# Assessment Preferences and Test Anxiety: Student Perspectives on Multiple-Choice, Open-Questions, and Performance Tasks

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## Abstract

Assessment plays an important role in both general and higher education. Research shows that how students perceive assessments influences the way they learn. Test-anxiety is another factor that plays a role. This study explores the assessment preferences of students, focusing specifically on multiple-choice (MC) exams, open-question (OQ) exams, and performance tasks (PTs). Additionally, it examines assessment preference in combination with test anxiety and what aspects of the different types of assessments students find anxiety-inducing. A total of 128 students from the Faculty of Behavioral and Social Sciences at the University of Groningen participated in the study through a survey, providing valuable insights into their preferences. Results indicated a preference for multiple-choice exams over open-question exams and performance tasks. Furthermore, it was found that students with higher levels of test anxiety tend to prefer multiple-choice exams more. While no effect was found between test anxiety and open-question exams, nor between test anxiety and performance tasks. Additionally, thematic analysis of an open-question regarding anxiety inducing aspects revealed various themes related to test anxiety. For example, the most common themes are: “writing skills and formulation,” “personal blame and doubt,” and “uncertainty.” By shedding light on these dynamics, this study offers a deeper understanding of student assessment preferences and anxiety, paving the way for theoretical and practical implications


*Keywords:* assessment formats, students, exam preferences, test anxiety

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# Assessment Preferences and Test Anxiety: Student Perspectives on Multiple-Choice, Open-Questions, and Performance Tasks

In the past decade, there has been a growing focus on researching students' assessment preferences (Holzinger et al., 2020). Students encounter various types of assessments throughout their academic careers. Previously, assessment was largely regarded as a way to assign grades and evaluate students. Nowadays, it is recognized that the benefits of assessment are much broader and affect every stage of the learning process (Van De Watering et al., 2008).

Assessment plays an important role in both general and higher education (Kasanda et al., 2013). How assessment methods are conducted can have an impact on the way students learn (Amin et al., 2011). Students their preparation for assessments are influenced by how they perceive them, and these perceptions can either positively or negatively impact their learning (Van de Watering et al., 2008). Furthermore, when assessments are used under ideal conditions, they are able to showcase an individual's existing knowledge, promote mastery, and encourage engagement (Sotardi & Dutton, 2022). However, critics have voiced concerns regarding the use of traditional assessment methods like multiple-choice question formats, and short-answer question formats (Holzinger et al., 2020).

## Assessment methods

Assessment methods that are most commonly used can be mainly divided into two categories: the selective response or multiple-choice question format (MC exams) and constructed response format or open-question format (OQ exams) (Hift, 2014). An alternative assessment method that will be discussed in the present study is performance tasks (PTs). This method focuses on how students learn, solve problems, and complete tasks, using various

methods to measure their knowledge (Oliver, 2015). It challenges students to respond by performing tasks such as writing essays or giving oral presentations (Braun, 2019).

***Benefits and drawbacks***

Every assessment type comes with its own benefits and drawbacks. MC questions are widely used for assessment due to their ability to cover many content areas, be administered quickly, and graded efficiently (Epstein, 2007). MC questions are also highly reliable and more objective (Hift, 2014). However, they are less effective for cumulative learning and long-term retention of information. MC questions often lead to surface-level learning, while OQs encourage students to achieve deeper understanding (Holzinger et al., 2020). Another disadvantage is that little feedback is provided after completing the test. Feedback has been demonstrated to be highly motivating and beneficial for enhancing learning (Williams, 2014).

Research indicates that OQ formats offer more advantages compared to MC format assessments (Greving & Richter, 2022). Many believe that the OQ format is superior in evaluating higher cognitive levels of knowledge (Hift, 2014). However, this depends on how the question is formulated. With poor formulation, the OQ format will not outperform MC questions, as it will fail to stimulate higher-order thinking effectively. Another advantage is that OQ have a greater validity compared to MC questions (Hift, 2014).

The previously discussed assessment methods primarily focus on testing knowledge. Alternative assessment enable students learn how to apply their knowledge, mainly emphasizing their strengths (Oliver, 2015). With this method instructors can evaluate students their associative and strategic thinking skills (Holzinger et al., 2020). A study conducted by Williams (2014) has shown that alternative assessment methods provide advantages in student

engagement, learning, and retention. However, this method can be demanding in terms of time and effort.

### *Assessment preference of students*

Educational measurement specialists frequently overlook an essential factor in test planning: the perspective of the students who will be taking the tests. This perspective should be carefully considered and given serious attention during test development. (Zeidner, 1987).

Various studies have been conducted on students' preferences regarding assessment formats. Students generally hold a more positive view of exams with MC questions compared to those with OQs (Holzinger et al., 2020; Traub & McRury, 1990; Van de Watering et al., 2008; Zeidner, 1987). It has been reported that students find these tests easier to prepare for and simpler to complete. (Holzinger et al., 2020; Traub & McRury, 1990; Zeidner, 1987). Their preference was also due to the higher perception of objectivity and the test method to be viewed as less tricky (Holzinger et al., 2020). It has also been found that students have a preference for MC question formats as they are perceived to be superior compared to OQ formats in terms of complexity, and familiarity with the format (Zeidner, 1987). Furthermore, students reported that MC questions result in lower levels of stress and test anxiety compared to OQs (Fortun & Tempest, 2020; Holzinger et al., 2020; Zeidner, 1987). Students are in overall more satisfied with the MC question format (Holzinger et al., 2020).

It appears that students also have a positive attitude towards PTs (Van de Watering et al., 2008). Students find them more personal and gain a deeper understanding of the material as it is more demanding compared to traditional written assignments like MC and OQ exams (Joughin, 2007). However, students indicate that this type of assessment method is less objective, less reliable, and may involve examiner bias (Holzinger et al., 2020). In consideration of the previous

reasons, students believe that supporting materials be permitted, and that the questions or tasks should evaluate a range of cognitive processes (Van de Watering et al., 2008). Additionally, students prefer other alternative assessment methods over OQ formats (Holzinger et al., 2020).

**Current study**

From the previously discussed studies, it appears that students primarily prefer the MC question format over the OQ question format (Holzinger et al., 2020; Traub & McRury, 1990; Van de Watering et al., 2008; Zeidner, 1987). Despite various research being done about students' assessment preferences (Fortun & Tempest, 2020; Holzinger et al., 2020; Joughin, 2007; Traub & McRury, 1990; Van de Watering et al., 2008; Zeidner, 1987), there is little knowledge particularly regarding the comparison of MC questions exams, OQ exams, and PTs. We predict that students also prefer the MC question format over PTs, as they perceive PTs to be less objective, less reliable, and more susceptible to examiner bias (Holzinger et al., 2020). The aim of this study is to examine and gather additional information about students' assessment preferences, as it's unclear what their preference is among MC questions exams, OQ exams, and PTs. To gain a better understanding of students their assessment preferences, it is crucial to consider their perspectives and opinions regarding different assessment methods. Based on the previously discussed literature, the following hypothesis can be formulated:

**Hypothesis 1.** Students have a preference for MC question formats over OQ formats and PTs.

**Test Anxiety and assessment preference**

Previously, it has been mentioned that students reported lower levels of stress and test anxiety when it comes to MC questions (Fortun & Tempest, 2020; Holzinger et al., 2020; Zeidner, 1987). Test anxiety appears to be another factor that can influence attitudes toward

different assessment methods (Van de Watering et al., 2008). There is a widespread belief that test anxiety is a major issue in education (Lovett et al., 2024).

### *Test anxiety*

Students who suffer from test anxiety usually experience heightened levels of stress, restlessness, and fear (Salend, 2011). Additionally, they often show signs such as increased distractibility during exams and also struggle with basic instructions and organizing or remembering information (Stankovska et al., 2018). Students also experience anxiety when there is a lack of communication about the criteria and procedures involved in an assessment (Sotardi & Dutton, 2022). Concerns about test results cause students to experience negative emotions during exams, which is linked to lower exam scores. While some anxiety can motivate students and enhance their study efforts, excessive stress during exams can hinder their performance (Gharib & Phillips, 2013).

**Assessment formats.** Test anxiety usually occurs in a specific situation or context and also depends on how performance will be assessed or evaluated (Putwain, 2008). Test anxiety can be triggered by multiple factors, including the length of the exam, the number of questions, the type of test, test instructions and the testing environment itself (Wadi et al., 2022). A study by Sotardi et al. (2020) shows that the assessment context is known to impact both evaluation anxiety and performance. However, there still remains a gap in the literature regarding students their perspectives on assessment and anxiety (Sotardi & Dutton, 2022).

**Self-efficacy.** A different way that test anxiety can have an influence in situations where students have to perform is determined by how much the student has confidence in themselves. This is also called self-efficacy (Bandura, 1997). This also influences how students learn. When

students have low self-efficacy beliefs, they tend to experience higher levels of anxiety, which in turn decreases their academic performance (Roick & Ringeisen, 2017).

### *Students' assessment preference*

The impact of test anxiety in exams varies greatly between students. For instance, while some students find oral exams a comfortable way to show their knowledge, others struggle with anxiety that can negatively affect their results (Sayin, 2015). However, it is also known that when students feel less anxious during their exams, their performance improves regardless of the assessment method used (Mavridis & Tsiatsos, 2016). Fortun and Tempest (2020) have conducted research on modified essays and MC questions. The study revealed that students prefer MC questions over modified essays. This preference can be explained by students being unfamiliar with this format and the uncertainty associated with OQ exams, which leads to increased anxiety. Another study shows that students with high levels of test anxiety favor MC questions, whereas those with low test anxiety generally favor OQ (Van de Watering et al., 2008).

## Present study

From the previously discussed literature, it appears that students with high levels of test anxiety prefer the MC question format (Fortun and Tempest, 2020; Van de Watering et al., 2008). Compared to MC questions, students reported that the uncertainty associated with OQs leads to increased anxiety. Because PTs are less structured compared to MC questions, we also expect a negative relationship between test anxiety and PTs, as they are more anxiety-inducing than MC questions. Despite various research being done about test anxiety and assessment preferences, there is little knowledge particularly regarding test anxiety and the comparison of the preference for MC questions, OQ and PTs. The aim of this study is to examine the

relationship between test anxiety and different assessment preferences. Based on the previously discussed literature, the following hypothesis can be formulated:

**Hypothesis 2**. Test anxiety is (a) positively related to preference for the MC question format and (b) negatively related to preference for OQ formats and (c) PTs.

Finally, to gather more insights, exploratory research is also conducted on what exactly students find anxiety-inducing for each type of assessment. This involves seeking opinions from students.

## Methods

### Participants

The present study was conducted with students from the faculty of Behavioral and Social sciences at the University of Groningen. The original sample consisted of 143 students. Of the people who started the questionnaire, 12 failed to complete the survey. Throughout the survey, five attention checks were incorporated. Three participants failed two or more attention checks. If someone failed to complete the survey or the attention checks, that participant was removed from the final data set. This resulted in a sample size of 128, which was used for the data analysis.

There were 37.5% Psychology (EN) students, 61.7% Psychology (NL) and 0.8% Sociology. For practical reasons, we limited our sample to students of this faculty. Of the sample 72.7% was female, 23.4% was male, 3.1% was non-binary/third gender, and 0.8% preferred not to say. 35.2 percent of students were in their second year of studying or higher, while there were 64.8% first-year students. A higher number of first-year students was expected since the sampling was mostly done through Sona Systems (https://www.sona-systems.com/).

#### *Incentive*

As an incentive to participate in the study, first-year Psychology students received 0.6 course credits through Sona Systems (https://www.sona-systems.com/). These credits are used to pass the first-year course ‘A Practical Introduction to Research Methods’. Students in higher years did not receive an incentive for their participation.

**Procedure**

Participants were recruited through convenience sampling. The survey was accessible through Sona Systems (https://www.sona-systems.com/). Furthermore, a link to the study was shared in several group chats on WhatsApp to obtain more participants who were further along in their studies. Researchers were not physically present when participants filled out the survey, and participants were asked to complete the survey independently. The survey was accessible from April 16th, 2024 to April 24th, 2024.

Before filling in the questionnaire, participants were informed about the content and aim of the research, their choice to participate or refrain from participating, the incentive for completing the questionnaire, and the confidentiality in handling the data. The researchers’ contact information was provided in case of any questions about the research. Subsequently, participants were required to fill in the informed consent about participating in the study and processing their data.

The questionnaire started with demographic questions, followed by questions measuring several constructs. Due to the collaborative nature of the study, some of these constructs are not relevant to the current research and will only be mentioned shortly. For further information on these sections please see the theses written by collaborators mentioned in the headline.

After the demographic questions, students were presented with questions assessing their personality type and levels of trait test anxiety. Participants were then asked to indicate their

preferences for different exam formats: OQ exams, MC exams, and PTs (both individual and grouped). Subsequently, prior experience and learning strategies for the different formats were assessed. Next, respondents answered questions regarding their levels of state evaluation anxiety for each examination method. The order in which these different sections were shown was randomized for each participant. After completing the questionnaire, participants were directed to the Sona Systems website to receive credits, if applicable.

### *Ethics*

Before recruiting participants, we obtained ethics approval from the Ethical Committee (EC-BSS). Based on a checklist developed by the EC-BSS at the University of Groningen, the study was exempt from full ethical review.

## Materials

First, participants were required to provide demographic information, namely gender, year of study, and subject of study.

### *Overall preference*

To assess the preferences for different examination methods, an Examination Preference Inventory (EPI) was developed (see Appendix A), which was presented separately for each type of examination.

The inventory consisted of four scales, each consisting of two to four items, where participants indicated their level of agreement with displayed statements on a five-point Likert scale. Three scales were based on an existing inventory by Lindner (2019): potential to show performance, objectivity, and valence. The scale measuring potential to show performance was directly adopted from Lindner's research, where it consisted of four items. An example item of this scale is "Open question exams/ MC exams/ Performance tasks allow me to express my

knowledge precisely." Perceived objectivity was assessed through two items, one adopted directly from Lindner (2019) and another added to enhance the scale's reliability. Three items were included to measure participants' valence (liking) of the different exam formats. One item's phrasing was adjusted to prevent misinterpretations, and one was added. An example item is "Open question exams/ MC exams/Performance tasks should be the main method of examination." The fourth scale measured difficulty and included two items adapted from Zeidner (1987) and one more item added for construct validity.

The means of the different subscales were combined to form the general preference score. Reliability was estimated using Cronbach's alpha and proved sufficient for all scales (Taber, 2017). Moreover, the reliability of all scales combined as a measure of preference was also sufficient (see Table 1).

**Table 1**

*Cronbach's Alpha Scores for the EPI Scale and Subscales*

| Subscales | Open-question Exams | Multiple-Choice Exams | Performance Tasks |
|---|---|---|---|
| | α | α | α |
| Difficulty | .78 | .74 | .81 |
| Potential to show performance | .80 | .71 | .71 |
| Objectivity | .91 | .81 | .91 |
| Valence | .76 | .74 | .69 |
| Total | .72 | .75 | .71 |

***Test anxiety***

To measure the level of trait test anxiety for each individual, a short version of the test anxiety inventory (TAI) by Taylor & Deane (2002) was used (see appendix B). The inventory

consisted of five items, where participants indicated their level of agreement with displayed statements on a 4-point Likert scale (1= *Almost Never*, 4= *Almost Always)*. The short version of the TAI includes items such as: "I feel very panicky when I take an important test"; "I seem to defeat myself while working on important tests." The internal consistency of the instrument is .87 (Taylor & Deane, 2002).

Additionally, an open-ended question has been included where students are asked to provide a brief explanation of what they find stressful about each type of assessment format (MC questions, open-ended questions and performance tasks). A maximum of two sentences was given for their answer.

## Results

### General Preference

After the data collection, we analyzed the descriptive statistics for students' general preference for each examination format, based on the EPI scores. As was hypothesized, a higher preference score was found for MC exams ($M$ = 3.45, $SD$ = .54) in comparison to OQ exams ($M$ = 3.01, $SD$ = .46), and PTs ($M$ = 3.00, $SD$ = 0.48). The paired sample t-test between MC exams and PTs showed that preference for MC exams was significantly higher, $t(127) = 6.16$, $p < .001$, $d$ = 0.54, 99.5% CI [0.25, 0.65]. Similarly, the second t-test between MC exams and OQ exams indicated that preference was significantly higher for MC exams compared to OQ exams, $t(127) = 6.21$, $p < .001$, $d$ = 0.55, [0.24, 0.63].[1,2] The effect sizes showed moderate effects. These

[1] The assumptions of independence between subjects, same subject paired measurements, normal distribution of differences between pairwise comparisons were met. Some outliers were found, therefore a Kruskal-Wallis test be an alternative for the current research. However, this statistical technique is not part of the curriculum. Therefore, paired-sample t-test were still ran. Results must be interpreted with caution.

[2] Due to the increased risk of a type I error when conducting multiple statistical tests, we corrected the original alpha value of 0.05 according to the Bonferroni correction. This means that the critical p-value was corrected to 0.006 when taking into account the t-tests for the subscales later in this section.

[3] Due to limited statistical knowledge, paired-sample t-tests were conducted. However, a repeated measures ANOVA would have been a more suitable method for the analysis.

results are also in line with our hypothesis that students tend to prefer MC exams over OQ exams and PTs.

**Subscales of General Preference**

Based on the mean differences we decided to conduct paired-sample t-tests for objectivity, difficulty, and potential to show performance, between selected exam formats. [2,3] The means of the four subscales for each examination format can be found in Table 2.

**Table 2**

*Means and Standard Deviations of the Different Scales of the EPI*

| Measure | Multiple Choice | | Open Question | | Performance Tasks | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Difficulty | 2.95 | 0.84 | 4.08 | 0.61 | 3.27 | 0.29 |
| Potential to show performance | 3.14 | 0.83 | 3.98 | 0.75 | 3.75 | 0.72 |
| Objectivity | 4.49 | 0.73 | 3.09 | 0.97 | 2.67 | 0.99 |
| Valence | 3.55 | 0.87 | 2.75 | 0.86 | 3.00 | 0.80 |

The differences in difficulty between MC exams and PTs, and MC exams and OQ exams were significant, $t(127) = 4.204$, $p < .001$, $d = .37$, [0.11, 0.53] and $t(127) = 13.559$, $p < .001$, $d = 1.20$, [0.90, 1.36], respectively. PTs and OQ exams were rated as more difficult. The potential to show performance scores for OQ exams and PTs were rated significantly higher compared to MC exams, $t(127) = 7.37$, $p < .001$, $d = .65$, [0.52, 1,16] and $t(127) = 5.427$, $p < .001$, $d = 0.48$, [0.29, 0.91], respectively. The effect sizes of these t-tests showed medium to large effects. Furthermore, the objectivity scores for MC exams were significantly higher compared to PTs, $t(127) = 16.562$, $p < .001$, $d = 1.46$, 99.5% CI [1.51, 2.13], and compared to OQ exams. $t(127) = 13.870$, $p < .001$, $d = 1.23$, [1.11, 1.68]. Lastly, students rated MC exams significantly higher in

valence compared to OQ exams, $t(127) = 6.18$, $p < .001$, $d = 0.55$, [0.43, 1.17], and PTs, $t(127) = 4.45$, $p < .001$, $d = 0.39$, CI [0.2, 0.91]. The effect sizes showed medium to large effects.

**Assessment Preference and Test Anxiety**

A Pearson correlation coefficient was computed to assess the linear relationships between test anxiety and preference for MC exams, between test anxiety and preference for OQ exams, and between test anxiety and PTs. Firstly, the results indicated a weak significant positive relationship between test anxiety and preference for MC exams, r(126) = .207, $p = .019$, 95% CI [0.04, 0.37]. However, there was a weak non-significant positive relationship between test anxiety and preference for OQ exams, r(126) = .067, $p = .454$, 95% CI [-0,11, 0.24]. Furthermore, there was a weak non-significant negative relationship between test anxiety and preference for PTs, r(126) = -.022, $p = .806$, 95% CI [-0,20, 0.15]. The first result was in line with hypothesis 2(a). However, the last two results did not support hypothesis 2(b and c), as non-significant results were found.

**Analysis of the Open Questions on Anxiety Inducing Factors**

To analyze the responses to the open-ended question regarding what aspects of different assessment types induce anxiety, the data was extracted and analyzed to identify common themes. Thematic analysis involves identifying patterns or themes within qualitative data (Braun & Clark, 2006). I followed the six-step method by Braun and Clarke (2006). Firstly, I reviewed the answers given by the participants, making small annotations when necessary. Following this, I created codes for the various statements. I then identified recurring patterns, grouping them together into themes. Codes were given to each specific statement that was given by the students. Statements with similar content were grouped together under specific themes. Subsequently, the data was verified by rechecking the codes ensuring accuracy and reliability. Finally, I defined the

themes, and the last step involves reporting them. Percentages of all themes were also computed to determine how often each theme was mentioned. I will first start by discussing the unique themes for each specific type of assessment. Then, the themes that occur in multiple types of assessment will be discussed.

***Open-ended questions***

For OQ exams, a total of 10 themes were identified (see table 3 for an overview of all identified themes). Non-sensical or empty responses and those that do not fit into any category were excluded from the analysis ($n$ = 6). Additionally, responses from individuals who mentioned not experiencing anxiety with this assessment type were also not included ($n$ = 4).

Firstly, most students mentioned that it was difficult to recall information or specific terms. Some students even mentioned that they were scared to experience a black out. For example, one student said: “Getting a black out and not remembering certain words that you need to answer essay questions.” Students also mentioned that there is no guess-factor involved when it comes to OQ exams; it’s either getting the answer right or wrong. Another theme that was frequently mentioned was “specificity and terminology.” Students mentioned that it was difficult to use the right terms for the right answer. They also expressed that some questions are very specific. On the other hand, some students reported that some open-questions are ambiguous, allowing for different interpretations. For example, one student said: “it is very subjective.” Some other themes that were found were “orientation point,” “weight of questions,” and “Completeness of answers.” However, these themes are not discussed in detail as their occurrence in percentage was low.

***Performance tasks (written assignments)***

For performance tasks, a total of eight themes were identified (see table 4 for an overview of all identified themes). Non-sensical or empty responses and those that do not fit into any category were excluded from the analysis (*n* = 10). Additionally, responses from individuals who mentioned not experiencing anxiety with this assessment type were also not included (*n* = 6).

The first theme that was identified was “Time related stress.” Students mentioned that they usually experience anxiety as there is a deadline involved when it comes to written assignments. They also mentioned that it takes more time and effort to complete the task. For example, one student said: “The deadlines, I always finish an essay right before the deadline somehow.” Another theme that was mentioned frequently, was “evaluation and subjectivity.” This theme involved everything that had to do with the examiner and the bias that might be involved. Students expressed that they were unsure if the examiner liked the topic that they wanted to write about. One student said: “I dislike written assignments because it feels like you're trying to please the person who will review it, which is anxiety inducing.” Some other themes that were found were “energy consuming,” “complexity of the assignment,” “difficulty starting,” and “creativity and freedom.” However, these themes are not discussed in detail as their occurrence in percentage was low.

***Multiple-choice questions***

For MC questions, a total of nine themes were identified (see table 5 for an overview of all identified themes. Non-sensical or empty responses and those that do not fit into any category were excluded from the analysis (*n* = 8). Additionally, responses from individuals who mentioned not experiencing anxiety with this assessment type were also not included (*n* = 14).

One theme that occurred frequently was “doubt between answers.” Students mentioned that they often are unsure about which answer to choose. A similar theme that was found, was

"similarity of answers." This theme included the responses of students that expressed that the answers of MC questions often look identical to each other. For instance, one student said: "when there are two very similar answers and they are both right but one is slightly better, that frustrates me as it is not an objective measure of my knowledge." Another related theme was "trick questions." Students mentioned that some of the answers can be very confusing, leading them to the wrong answers. One student reported: "That they are often trick questions or focusing on small details I might not know, even though I studied the general topic quite well." Subsequently, the following theme was also found: "lack of clarification." Students mentioned that with MC questions there's no room to justify your answer compared to OQ exams and written assignments. Answers were either right or wrong. Some other theme's that were found were: "misunderstanding," "guess factor," "external factors," and "strictness of grading." However, these themes are not discussed in detail as their occurrence in percentage was low.

***Common themes***

A theme that emerged in both written assignments and OQ exams was uncertainty. In both types of assessment, students expressed that it was unclear what exactly was expected of them and how/on what points whey would be evaluated. For example, one student said: "I feel like it's hard to estimate the answer the teachers are looking for. Sometimes there are several directions to take your answer which makes it hard to choose one." Another common theme across both types of assessments was "writing skills and formulation". Students mentioned difficulty in articulating their thoughts and answers clearly and expressed concerns about making errors in sentence structure and spelling. Some students also worried about their language proficiency, affecting their ability to effectively convey their ideas. One student said: "I find it quite stressful to determine whether I've put my knowledge in the right words so it answers the

whole question. Sometimes I forget like two words in the whole paragraph, which lowers my grade."

A theme that was present in both written assignments and MC question exams was "personal blame and doubt." Students expressed doubting their own abilities. However, in written assignments there was a stronger tendency for students to perceive the task as a personal reflection of their skills. For instance, one student said: "That it feels more personal and a bigger representation of my intelligence and creativity than multiple choice exams. Hence, it might be more pressure."

**Table 3**

Themes of the Responses to the Question on what Induces Test Anxiety in Open-Ended Questions

| Theme | Example quotes | Percentage |
|---|---|---|
| Ambiguity of the questions | “some essay questions are not specific enough, so then it is difficult to answer the question because there is often a lot of learning material.’’ | 7,0% |
| Completeness of answers | “I worry about writing too much or too little, or leaving out important pieces of information.” | 6,3% |
| Information retrieval difficulties | “You have to actively recall knowledge and specific terms you may have forgotten about.’’ | 20,3% |
| Orientation point | “It is less directing than Multiple Choice, it needs to come almost completely out of you instead of being able to redirect it from the question. It is also harder to asses whether I did well or not.” | 3,9% |
| Probability to right answer | “The chance of you just having guessed the right answer is lower compared to a multiple choice exam.’’ | 9,4% |
| uncertainty | “It is sometimes unclear what is expected from you, or how it will be graded.’’ | 14,8% |
| Specificity and terminology | “You usually need to remember specific terms and words. If you write down a single wrong word, it immediately affects the amount of points you get for a question.’’ | 11,7% |
| Writing skills and formulation | “I often understand the question, but I am sometimes afraid that I cannot express my understanding properly.’’ | 15,6% |
| Weight of the questions | “Because I now that the grade depends on my answer and that the grade will be worse if I don‘t know enough or anything about the problem in question.” | 3,1% |

*Note.* nonsensical, unclassified, and people with no anxiety were not included

**Table 4**

*Themes of the Responses to the Question on what Induces Test Anxiety in Written Assignments*

| Theme | Example quotes | Percentage |
|---|---|---|
| Writing skills and formulation | “That I won’t be able to express my thoughts correctly, as I often struggle with wording and organizing what I want to say.” | 18,8% |
| Time related stress | “What I find anxiety evoking about written assignments is the deadline.” | 13,3% |
| Uncertainty about sufficiency | “Not knowing whether they are deemed sufficient. And sometimes it is hard to assess one's own performance. Often, I cannot look at my own work with necessary distance”. | 14,8% |
| Personal blame and doubt | “That you get judged over your writing skills, which i take pretty personal often.” | 14,1% |
| Evaluation and subjectivity | “I was worried that my examiner would not like the topic I chose or would show bias in my work due to this.” | 12,5% |
| Energy consuming | “Starting to work on them, and all the preparation and effort you have to put in them”. | 2,3% |
| Complexity of the assignment | “It is a lot more difficult than tests, because you can do so much wrong.” | 7,8% |
| Creativity and freedom | “There is a lot of freedom. You have to think of a subject and of all the text and information by yourself, without a specific example of format.” | 3,9% |

*Note*. nonsensical, unclassified, and people with no anxiety were not included

**Table 5**

*Themes of the Responses to the Question on what Induces Test Anxiety in Multiple-choice questions*

| Theme | Example quotes | Percentage |
|---|---|---|
| Doubt between answers | “That two options both seem to be right and if I´m not sure which one is right it makes me anxious about my final grade.” | 17,2% |
| Trick questions | “That they are often trick questions or focusing on small details I might not know, even though I studied the general topic quite well.” | 10,2% |
| similarity of answers | “Answers can seem nearly the same.” | 15,6% |
| Questioning own ability | “That I sometimes don‘t trust my answers and therefore don‘t know if I was right and will get a good grade.” | 10,9% |
| Lack of clarification | “You can't explain your answers, so I feel like I don't have control of the result.” | 10,2% |
| Misunderstanding | “I'm afraid I won't select the correct answer because of misunderstanding the phrasing of the question, which I am likely to do under stress. Otherwise I feel inhibited to express what I've learned.” | 3,9% |
| Guess factor | “There was a guess rate correction, and your answer is either right or wrong.” | 6,3% |
| External factors | “usually being in a room with a lot of people.” | 5,5% |
| Strictness of grading | “They are graded quite strictly and you often get your mark immediately after finishing, which makes you very aware that every answer counts.” | 3,1% |

*Note*. nonsensical, unclassified, and people with no anxiety were not included

## Discussion

In this current study, I examined the preferences of students regarding assessment methods, specifically focusing on MC questions, OQs, and PTs. Additionally, the study examined test anxiety and its relationship with assessment preference. I also analyzed the specific reasons what students found anxiety inducing for each assessment type. Overall, the study takes an exploratory approach to these various topics.

### General assessment preference

The findings revealed that students have a greater preference for MC exams over open question exams and performance tasks, which aligns with our first hypothesis that multiple-choice exams would be preferred. This finding is in line with prior research showing that MC exams are preferred (Holzinger et al., 2020; Traub & McRury, 1990; Van de Watering et al., 2008; Zeidner, 1987). The different subscales were examined to gain a better understanding of this finding. Firstly, MC exams were perceived to have higher levels of objectivity. This implies that students perceive grading to be less biased compared to the other assessment methods. Additionally, MC exams were rated more positively in terms of valence. These findings are in line with prior research done by Holzinger et al. (2020), showing that students overall like MC exams and it being more objective. MC exams were also perceived as less difficult compared to OQ exams and PTs. This finding is also in line with the literature that MC exams are easier to complete (Holzinger et al., 2020; Traub & McRury, 1990; Zeidner, 1987).

Interestingly, in contrast to prior research, PTs are found to be less difficult compared to OQ exams. Previous research has found that PTs can be demanding in terms of time and effort (Joughin, 2007; Williams, 2014). However, this finding might be explained by the fact that performance tasks enable students to learn how to apply their knowledge, mainly emphasizing

their strengths (Oliver, 2015). While for MC exams and OQ exams, you have to study the material and recall information, which can be more cognitively demanding.

**Assessment preference and test anxiety**

Consistent with hypothesis 2(a), it has been found that students scoring higher on test anxiety showed a greater preference for MC exams over OQ exams and PTs. This is in line with the literature showing that students with high levels of test anxiety favor MC questions over OQ exams (Van de Watering et al., 2008) and modified essays (Fortun and Tempest, 2020). This finding can be explained by the cognitive challenges associated with test anxiety, such as difficulties in following instructions and organizing or recalling information (Stankovska et al., 2018). The structured format of MC questions, with options to choose from, could provide a sense of relief for these students by reducing the cognitive load and offering cues of information recognition. In contrast, OQs require students to generate their own responses, which can be more cognitively demanding. Additionally, students might experience uncertainty, which can lead to anxiety as there is a lack of communication about the criteria and procedures involved in an assessment. In contrast to the discussed literature, there was no effect found for hypotheses 2(b and c).

**Anxiety inducing factors**

Students provided insights into the factors that induce anxiety for MC exams, OQ exams, and PTs. Firstly, regarding OQ exams, most of the students gave the following reasoning: “difficulties with information retrieval,” “uncertainty,” “being specific/using terminology,” and “writing skills and formulation.” This is in line with the previously mentioned literature (Fortun and Tempest, 2020; Stankovska et al., 2018). Secondly, when it comes to PTs (written assignments), the following most common themes have been found: “writing skills and

formulation," "time related stress," "uncertainty about sufficiency," "personal blame and doubt," and "evaluation and subjectivity." Some of these findings are also consistent with the literature (Joughin, 2007; Holzinger et al., 2020). However, the themes "writing skills and formulation" and "personal blame and doubt" have not been mentioned in the literature before. These themes might be explained by self-efficacy, as they all relate to the level of confidence (Bandura, 1997).

Lastly, regarding MC exams, most of the students mentioned the following themes: "doubt between answers," "trick questions," "similarity of answers," "questioning own ability," "and lack of clarification." Compared to the other assessment methods, some of the students have mentioned that it was difficult to show their knowledge through this format. This aligns with the literature that says it is more challenging to evaluate higher cognitive levels of knowledge (Hift, 2014).

**Limitations and Future Research**

This study has several limitations. Firstly, the external validity of the study. Participants were drawn from one faculty. It's important to recognize that the findings may not be fully generalizable to other faculties. Additionally, the majority of the participants were recruited for the study through SONA, predominantly consisting of first-year students. Students that have studied longer (e.g., master students) might give a different response as they have more experience with the different assessment methods. Future research may consider using a different sampling method and a different population. Secondly, the statistical analysis used may not have been the most appropriate. Due to a lack of statistical knowledge, a two-sample t-test was performed to determine the students their preferences. However, a repeated measures ANOVA would have been a more suitable method for the analysis. Future research may consider using this statistical method for the analysis. Therefore, interpretation of the results should be

approached cautiously due to the limitations. Another factor to consider is the number of likert-scale options in the short form of the Test Anxiety Inventory. Despite the instrument's internal consistency, the limited response options might have resulted in small in-group differences. This could explain the non-significant results. Given this limitation, future studies might consider using a different type of questionnaire.

A strength of our study is that both quantitative and qualitative have been conducted. We not only examined students their assessment preferences but also explored these preferences in combination with test anxiety and what students find anxiety-inducing, which can lead to new insights.

**Theoretical and Practical Implications**

Our study has theoretical and practical implications. Regarding the theoretical implications, this study sheds light on students assessment preferences and factors that might influence their preferences. It also builds upon prior research on students' assessment preference (Fortun & Tempest, 2020; Holzinger et al., 2020; Joughin, 2007; Traub & McRury, 1990; Van de Watering et al., 2008; Zeidner, 1987). In regards to assessment preference, we examined the following subscales: valence, potential to show performance, objectivity, and difficulty. In the future, these subscales could be further developed. Our study also looked at the association between assessment preference and test anxiety, while also considering various perspectives of students. This contributes to valuable insights, given the limited existing literature on this topic (Sotardi & Dutton, 2022).

Regarding practical implications, the results may be useful for universities and higher education. To positively influence the learning process, teachers can take into account the preferences of students. It is important to remember that assessment methods can influence the

way students learn (Amin et al., 2011), and their opinions are crucial in this regard (Van de Watering et al., 2008). Furthermore, students with higher test anxiety scores have shown a greater preference for MC exams. An implication of this finding is that teachers can offer various types of assessment methods that may induce less anxiety in these students, thereby promoting inclusivity. Additionally, the identification of various themes related to anxiety-inducing factors in assessment methods can serve as valuable information for improving the assessment methods by acknowledging the different responses of students.

## References

Amin, T. T., Kaliyadan, F., & Al-Muhaidib, N. S. (2011). Medical students’ assessment preferences at King Faisal University, Saudi Arabia. *Advances in Medical Education And Practice*, 95. https://doi.org/10.2147/amep.s12950

Bandura, A. (1997). *Self-efficacy: The exercise of control*. Macmillan.

Braun, H. (2019). Performance assessment and standardization in higher education: A problematic conjunction? *British Journal Of Educational Psychology*, *89*(3), 429–440. https://doi.org/10.1111/bjep.12274

Epstein, R. M. (2007). Assessment in medical education. *New England Journal Of Medicine/ The New England Journal Of Medicine*, *356*(4), 387–396. https://doi.org/10.1056/nejmra054784

Fortun, J., & Tempest, H. (2020). A case for written examinations in undergraduate medical education: experiences with modified essay examinations. *Assessment and Evaluation in Higher Education/Assessment & Evaluation in Higher Education*, *45*(7), 926–939. https://doi.org/10.1080/02602938.2020.1714543

Gharib, A., & Phillips, W. (2013). Test Anxiety, Student Preferences and Performance on Different Exam Types in Introductory Psychology. *International Journal Of E-education, E-business, E-management And E-learning*. https://doi.org/10.7763/ijeeee.2013.v3.183

Greving, S., & Richter, T. (2022). Practicing retrieval in university teaching: short-answer questions are beneficial, whereas multiple-choice questions are not. *Journal of Cognitive Psychology*, *34*(5), 657–674. https://doi.org/10.1080/20445911.2022.2085281

Hift, R. J. (2014). Should essays and other “open-ended”-type questions retain a place in written summative assessment in clinical medicine? *BMC Medical Education*, *14*(1). https://doi.org/10.1186/s12909-014-0249-2

Holzinger, A., Lettner, S., Steiner-Hofbauer, V., & Melser, M. C. (2020). How to assess? Perceptions and preferences of undergraduate medical students concerning traditional assessment methods. *BMC Medical Education*, *20*(1). https://doi.org/10.1186/s12909-020-02239-6

Joughin, G. (2007). Student conceptions of oral presentations. *Studies in Higher Education*, *32*(3), 323–336. https://doi.org/10.1080/03075070701346873

Kasanda, C. D., Mitonga, K. H., Veii, K., & Zimba, R. F. (2013). Medical and pharmacy students’ perceptions of the grading and assessment practices. *Frontiers in Psychology*, *4*. https://doi.org/10.3389/fpsyg.2013.00423

Lovett, B. J., Nelson, J. M., & O’Meara, P. (2024). Test Anxiety Symptoms in College Students: Base rates and statistical deviance. *Psychological Injury and Law*. https://doi.org/10.1007/s12207-023-09494-0

Mavridis, A., & Tsiatsos, T. (2016). Game-based assessment: investigating the impact on test anxiety and exam performance. *Journal of Computer Assisted Learning*, *33*(2), 137–150. https://doi.org/10.1111/jcal.12170

Oliver, E. (2015). Alternative assessment to enhance theological education. HTS Teologiese Studies/Theological Studies, 71(3):1-10.

Putwain, D. W. (2008). Deconstructing test anxiety. *Emotional and Behavioural Difficulties/Emotional & Behavioural Difficulties*, *13*(2), 141–155. https://doi.org/10.1080/13632750802027713

Roick, J., & Ringeisen, T. (2017). Self-efficacy, test anxiety, and academic success: A longitudinal validation. *International Journal of Educational Research*, *83*, 84–93. https://doi.org/10.1016/j.ijer.2016.12.006

Salend, S. J. (2011). Addressing test anxiety. *Teaching Exceptional Children*, *44*(2), 58–68. https://doi.org/10.1177/004005991104400206

Sayin, B. A. (2015). Exploring anxiety in speaking exams and how it affects students' performance. *International Journal of Education and Social Science*, *2*(12), 112-118.

Sotardi, V. A., Bosch, J., & Brogt, E. (2020). Multidimensional influences of anxiety and assessment type on task performance. *Social Psychology of Education*, *23*(2), 499–522. https://doi.org/10.1007/s11218-019-09508-3

Sotardi, V.A, & Dutton, H. (2022). First-year university students' authentic experiences with evaluation anxiety and their attitudes toward assessment. *Assessment And Evaluation in Higher Education/Assessment & Evaluation in Higher Education*, *47*(8), 1317–1329. https://doi.org/10.1080/02602938.2022.2059445

Stankovska, G., Dimitrovski, D., Angelkoska, S., Ibraimi, Z., & Uka, V. (2018). Emotional Intelligence, Test Anxiety and Academic Stress among University Students. *DOAJ (DOAJ: Directory of Open Access Journals)*. https://doaj.org/article/499138eb21364a1ab2ed4e24a45d432f

Taber, K. S. (2017). The use of Cronbach's Alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Traub, R. E., & MacRury, K. (1990). Multiple choice vs. free response in the testing of scholastic achievement. In K. Ingenkamp & R. S. Jager (Eds.), Tests und Trends 8: Jahrbuch der Pädagogischen Diagnostik (pp. 128–159). Weinheim und Basel: Beltz.

Van de Watering, G., Gijbels, D., Dochy, F., & Van Der Rijt, J. (2008). Students' assessment preferences, perceptions of assessment and their relationships to study results. *Higher Education*, *56*(6), 645–658. https://doi.org/10.1007/s10734-008-9116-6

Wadi, M., Yusoff, M. S. B., Rahim, A. F. A., & Lah, N. a. Z. N. (2022). Factors affecting test anxiety: a qualitative analysis of medical students' views. *BMC Psychology*, *10*(1). https://doi.org/10.1186/s40359-021-00715-2

Williams, P. (2014). Squaring the circle: a new alternative to alternative-assessment. *Teaching in Higher Education*, *19*(5), 565–577. https://doi.org/10.1080/13562517.2014.882894

Zeidner, M. (1987). Essay versus Multiple-Choice Type Classroom Exams: The Student's Perspective. *The Journal of Educational Research*, *80*(6), 352–358. https://doi-org.proxy-ub.rug.nl/10.1080/00220671.1987.10885782

# Appendix A

## Examination Preference Inventory

This appendix comprises the four scales of the Examination Preference Inventory and their corresponding items. Participants rate each statement on a five-point Likert scale, ranging from "Strongly disagree" to "Strongly agree".

***Difficulty***

1) Open-question exams/ MC exams/ performance tasks are complex.

2) Open-question exams/ MC exams/ performance tasks are easy.

3) Open-question exams/ MC exams/ performance tasks are challenging.

***Potential to show performance***

4) Open-question exams/ MC exams/ performance tasks give me the opportunity to show that I have understood the subject matter very well.

5) Open-question exams/ MC exams/ performance tasks give me the opportunity to show that I know more than other students.

6) Open-question exams/ MC exams/ performance tasks allow me to express my knowledge precisely.

7) Open-question exams/ MC exams/ performance tasks are an appropriate examination format for important exams.

***Objectivity***

8) Open-question exams/ MC exams/ performance tasks are evaluated objectively.

9) Open-question exams/ MC exams/ performance tasks are graded without bias.

***Valence***

10) Open-question exams/ MC exams/ performance tasks should be the main method of examination.

11) Open-question exams/ MC exams/ performance tasks are interesting.

12) Open-question exams/ MC exams/ performance tasks are liked by me.

## Appendix B

## Short form of the test anxiety inventory

This appendix comprises the items of the short form of the test anxiety inventory (Taylor & Deane, 2002). Participants rate each statement on a 4-point Likert scale, ranging from “Almost never” to “Almost always”.

1) During examinations I get so nervous that I forget facts I really know
2) I feel very panicky when I take an important test.
3) I seem to defeat myself while working on important tests
4) I wish examinations did not bother me so much
5) During tests I feel very tense