

**Business Students' Preferences and Attitudes Toward Multiple-Choice Questions as
Exam Form. Does the Big Five Matter?**

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Abstract

Traditionally, the exam form in Norway has been a 4-hour exam with constructed response (CR) questions. There is currently a debate about replacing CR with multiple-choice (MC) questions. The purpose of this study is to explore students' attitudes toward MC exams by surveying 130 undergraduates. Results indicate that most students prefer CR-format exams. The introduction of MC exams will change the students' learning strategy, where one highlights memory and detail more than understanding. The analysis shows that students are divided in their views of the exam depending on personal traits (Five-Factor Model). More conscientious undergraduates prefer CR-type exams. These individuals are characterized by commitment to academic skills and performing well. This is probably due to the fact that the two exam forms measure different dimensions of knowledge. When selecting the evaluation form, one should consider how to adapt the exam form to different types of students and to think about the purpose of the test.

Keywords: Big five, multiple-choice questions, business courses, quantitative analysis

Business Students' Preferences and Attitudes Toward Multiple-Choice Questions as Exam Form. Does the Big Five Matter?

Multiple-choice question design is quite common for large-scale testing. There is no bias in the grading practice among the students attending the same course, the scoring can be done by a computer, and the large number of questions cover different issues. Due to budgetary considerations and the decision to have a common course and exam at different campuses that involve from 500 to 1000 students, there is pressure to substitute ordinary written essays or constructed response (CR) methods with multiple-choice (MC) tests for undergraduate business students in Norway.

MC-based testing has some limitations. As Livingston (2009) emphasised, MC questions give students the opportunity to choose between a correct or incorrect response, but the participants are not asked to construct a model, to provide the right answer without choosing between alternatives, to explain logical steps and structure, or to express the choice well by the written language.

The purpose of this study is not to consider whether MC-formed exams can replace CR-formed exams, but to identify students' attitudes toward multiple-choice-oriented assignments. Which factors have influence on the desire to have more MC questions in the final exam? What factors can explain the variations of students' assessment preferences? We want also to find out whether personality factors (the Big Five Model) have an impact on students' preferences. Finally, we will investigate to what degree the preferred choice of exam form might have an effect on students' effort.

Theory and Literature Review

Zeidner (1987) reported that the majority (77%) of high school students prefer MC questions over essay exams. The main reasons are that they do not need to clarify the answers, they can select among different options, and one has the option to guess. The minority favours essay exams because it provides the opportunity to write and explain the

answer. Furthermore, it is easier to prepare for the exam, and one can expect to get a higher score by applying MC questions (Struyven et al., 2005). A challenge using MC-based questions is to measure the students' knowledge, especially in the context of a deeper-learning approach. It is hard to compose MC items that reach a high level of knowledge. The essay-based exam better reflects students' knowledge of exam materials compared to the MC-based exam. Consequently, the MC exam does not provide the same level of explanation as the CR exam, and the result depends on personal characteristics (Krieg & Uyar, 2001). Other studies have confirmed that students prefer MC-based exams over CR-based exams (Beller & Gafni, 2000; Ben-Chaim & Zoller, 1997). However, other studies have reported that students largely prefer traditional written assessments (Van de Watering et al., 2008). Many students wish to have essay-format exams because they are used to them.

Preferences and Attitudes Toward MC

The prior literature shows that students' preference of exam form depends on the learning setting (Birenbaum, 2007). Students tend to choose an environment that promotes their understanding (Entwistle & Tait, 1990).

Anxiety and depression can result in poorer student performance on a test. There is a negative correlation between test anxiety and academic performance (Burke et al., 2020). Zeidner (1987) reported a significantly higher anxiety rate for essay-type exams compared to MC exams. This is because students must organize, structure, and express their answers in essay form. Many students face anxiety if they think they cannot perform well. They might feel they are not well prepared, do not understand the questions, answer incorrectly, or cannot handle the time limit (AlKandari, 2020). Therefore, some students might struggle to answer open questions on an exam. Other students may struggle with MC questions. Participants with high anxiety might choose not to answer many questions. This effect increases if the

students are risk averse and if negative points are assigned for incorrectly answered MC questions (Pamphlett & Farnill, 1995).

There is no simple answer regarding students' definition of fairness in testing (Struyven et al., 2005). MC questions can be fairer because there is no bias in measuring the students' score, and the questions can cover different kinds of issues in a specific course. MC-type exams achieve homogeneity in grading practice. The students are equally treated on the basis of their scores. It is also easy to check the answers and compare with others. CR questions include only a part of the exam materials. The difficulty can vary, and the students' performance depends on how well prepared they are to answer the specific question. MC questions have some limitations because it is difficult to measure certain kinds of skills and knowledge (Denny et al., 2019). CR-based exams develop a wider range of skills and motivate the students to write and express their ideas and answers. Another drawback is that it is easier to cheat using the MC-type exam, especially in large halls where one can notice the marks of the fellow students. Zeidner (1987) reported that about 75% of students believed they could obtain a higher score on a MC-based test relative to a CR-based test. Students find MC questions easier to answer, the risk of failure is smaller, it requires less preparation, and one can achieve a high score even with poor spelling and writing abilities. Some students might perform better while others perform more poorly, depending on the chosen testing design, but the distribution of the grade letters depends on the grading practice for the actual course (Opstad, 2020). Hence, if one uses a relative grading system based on the result from the exam, the success of the average student might be unchanged.

The choice of exam form influences students' study behaviour (Zeidner, 1987). Students with good academic abilities tend to favour CR-based exam instead of MC questions. The situation is opposite for students with poor academic performance and with low self-confidence. They prefer MC questions as the exam form (Birenbaum & Feldman,

1998). Other researchers have supported this conclusion (Struyven et al., 2005; Traub & MacRury, 1990).

Assessment plays an important role in the learning process. According to Birenbaum and Feldman (1998), students are motivated to choose the exam type where they perform best. Furnham and Chamorro-Premuzic (2005) found that students play on their strength and self-interest. This is reflected in the students' desired exam format. Schouller and Prosser (1994) reported that MC questions lead to a surface-learning style. Van de Watering et al. (2008) did not confirm this result. Students with deep-learning approaches tend to keep to this strategy on the preparation for the exam, independent of the exam format.

Personality Traits (the Big Five)

Prior studies (Furnham et al., 2008; Lakhali et al., 2013) have verified that students' personalities have an impact on their preferred exam format. In this study we use the Five Factor Model for personal traits to investigate this issue. This model is widely used and is very popular (O'Connor, 2002). Following the definition of John and Srivastava (1999), individual differences can be captured in five traits: *extraversion*, *agreeableness*, *consciousness*, *neuroticism*, and *openness to experience* (see Table 1).

Table 1
The Big Five Personality Traits

Trait	Definition
Openness to experience	The tendency to be open to new aesthetic, cultural, or intellectual experiences
Conscientiousness	The tendency to be organized, responsible, and hardworking
Extraversion	An orientation of one's interests and energies toward the outer world of people and things rather than the inner world of subjective experience
Agreeableness	The tendency to act in a cooperative, unselfish manner
Neuroticism (inverse of emotional stability)	A chronic level of emotional instability and proneness to psychological distress

Adapted from Almlund et al. (2011) and Adrebilli and Rickertson (2020).

The Big Five is a robust measure that can be used across cultures and is relatively stable among adults. It incorporates distinct factors in the personality characteristics. This method is widely used in the current literature.

O'Connor and Paunonen (2007) reported a small correlation between openness and academic performance. Therefore, this personality dimension does improve academic success. Openness to experience is associated with intelligence (Furnham & Chamorro-Premuzic, 2005). Such people are more open to experience, and they are original and creative. This might be an argument for such students to prefer CR questions in the final exam. Lakhal et al. (2013) partially supported this result, but one has to take into account that business students are less open to experience than other peer students (Lounsbury et al., 2009).

Conscientiousness is associated with responsibility, being hardworking, and being well organized. This will predict lower interest for group work. Furnham and Chamorro-Premuzic (2005) suggested that such students might not appreciate only MC questions in the final exam. Many studies have found a positive relationship between conscientiousness and academic performance (O'Connor & Paunonen, 2007). Extraverted students are impulsive and have a tendency to dislike working alone; they prefer project work. According to Furnham et al. (2008), these students might prefer MC questions, but the authors failed to verify such a link. The literature suggests that agreeableness is not an important predictor for academic success (O'Connor & Paunonen, 2007). Students who are agreeable prefer group work and project work instead of MC- or CR-based testing (Lakhal et al., 2013). Neurotic or emotionally unstable students are more likely to improve their performance under stress-free circumstances (Dollinger et al., 2008). If these students associate CR-based exams with more stress than MC-based exams, this can be an argument for them to prefer MC questions over CR questions (Furnham & Chamorro-Premuzic, 2005).

Methodology

Sample

The sample consists of 118 undergraduates at NTNU Business School (48% men and 52% women). Students attending the last lecture of fall 2019 in the second-year compulsory macroeconomic course completed the questionnaire. The sample was not randomly chosen. Those who were absent on this day were not included (about 40% of the students). The representativeness of the sample was not evaluated by comparing the characteristics of all students at second year, but prior research suggests that a slightly higher proportion of students are women and that they have a slightly higher GPA than other students (Bonesrønning & Opstad, 2015).

Instruments and Test Methods

By using the 20-item version of the Big-Five Inventory (BFI-20) developed by Engvik and Clausen (2011), we were able to identify the personality traits of the students. Measurement is done using a 5-point Likert scale where 1 reflects strong disagreement and 5 reflects strong agreement. Instead of neuroticism, the inverse value (emotional stability) is measured, following Barrett et al. (2017).

The first part of the questionnaire examined a bilateral correlation of whether there is a connection between attitudes and preferred exam form. It additionally looked at whether attitudes and preferred exam form depend on the undergraduates' personality. Because the undergraduates in this study could choose between only two kinds of written final exam, the connection between personal traits and exam form is not obvious. The second part investigated factors that might influence students' efforts if the final exam consists of MC questions by using a linear regression model. The advantage of this method is that one can simultaneously explore how different factors influence students' effort. The assumption is that more positive attitudes toward a MC-based exam will increase the student's effort.

The chosen independent variables are gender, attitudes (knowledge, anxiety, fairness), and personality traits. The selected linear regression model is:

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 X_6 + \alpha_7 X_7 + \alpha_8 X_8 + \alpha_9 X_9 + \varepsilon$$

where:

Y: effort (students report more effort if pure MC-based exam; 7-point Likert scale, 1: strongly disagree, 7: strongly agree)

α_0 : constant

X_1 : gender (0:F, 1:M)

X_2 : anxiety (students' opinions of less anxiety with only MC-based exam; 7-point Likert scale, 1: strongly disagree, 7: strongly agree)

X_3 : knowledge (MC-based exam will measure the students' knowledge in subject; 7-point Likert scale, 1: strongly disagree, 7: strongly agree)

X_4 : fairness (MC-based exam is more fair; 7-point Likert scale, 1: strongly disagree, 7: strongly agree)

X_5 : extraversion (5-point Likert scale, 1: strongly disagree, 5: strongly agree)

X_6 : agreeableness (5-point Likert scale, 1: strongly disagree, 5: strongly agree)

X_7 : conscientiousness (5-point Likert scale, 1: strongly disagree, 5: strongly agree)

X_8 : emotional stability (5-point Likert scale, 1: strongly disagree, 5: strongly agree)

X_9 : openness to experience (5-point Likert scale, 1: strongly disagree, 5: strongly agree)

ε : stochastic error

Due to multicollinearity, one had to limit the number of independent variables.

Findings

Table 2
Data

A. Students' attitudes if only MC-based exam compared to CR-based exam (N = 118, 7-point Likert scale)	Mean	St. dev.

Effort		
Increased effort	3.4	1.64
Study Habit		
Change learning style	5.16	1.46
Change preparation to exam	5.48	1.36
More focus on details	4.97	1.65
Anxiety		
Less anxiety	4.02	1.75
Knowledge		
MC will catch my knowledge	3.74	1.43
Keep memory and remember more	3.53	1.66
Learning		
MC makes me learn more	3.47	1.56
Success		
MC exam will change my expected letter grade	3.44	1.62
Fair		
MC is more fair than CR	3.18	1.70
Motivation		
MC will motivate me more	3,66	1.36
B. Big Five personality traits (5-point Likert scale)		
	Mean	St.dev.
Extraversion	3.60	0.77
Agreeableness	3.88	0.58
Conscientiousness	3.65	0.72
Emotional stability (inverse of neuroticism)	3.29	0.79
Openness	3.36	0.72
C. Preferred percent of MC questions at final exam (can choose between 0, 25, 50, and 100 percent)		
	Mean	St.dev
Math	12,0	21,6
Business economics	32,7	20,3
Macroeconomics	34,7	21,6
Managerial accounting	26,0	22,0
Management	35,9	29,2
Statistics	15,6	23,5
Marketing	35,2	28,3

Table 2 shows some variations in students' reports. Note that there is a significant difference in students' desire for MC-based or CR-based exam depending on the course. Few students want MC questions in mathematics and statistics. The mean value is around 15%. The mean rate is substantially higher for accounting (around 25%). For the other courses the mean is between 30% and 40%.

Table 3
Pairwise Correlation Among Variables (Pearson Correlation Coefficient)

	Desired % of MC on final exam				Personality traits				
	Math and stat ¹⁾	Eco-nomics ²⁾	Accou-nting	Non-quantitative courses ³⁾	Extra-ver-sion	Agree-able-ness	Con-scienti-ousness	Emotional stability	Open-ness
Desired % of MC on final exam									
Math & stat		0.60 ***	0.50 ***	0.70 ***	-0.13	-0.13	-0.08	-0.08	-0.01
Economics	0.60 ***		0.52 ***	0.61 ***	-0.02	-0.21 **	-0.17 **	-0.06	0.08
Accounting	0.50 ***	0.52 ***		0.52 ***	0.07	-0.09	-0.18 *	-0.09	-0.02
Non-quantitative courses	0.70 ***	0.61 ***	0.52 ***		-0.06	-0.15 *	-0.10	-0.04	-0.04
Effort									
Increased effort	0.33 ***	0.51 ***	0.46 ***	0.38 ***	0.12	-0.06	-0.28 **	0.06	0.11
Study Habit									
Change learning style	0.16 *	0.24 ***	0.23 **	0.13	0.00	0.06	-0.01	0.23 **	0.03
Change preparation for exam	-0.03	0.15 *	0.00	0.01	-0.08	0.03	-0.02	-0.04	-0.05
More focus on details	-0.25 **	-0.21 **	-0.16 **	-0.22 **	0.07	0.18 *	0.01	-0.06	-0.07
Anxiety									
Less anxiety	0.28 **	0.53 ***	0.37 ***	0.28 **	0.06	-0.09	0.03	0.18 **	0.09
Knowledge									
MC will catch my knowledge	0.30 **	0.52 ***	0.34 ***	0.34 ***	-0.06	-0.11	-0.14	0.10	0.03
Keep memory and remember more with MC	0.33 ***	0.58 ***	0.39 ***	0.41 ***	0.07	-0.13	-0.26 **	0.02	0.10
Learning									
MC makes me learn more	0.38 ***	0.57 ***	0.50 ***	0.47 ***	-0.02	-0.14	-0.26 **	-0.01	-0.05
Success									
MC exam will not change my expected letter grade	0.00	-0.03	0.09	0.03	-0.01	-0.05	0.11	-0.08	-0.10

Fairness									
MC is more fair	0.33 ***	0.52 ***	0.48 ***	0.43 ***	-0.1	-0.13	-0.13	-0.04	-0.11
Motivation									
MC will motivate me more	0.37 ***	0.66 ***	0.53 ***	0.42 ***	-0.15 *	-0.06	-0.18 **	0.09	0.10
Notes: 1) Mean value of mathematics and statistics, 2) Mean value of macroeconomics and business economics, 3) mean value of introduction course in management and marketing *, **, and *** denote significance at the 10%, 5%, and 1 % level, respectively									

Table 3 presents the bilateral correlation of coefficients between actual variables. The courses are divided into four homogenous groups (1. mathematics and statistics; 2. economics, including macroeconomics and business economics; 3. accounting; and 4. non-quantitative courses, containing marketing and management). Note that there is a strong correlation between students' desired exam form among the courses. Undergraduates who prefer more MC questions in one course tend to do the same in other courses. Additionally, for most of the attitude variables there is a significant link between the score and the preferred exam form. The findings also show variation in the correlation between attitudes and preferred exam form among the courses. The impacts are stronger for economics courses (for instance, for anxiety the correlation coefficient is higher than 0.5, while it is between 0.28 and 0.37 for the other courses). Furthermore, students' expected success does not depend on the exam design.

The personality traits have impact on the attitudes toward test methods. For instance, there is a negative significant correlation between the personality type conscientiousness and preferred MC-type exam within economics and accounting. Emotional stability is positive and significantly linked to less anxiety with MC-type exams. Additionally, these students will change learning style if one introduces more MC questions in the final exam. In addition, there is a significant negative link between agreeableness and MC-formed exam for some of the courses. Finally, conscientiousness has substantial negative correlation with undergraduates' effort, learning, and motivation if one introduces more MC questions.

From the regression model (Table 4), one can conclude that there are significant relationships between the independent variables (like students' perceptions of less anxiety, knowledge, fairness, and motivation regarding more MC tests) and the dependent variable. Additionally, students with high scores on extraversion and low scores on conscientiousness will increase their effort if the colleges introduce MC testing in the final exam. Agreeableness, emotional stability, and openness have no effect on students' effort.

Table 4
Dependent variable: MC questions increase my effort

	B	Standardized coefficients Beta	T-value	Sig.	Statistics VIF¹⁾
Constant	-0.17				
Gender	-0.325 (0.240)	-0.100	-1.36	0.708	1.41
Less anxiety	0.160 (0.072)	0.170	2.21	0.029**	1.53
Knowledge (catch up/measure)	0.504 (0.083)	0.518	6.11	0.000***	1.88
Fairness	0.155 (0.080)	0.171	1.93	0.056*	1.82
Extraversion	0.321 (0.150)	0.151	2.14	0.035**	1.29
Agreeableness	0.254 (0.190)	0.090	1.34	0.183	1.19
Conscientiousness	-0.402 (0.171)	-0.171	-2.35	0.021**	1.38
Emotional stability (inverse of neuroticism)	0.031 (0.160)	0.014	0.192	0.848	1.48
Openness	0.081 (0.166)	0.036	0.49	0.627	1.41
N= 115, adjusted R square = 0.51					
Notes: 1) All VIP (Variable Importance of Projection) values are between 1 and 2 *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively					

Discussion

If the analysis is based on a rational student who wants to maximise his or her own utility, many of the findings in this research will make sense. The prior literature has shown there is a positive link between effort and performance for business courses (Bonesrønning & Opstad, 2012). From this point of view, one will expect MC-favouring undergraduates to

increase their effort by introducing more MC-type exams. This conclusion has validity for all courses. The same tendency is observed for knowledge, learning, and motivation. Students who like MC-type exams report that more MC questions will increase their motivation, value of learning, and knowledge. The connection between fairness and exam form is also statistically strong and significant. Students desire fairness. And if they find MC questions to be fairer than traditional essay questions, they wish more of that kind of exam, independent of the chosen business course.

Test anxiety varies among the students. Naveh-Benhamin et al. (1987) reported two types of test-anxious students: those with poor learning skills and those with good ones. A high level of nervousness can stifle students' ability to act and perform well. Hence, there is an inverse relationship between test anxiety and success. According to Cassidy et al. (1992), more MC tests might reduce the fear among business students. This might be the case for some students, and it depends on which course. Many business students have math anxiety and therefore dislike quantitative business courses (Bhowmick et al., 2017; Opstad, 2019). A CR-type test might therefore create more anxiety than MC questions for those subjects. On the other hand, some students fear answering incorrectly with MC questions. This can inhibit them from responding, and therefore they dislike this exam form. Those students who consider that MC questions will lower their anxiety prefer more MC tests. It is probable that students' anxiety about mathematical analysis explains why this relationship is much stronger for quantitative courses (correlation coefficient 0.53) than for non-quantitative courses (correlation coefficient 0.37). However, the score is low for mathematics and statistics. The reason might be that most of the students (around 85%) do not like MC tests in those courses. Therefore, few participants are included. Singh et al. (2013) suggested it is a significant difference in students' anxiety depending on whether it is MC or CR, but they did not find any significant diversity. Our results confirm that students are divided in their view of

whether MC-type exam causes less anxiety. Half of the undergraduates agree, while the other half disagree (Figure 1). Other authors have reported that MC questions will reduce the students' stress (Traub & MacRury, 1990; Zeidner, 1987).

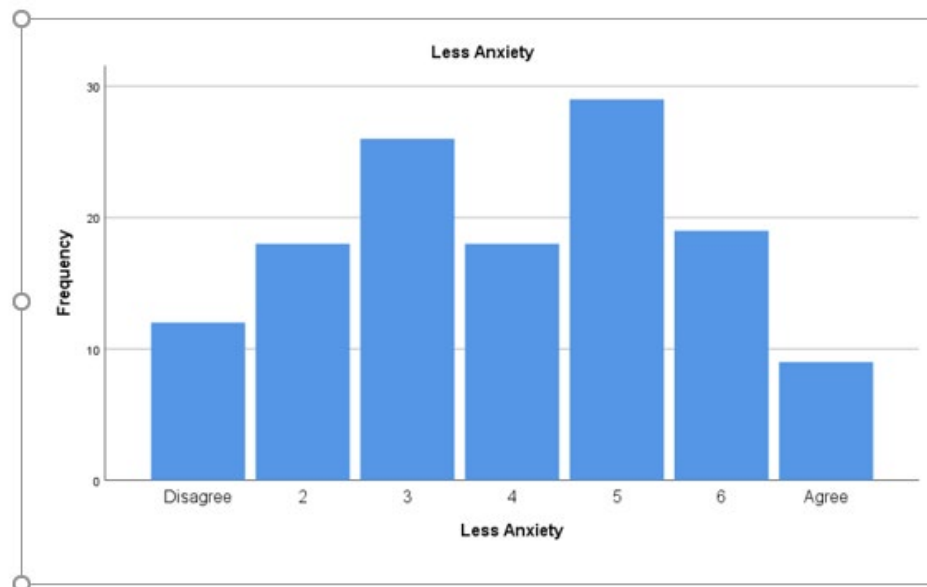


Figure 1. Student reports on whether more MC-based exam will reduce anxiety

With the same composition of students and using the ECTS (European Credit Transfer and Accumulation System) grading scale system, the distribution and mean value of the letter grade will not be affected by the chosen exam form (Opstad, 2020). Some students might perform better, others worse, but overall the distribution and mean will be unchanged. The students are obviously aware of this. Hence, there is no significant link between more MC questions and expected performance.

Most of the undergraduates agree that they will change their type of learning and the preparation for the exam if one substitutes CR questions with MC questions. (The mean score is high, between 5 and 6.) This impact is significantly correlated with the preferred percent of MC questions in the final exam for the quantitative courses. There is no such effect for non-quantitative courses. Previous research has indicated that MC-based and CR-based exams measure different aspects (Simkin & Keuchler 2004; Simkin et al., 2011; Singh et al., 2013). If the students have the opinion that MC questions measure knowledge like recall and

superficial reading, while CR questions evaluate real learning and skills, they will adjust their study habits according to this. Consequently, they will focus more on details. Hence, it makes sense that there is a significant relationship between desire for more MC questions and more focus on details for all courses. It is not easy to capture students' written and analytical skills using MC-type exams. By applying MC questions, it is also difficult to capture critical thinking. In the literature this discussion is related to Bloom's taxonomy of educational objectives (1956).

The paired correlation between the different variables also shows that personal characteristics have an impact on students' preference. From Figure 1, we note that students are divided in their view that pure MC exams will lead to increased anxiety. Because emotional stability is substantially and positively correlated with students' view of less stress with regard to MC questions, the opposite is true for neurotic persons. Such individuals fear MC-format exams more than CR-format exams. Maybe they are afraid of answering incorrectly in the choice between a given number of alternatives. These students also report that the MC format will change their learning style.

According to Birenbaum and Feldman (1998), students who favour the CR format tend to have academic self-confidence, high academic abilities, and good learning skills. Furthermore, many authors have identified the relationship between conscientiousness and academic aptitude (Furnham et al., 2008; O'Connor & Paunonen, 2007). A high score in conscientiousness is an important factor to verify academic success, and there is a significant relationship between this personality type and academic results. In this study we do not have data on students' performance, but conscientiousness can be used as an indicator of academic success. If so, we can argue that skilled students prefer CR-format exams because the results of this survey show a negative correlation between favouring MC and conscientiousness. This impact is significant for economics and accounting courses.

Agreeable individuals will largely help each other, and they show solidarity and great social skills. They are supporters of group work instead of individual written exams (Lakhal et al., 2013). This is not an option in this case, and therefore, it is not easy to assume what these individuals would prefer. Lakhal et al. (2013) suggested that higher agreeableness predicts lower preference for written exams, but not for MC tests. However, Furnham and Chamorro-Premuzic (2005) reported a significant positive relationship between written exam and agreeableness. The correlation between preferred MC-type exam and agreeableness was negative, but not significant. The findings in the current research are in line with this result. More investigation is needed to find out if there may be a link here.

Students who are more open to experiment can be associated with intelligence and creativity (Furnham & Chamorro-Premuzic, 2005). One could expect that such students would favour the CR-format exam, but this data does not suggest that there is such a connection. One explanation could be that business students are to a lesser extent open to experiment than other students (Lounsbury et al., 2009).

Which Factors Have Influence on Students' Reported Effort with Applying MC-Type Exams?

Partial analysis does not capture how different factors influence a variable simultaneously. The findings shown in Table 4 indicate that many variables affect students' efforts when changing to a MC test. There is a strong statistical link between effort by introducing MC and the students' attitudes toward this evaluation method. This approved selection of exam form can have great influence on students' effort, and thus the exam results. Undergraduates who consider that MC-type exams will better capture their knowledge, will be fairer, and will reduce their exam nervousness confirm that they will increase their effort if the college introduces more MC tests. The impact varies. Knowledge has the strongest effect, with a standardized Beta value of 0.5, and it is significant at the 1%

level. Students who believe a MC test measures their knowledge better than a CR test will study harder and will probably be rewarded with a higher grade. One should not disregard the fact that many of these students may struggle with traditional essay exams. In this model there is no significant gender effect.

Note the connection between personality traits and effort. Students with high scores on conscientiousness report a significant negative impact on effort by applying MC questions. This supports the analysis that was done in the paired comparison in this paper. These students' effort and attitudes are related to the evaluation form. They are good at reflection, analysis, and writing. An exam form in which these abilities are not appreciated may lead to less interest in the subject. Another explanation is that skilled students find it easier to perform well at MC questions. The requirements are lower at the final exams. Many students assume the same grade can be achieved with less input than with a CR-type exam. Therefore, the effort is reduced by introducing a MC-type exam.

Extraverted students are impulsive and impatient. According to Furnham and Chamorro-Premuzic (2005), they may prefer MC tests if this means shorter duration. No such assumption can be made from this study. There is no obvious explanation why extraverted undergraduates will increase their effort by the introduction of MC questions. One possible explanation may be that they do not have patience to prepare and study well for a CR exam, and therefore they report more effort with a MC exam.

Education policymakers must consider what kind of assessment and exam strategy is suitable for students with different psychological characteristics. The chosen evaluation form has influence on students' learning style and attitudes. It is important to work out the consequences of various changes before new arrangements are implemented.

Limitations

This study is based solely on the results of a survey. The selection can reflect bias. This work relies on honest answers from the participants. Many of the students have little experience with MC questions. In most subjects at business schools in Norway there are still only CR questions in the final exam. The consequence may be that many students do not have enough knowledge of how a MC exam will work. Much of the analysis is based on paired observations. This means that one cannot capture how other variables affect the result.

Conclusions

This analysis confirms that students' preference for evaluation methods affects their study behaviours. Some students favour MC-based exams. For these students, that type of exam will contribute more to enthusiasm and motivation. The implication is increased energy and probably better grades. The students are divided in their preference for evaluation format. This view depends on participants' characteristics. Using the Big Five Model as a reflection of personal traits shows that students with high conscientiousness prefer traditional CR exams. Conscientiousness is related to motivated students who perform well. They work hard and are achievement oriented. Therefore, students with good learning skills and high academic ability tend to prefer CR questions. The reason is probably that MC questions and CR questions measure different kinds of knowledge—where the first type involves deeper approaches of learning and analysis. These are important factors to consider when designing and choosing the type of course evaluation.

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