-constructed and inquired about students' perceived stress, workload, and anxiety in relation to course type, as research has found these constructs to be factors influencing or being influenced by assessment types (Struvyen et al., 2005). We included five items to assess the wellbeing subscale in relation to the two assessment types. Additionally, we added a sixth item "The mandatory assignments help me understand the course content" only in relation to formative courses to assess how effective students perceive formative elements. To assess the influence of workload, we included the items "The overall workload is too much" and "During the exam period the workload is a lot heavier". In our scale agreement to wellbeing items corresponds to stress, high workload, and anxiety. A higher mean therefore indicates lower wellbeing.

### **Cheating**

Nine specific behaviors were listed, that were partly based on the Academic Dishonesty Scale (Bashir & Bala, 2018). Cheating behaviors during exams included the use of prohibited items such as notes and calculators, having someone else complete one's exam, collaborating with others during the exam and copying answers from another student. In turn, cheating in assignments included various forms of plagiarism as well as having someone else complete one's assignment. Additionally, participants were instructed to use a coin toss method that is based on the randomized response research method initially developed by Warner (1965). The use of the coin toss method has been found to facilitate admitting embarrassing behaviors in studies, such as cheating for example. The method allows for the assessment of sensitive topics such as cheating, where a coin toss decides whether the question has to be answered truthfully to prevent socially desirable answers and ensure anonymity. The introduction and explanation to the coin toss method was self-constructed and went as follows:

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 ([Just flip a coin](#), 2010) 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](#) (Pitsch et al., 2017) for more information on the coin toss method.

Participants were then instructed to indicate whether they had ever done any of the listed cheating behaviors, with answer possibilities “yes” or “no”. Therefore, the “yes” responses consisted not exclusively of true responses since students with the coin toss outcome ‘tails’ were instructed to respond “yes” regardless of the truth.

### **Design and Procedure**

Recruited participants received a link with access to our questionnaire on the online platform Qualtrics, where they could complete the questionnaire on their own devices in their chosen environment. Before the start of the questionnaire, the students were provided with an information form that summarized the purpose of the study, benefits and risks of participating, the following procedures as well as giving contact information in case of questions. Next, participants were directed to a consent form which was a requirement to proceed to the questionnaire. The survey began with demographic questions such as the participants gender, age, year of enrollment and nationality. Students then proceeded to the main part, in which they were asked to indicate their agreement to statements relating to retention, satisfaction, wellbeing, procrastination, cheating, learning approaches, engagement, and self-efficacy. The participants were asked all applicable questions twice in two separate blocks, one block for courses with summative assessment and one for those with formative



elements. Students received a clear definition with examples on which courses fell under summative or formative assessment, as well as regular reminders as to which type of course they should be relating the statements to. Summative assessment was defined as follows: “Courses in which the grade is determined only by a **final exam** (which may be in two or more partials) and there are **no other mandatory assignments.**” In turn, formative assessment was defined as “courses that **include mandatory assignments, quizzes, or exercises** *throughout* the block (possibly in addition to a final exam)”. The order of which assessment was first investigated was decided randomly to control for order effects such as fatigue or boredom. The last item students were asked about was always their cheating behavior. These statements came with the coin tossing method which was carried out online as well. After finishing the questionnaire participants were asked to indicate whether they answered truthfully and if they had any comments to add. After this they could close the page.

## Results

For the purpose of this paper, we will have a closer look at the dimensions of learning approaches, satisfaction, and wellbeing with the goal of comparing student experiences between summative and formative assessment. We conducted paired samples t-tests to assess whether statistically significant differences could be found for the two assessment types using the statistical software platform SPSS. The assumption of a normal distribution of differences between the paired measurements was met for all subscales except for satisfaction. For the subscale satisfaction the distribution was slightly deviating from normality, however it was still robust. The means for all subscales except for study habits are summarized below at the end of the result section in table 3. Their internal validities are provided as well in table 4.

### Study Habits

Due to the low internal reliability of the items ( $\alpha = 0.25$ ) the descriptive data was not summarized in an overall mean. A higher mean indicated higher agreement with the statement. For an overview, Table 2 displays the individual means and standard deviations for “Study Habit” items.

**Table 2**

*Means and Standard Deviations for Study Habits items*

Item	<i>M</i>	<i>SD</i>
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

*Note.* All Scores were measured with 1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5 (strongly agree).

### **Procrastination**

The subscale procrastination behavior was first assessed generally independent of assessment type. A higher mean indicated more procrastination behaviors. For courses with exclusively summative assessment the mean was at 3.53 (1.23), whereas for formative courses the mean was at 3.18 (1.18).

### **Self-efficacy**

In the subscale self-efficacy, a higher mean also indicated higher self-efficacy in students. For summative assessment, the self-efficacy mean was at 3.31 (0.71) and for formative assessment the mean was at 3.64 (0.57).

### **Engagement**

For formative assessment the engagement mean was at 3.16 (0.57), for summative assessment it was at 2.96 (0.60) with higher values corresponding to more student engagement.

### **Retention**

As for the subscale retention, a higher mean indicated more retention of course contents in students. Students in our survey tended to have better perceived retention in courses that used formative assessments, as all items consistently received higher agreement for formative courses ( $M = 3.83$   $SD = 0.48$ ) than summative courses ( $M = 3.56$ ,  $SD = 0.64$ ). Specifically, students felt more confident in their ability to explain course concepts to a friend, if the course was formative ( $M = 4.03$ ,  $SD = 0.73$ ) than summative ( $M = 3.45$ ,  $SD = 0.91$ ). For summative courses 58.7 % of students (strongly) agreed with this statement, compared to 75.3% of students who expressed (strong) agreement for formative courses. We conducted a paired samples t-test to estimate whether the differences in retention were statistically significant. The t-test revealed statistical significance with  $t(210) = -0.65$ ,  $p < 0.001$ . The effect size was medium with a Cohen's  $d$  of 0.66 and a mean difference of 0.27 units in scales. The individual responses are visualized below in Figure 1. As we conducted four tests for this study, we have adjusted the significance level according to the Bonferroni Adjustment from 0.05 to 0.0125 to reduce the possibility of a Type 1 error. All statistically significant results remained significant.

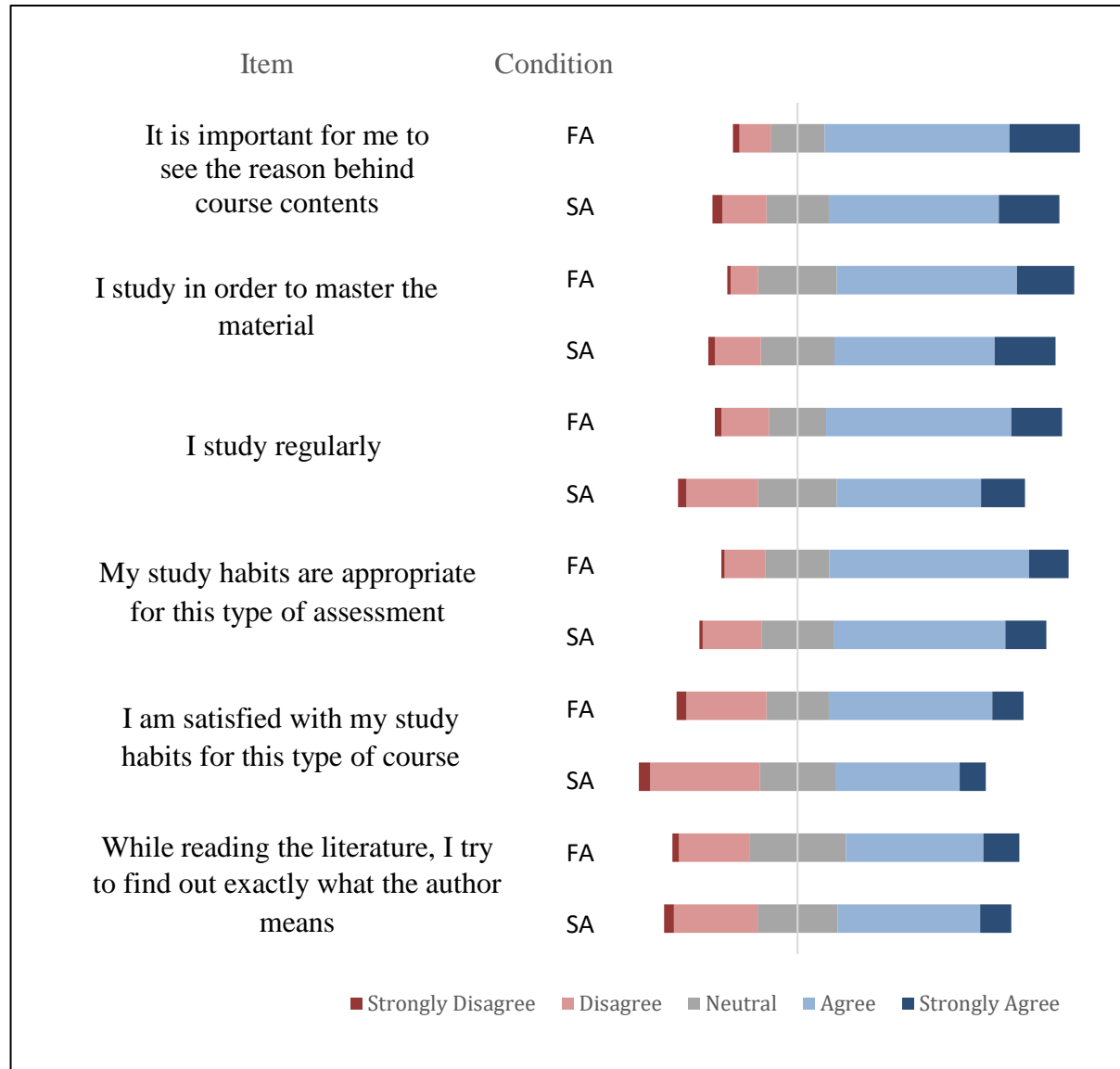
### **Learning Approaches**

In the subscale learning approaches, a higher mean corresponded to deep learning approaches in students, whereas a lower mean corresponded to surface learning approaches. We found that for summative assessment, the learning approaches mean of the items was 3.28 (0.44) and for formative assessment the mean was 3.37 (0.39). We conducted a paired samples t-test to assess whether the overall means for learning approaches in summative versus formative assessment differ from each other. The t-test revealed statistically significant differences, with  $t(210) = -4.32, p < 0.001$ , indicating that for formative assessment students employed slightly more deep learning approaches with a mean difference of 0.08 units on the scale. The effect size was small with a Cohen's  $d$  of 0.28.

Students tended to study more regularly for formative assessment ( $M = 3.41, SD = 1.05$ ) than for summative assessment ( $M = 3.64, SD = 0.95$ ). Specifically, for summative assessment 54% of students (strongly) agreed that they were studying regularly for this type of course. In turn, 67.8% of students (strongly) agreed to this statement when asked about studying for formative courses. Students also focused slightly less on memorizing their materials in formative ( $M = 2.91, SD = 1.06$ ) than in summative courses ( $M = 3.22, SD = 1.04$ ). As for the effect of regular assignments in formative assessment, most students appeared to draw benefits from them: The item "The mandatory assignments help me understand the course content" received 74.4% of (strong) disagreement from students. The individual responses to the learning approaches items are visualized below in Figure 2 and Figure 3 for the reverse coded items.

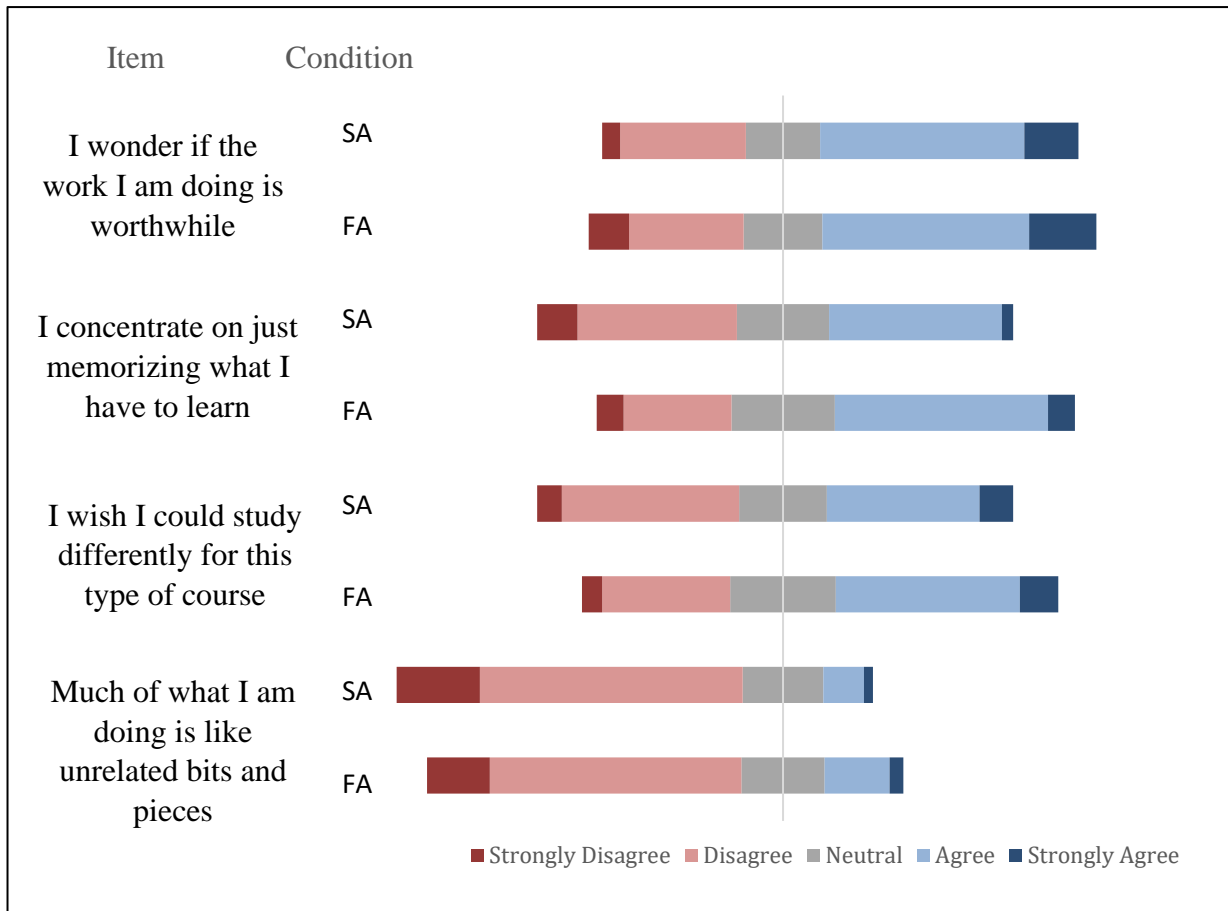
**Figure 2**

*Learning approach scores for Formative Assessment (FA) and Summative Assessment (SA)*



**Figure 3**

*Learning approaches scores for Formative Assessment (FA) and Summative Assessment (SA)*  
– Reverse Coded items



### Satisfaction

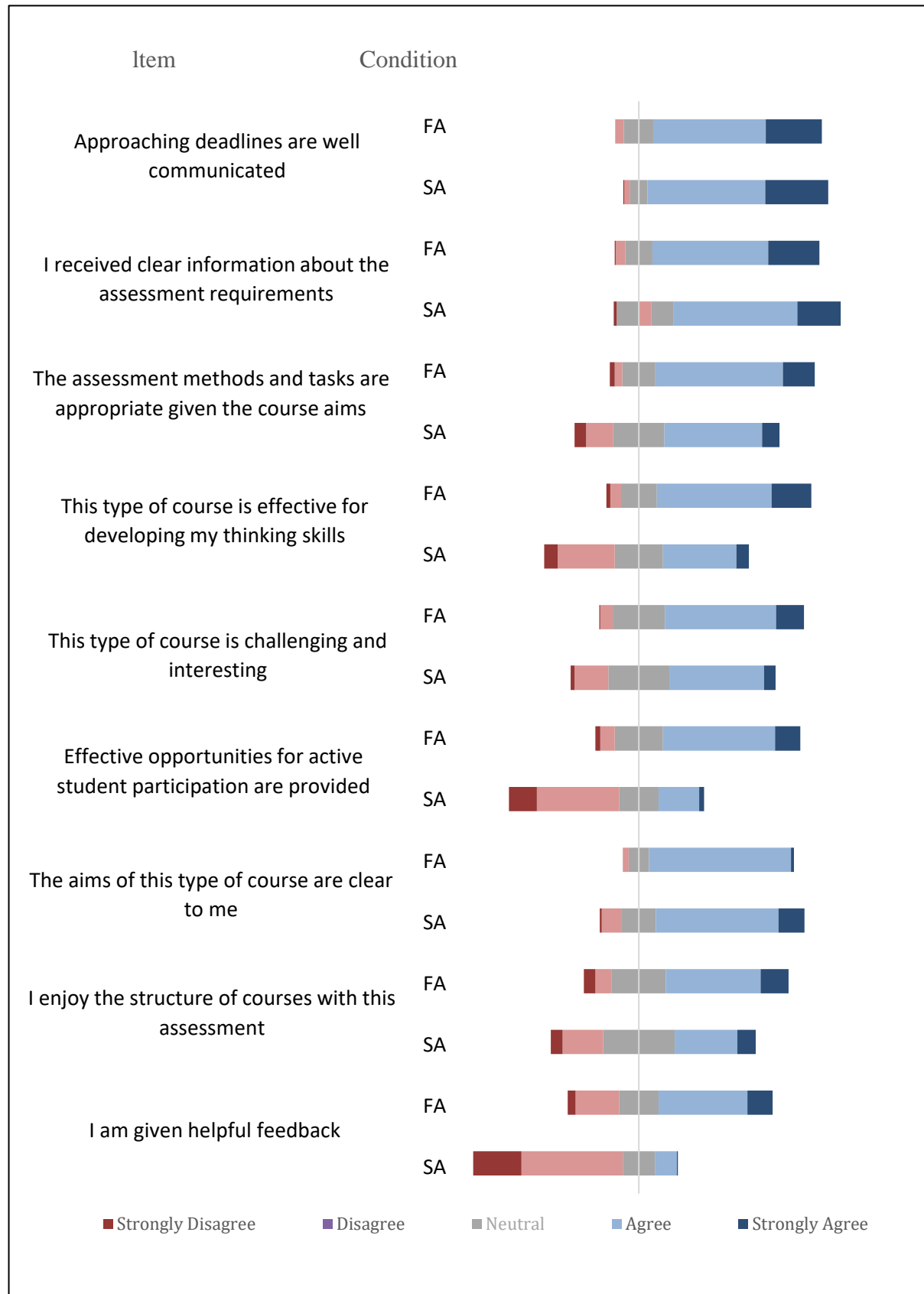
In the subscale satisfaction, a higher mean indicated more student satisfaction with the assessment type. For summative assessment we found a mean of 3.28 (0.56) and for formative assessment a mean of 3.79 (0.50). We conducted a paired samples t-test to compare the average student satisfaction for summative versus formative courses. We found statistically significant differences with  $t(210) = -10.002, p < 0.001$ . The effect size was medium with a Cohen's  $d$  of 0.73. The results of the t-test indicate that student satisfaction

for formative assessment is slightly higher than for summative assessment with a mean difference of 0.505 units on the scale.

The biggest differences could be found in the perception of feedback, opportunities for student participation and effectiveness for thinking skills. The students in our study perceived much more available and effective feedback in formative ( $M = 3.39$ ,  $SD = 1.06$ ) than in summative courses ( $M = 2.15$ ,  $SD = 0.92$ ). This was assessed by the item: “I am given helpful feedback”. Only 25.5% of students experienced a lack of feedback in courses with formative elements, whereas 73.5% of students did not feel that they were provided with helpful feedback during summative courses. The item “This type of course is effective for developing my thinking skills” also received higher student agreement for formative courses. The mean agreement for summative assessment was 3.08 (1.07) compared to a mean of 3.86 (0.85) for formative assessment. In terms of active student participation, students experienced more opportunities in courses with formative elements than in exclusively summative courses. For the item “Effective opportunities for active student participation are provided” there was a mean agreement of 2.57 (1.03) in summative courses, whereas for formative assessment students indicated an average agreement of 3.67 (0.86). 22.3% of students (strongly) agreed with the statement, compared to 66.8% of students who indicated that they (strongly) agreed with it in formative courses. The individual responses to items in the subscale can be found below in Figure 4.

**Figure 4**

*Satisfaction scores for Formative Assessment (FA) and Summative Assessment (SA)*





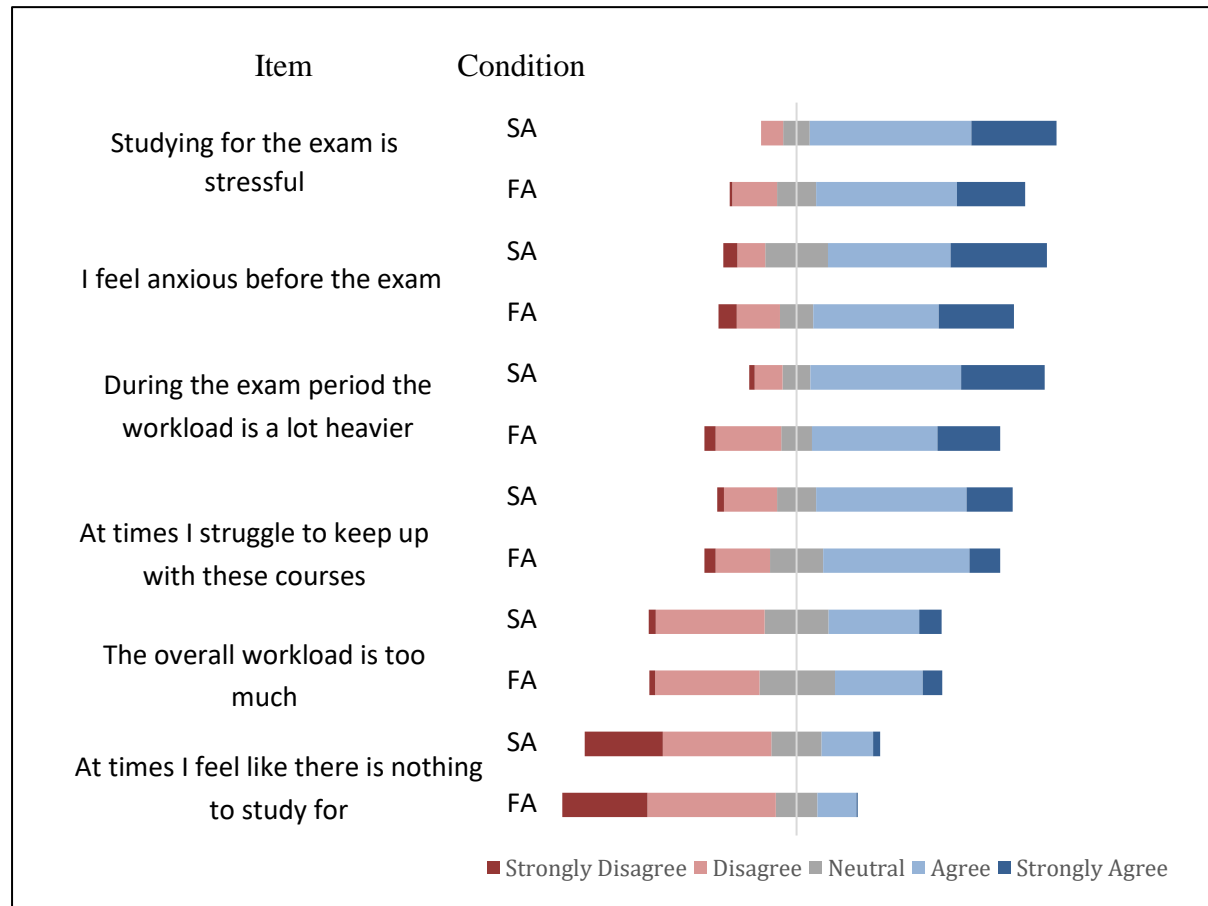
## Wellbeing

The subscale wellbeing was utilized to assess student's stress levels, therefore a higher mean in this scale indicated more stress and lower wellbeing. We found that for summative assessment the mean was at 3.70 (0.62), whereas for formative assessment the mean was at 3.35 (0.57). A paired samples t-test was conducted to compare the average responses for the two assessment types. We found statistically significant differences with  $t(210) = 8.52, p < 0.001$ . The effect size was medium with a Cohen's  $d$  of 0.58 and a mean difference of 0.435 units in scales, indicating that students' stress levels are slightly higher when participating in courses with summative assessment as opposed to formative assessment.

Specifically, students indicated more stress for exams in summative courses ( $M = 4.07, SD = 0.82$ ) than in formative courses ( $M = 3.78, SD = 0.99$ ). There was a (strong) agreement of 83.9% to the item "Studying for the exam is stressful" in summative courses, with no one strongly disagreeing. In turn with 71.7% agreement, less students reported that studying is stressful in formative courses. In line with this perception, students also indicated that the general workload is heavier during exam period, even more so in summative courses ( $M = 3.95, SD = 0.96$ ) than in formative courses ( $M = 3.55, SD = 1.16$ ). In regard to formative assessment methods, 76.8% of students (strongly) agreed that mandatory assignments helped them understand course contents, with a mean agreement of 3.89 (0.82). The overall workload was perceived as quite similar for both assessment types. For the item "The overall workload is too high" there was a mean agreement of 3.06 (1.07) for summative courses and a mean agreement of 3.08 (1.02) for formative courses. The individual response scores can be found below in Figure 5.

**Figure 5**

*Wellbeing scores Formative Assessment (FA) and Summative Assessment (SA)*



## Cheating

The responses to cheating behavior in our survey are best summarized in percentages. After accounting in the summative condition for the ‘yes’ responses that were due to ‘tail’ coming up, approximately 10.4% of the participants admitted to cheating in some form during exams. In comparison, for formative assessment 6.4% of students admitted to cheating in this type of course. However, in the formative condition the coin toss method did not produce a fair distribution of about 50%, resulting in significantly less participants being instructed to respond “yes” to the items inquiring whether students had cheated before. This

resulted in a negative percentage of -4% and will be treated as 0%. Hence, about 0% indicated to have cheated in exams in the formative condition.

### Student Comments

At the end of our questionnaire participants had the option to leave additional comments regarding our research. Eight students emphasized in their comments that the formative courses differed greatly from each other. Students distinguished further between formative courses with versus without a final exam, the types of assignments as well as the timing of assignments. One student felt that formative elements in the form of assignments are more justified and can lessen the workload if they are *not* paired with a final exam. Five students elaborated on how useful they perceive different kinds of assignments. In particular, there appeared to be a consensus that some assignments deal only with rather specific course contents, which made them less useful when coupled with a final exam. Assignments which focus on covering exam material are much appreciated, with a student describing that they “take away more” that way. One student noted that the timing of the assignments also matters, with assignments which can be completed before exam period doing better in lessening stress and perceived workload.

**Table 3**

*Mean and Standard Deviation of the Subscales*

Subscale	Formative		Summative	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Procrastination	3.18	1.18	3.53	1.23
Self-Efficacy	3.64	0.57	3.31	0.71
Engagement	3.16	0.57	2.96	0.60
Retention	3.82	0.48	3.55	0.64

Learning approaches	3.36	0.39	3.28	0.44
Satisfaction	3.79	0.50	3.28	0.56
Wellbeing	3.35	0.57	3.70	0.62

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*Note.* All Scores were measured with 1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5 (strongly agree).

**Table 4**

*Internal validities measured by Cronbach's alpha*

Subscale	Internal validity (Cronbach's alpha)
Procrastination	0.89
Self-Efficacy	0.79
Engagement	0.56
Retention	0.69
Learning approaches	0.54
Satisfaction	0.79
Wellbeing	0.67

---

*Note*

## Discussion

Our reason for conducting this study was to acquire an impression of student experiences with different assessment methods in the psychology department of the University of Groningen (RUG). We specifically distinguished between summative

assessment methods and assessment with formative elements. So far, research offers evidence that formative assessment can foster deep learning approaches in students and result in higher retention of course contents (Iverson et al., 1994; Yorke, 2001). Next to the effects on learning, surveys have also found students to indicate high satisfaction for formative assessment, as it is perceived as interesting, fun, and meaningful compared to summative assessment forms (Jones et al., 2021). However, a closer look into the research reveals a much more nuanced picture of student experiences, as factors such as the workload and clarity of assessment requirements appear to be strong influences for the effects of assessment methods (McSweeney, 2014). In light of these research findings, we investigated how students in our department perceived their own experiences with the two assessment methods, in terms of learning approaches, wellbeing and satisfaction.

Overall, students in our survey reported higher satisfaction, higher retention, more deep learning, and better wellbeing (less stress) for courses with formative assessment. These results indicate clear benefits of formative teaching elements for student performance and wellbeing over exclusively summative teaching methods. As we have established before, especially the workload and clarity of an assessment method can serve as moderators for anticipated effects of assessment types (McSweeney, 2014). A new assessment method that initially feels meaningful and exciting to students can still end up being disliked if the workload is perceived as too high or if the instructions are unclear. Our student reports are in line with current research on effects of assessment methods and their moderators: Students consistently rated formative assessment as more enjoyable, challenging, and interesting than summative assessment. As expected for such positive ratings on the satisfaction items, most students also indicated that approaching deadlines were well communicated and that the assessment requirements were clear. Similarly in line, most students did not agree that the

overall workload for formative (and summative) courses was too high. Our results are in line with research of Struyven et al. (2005) and Jones et al. (2021), who have both hypothesized a lack of clear assessment methods and high workload as hurdles to student satisfaction with formative assessment. An advantage to our study is therefore the integration of these constructs, which have previously been suspected to be (partly) responsible in ambiguous results regarding student preferences.

Even though the overall workload for the two assessment methods was rated almost exactly the same, it appears that formative assessment is still associated with a less stressful learning experience. Students indicated less anxiety and stress before an exam in a formative course. Current research on the effects of formative assessment on test anxiety and test performance offers explanations for the reduced stress: The integral element of feedback in formative assessment can increase student's confidence and motivation. According to Cauley and McMillan (2010), feedback facilitates student's self-monitoring as well as motivation for studying. Students who have received feedback once or even multiple times tend to be more engaged throughout the course, which might lower stress levels right before the exam. Another common element of formative assessment is active student participation during the course, e.g., in the form of group work or educational game activities. Cardozo et al. (2020) found that active student participation requiring interaction with the lecturer or collaboration with fellow students reduced anxiety and stress levels in students. While working together with their colleagues, students realized that others were struggling with similar course topics. By helping each other out, students were able to improve their own understanding of the content, while also decreasing feelings of loneliness and helplessness, ultimately lowering their anxiety for the course. The students in our survey did in fact perceive more opportunities for active student participation as well as feedback implementation in formative

courses than summative one, as indicated by their responses to these two items. These student ratings offer further support that the integral elements of formative teaching such as feedback and active student participation can positively affect students learning and wellbeing.

A specific reason possibly accounting for the higher satisfaction with formative over summative courses could be the perceived utility of the teaching method. Students in our study indicated that formative courses helped them to develop their thinking skills, more so than summative courses did. Our participant's perceptions are in line with other surveys, in which students explained how courses with formative assessment methods felt more meaningful to them. Many students in the studies by Jones et al. (2021) as well as Struyven et al., (2005) perceived formative assessment as useful for their future careers by teaching and assessing competencies, such as giving a presentation. Students perceive formative courses to teach general skills and qualities which they can apply outside of the academic context, creating a plausible benefit of formative methods over summative methods for students. The enhancement of thinking skills which we assessed in our study can be understood as one of these qualities useful outside of the academic context.

Although students consistently indicated more deep learning approaches for formative than for summative courses, the difference was smaller than expected in light of previous research ( $M=0.08$  units on the five-point scale, Cohen's  $d = 0.28$ ). A possible explanation for this and also general limitation to our study is the extent of actual formative elements in our condition of formative courses. Even though there are significant differences in the perception of feedback and participation, enabling us to compare exclusively summative courses with those including formative elements, the extend of such elements is unclear. On average, students from our sample, neither agreed nor disagreed that they were receiving helpful feedback, as opposed to disagreeing for summative courses. Similarly, there could be

more agreement concerning the presence of opportunities for active student participation. The fostering of deep learning in courses might be harder to achieve than a decrease in stress or increase in enjoyment. Bloxham and Boyd (2007) explain how learning approaches tend to be task-specific, meaning that students evaluate the learning requirements for individual tasks and adapt to those. To foster deep learning, Bloxham and Boyd identified student activity or interaction and encouragement of student's intrinsic interests as essential conditions. While students in our survey experienced significantly *more* opportunities for active participation, this condition still seems unfulfilled even for courses with formative elements in our program. Nevertheless, students consistently reported slightly more deep learning approaches for all items on this matter, further supporting existing research on the positive relationship between deep learning and formative assessment.

### **Limitations and Future Directions**

A limitation to our study is the diversity of courses which fit under our umbrella of formative assessment. As students in our sample have commented, the types of formative assessment they experienced varied vastly from each other. Multiple participants have commented how their opinions actually differed depending on the exact formative elements. Our study provides useful information and strong indications for the benefits of formative over summative assessment. However, our condition of formative assessment is not consistently inclusive of the integral elements of formative teaching such as student collaboration or effective feedback. The implications we are deriving from our survey are therefore more reliant on the differences we could find between the conditions rather than the relationships between a single assessment condition and their student ratings. With this limitation in mind, it is intriguing to further investigate the same dimensions again with a formative assessment condition that meets the integral qualifications identified by



many researchers by now. Specifically, the investigation of learning approaches might yield informative results, as we are hypothesizing which elements of formative assessment have a stronger relationship with deep learning approaches. Also, since our students have explicitly indicated having differing perceptions on different formative assessment elements, it naturally awakens interest to find out concrete information. Even though our research offers insight into possible factors influencing formative assessment such as workload and clarity, the specific circumstances fostering effective formative teaching are not completely clear. This is why finding out the formative elements specifically relating to wellbeing, deep learning and satisfaction can provide useful information for realizable and effective changes in assessments.

## **Conclusion**

The aim of our study was to provide advice to our programs educators on how to improve courses to increase student learning and wellbeing. Students in our survey have consistently indicated better wellbeing, more satisfaction and more deep learning for courses that included formative elements than for exclusively summative courses. On the basis of our survey, we are advising to consider the implementation of formative assessment elements in more courses. Firstly, it is useful to consider the intended learning goals of the course, as assessment should aim to be in line with them, rather than implementing new assessment for the sake of change. Secondly, in connection, we advise to consider and prevent possible hurdles that have been found to arise with formative assessment, such as unclear requirements. As Gijbels and Dochy (2006) have observed, their implementation of formative teaching elements resulted in more surface learning in students, rather than the anticipated deep learning. Thirdly, it can be useful to reflect on one's current teaching methods as chances are high one is already making use of formative elements. As mentioned before,

formative and summative assessment are not mutually exclusive and are often applied in combination (Chen, 1994). It could be insightful to consider one's currently employed methods, estimate where they stand on the assessment continuum and possibly identify areas where change is easier to implement.

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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**.

More **detailed information** about the study itself, your participation, and the way we will treat your data will follow on the next page.

#### INFORMATION ABOUT THE RESEARCH

Version for participants

**“STUDENT EXPERIENCE OF UNIVERSITY ASSESSMENT: IS THE EXAM STILL RELEVANT?”** PSY-2122-S-0060

**Why do I receive this information?** You are kindly invited to participate in our current research on student experiences of university assessment. You are in the Bachelor or Minor programme of Psychology and have experienced assessments in this programme. This study started in November 2021 and will continue until January 2022. The study has been evaluated by the Ethics Committee of Psychology (ECP) of the University of Groningen. Principal investigator of the study is Dr. A.



Sarampalis, additional researchers are L.M. Duiverman, S.A.A. Fritzsche, O. Konradt, M.K. Kuhnert, J. Wulf, T. Mueller-Scholtz.

**Do I have to participate in this research?** Participation in the research is voluntary. However, your consent is needed. Therefore, please read this information carefully. Ask all the questions you might have, for example, because you do not understand something. Only afterwards decide if you want to participate. If you decide to not participate, you do not need to explain why, and there will be no negative consequences for you. You have this right at all times, including after you have consented to participate in the research.

**Why this research?** During the COVID-19 lockdowns, assessment at the university has gone through some changes. There has been more focus on assessments for learning purposes (formative assessment) in addition to assessment for grading purposes (summative assessment). Through this study, we would like to discover how these different types of assessment are experienced by you, the students, in order to make recommendations to the faculty to improve on their assessments.

**What do we ask of you during the research?** Before beginning with the study please read this information thoroughly. If you decide to participate in this study you will first be asked to provide informed consent. Then you will fill out a few short questionnaires on procrastination, your experiences with assessment for grading, and assessment for feedback.

**What are the consequences of participation?**

This research might provide the faculty members with new information on how students experience their exams and different types of assessment. In the future, this could help to improve the assessment types used by the faculty. We do not foresee any significant negative effects or discomfort as a consequence of this study.

**How will we treat your data?** *For SONA participants* Your data will be treated confidentially. Because we ask you for your SONA number, the data collection is not completely anonymous: your SONA number is linked to your name and email address. However, we do not have access to your name and email address; only the SONA administrator does. Nonetheless, your data will only become

anonymous once we delete your SONA number, which we will do at the end of data collection, i.e. 14-12-2021. Until this date, you can ask to have your data removed from the dataset. Afterwards this is no longer possible. *For other participants* Data collection is designed to be anonymous, in other words, we do not ask you for any information that could be used to identify you as a person. The questionnaire data are collected using online software which uses secure servers. After the study ends all data will be stored anonymously according to the Faculty of Behavioural and Social Sciences data management protocol. *For SONA participants* You have the right to access, rectify, and erase your data for as long as your data remains linked to your SONA number, i.e. until 14-12-2021. To exercise this right you can send an email to the Principal investigator stating your SONA number and that you wish to have your data removed. Please do so before 14-12-2021.

**What else do you need to know?** You may always ask questions about the research: now, during the research, and after the end of the research. You can do so by emailing the researchers at l.m.duiverman@student.rug.nl or by emailing (a.sarampalis@rug.nl) or phoning (+31 50 36 36778) the principal investigator. Do you have questions or concerns regarding your rights as a research participant? For this you may also contact the Ethics Committee of Psychology of the University of Groningen: ecp@rug.nl *For SONA participants* Do you have questions or concerns regarding your privacy, or the handling of your personal data? For this, you may also contact the Data Protection Officer of the University of Groningen: [privacy@rug.nl](mailto:privacy@rug.nl).

As a research participant, you have the right to a copy of this research information.

## **INFORMED CONSENT** (for participants aged 16 years or older)

**“Student experience of University assessment: is the exam still relevant?”** PSY-2122-S-0060

Please indicate below whether you consent with the following statements:

I have read the information about the research and I have had the opportunity to ask questions about it.

The information provided gave me a sensible idea about ...

... the **content** of the research.

... my **involvement** in the research.

... possible **consequences** of participating.

... how my **data** is handled.

... my **rights**. I understand that my participation is voluntary and I can stop participating at any moment without having to give an explanation. This will have no negative consequences for me.

If you **consent** to participate, please click "→" to go to the questionnaire.

If you **do not consent** to participate, please close this qualtrics window to stop participating. 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 <b>improved</b> since enrolling in this programme.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Other students</b> 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 <b>information</b> or <b>advice</b> that I found <b>helpful</b> in improving my study habits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could <b>improve</b> my study habits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the <b>same</b> study habits I have used in high school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I <b>just memorize</b> 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 <b>a hard time knowing</b> 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 <b>too many other things</b> to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There tends to be some information <b>I</b> <b>need to ask</b> the professor, but I feel <b>uncomfortable approaching</b> them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to be worried I get a <b>bad grade</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really tend to <b>dislike studying</b> for exams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to feel <b>overwhelmed</b> by the task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to <b>distrust myself</b> to do a good job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to <b>lack the energy</b> to begin studying.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to <b>wait</b> to see if the professor gives me some <b>more information on</b> <b>the exam</b> .	<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 <b>confident</b> that I will <b>pass</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to have <b>problems with understanding</b> the most difficult material presented in the <b>readings</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can <b>understand</b> the <b>basic concepts</b> taught.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to have <b>problems with understanding</b> the most difficult material presented by the <b>instructors</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am certain that I can <b>master</b> the <b>skills</b> 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 <b>enthusiastic</b> about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do the <b>bare minimum</b> 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 <b>work with classmates</b> on the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually <b>cram</b> before an exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I <b>attend</b> lectures or <b>watch</b> the recordings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I <b>contact lecturers</b> 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 <b>general topic</b> and <b>learning goals</b> 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 <b>central concepts and theories</b> 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 <b>explain the central theories</b> and concepts that were taught in this type of course <b>to a friend</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I generally <b>receive a high grade</b> 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 <b>important</b> for me to follow arguments, or to see the <b>reason</b> 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 <b>find out</b> exactly <b>what the author means</b> .	<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 <b>worthwhile</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Much of what I am studying makes <b>little sense</b> : 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 <b>memorising</b> 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 <b>appropriate</b> for this type of assessment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am <b>satisfied</b> 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 <b>differently</b> 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 <b>master</b> the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I study <b>regularly</b> .	<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 <b>often</b> procrastinate while <b>preparing</b> for exams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procrastination on preparing for exams is a <b>problem</b> for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to <b>decrease</b> 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 <b>aims</b> 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 <b>helpful feedback</b> 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 <b>challenging</b> and <b>interesting</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effective opportunities for <b>active student participation</b> 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 <b>developing my thinking skills</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was provided with <b>clear</b> information about the <b>assessment requirements</b> for this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The <b>assessment methods</b> and tasks in this type of course are <b>appropriate</b> given the course aims.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Approaching deadlines are <b>well communicated</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I <b>enjoy the structure</b> 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 <b>workload</b> is too much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Studying for the exam is <b>stressful</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I <b>struggle</b> 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 <b>nothing</b> to study for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the exam period the <b>workload</b> is a lot heavier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel <b>anxious</b> 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 <b>confident</b> that I will <b>pass</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to have <b>problems with understanding</b> the most difficult material presented in the <b>readings</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can <b>understand</b> the <b>basic concepts</b> taught.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to have <b>problems with understanding</b> the most difficult material presented by the <b>instructors</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am certain that I can <b>master</b> the <b>skills</b> being taught.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am <b>enthusiastic</b> about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do the <b>bare minimum</b> 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 <b>work with classmates</b> on the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually <b>cram</b> before an exam or deadline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I <b>attend</b> lectures or <b>watch</b> the recordings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I <b>contact lecturers</b> 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 <b>general topic</b> and <b>learning goals</b> 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 <b>central concepts</b> and <b>theories</b> 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 <b>explain the central theories</b> and concepts that were taught in this type of course <b>to a friend</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I generally <b>receive a high grade</b> 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 <b>important</b> for me to follow arguments, or to <b>see the reason</b> 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 <b>find out</b> exactly <b>what the author means</b> .	<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 <b>worthwhile</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Much of what I am studying makes <b>little sense</b> : 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 <b>memorising</b> 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 <b>structure</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My study habits are <b>appropriate</b> for this type of assessment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am <b>satisfied</b> 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 <b>differently</b> 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 <b>master</b> the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I study <b>regularly</b> .	<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 <b>often</b> 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 <b>problem</b> for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to <b>decrease</b> 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 <b>aims</b> 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 <b>helpful feedback</b> 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 <b>challenging and interesting</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effective opportunities for <b>active student participation</b> 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 <b>developing my thinking skills</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was provided with <b>clear</b> information about the <b>assessment requirements</b> for this type of course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The <b>assessment methods</b> and tasks in this type of course are <b>appropriate</b> given the course aims.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Approaching deadlines are <b>well communicated</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I <b>enjoy the structure</b> 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 <b>workload</b> is too much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Studying for the exam is <b>stressful</b> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I <b>struggle</b> 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 <b>nothing</b> to study for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the exam period the <b>workload</b> is a lot heavier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel <b>anxious</b> before an exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The mandatory assignments help me <b>understand</b> 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.

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