The effect of studying abroad on academic achievement through skills

Julie Schaapsmeerders SNR: 2061831

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Liberal Arts and Sciences: Economics

Faculty of Humanities and Digital Sciences
Tilburg University, Tilburg

Supervisors:
Gerwin van der Laan
Arlinde Vrooman
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Table of contents

Chapter 1: Introduction 2

Chapter 2: Literature review 4

Literature review 4

Definition of studying abroad 4

Definition of academic achievement 4

Effect of studying abroad on academic achievement 5

Effect of studying abroad on skills 6

Skills that influence academic achievement 8

Hypotheses 9

Chapter 3: Data 10

Population 10

Data collection method and sample 10

Variables 11

Scales 12

Method of analyzing 12

Chapter 4: Results 13

Descriptive statistics 13

Analysis 13

Chapter 5: Discussion & conclusion 23

Summary 23

Reflection 24

Alternative explanations 24

Limitations 25

Recommendations 25

Appendix 26

Appendix A: Full questionnaire 26

Appendix B: Results graphs 28

Appendix C: References 29

Chapter 1: Introduction

Studying abroad has become a well-known part of the higher education space, especially in Europe. It is becoming increasingly popular, for example, due to the Erasmus+ program of the European Union (What Is Erasmus+?, n.d.). Erasmus+ is a program that offers mobility and cooperation opportunities to support education, training, youth, and sport in Europe (*What Is Erasmus+?*, n.d.). Erasmus+ started in 1987 when it had 3000 participants – now it has grown to 1.2 million participants in 2022 (Factsheets and Statistics on Erasmus+, n.d.). In 2022, 37,603 people were Dutch participants going abroad, of which 31,139 were students (*Erasmus+ Netherlands in 2022*, n.d.).

Assessing the program's benefits and costs from both individual and societal perspectives is important when considering participating. From an individual perspective, students need to determine whether it is worth it for them to participate. Will the program offer them assets that they cannot develop while staying in their home university? From a societal perspective, policymakers must determine whether it is worth it for them to invest in these programs. Will the investment they make get back as a societal benefit? For example, will the finances spent by the European Commission to support participants get back to them as international gain due to students' mobility period (*Who Implements the Erasmus+ Programme?*, n.d.)? The business world and higher education in the Netherlands thrive on international students, but Dutch students are being overshadowed (Misérus, 2024). Should we indeed put a brake on international students, like universities are leaning towards? (NOS, 2023)

Existing literature states that studying abroad overall has a positive effect on academic achievement (Cardwell, 2019). However, it is often unclear why the mobility period positively influences academic achievement (Xu et al., 2013). Other literature states that studying abroad has a positive effect on the language proficiency of participants (Higuchi et al., 2023), global view, and intercultural competence (Watson et al., 2013). For this reason, it is of importance to research the causes why study abroad period leads to a better outcome.

What can be concluded from existing literature is that participants of a mobility period learn social skills, improve their language proficiency, and develop an intercultural view of the world. However, this is not enough to answer the questions individuals and policymakers ask themselves. These skills do not all contribute to academic achievement or are not measurable. To be able to solve this problem, research is needed on how studying abroad can affect academic achievement, using these skills they developed abroad. This means measurable skills developed abroad will be used as a mediator between the effect of studying abroad on academic achievement.

This leads to the research question; ''What is the effect of studying abroad on academic achievement, through the development of social skills, problem solving skills and general knowledge?''
The skills that will be measured and therefore focused on in this thesis are social skills, like communication and cooperation, problem-solving skills, and general knowledge. These skills are measurable and have a relation to academic achievement (Beyazsaçlı, 2016).

The sub-questions to break down my thesis will be;
''What is the effect of studying abroad on social skills like communication and cooperation?''
''What is the effect of studying abroad on problem-solving skills?''
''What is the effect of studying abroad on general knowledge?''
''What is the effect of social skills, like communication and cooperation, on academic achievement?''
''What is the effect of problem-solving skills on academic achievement?''
''What is the effect of general knowledge on academic achievement?''

The methodology that will be used to answer the research question is collecting own data through a survey. Both students who participated in a study abroad program and students who stayed at home will be included.

Academic achievement will be measured in the form of the bachelor thesis grade. I chose this as the most reliable comparison for several reasons. To be able to use the skills learned abroad as a mediator in my research, the measurement of academic achievement must be after the mobility period. The thesis is always written after the exchange because to write your thesis the minor program must be completed. The thesis is also the most reliable comparable because all theses have the same grading requirements, regarding the subject or study program. Also, the thesis is an integral assessment, everything that students have studied during all the years of their program is of need here.

In this thesis, the focus will be on students studying abroad as part of their study program home-based in the Netherlands. All participants of the survey completed their minor program during their mobility period, mostly a semester, from 4-6 months, during the 3rd and last year of their bachelor program. All students were free to choose a top 3 destination universities and their courses. This is of importance because all participants therefore went abroad with the same motivations, are therefore are most likely to be able to develop the same skills.

Because this survey is a collection of social data, there is always some form of bias. To fight this, the survey will not ask students to compare themselves over time – as this implies, they needed to have developed the skills positively during their time abroad.

Chapter 2: Literature review

Literature review

The purpose of this literature review is to demonstrate the scholarly context on the effects of studying abroad on academic achievement. Through understanding the definition of studying abroad, academic achievement and research on skill formation, my research will fill a gap in the existing literature.

Definition of studying abroad

Study abroad programs, defined as all educational programs that take place outside the geographical boundaries of the country of origin, has been growing over the years. (Carlson & Others, 1991) In Europe, Erasmus+ is the most popular program that youth, students, staff and others can participate in. (*Factsheets and Statistics on Erasmus+*, n.d.) However, there are many more programs across the globe. There is a general belief that a period abroad helps participants with personal and professional development (Carlson et al., 1990). Emotional resilience, flexibility and openness, perceptual acuity, and personal autonomy are hypothesized effects of studying abroad (Kitsantas & Meyers, n.d.).

Definition of academic achievement

Academic achievement is a hard term to define entirely. John Hattie and Eric M. Anderman (2013) argue that it has several meanings. To some it can be closely related to standardized scores like SAT tests or GPA scores, but in the simplest terms achievement means the accomplishment of something. Other studies say ‘’academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, like school college or universities’’ (Steinmayr et al., 2014, page 1).

In general, academic achievement refers to skills that enable students to pass in school, like communication, mathematics, science, social science and thinking skills and competences (Genesee, 2006).

Academic achievement has to do with academic background knowledge according to Marzano, students who have a great academic background on a specific subject are more easily able to learn new information regarding that field, and the converse is also true (2004).

The definition I will be following throughout this thesis is the most clear-cut of all, the one of standardized scores by John Hattie and Eric M. Anderman, as this is the most concrete definition.

Effect of studying abroad on academic achievement

There are a number of studies that describe the effect of studying abroad on academic achievement. The first study is a small sample size research performed in the US. It concluded a positive association between studying abroad and grades (Xu et al., 2013). Their methodology was quantitative, using university's database. They compared the final degree grades of post-mobility students to their grades prior and grades of colleague-students who stayed home. This research suggests the reason of this positive association is uncertain, the reason can either be the study abroad period or ''simply an impact of demographics and better academic achievement prior to studying abroad'' (Xu et al., 2013, page 93).

The second study by Cardwell (2019) uses a similar smaller sample, but with improved methodology. This study from the UK resulted in a positive association between studying abroad and academic achievement. Cardwell compared the final degree grades of students at Sheffield Law School of students who went abroad to those of students who did not go abroad. This positive association was because of additional confidence and maturity, deeper knowledge of their subject and a break in the pattern of their studies. This study used a qualitative methodology, interviews to understand the positive association, compared to the earlier study by Xu et al.

The third study used a bigger sample size. Meya & Suntheim (2014) studied the impact of studying abroad on academic achievement for more than 2500 students from the same university. Their empirical analysis suggests that a temporary study-related visit abroad improves the final university grade, using GPA. ''Two possible explanations for this result are that studying abroad improves the students' academic ability or that the grades obtained at the foreign university are better than the average grade achieved at the home institution. (Meya & Suntheim, 2014, page 20)''.

The latest study by Chiamaka Nwosu (2022) used a bigger sample which again increases reliability. Nwosu comparatively studied grades of students prior to and after their exchange, and with a control group of students who did not participate in a mobility period. This study argues there were few studies solely based on academic achievement as the outcome of studying abroad. This study from the UK with a sample of in total 4162 students resulted in a negative association between studying abroad and grades. This goes for both the comparison between their own grades previous to the mobility period, and between the grades of their colleague-students who did not go abroad. The reason for this negative association according to Nwosu, is that in some universities, like the one where this research was conducted, grades achieved during SA do not count towards the final degree. The method used by this study is fixed effects regression model.

As the definition for academic achievement was chosen to be standardized scores, all of these studies follow this definition. The positive association between studying abroad and academic achievement was the largest when taking these studies into account, so my first hypothesis will be based on that. However, there is no clear reason of this positive association. These articles, the current research, does not provide a direct explanation which is a good starting point of my research, for me to actually research these processes.

Effect of studying abroad on skills

Studies 1,2 and 3 show a positive association between studying abroad and grades, study 4 shows a negative association. What changes or develops while participants are abroad, and does this influence their academic achievement?

Skills that are mostly learned during a study abroad period according to the literature is language learning and global citizenship. According to the study by Higuchi et al. (2023), their regression discontinuity design shows all students gained language skills after studying abroad. Studies on the linguistic benefits of studying abroad have been conducted in large numbers, like (Tseng et al., 2021), but more and more scholars are also starting to focus on the possible benefits for cultural competency (Maharaja, 2018).

A chapter from the book 'Practice in a Second Language: Perspectives from Applied Linguistics and Cognitive Psychology' by Robert M. DeKeyser (2007) discusses what the effect of study abroad is on the 4 skills of language proficiency, speaking, listening, reading and writing. The focus in this study lies on speaking in a second language. The results show that the majority of students made clear progress in the skill of speaking and fluency. Schenker has done research after a short-term study abroad program, consisting of 4 weeks abroad in Germany, and what these 4 weeks did to the German language proficiency of American participants (2018). The students' language level was tested before and after the mobility program for 3 summers long, and compared to students who did not attend the mobility program. The data from this study showed that, the students who went abroad improved statistically significantly in every area of language. In vocabulary and hearing, they performed better than the students who finished the traditional courses at home, but they performed worse in reading. This concludes that a mobility period has a positive effect on language learning (Schenker, 2018).

A study from the US provides learning outcomes due to study abroad in the areas of language proficiency, cross-cultural competence and regional awareness at the U.S. Military Academy at West Point. (Watson et al., 2013) As for the language proficiency, they use test results of the Defense Language Proficiency Test, they compare the results from before and after the semester-long period abroad. The focus is on listening and reading. The results show that there is a rise in both listening and reading of the students' language proficiency.

As for cultural competence, meaning values, beliefs, norms and customs according to Watson, was measured by the Intercultural Development Inventory. Students significantly grew their cross-cultural competence due to their study abroad experience. This study adds to the proof of the importance of study abroad experiences on the development of cross-cultural competence (Watson et al., 2013).

Both of these studies show a positive association between studying abroad and gaining language skills. This therefore can be seen as a big effect of studying abroad, but extensive research has already been done on this topic. As well, my research is a mediating model of skills being an extra explanation between the association of studying abroad and academic achievement. Therefore, skills that students learn abroad must be skills that they can use while studying back in their home university. Language learning might not be one of them, as learning a foreign language which is not used in the home university, has no particular effect on studying back home (like French would not be so useful in the Netherlands).
My hypotheses and research will therefore not include language learning. Besides the skill of language learning, a lot of literature as well mentions global citizenship and intercultural competence as a main outcome of studying abroad.

Both using qualitative methodology, Dunkley (2009) and Maharaja (2018), found a positive association between the skill formation of intercultural competence and studying abroad. The study by Dunkley in Australia discusses how intercultural learning through studying abroad relates to cultural identity, global citizenship and global competence (2009). Global citizenship meaning open-mindedness, cultural intelligence and global consciousness. The approach in this study was interviewing students who did a semester abroad. The results of this study are that intercultural learning is a main outcome of the mobility period, and there is achievement of skills in global and intercultural competence, and that students have developed varying levels of global consciousness. (Dunkley, 2009) The paper by Maharaja studies the effects of a semester-long study abroad program on students' personal growth and intercultural competence. She refers to intercultural competence as ‘’the ability to develop an understanding of one’s own and host culture, cultural differences, and one’s own personal changes after a study abroad experience’’ (2018, p. 19). Through analyzing essays written by students after completing their mobility period, the paper concludes that students clearly gain understanding because of studying abroad. A better understanding of one’s own and another culture, better appreciation of cultural differences and a change in world view (Maharaja, 2018).

Most of the literature describe the same effects of studying abroad on a global view and intercultural competence. The aim of the research was most often to evaluate and characterize improvements in self-efficacy, cultural competence, and cultural awareness following study abroad experiences. Using quantitative methods like data sets (Haas, 2018) and test scores, but as well qualitative methods like interviews, surveys and essays the

studies always came to the same general conclusion. For example, study abroad experiences help students develop cultural awareness (De Diego-Lázaro et al., 2020).

Common themes that can be taken from this literature are language proficiency, intercultural competence, personal growth and a global view. Although these are clearly main outcomes of studying abroad and can be the reason for students performing better in school after their abroad period, these papers do not specifically mention this relation. Earlier research takes skills as an effect of studying abroad, besides the academic achievement effects found. My research will take the skills as an ingredient to realize these academic achievement effects, besides the fact that studying abroad already has an effect on academic achievement itself.

Skills that influence academic achievement

According to Griffin et al. (2012) the 'Learning and Study Strategies Inventory' assessment device is an accurate way of measuring students' factors that influence academic achievement. This device takes into account attitude, concentration, information processing skill, motivation, self-testing and review techniques, general knowledge, use of study support techniques, time management, and effective test-taking strategies. His research reveals that all of these skills correlate positively to student GPA, which is a valid measurement of academic achievement according to prior literature mentioned (John Hattie and Eric M. Anderman, 2013).

Social skills are discussed quite frequently when researching what skills influence academic achievement. The 5 parts of social skills are discussed in a study by Sung and Chang; approaches to learning, self-control, interpersonal skills, externalizing problem behaviors, and internalizing problem behaviors (2010). Their research also proves a positive correlation between the social skills and academic achievement. Especially when approaches to learning, self-control and interpersonal skills are high, students achieve high academically. Another study performed by Jovarini et al. focuses on social skills, whether these have influence on academic achievement (2018). Their model indicated that the social skills of assertiveness, empathy and emotional approach and school stressors related to stress related to the student's role predicted 18% of the academic achievement, which is relatively large.

Another skill that is said to be important towards academic achievement is that of problem-solving (Beyazsaçlı, 2016). According to Veerasamy et al. the more effective problem solvers achieved better final exam scores (2018). Students that have problem-solving skills have higher mean grade scores than students will less problem-solving skills (Aka et al., 2010).

This is where all the literature links to my research. Multiple studies, like mentioned earlier, researched the effects of studying abroad on skills. Common themes here were intercultural competence, (Maharaja, 2018) and language learning (Schenker, 2018). However, these skills learned were not directly related to the apparent positive association between studying abroad and academic achievement, found by Cardwell (2019) and Meya & Suntheim (2014).

My research will fill the gap, to create the link between the effects of skill formation by studying abroad on academic achievement, but only the skills that can be influential towards academic achievement. The three skills that are influential towards academic achievement according to the literature are general knowledge (John Hattie and Eric M. Anderman, 2013), social skills (Sung and Chang, 2010) and problem-solving skills (Beyazsaçlı, 2016). This association and examples are interesting to use as hypotheses in my research.

Hypotheses

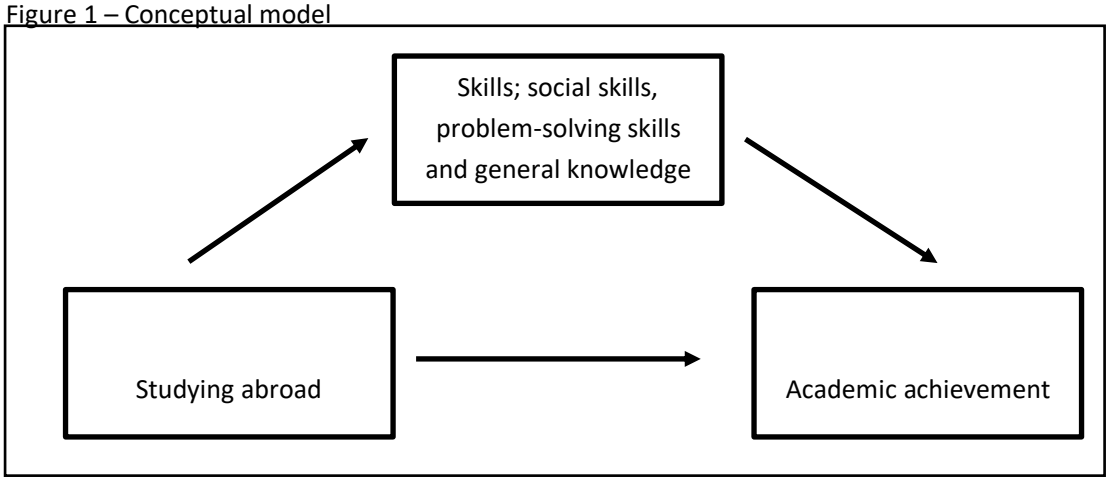
Having completed the scholarly context of this research – I hypothesize that:

Hypothesis 1: Study abroad has a positive effect on academic achievement.
The positive association between studying abroad and academic achievement was the largest when taking the 4 discussed studies into account. Xu et al. (2013), Cardwell (2019) and Meya & Suntheim (2014) all found that studying abroad has a positive effect on academic achievement described as standardized scores.

As Meya & Suntheim (2014) mentioned in their study, there can be 2 possible explanations for the positive association between studying abroad and academic achievement, that studying abroad improves the students' academic ability or that the grades obtained at the foreign university are better than the average grade achieved at the home institution. To further investigate their first option, that studying abroad improves students' academic ability, I looked into literature that researches skill development. Therefore, hypothesis 2 and 3 are developed.

Hypothesis 2: Study abroad has a positive effect on skill development.
Hypothesis 2a: Study abroad has a positive effect on social skills.
Hypothesis 2b: Study abroad has a positive effect on problem-solving skills.
Hypothesis 2c: Study abroad has a positive effect on general knowledge.
Hypothesis 3: Skill development has a positive effect on academic achievement.
Hypothesis 3a: Social skills have a positive effect on academic achievement.
Hypothesis 3b: Problem-solving skills have a positive effect on academic achievement.
Hypothesis 3c: General knowledge has a positive effect on academic achievement.

Figure 1 – Conceptual model



Chapter 3: Data

Population

The population of this research is people who have finished their university bachelor program including their bachelor thesis. This is a requirement because this research includes achievement, and this has been measured through the grade of the bachelor thesis as this is most equal to measure. The requirements of the bachelor thesis are the most comparable, as the guidelines are most similar, and do not include grades before the mobility period as for example GPA.

The population consisted of only people whose home university was in the Netherlands, in order to compare most accurately and in order to exclude outside factors. Meya & Suntheim (2014), Card well (2019), Xu et al., (2013) and Chiamaka Nwosu (2022) all focused on a single country as well, so this thesis followed this path.

Data collection method and sample

The data collection method of this research was a survey. Many studies from the literature used the method of a survey, like Nwosu (2022) and De Diego-Lázaro et al. (2020) – but often used a bigger sample size. Finding a large sample size like them was impossible to achieve as a student in 1 semester, so this research used a smaller sample size. The target number of the sample was 100 participants (Memon et al., 2020). This target number was chosen based on the analysis that the research needed, simple regression analysis needs at least 50 samples and generally 100 samples for most research situations (Hairet al., 2018). This research contains of 4 main variables, that will be described later this chapter, and therefore 100 participants are at least needed. However, 100 is insufficient to generalise the results to the entire population, as 100 is not 10% of the population (Memon et al., 2020).

In order to prevent too much bias through convenience sampling, voluntary response sampling seems the best alternative. The survey was shared in multiple master students' group chats from different universities in the Netherlands. As well, the survey was shared on LinkedIn.

Variables

Table 1 - Variables

Variable	**Type**	**Definition**	**Measurement**	**Relevance**
Studying abroad	Independent variable	If students studied abroad	Yes or no	To assess potential impact on academic achievement
Academic achievement	Dependent variable	Academic performance as reflected in bachelor thesis grade	*See variable 'bachelor thesis grade'*	Primary outcome of interest
Bachelor thesis grade	Dependent variable	Grade of ending bachelor project the thesis	Grade on a scale from 1-10	This variable represents the variable academic achievement.
Skill development	Mediating variable	Having skills like social skills, problem-solving skills and general knowledge	*See variables 'social skills', 'problem-solving skills' and 'general knowledge'.*	To understand the mechanism through which studying abroad may affect academic achievement
Social skills	Mediating variable	Having social skills	Rank on scale from 1-10	To understand the mechanism through which studying abroad may affect academic achievement
Problem - solving skills	Mediating variable	Having problem-solving skills	Rank on scale from 1-10	To understand the mechanism through which studying abroad may affect academic achievement
General knowledge	Mediating variable	General knowledge as a skill	Rank on scale from 1-10	To understand the mechanism through which studying abroad may affect academic achievement
Duration of studying abroad	Control variable	The time spent abroad	Months of being abroad	To control for an additional influencing factor

Scales

The scales that were used in this questionnaire and research were the following.
The majority of the questions were asked using the ordinal scale, ranking different subjects from 1-10. They did not necessarily have equal intervals between the points on the scale, the ordinal scale provides information about the order of responses, but it does not provide precise measurement of the magnitude of differences between them; a rating of 5 and 6 may not be the same as the difference between 8 and 9. (*Research Methods for the Behavioral Sciences*, 2018)
The binary scale was used to ask participants whether they studied abroad yes or no.
The ratio scale was used to ask participants how long their (possible) study abroad program took.

The questions of the survey mainly followed a rating system where participants were asked to rate their skills on a scale from 1-10. This rating scale was chosen because this method allows respondents to evaluate each variable independently (Hino & Imai, 2018). Rating scales are used in many applied sectors like the government, businesses, industries and public media to answer key questions (Uher, 2018). Therefore, the questions regarding skills were asked using the rating scale. The other questions automatically followed an obvious way of asking. The full survey is included in the appendix (see Appendix A).

Method of analyzing

The method of analyzing was supposed to be a regression analysis, because literature like Higuchi et al. (2023) uses this method, and my sample size should have worked with this analysis.

However, the target number of 100 participants in the sample was not reached. Therefore, an advanced regression analysis was not possible (Memon et al., 2020). Therefore, t-tests, correlation tables, the Mann-Whitney U test and Sobel test were used as analyses. The Mann-Whitney U test was chosen because this test does not need a large sample size and normally distributed data (Nachar, 2008). The Sobel test is to test a mediation model, and can also provide relevant outcomes with a smaller sample size (Pan et al., 2018).

Chapter 4: Results

In this chapter the main results of the online survey are presented in relation to the research question ''What is the effect of studying abroad on academic achievement, through the development of social skills, problem solving skills and general knowledge?''. The hypotheses H1-H3 will be analyzed.
The answers of the questionnaire were analyzed using descriptive statistics as well as statistical tests.

Descriptive statistics

In total, 55 participants completed the questionnaire. Since it is not possible to determine how many students received the invitation to the questionnaire, due to voluntary response sampling, there is no need for a classic response rate. The sample consisted of 25 male and 30 female participants, of which 90% had the age range of 21-30, and 10% above 30. The number of months the students had studied abroad ranged from 0 till 6 (M = 2.24, SD = 2.52), of which 30 participants, 54.5% did not study abroad.

Of the 25 participants that did study abroad, 14 were female and 11 were male, and all 25 had an age range between 21-30. The number of months they had studied abroad ranged from 4 to 6, 8 participants went for 4 months, 11 participants went for 5 months and 6 for 6 months. (M = 4.92)

Participants were asked how they would rate their social skills, problem-solving skills and general knowledge on a scale from 1 to 10. Participants rated their social skills between 6 and 10 (M = 7.78, SD = 0.786), their problem-solving skills between 6 and 10 (M = 7.85, SD = 1.026) and their general knowledge between 4 and 10 (M = 7.18, SD = 1.307).

The criterium to participate in this study was to have completed your bachelor, including the bachelor thesis. The bachelor thesis grade ranged from 6 to 9 (M = 7.585, SD = 0.8036).

Analysis

A full correlation between all variables is shown below in table 2. All skills correlated positively with academic achievement, the bachelor thesis grade, with problem-solving skills being the highest correlation of .431**. Academic achievement also correlated positively with studying abroad, but showing a very weak insignificant correlation of .015. Social skills, problem-solving skills and general knowledge all negatively correlated with studying abroad. We do not find support for hypothesis 1 here.

Table 2 – Correlation table

		Social skills	Problem-solving skills	General knowledge	Bachelor thesis grade	Study abroad duration
Social skills	Pearson Correlation Sig	1	-.178 .194	.093 .498	.200 .143	-.058 .677
Problem-solving skills	Pearson Correlation Sig	-.178 .194	1	.103 .454	.431** .001	-.101 .464
General knowledge	Pearson Correlation Sig	.093 .498	.103 .454	1	.080 .561	-.137 .319
Bachelor thesis grade	Pearson Correlation Sig	.200 .143	.431** .001	.080 .561	1	.015 .911
Study abroad duration	Pearson Correlation Sig	-.058 .677	-.101 .464	-.137 .319	.015 .911	1

**. Correlation is significant at the 0.01 level (2-tailed).

N = 55

To further test hypothesis 1 (that studying abroad has a positive effect on academic achievement), a t-test was conducted to compare the means of bachelor thesis grades of students who studied abroad versus students who did not. As can be seen in table 3 below, the mean of the bachelor thesis grade was 7.6 (SD = .7719) for the group of participants who did not study abroad, and 7.568 (SD = .8557) for participants who did study abroad. These results show a very small difference in mean academic achievement between the groups, hypothesis 1 is not supported due to insignificant results (p = .379).

Table 3 – T-test studying abroad & academic achievement

	Study abroad	n	M	SD	t	df	p	Effect Size (Cohen's d)	95% CI for Mean Difference
Grade bachelor thesis	Did not study abroad	30	7.6	.7719					
	Did study abroad	25	7.568	.8557					
	t-test results				1.46	53	.379	.0320	[-.4085, .4725]

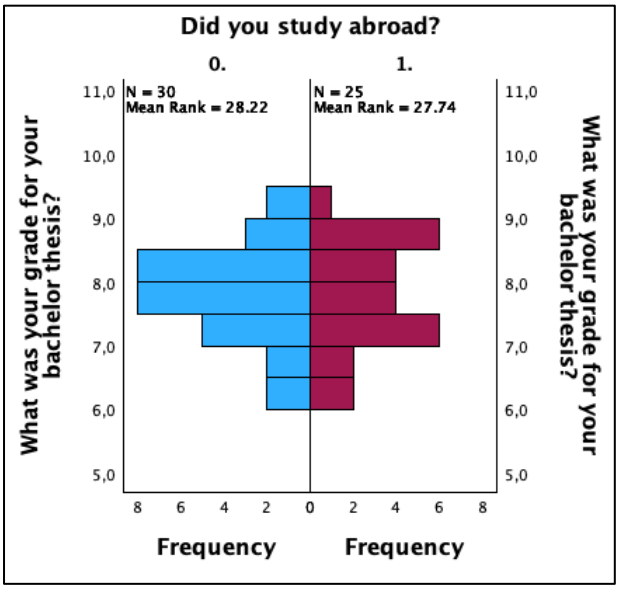
*p < .05; **p < .01; ***p < .001

The Mann-Whitney U test was conducted as well to test hypothesis 1, as for this test it is not necessary to have normally distributed data (see Appendix B for a graph on the sample distribution). Table 4 and figure 2 below show the results. It can be seen that the participants that studied abroad, are kind of divided into 2 groups, high ranks and lower ranks, and less in the middle. The participants that stay home do not have this division, most of them scored in the middle. Therefore, it can be said that studying abroad leads to more extreme grades, implying that some exchanges are helpful and others are not. However, these results are insignificant as well – so we still do not find support for hypothesis 1.

Table 4 – Mann-Whitney U test

Total N	**55**
Mann-Whitney U	368.500
Wilcoxon W	693.500
Test Statistic	368.500
Standard Error	58.335
Standardized Test Statistic	-.111
Sig.	.911

Figure 2 – Mann-Whitney U graph



As seen before, skill development, including; social skills, problem-solving skills and general knowledge all negatively correlated with studying abroad. This is contrary to the assumptions made after reading the literature. Literature suggested studying abroad has a positive effect on language proficiency (Schenker, 2018) and intercultural competence (Dunkley, 2009), so it can be assumed social skills, problem-solving skills and general knowledge will also improve, or at least not decline. This links to hypothesis 2, 2a, 2b and 2c. to further examine this hypothesis, a t-test was used.

Hypothesis 2: ''Study abroad has a positive effect on skill development.''

Hypothesis 2a: ''Study abroad has a positive effect on social skills.''
As can be seen in table 5 below, the mean of the social skills rate was 7.83 (SD = .791) for the group of participants who did not study abroad, and 7.72 (SD = .792) for participants who did study abroad. These results show a very small difference in mean social skills between the groups, there was insufficient evidence to conclude that the hypothesis 2a was supported (p = .929).

Table 5 – t-test social skills & studying abroad

	Study abroad	**n**	**M**	**SD**	**t**	**df**	**p**	**Effect Size (Cohen's d)**	**95% CI for Mean Difference**
Social skills	Did not study abroad	30	7.83	.791					
	Did study abroad	25	7.72	.792					
	t-test results				.529	53	.929	.792	[-.317, .543]

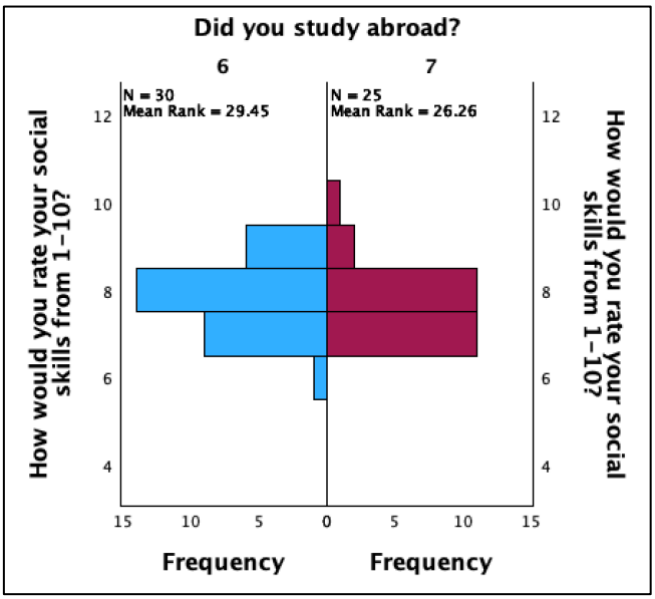
*p < .05; **p < .01; ***p < .001

The Mann-Whitney U test was conducted as well to test hypothesis 2a. Table 6 and figure 3 below show the results. It can be seen that some students who studied abroad rated their social skills a 10, and none of the students who stayed home did. Also, some students who stayed home rated their social skills a 6, and none of the students who went abroad did. However, these results are insignificant as well – so we still do not find support for hypothesis 2a.

Table 6 – Mann-Whitney U test

Total N	**55**
Mann-Whitney U	331.500
Wilcoxon W	656.500
Test Statistic	331.500
Standard Error	54.710
Standardized Test Statistic	-.795
Sig.	.427

Figure 3 – Mann-Whitney U graph



Hypothesis 2b: ''Study abroad has a positive effect on problem-solving skills.''
As can be seen in table 7 below, the mean of the social skills rate was 7.93 (SD = .868) for the group of participants who did not study abroad, and 7.76 (SD = 1.200) for participants who did study abroad. These results show a very small difference in mean problem-solving skills between the groups, but there was insufficient evidence to conclude that the hypothesis 2b was supported (p = .0.50).

Table 7 – t -test problem-solving skills & studying abroad

	Study abroad	**n**	**M**	**SD**	**t**	**df**	**p**	**Effect Size (Cohen's d)**	**95% CI for Mean Difference**
Problem-solving skills	Did not study abroad	30	7.93	.868					
	Did study abroad	25	7.76	1.200					
	t-test results				.620	53	.050	1.032	[-.387, .734]

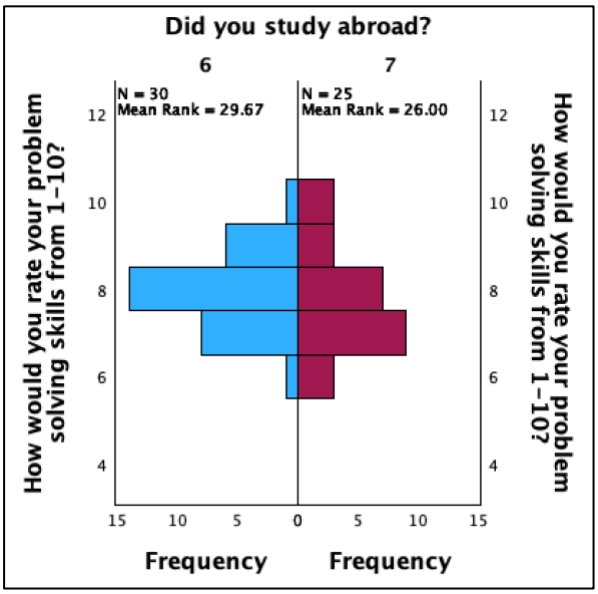
*p < .05; **p < .01; ***p < .001

The Mann-Whitney U test was conducted as well to test hypothesis 2b. Table 7 and figure 4 below show the results. These results show that students who stayed home rated their problem-solving skills in general higher than students who went abroad, there are way more 8's and 9's for stay-at-home students. But at the same time, 4 students who studied abroad, which is 16% of their sample rated their problem-solving skills a 10. Only 1, 3%, of the stay-at-home students rated theirs a 10. However, we do not find enough support for hypothesis 2b (.376).

Table 7 – Mann-Whitney U test

Total N	**55**
Mann-Whitney U	325.000
Wilcoxon W	650.000
Test Statistic	325.000
Standard Error	56.434
Standardized Test Statistic	-.886
Sig.	.376

Figure 4 – Mann-Whitney U graph



Hypothesis 2c: ''Study abroad has a positive effect on general knowledge.''
As can be seen in table 7 below, the mean of the general knowledge rate was 7.37 (SD = 1.245) for the group of participants who did not study abroad, and 6.96 (SD = 1.369) for participants who did study abroad. These results show a very small difference in mean general knowledge between the groups, but there was insufficient evidence to conclude that the hypothesis 2c was supported (p = .980).

Table 7 – t-test general knowledge & studying abroad

	Study abroad	n	M	SD	t	df	p	Effect Size (Cohen's d)	95% CI for Mean Difference
General knowledge	Did not study abroad	30	7.37	1.245					
	Did study abroad	25	6.96	1.369					
	t-test results				1.153	53	.980	1.303	[-.301, 1.114]

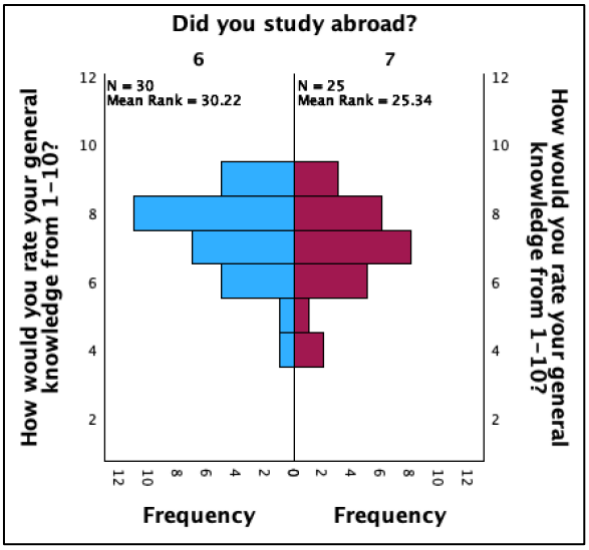
*p < .05; **p < .01; ***p < .001

The Mann-Whitney U test was conducted as well to test hypothesis 2c. Table 7 and figure 4 below show the results. These results are quite similar for each group, relatively. However, we do not find enough support for hypothesis 2c (.247).

Table 8 – Mann-Whitney U test

Total N	**55**
Mann-Whitney U	308.500
Wilcoxon W	650.000
Test Statistic	308.500
Standard Error	57.395
Standardized Test Statistic	-1.159
Sig.	.247

Figure 5 – Mann-Whitney U graph



As said before referring to table 2, all skills correlated positively with academic achievement. To test hypothesis 3, ''Skill development has a positive effect on academic achievement.'', this correlation table is broken down.

Table 9 below shows r = .200 for the correlation between social skills and academic achievement, which means there is a weak linear relationship between the mediator variable 'Social skills' and the dependent variable 'Academic achievement'. However, we do not find enough support for hypothesis 3a: ''Social skills have a positive effect on academic achievement.''

Table 9 – Pearson Correlation social skills & academic achievement

Pearson correlation	.200
Sig.	.143

Table 10 below shows r = .431** for the correlation between problem-solving skills and academic achievement, which means there is a moderate linear relationship between the mediator variable 'Problem-solving skills' and the dependent variable 'Academic achievement'. With these significant results, we find support for hypothesis 3b: ''Problem-solving skills have a positive effect on academic achievement.''

Table 10 – Pearson Correlation problem-solving skills & academic achievement

Pearson correlation	.431**
Sig.	.001

Table 11 below shows r = .080 for the correlation between general knowledge and academic achievement, which means there is a very weak linear relationship between the mediator variable 'General knowledge' and the dependent variable 'Academic achievement'. However, we do not find enough support for hypothesis 3c: ''General knowledge has a positive effect on academic achievement.

Table 11 – Pearson Correlation general knowledge & academic achievement

Pearson correlation	.080
Sig.	.561

These tests show there could be an association between the mentioned variables, but not necessarily direct relationships between the variables. Some variables score higher for the study abroad group than stay at home group, but it is not impossible this cannot be related to another cause.

To test the full mediation model, a Sobel test was used. Because the variable 'skill development' was divided into 3 new variables in the thesis, the Sobel test was divided into 3 as well.

For the first test, the variable 'social skills' was used as the mediator. This involved calculating the indirect effect as the product of two regression coefficients: the effect of study abroad on social skills (denoted as a) and the effect of social skills on academic achievement, controlling for studying abroad (denoted as b). The values were a = -.113, b = .204 and the standard errors of these coefficients (.214 and .139) were also obtained. The Sobel test statistic was then calculated, and these results can be seen in table 12 below.
The non-significant Sobel test results suggest that the mediator variable (social skills) does not significantly mediate the relationship between studying abroad and academic achievement. This implies that the effect of these skills is not carried through strongly and other factors may be influencing this relationship. Our initial hypothesis that social skills would mediate the relationship between studying abroad and academic achievement is not supported by these findings.

Table 12 – Sobel test social skills

Test statistic	**Std. Error**	**p-value**
-0.049685694	0.04639565	0.61928994

For the second test, the variable 'problem-solving skills' was used as the mediator. This involved calculating the indirect effect as the product of two regression coefficients: the effect of study abroad on problem-solving skills (denoted as a) and the effect of problem-solving skills on academic achievement, controlling for studying abroad (denoted as b). The values were a = -.173, b = .339 and the standard errors of these coefficients (.279 and .098) were also obtained. The Sobel test statistic was then calculated, and these results can be seen in table 13 below.
The non-significant Sobel test results suggest that the mediator variable (problem-solving skills) does not significantly mediate the relationship between studying abroad and academic achievement. This implies that the effect of these skills is not carried through strongly and other factors may be influencing this relationship. Our initial hypothesis that social skills would mediate the relationship between studying abroad and academic achievement is not supported by these findings.

Table 13 – Sobel test problem-solving skills

Test statistic	Std. Error	p-value
-0.61034346	0.09608852	0.54163431

For the third test, the variable 'general knowledge' was used as the mediator. This involved calculating the indirect effect as the product of two regression coefficients: the effect of study abroad on general knowledge (denoted as a) and the effect of general knowledge on academic achievement, controlling for studying abroad (denoted as b). The values were a = -.407, b = .049 and the standard errors of these coefficients (.353 and .086) were also obtained. The Sobel test statistic was then calculated, and these results can be seen in table 14 below.

The non-significant Sobel test results suggest that the mediator variable (general knowledge) does not significantly mediate the relationship between studying abroad and academic achievement. This implies that the effect of these skills is not carried through strongly and other factors may be influencing this relationship. Our initial hypothesis that social skills would mediate the relationship between studying abroad and academic achievement is not supported by these findings.

Table 14 – Sobel test general knowledge

Test statistic	Std. Error	p-value
-0.51080075	0.03904262	0.60949058

Chapter 5: Discussion & conclusion

Summary

The research problem starting this study is to understand how studying abroad impacts academic achievement through the development of specific measurable skills. While existing literature acknowledges the positive effects of studying abroad on academic achievement, language proficiency, and intercultural competence, it does not directly and clearly explain the reason behind these outcomes. This understanding is crucial for both individuals deciding on the value of studying abroad, policy makers evaluating the return on investment in such programs, and the government for the current debate of letting in less international students in the Netherlands. The research question of this study is; ''What is the effect of studying abroad on academic achievement, through the development of social skills, problem solving skills and general knowledge?''

The results of this study indicated no statistically significant relationship between the variables studying abroad, academic achievement and skill development. The p-values for the outcomes of all 7 hypotheses (except for one) exceeded the conventional threshold of 0.05.

The results for the first hypothesis, that studying abroad has an effect on academic achievement, suggest a very small difference in means for academic achievement, between the groups of students who studied abroad versus students who did not. An interesting result arises here, namely a clear division in academic achievement grades of students who studied abroad. They either scored higher or lower, and students who stayed home had a more constant grade. The existing literature suggests a positive correlation between studying abroad and academic achievement (Meya & Suntheim, 2014), but this is not clearly reflected in our study.

The relationship between skill development and studying abroad is suggested to be positive as well, according to literature (Dunkley, 2009 and Maharaja, 2018), although existing literature did not test the same skills as in this study. In our study all variables used for skill development, social skills, problem-solving skills and general knowledge, correlate negatively with studying abroad. The means for all 3 skills are even higher for the group of students who stayed at home, than for the students that studied abroad. However, there are a few students in the study abroad group who rated their skills with a 10, where only a single student who stayed at home rated a 10.

Skill development correlates positively with academic achievement, social skills, problem-solving skills and general knowledge. In line with hypothesis 3b, problem-solving skills is proven to impact academic achievement with a significant p-value. These results match claims by Jovarini et al. (2018), saying social skills influence academic achievement positively. Beyazsaçlı (2016) said the same for problem solving skills.

The full mediation model, if studying abroad had an effect on skill development and if skill development had an effect on academic achievement was also tested in this study. These results show that skill development does not significantly mediate the relationship between studying abroad and academic achievement, and therefore our initial research question cannot be answered.

Reflection

Alternative explanations

In this study, the question whether studying abroad has a bigger effect on academic achievement than staying at home, through the development of certain skills. However, students who stay at home also go through experiences and might learn the same or other skills. An alternative explanation could be that stay-at-home students go through the same development as abroad. The level of education at the home-university might be relevant here, and also whether the students' home-university is also their home country, if they are already full degree international students this makes a difference as well. They might learn the same skills and go through the same experiences if the level of their home-university is challenging enough already, or if they already study in a different country than they are originally from.

The duration of the study abroad could also be an alternative explanation. Studying for 4 months abroad might be a different experience than studying abroad for 8 months. One might say that the longer you stay abroad, the more people will dive into the culture and therefore learn different things than when they would stay at home (Dwyer, 2004).

Apart from the earlier 2 mentioned alternative explanations, people are individuals. Every student learns in a different way (Biggs, 1978), has a different background and past experiences. These factors might also influence (the relationships between) my variables studying abroad, skill development and academic achievement.

As mentioned earlier in the result chapter, the Mann-Whitney U graph (figure 2) shows interesting results. What could this division in thesis grade inside the group of students who studied abroad mean? And why do they have a division of such kind, and the stay-at-home students do not? I would be more logical the other way around, students who stay at home either perform really well or just enough to pass, and students who wanted to go abroad already studied hard to be able to go on exchange and therefore none really get a low grade. However, another reason could be underlying these results. One might be the so-called 'reverse culture shock', meaning students who went on exchange have difficulties letting go of the study abroad period time (*Returning From Study Abroad | Middlebury*, 2023). Raja et al. (2023) mention students often suffer from psychological challenges when returning at their home-university, which could lead to the lower division of bachelor thesis grades.

Limitations

The purpose of this study was to investigate the impact of studying abroad on academic achievement with the mediator skill development. While the findings provide some insights, it is important to acknowledge the limitations that may have influenced the results.

A limitation to this study is the small sample size. This may have been the reason for the lack of significant results, and it was not possible to generalize to the population because of the small sample size.

Bias is a limitation of many studies, as well as in this research. Respondents of the questionnaire were asked to rate their own skills, which may include bias. According to Hino & Imai (2018), positivity bias is a common limitation when using the rating system in a survey.

Another limitation could be the argument that students who want to go on exchange, need a higher GPA because this is what students are selected on to go on exchange in most Dutch universities (*Selection by Tilburg University | Tilburg University*, n.d.). When students know, they might want to go on exchange in the near future, they may study harder because they know they need higher grades, they students who do not have this ambition to go abroad. However, students might also not know in advance they want to go, or students study hard for good grades even if they do not want to do on exchange. Because of this, and because of the fact only the bachelor thesis grade is used for the academic achievement variable, this study is limited. A solution for this could be measuring grades before and after the mobility period, but this will be discussed further in the recommendations section.

Recommendations

Addressing the limitations identified and maximizing the benefits of the research outcomes, this section includes some recommendations for future study on this topic.

A bigger sample size could solve earlier mentioned issues of not being able to generalize to the population, and would give more opportunity for significant results.

To prevent bias, like rating bias (Hino & Imai, 2018), using scores from a database could be a recommendation. Through this way, positivity bias about for example grades is prevented.

Like mentioned before, the fact that there was no before and after possible study abroad measurement of grades and skills, this study is limited. For future research, a recommendation is to do this before and after measurement.

Appendix

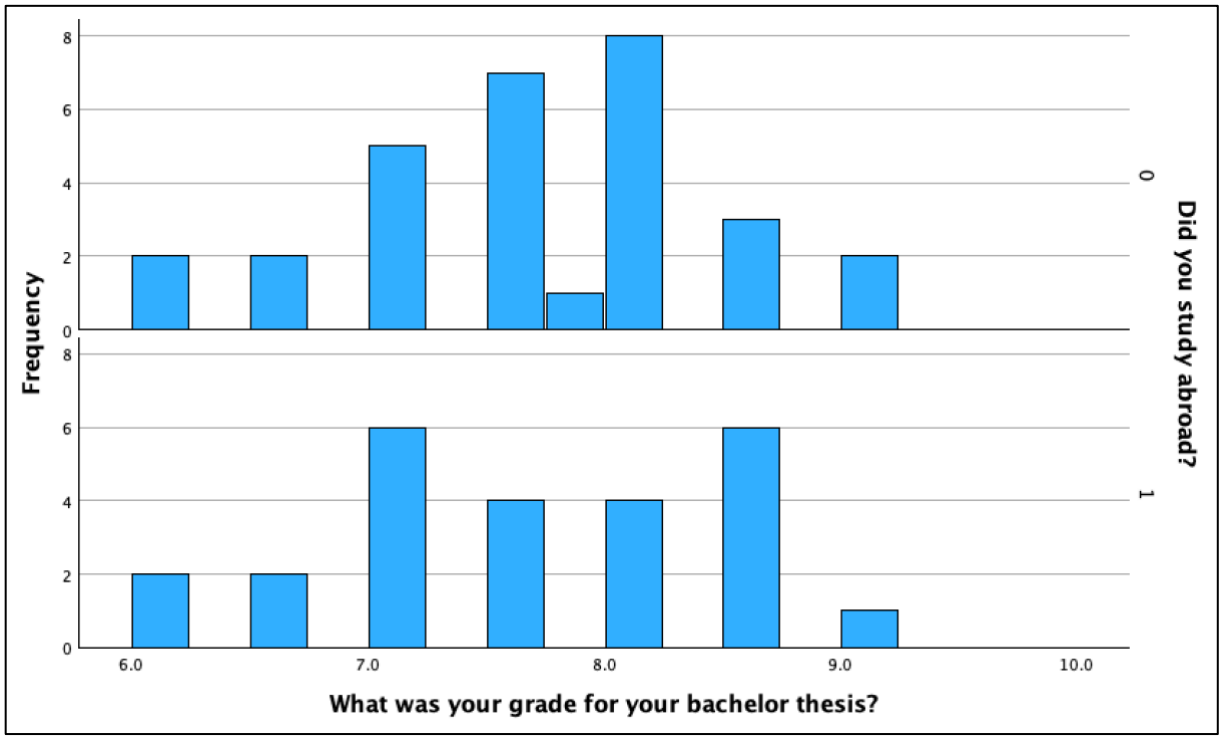
Appendix A: Full questionnaire

Question number	Question	Additional info underneath question	Answer options
1	What is your gender?		Male
			Female
			Prefer not to say
2	What is your age		<18
			21-30
			>30
3	How would you rate your social skills from 1-10?	Social skills meaning communication and cooperation. 1 being the lowest score, 10 being the highest.	1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
4	How would you rate your problem-solving skills from 1-10	Problem solving skills meaning flexibility, being able to keep options open and being able to view situations from a different perspective. 10 being the highest score, 1 being the lowest.	1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
5	How would you rate your general knowledge from 1-10?	General knowledge meaning information on many different subjects that you collect gradually, rather than detailed information on subjects that you have studied formally. 10 being the highest score, 1 being the lowest.	1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
6	What was your grade for you bachelor thesis?	Please indicate your exact grade 1-10.	Open-ended
7	How would you rate the influence of your social skills like communication and cooperation on your personal grade/process of your bachelor thesis on a scale from 1-10?	In what way do you believe your social skills, communication and cooperation skills, have influenced the writing process and or grade of your bachelor thesis? 10 being the highest score, 1 being the lowest.	1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

8	How would you rate the influence of your problem-solving skills on your personal grade/process of your bachelor thesis on a scale of 1-10?	In what way do you believe your problem-solving skills, like flexibility, being able to keep options open and being able to view a situation from a different perspective, have influenced the writing process and or grade of your bachelor thesis? 10 being the highest score, 1 being the lowest.	1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
9	How would you rate the influence of your general knowledge on your personal grade/process of your bachelor thesis on a scale from 1-10?	In what way do you believe your level of general knowledge (meaning information on many different subjects that you collect gradually, rather than detailed information on subjects that you have studied formally) have influenced the writing process and or grade of your bachelor thesis? 10 being the highest score, 1 being the lowest.	1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
10	Is your home university based in the Netherlands?		Yes - No
11	Did you study abroad?	Study abroad meaning that you did part of your study program in another country than the Netherlands.	Yes - No
12	If yes: What was the duration of your study abroad?	This can be years, months, weeks. If no to previous question: please answer no here	Open-ended
13	Did study abroad influence you? If yes, in what way? Please explain.		Open-ended

Appendix B: Results graphs

Figure 6 – distribution sample



As can be seen in this graph, the sample is not normally distributed, when looking at the variable academic achievement. Especially the group who studied abroad (0 = did not study abroad, 1 = did study abroad), deviates.

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