

Does studying from home work?

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Abstract

In this paper I will present the results of a survey research among 552 first year students in Economics of the Erasmus University Rotterdam. All these students were approached during tutorial sessions in week 21 of 2014. I find a statistically significant positive relation between the number of hours studying from home and students' grades. No such relation is found for hours studying in the university's library (UB). The results confirm sorting effects of students avoiding distractions at home.

Key concepts: distraction, location,
productivity, sorting, studying

Bachelor's Thesis Economics and Business Economics

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Preface

This thesis has been written to finish my Bachelor in Economie en Bedrijfseconomie at the Erasmus University Rotterdam. For me, economics has always been the right choice to study and made me eager to get a degree in. On the finish line, I would like to thank some people who supported me. First, I would like to thank all first year students in Economics and their teachers, who were respectively willing to fill out surveys and allowing me to hand them out. Second, I would like to thank Ymke, Bob and Sanne, who helped me collecting the survey data. You were very helpful completing this full dataset in just four days. Third, I would like to thank Dr. S.V. Kapoor, for opening my eyes on the first order question in the flexwork topic. Fourth, I would like to thank my supervisor, Prof. Dr. R. Dur, and my buddy, Sander van Heteren, for their willingness to help me improving this research. At last, I would like to especially thank my parents, Jan en Ankie Riske, for giving me the opportunity to study and their unlimited support while doing it.

I cannot be more grateful.

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1. Introduction

More and more workers are getting allowed to work from home. This means it is possible you will find workers working from your own home. But does working from home actually work? Workers working from home may be more distracted than in the office and there will be no supervisor at home supervising what the workers are doing. On the other hand, working from home means no commuting and no distractions by colleagues which may result in more focus on the workers' work. Recently, Bloom et al. (2013) did a randomized experiment in order to investigate productivity changes when workers were allowed to work from home. This research inspired me to investigate (almost) the same research question among students. Although students have, at least in the recent years, been in the position to decide their own location to study from, they seem to study most of the time from home. Therefore, in line with the research by Bloom et al. (2013), my research question is:

Does studying from home work?

Most students I know study from home and the university's library (hereafter referred to with 'UB'). As I speak for myself, I study most of the time from home and when I am at the university, I stick to the UB to study. At home, I feel more distracted to anything in my room which possible could distract me, from books to posters. Since the UB has a really nice study environment, which offers few distractions, silence and students around to discuss my study and daily life with during the breaks, I gladly use the UB since I feel more productive and less distracted. Therefore, my hypothesis is: studying from the UB results in higher grades than studying from home.

Although I know I study more productive and less distracted from the UB, I still study most of the time from home. This works fine, but the UB studies just better. I know why I do not go to the UB to study when I do not have to be at the Erasmus University. This is because it takes me too much time to get there. Not that it is so far, it takes me only 35 minutes each way, but apparently it is enough to keep me home. And so, every student has its own unique study behavior and reasons. This means that every student decides for him- or herself where and when to study. But do these students study from the locations they believe to be 'ideally' and what makes such a location ideal for them? Is it silence, having other students around or maybe even being at home? The reasoning of the students in their choice where to study may explain a possible discrepancy in their beliefs and their actual behavior. I expect this especially to be for students living outside of Rotterdam since they have to travel more to get to the Erasmus University to study from the UB.

The answers to the research question, the hypothesis and the expectation, seems to me interesting for both students and universities. Whatever grade students strive for, they probably want to achieve best by studying in the smallest time frame as possible. Especially since labor supply, as a result of the economic crisis of 2009, nowadays outweighs labor demand in The Netherlands. Since about 8.7% of the population is unemployed (Centraal Bureau voor de Statistiek, 2014) and 4% of the Master students in Economics does not find a job within 1,5 years after graduation (Studiekeuze123), students should strive to distinguish themselves with the highest grades and finest extracurricular activities. When students are able to study in less time than they do so far, there will be more time left to study more or participate in extracurricular activities. For students who study from the study year 2012-2013 at the Erasmus University, this is even more important. Since the Erasmus University expects the new bachelor students to finish their first year in just one year under the heading 'nominal is normal', the expectations about these students' career wise achievements are even higher to succeed in a bachelor study. Therefore, students should really think about how to meet the expectations of today. And so, in whatever way a student wants to fill in its agenda during their studies, it would be wise to plan the study time as efficient as possible. In that way, students may be able to achieve higher grades and to participate in extracurricular activities. And so, students make themselves (more) able to distinguish themselves on the labor market.

The main goal of this research is to open students' eyes to think critically about what the ideal location is to study. This research might give them a tool in understanding that some (un)conscious choices they should rethink again. This research is not only interesting for students, but for universities as well. I assume universities strive to create the ideal location for students to study best. In the end, universities do provide students with more and more flexible study places over their campuses for a reason. This research may provide some words of interest which can help in designing a better campus with 'ideal' study places. At last, I hope that students, universities and anyone who is interested in reading this paper will rethink which location is best to sort into to study or work.

The remainder of this thesis will be as follows. Section 2 will be an overview of literature which has already been written about working and studying from home and other locations. Section 3 will describe the data gathered. Section 4 describes the methodology used. Section 5 will show the results. These results will be discussed in Section 6. Recommendations will be given for further research in Section 7. Section 8 includes a conclusion. Section 9 will be an overview of the works cited. At last, Section 10 includes an appendix.

2. Literature Review

Before the Industrial Revolution began, people worked at home (Davies & Frink, 2014). In communities people produced products and services at home and consumed these there as well. Workers began to work from factories during the Industrial Revolution. In these factories, men were able to work for money and women remained at home to take care of their family. Employers were able to measure the factory workers productivity with a factory clock and a scientific management system. This resulted in workers working fixed long hours in the factories. Ideal workers were supposed to commit themselves fully without distraction by their families. And so, the separation between home and work was done. The interpretation of 'ideal' has changed over years. Today, workers are ideal when they fully commit themselves, are available for overtime work and do not have much commitments besides their work (Acker, 1990; Williams, 2000). As a result, the dividing line between work and workers' private lives vanishes. This might be the reason why workers nowadays gladly receive the opportunity to work from other places than the traditional ones (Finn & Donovan, 2013). Reasons why employers let their employees choose their own places to work from are to reduce work-family conflicts (Bond, Galinsky, Kim, & Brownfield, 2005; Kelly, Moen, & Tranby, 2011) and employee turnover (Galinsky, Bond, & Hill, 2004; Matos & Galinsky, 2011; Moen, Kelly, & Hill, 2011), and to increase job satisfaction and engagement (Bond, Galinsky, Kim, & Brownfield, 2005; Galinsky, Bond, & Hill, 2004; Matos & Galinsky, 2011). But, if working from home really works has been a lot of discussion about.

Companies like PwC, Intel and Yahoo earlier implemented flexible work arrangements for their workers (Madell, 2013). But after a while, Yahoo's CEO Marissa Mayer requested workers to come back to the office or fired them (Carlson, 2013). Main reasons for her were a loss in collaboration and innovation since workers did not get to work together that often anymore. Mayer did recognize though that workers were more productive when they worked alone. Recent research proved that when workers who were working for a Chinese call center and were willing to work from home, increased their productivity with 13% when they were randomly assigned to work from home (Bloom, Liang, Roberts, & Ying, 2013). But, at the same time, these workers' promotion rates fell with 50% conditional on their productivity. When all workers were after the experiment free to re-allocate themselves to work from home or the office, half of the home-workers switched back to the office. As a result, the increase in productivity increased even up to 22%. These findings suggest that workers knew where they work more productive and get rewarded, which agrees with selection effects found by Lazear (Lazear, 2000).

When it comes to comparing this research with reality, this experiment has some issues. At first, home-workers were required to work from an independent room, which was fully installed with all equipment needed to let the home-workers do their jobs. Since these home-workers had to work with a system which controlled for all the work they did, workers were not able to determine their own hours to work. When it comes to reality, a firm has to deal with a worker's home as it is. This means the worker can decide for him- or herself from which room and when the worker will work. It also means that there will be fewer resources available, it may not be a distraction-free environment and there will be family interactions which may negatively affect the worker's productivity (Neufeld & Fang, 2004). And so, it is the responsibility of the worker to choose the location which agrees with the worker's and employer's needs. This holds more or less for students as well. Although a student may not have a supervisor who checks the student's productivity daily, the student does have the responsibility to choose or create an 'ideal' location to study.

The Western Carolina University suggests three aspects worth considering when creating or choosing an 'ideal' location to study (Ramsey & Witter, 2010). At first, the student should choose a location from which he or she can study productively. Second, the student should think about if he or she wants to study alone or in a group. Third, the student should make sure to avoid any distractions. According to the Erasmus University the 'ideal' place to study differs among students (Erasmus Universiteit Rotterdam). One prefers to study from home, a library or from the university. The most common locations for students to study have always seemed to be home and the university's library. Since the appearance of the internet, students do not need to go to the library anymore to access resources to study. Today, a student is able to study from any place, even from a place like Starbucks, and has still full access to the universities' database. This resulted in a generation of students who expects to control the 'when, where, how, and how fast they learn' (Barone, 2003). Even with this electronically access, students still go to universities' libraries to study (80.6%), to share knowledge (55.2%) and to, although much less important, socialize (8.8%) (Gardner & Eng, 2005). Since students in The Netherlands do not have to pay to use public transport during their study years, all of them should be able to get to the UB. At the Erasmus University, students are even able to use it from 8:00 (AM) to midnight. But, according to Gardner & Eng (2005) do not all students use it. Especially students who live in noisy houses and graduates seem to use the libraries to study with fewer distractions than at home. And so, library users use the UB especially as a place to study, and nothing else.

3. Data

Since there was no data available about study locations in relation to grades, surveying students would make it possible to gain as much information about students' study behavior in just little time and with little costs. Since first year students in Economics of the Erasmus University are obliged to attend 70% of their tutorial sessions (both workgroups and day-time classes), and do not pass their first year if they do not, it would be very likely to be able to encounter many of them during these sessions. By visiting tutorial sessions myself, I would make my approach more personal, which I believed would result in students more willing to fill out a survey for thesis purposes. Although I was aware of the negative consequences of this approach, like being rejected by some teachers or students, compared to other options as an online survey and encountering students during their lectures, it seemed to me the best option. In the end, this approach would be much more doable in little time compared to an online survey. Next, being rejected by one of many teachers would only result in not being able to reach a particular tutorial group. Also, surveying the students during their lectures would result in a selection bias of only surveying students who voluntarily visit lectures. At last, I would not be able to control the students who would be least motivated to fill out a survey during the lectures since the lecture hall is too big to control all students at once. But, by visiting students during practical sessions there would be enough time to control about 20 students each time to fill out a survey in about 3 to 5 minutes.

And so, me and (when needed) my friends visited all groups of students during their tutorial sessions from Tuesday 20 until Friday 23 May 2014 (week 21). For an exact overview which sessions visited, I refer to Appendix A. When the teacher was on site, his or her permission was asked to survey the students. Some of the teachers were willing to hand out the surveys to the students by themselves. In other classes, students were introduced by myself or my friends and asked to fill out a survey for thesis purposes. Since the tutor groups were quite small, my friends who were handing out the surveys were able to make the request more personal by telling their names and they were students in Economics as well. When all surveys were completed, the class was left and the details of the results were written down.

In total, 552 surveys divided over all practical groups were completed. For an overview in which exact bachelor (BSc) these students were enrolled and how representative these students are for students in Economics of the Erasmus University, I refer to Table 1. This table shows that the surveys were completed by students enrolled in five studies in Economics. Since the students in the Bachelor

Economie en Bedrijfseconomie, the Bachelor Fiscale Economie, the International Bachelor in Economics and Business Economics (hereafter referred with 'IBEB') and the Mr. drs.-program Economie en Recht all take the same courses and make the same exams throughout the year, all these students would be representative as students in Economics at the Erasmus University. The programs of IBEB and Mr. drs. in Economie en Recht slightly differ. The courses for IBEB are in English and the students in the Mr. drs-program attend courses in Law ('Recht') as well. IBEB students may be Dutch or internationals. To make sure all students would answer questions only in regard to their mutual study in Economics, questions were asked about this study only.

Table 1: Representativeness students

Students / Surveys	Completed	Deleted	Used	Enrolled study year 2013-2014*	Representative (in %)
BSc Economie en Bedrijfseconomie	290	5	285	490	58.2%
BSc² Econometrics/Economics	2	2	0	n/a	0%
BSc Fiscale Economie	56	0	56	104	53.8%
International BSc Economics and Business Economics	141	0	141	238	59.2%
Mr.drs.-program Economie en Recht	63	0	63	89	70.8%
TOTAL	552	7	545	921	59.2%

* (Erasmus Universiteit Rotterdam, 2013)

Seven survey results were not used for this research. Removing these surveys from the sample had different reasons. First, two of these removed answers were given by students who were enrolled in the BSc² Econometrics/Economics study. These students did not take all the same courses as the overall student in Economics and would therefore not be representative for this research. The reason I collected surveys of these students in the first place was because they were enrolled in an IBEB

tutor group. In order not to exclude them directly, I asked these two students to write down they were BSc² Econometrics/Economics students. Two other surveys were deleted, since they showed similar answers which suggests to be copied. Another survey was only filled out half. At last, two surveys will not be used since no place of residence was given.

4. Methodology

Aided by the outcomes of the survey, which is included in Appendix B, I was able to test study location effects on grades with multiple linear and logit regressions. As outcome variable of the regression, the grade in Applied Statistics 1 (labeled "as1gr") was used. Since this grade is the latest grade received by the students, this makes it in my opinion the most reliable indicator for the achievements of students' study behavior where they were asked about. On the right-hand side of the regression equation, the variables of interest are study time at the UB (labeled "UBhrs"), somewhere else at the Erasmus University (labeled "EURhrs"), home (labeled "HOMEhrs") and somewhere else (labeled "SEhrs"). These variables were an outcome of a multiplication of the amount of study hours with the distribution of study time per location. In order to reveal the effects of these locations on students' grades, control variables which are all likely to have an effect on students' grades were added to the regression. The amount of lectures visited (labeled "lect") is to control for study time while attending lectures. The same variable may function as an indicator for motivation as well, since I expect someone who is motivated about studying to visit more lectures. There is no extra control variable included for the interest (labeled "inter") of the student for the study as an indicator for motivation, since this would most likely affect the actual effect of the variable for lectures. As an indicator of IQ, I added how difficult (labeled "diff") students believe their study is. Next, I added alcohol consumption (labeled "alc") and hours of sleep (labeled "avsleep"). These two control variables were added to control for students who like to party and hang around until late. Being tired and consuming alcohol probably affects the students' grades negatively. For living with parents (labeled "dumpar") and amount of housemates living with (labeled "house") will also be controlled. It is possible that parents have a positive effect by stimulating their children to study. It is also possible that the students who still live with their parents are not the better students and stay with their parents to study in a trusted environment. It may be that especially these students' parents did not study themselves and are not familiar with living on him- or herself as a student. This suggests these students may be children from parents with lower IQs and the students may have relatively lower IQs compared to their fellow students as well. Amount of housemates, which includes everyone someone lives with, was added to control for distractions from these

housemates. Gender (labeled “gender”) was added to the regression because it may be that females obtain higher grades than men (Voyer & Voyer, 2014). Another control variable which was likely to add was nationality. Instead, I added a control variable for being an IBEB student (labeled “dumibeb”). This is because I expect these students to act as another group, since I believe foreign students to be more motivated about their studies and are likely to influence their fellow students by e.g. studying together. And so, the multiple linear regression which will be used looks like:

$$as1gr_i = \alpha_0 + \beta_1 UBhrs_i + \beta_2 EURhrs_i + \beta_3 HOMEhrs_i + \beta_4 SEhrs_i + \beta_5 lect + \beta_6 diff + \beta_7 alc + \beta_8 avsleep + \beta_9 dumpar + \beta_9 house + \beta_{10} gender + \beta_{11} dumibeb + \epsilon_i$$

To control if students may study just enough from a certain location until they will pass a course, or studying from a certain location results in more passes per se, a logit regression will be used in addition to the linear regression. A logit regression is a regression with a dichotomous outcome variable. Such a variable takes the values 0 or 1. For this regression I gave all students who did not pass their exam (<5.5) a 0 and the students who passed their grades (≥ 5.5) a 1.

After the construction of these regressions, I will split the data and run four new regressions. Again, linear and logit regressions will be used. The regressions will be for a group of students living in and outside Rotterdam. Since I expect these two groups to have a different home situation, they are likely to have different study behaviors as well. In the end, someone with more distraction at home will probably sort him- or herself faster to study from another location. The findings of the regressions can be found in Section 3 of the Results.

First, I will show descriptive statistics about the sample and results of an investigation to a discrepancy between believes and actual behavior. The descriptive statistics will tell about the favored study locations by students, their study behavior, home situations and what kind of aspects they believe are (more) important in choosing their place to study. These aspects are regressed on study locations to see which aspects have significant effects on choosing a certain location to study. The outcomes of the discrepancy are results of answers given by students about their productivity and distraction among the four locations. A discrepancy will exist when students study most from a certain location, but in fact expect him- or her to be more productive and/or less distracted when studying from another. These findings can be found in respectively Sections 1 and 2.

5. Results

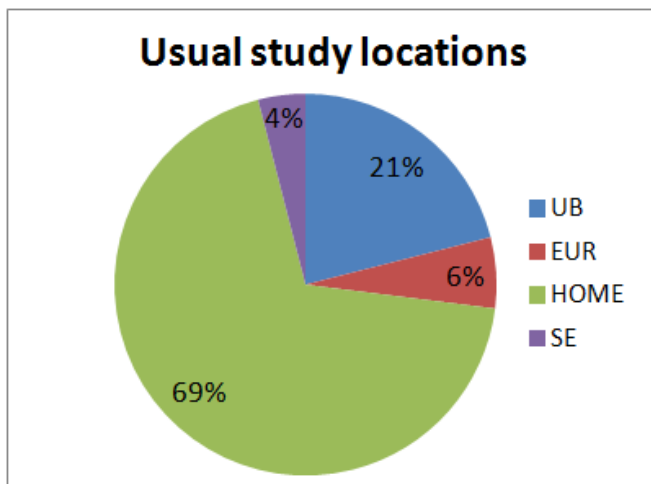
For the descriptions of the abbreviations of variables used in the regressions please have a look in the Codebook in Appendix C.

5.1 Descriptive statistics, ideals and discrepancies for all students

5.1.1 Descriptive statistics

The pie chart in Fig. 1 shows the locations where students usually study in percentages. Not really unexpected, students seem to study most of their time from home with 69%, followed by the UB with 21%. This means that the students study 3.3 times more from home than the UB.

Fig. 1: Usual study locations



This does not mean that 69% of the students studies from home. The amount of students studying at home in fact embraces almost all students. The pie chart showed in Fig. 2 shows that 96% of the students' studies from home and 22% does only study from home. The difference between both includes the students who study both from home and other locations. And so it appears that 74% of the students studies from home and other locations.

Fig. 2: Percentages of students studying from home

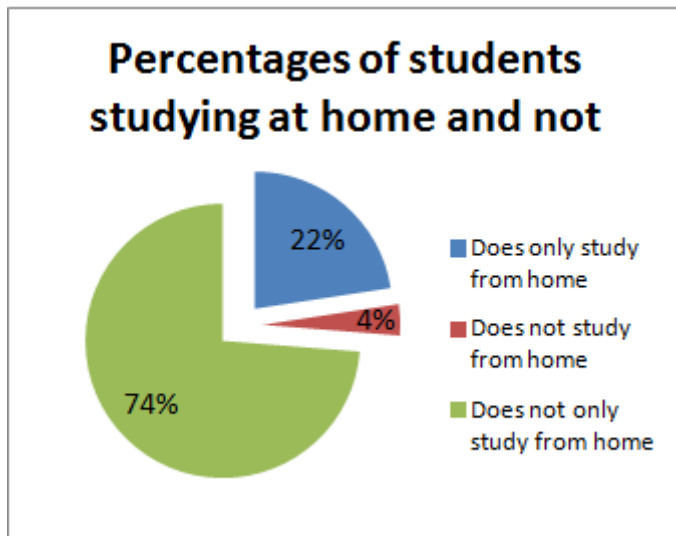


Table 2 shows that only 62.4% of the students uses the UB. 26.8% of the students appear to study from other locations at the Erasmus University. At last, only 17.8% of the students studies from somewhere else.

Table 2: Students who do and do not study from other locations than home

Frequency of students who uses study location(s)	UB	EUR	SE
Do	340 (62.4%)	146 (26.8%)	97 (17.8%)
Do not	205 (37.6%)	399 (73.2%)	448 (82.2%)
TOTAL	545	545	545

To give an idea of what kind of locations students study when studying from other locations than home and the UB, have a look at Figures 3 and 4. Figure 3 shows the locations reported when students usually study from other location at the Erasmus University than the UB. The main answers given were the buildings G, C and T and the PC-rooms. To give an idea what kind of locations these are, I will give you a description. The buildings C and T are respectively the main buildings of the faculties of Economics and Business Administration. Both studies are the most popular studies at the

Erasmus University. Therefore, these buildings are one of the largest and offer flexible workspaces. The G-building, as well as the earlier described T-building, are buildings which offer a lot of flexible workspaces and PC-rooms. Figure 4 shows the locations students named when they study from other locations than home and the Erasmus University. These students reported the (public) library and public transport as the most popular workplaces to study. I assume students only choose to study from the public transport if they are on their way to somewhere, e.g. the Erasmus University. Therefore, this seems to be an occasional location to study.

Fig. 3: Most used study locations if at the Erasmus University (EUR)

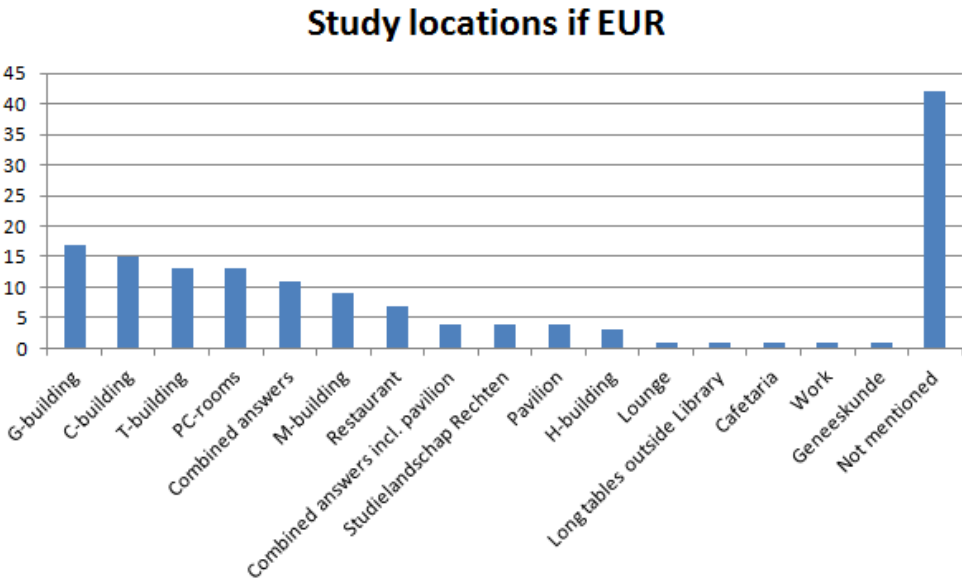
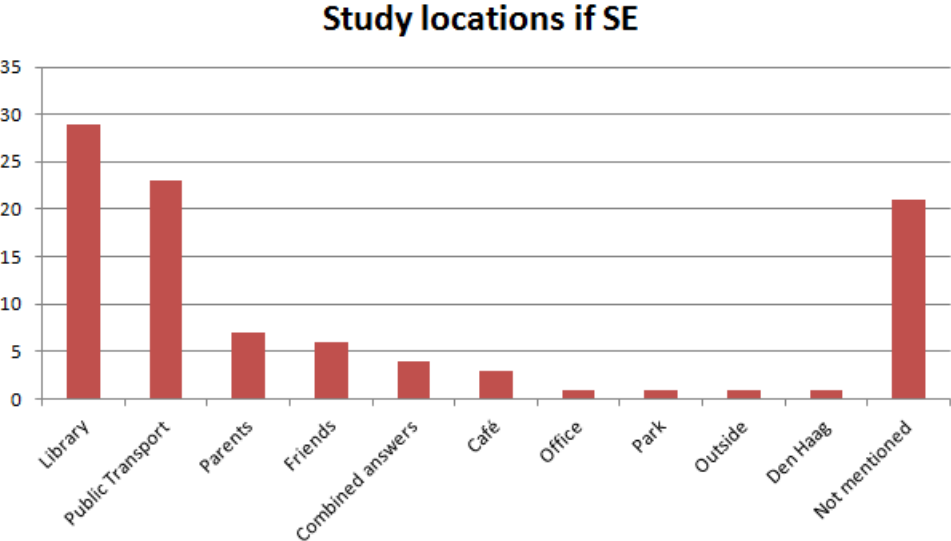


Fig. 4: Most used study locations if somewhere else (SE)



5.1.2 'Ideal' study locations

When students were asked what kind of aspects they believed were important, they answered with the averages summarized in Table 3. The aspects of silence, avoiding distraction and distance were valued with a mean above 5. And so, above average, these aspects seem to be the most important for all students. Being in the presence of other students is much less important (3.14). In order of completeness, students noted food, drinks, enough workspace and internet as other important aspects to study. Since not many filled out what other aspects (labeled "Something else") they believe are important and/or valued it with 1, the mean of this bundled aspect is relatively low. It can be interpreted as that students do not think anything else to be important or that they did not think about it while reporting.

Table 3: Aspects important in students' choices from which location to study

	Silence	Other students around	Avoiding distraction	Computers and printers/scanners	Being at home	Distance	Something else
Mean	5.71	3.14	5.41	4.36	4.4	5	3.2
Std. Dev.	1.42	1.85	1.54	1.99	1.80	1.77	2.18
Min	1	1	1	1	1	1	1
Max	7	7	7	7	7	7	7
Obs	543	542	542	542	542	544	149

Since students appear to study mostly from home and the UB, as earlier described and showed in Fig. 1, regressions will only be established with these particular locations as outcome variables in order to see how these aspects affect students' choice from which location to study. In addition to the aspects, the interest in and difficulty of the study by the students will be included as independent variables. The variable for interest is included since it may be that students who are more interested in their study (as an indicator of motivation) care less about the location to study. The variable for difficulty because a student who believes the study is more difficult (as an indicator of IQ), may choose to study in a more achievement based environment

Tables 4 and 5 show respectively the regressions at home and the UB. Since the Breusch-Pagan / Cook-Weisberg test found heteroskedasticity in both regressions, robust White standard errors were used to make the models more homoskedastic and therefore more BLUE, which means it gives 'best' linear unbiased estimators (Carter Hill, Griffiths, & Lim, 2008). In this research, heteroskedasticity means that the variances of the variables for all students are not the same. This may be because there are groups of students within the sample, which e.g. differ in nationality or residence. By using White robust standard errors, the outliers, which result in the different variances, will be taken less into account.

The regression in Table 4 gives statistical significant evidence that students who like the presence of other students ($p = 0.000$, $c = -2.68$), like to avoid distraction ($p = 0.038$, $c = -1.59$), like to use computers and printers/scanners ($p = 0.024$, $c = -1.27$) and think their study is difficult ($p = 0.066$, $c = -1.46$), study less from home. Only the variable of difficulty seem to be statistical significant on a 10%-scale. The only (heavy) positive statistical significant result is being at home ($p = 0.000$, $c = 9.3$). This effect is at least three times as high as the importance of the presence of students to choose to study somewhere else than home. It means that if a student likes being at home, the student will probably stay at home to study.

Table 4: Aspects important in choice for studying at home

```
Linear regression                                Number of obs =      537
                                                F( 8, 528) =      37.41
                                                Prob > F      =      0.0000
                                                R-squared     =      0.3739
                                                Root MSE     =      24.506
```

stHOME	Robust HC3			P> t	[95% Conf. Interval]	
	Coef.	Std. Err.	t			
imp_sil	-.7325017	.7902256	-0.93	0.354	-2.284874	.8198706
imp_stud	-2.679915	.6364757	-4.21	0.000	-3.930251	-1.42958
imp_avoid	-1.58769	.7637267	-2.08	0.038	-3.088006	-.087374
imp_comp	-1.27436	.5623039	-2.27	0.024	-2.378987	-.1697321
imp_home	9.302302	.6692807	13.90	0.000	7.987522	10.61708
imp_dist	.5470119	.6229774	0.88	0.380	-.6768067	1.77083
inter	.2898432	1.00356	0.29	0.773	-1.681618	2.261305
diff	-1.459581	.7910643	-1.85	0.066	-3.013601	.094439
_cons	57.41119	9.441459	6.08	0.000	38.86376	75.95863

Table 5 shows the same aspects but now regressed on the UB. The results are the other way around compared to Table 4. This is not surprising since the UB is the students' second choice to study from. And so, this table gives statistical significant results that students will study more from the UB if they like the presence of other students ($p = 0.005$, $c = 1.75$), like to avoid distraction ($p = 0.006$, $c = 1.93$) and think their study is difficult ($p = 0.003$, $c = 2.18$). If they prefer being at home ($p = 0.000$, $c = -8.09$) students are more likely not to study in the UB. There is no statistical significant ($p = 0.444$) effect of importance of computers and printers/scanners to go to the UB to study.

Table 5: Aspects important in choice for studying at the UB

Linear regression		Number of obs = 537				
		F(8, 528) = 27.79				
		Prob > F = 0.0000				
		R-squared = 0.3425				
		Root MSE = 23.121				
stUB	Coef.	Robust HC3 Std. Err.	t	P> t	[95% Conf. Interval]	
imp_sil	.931728	.7730548	1.21	0.229	-.5869126	2.450369
imp_stud	1.753811	.6181703	2.84	0.005	.5394356	2.968186
imp_avoid	1.93338	.7065973	2.74	0.006	.5452932	3.321468
imp_comp	.4024553	.5257723	0.77	0.444	-.6304071	1.435318
imp_home	-8.092967	.6747565	-11.99	0.000	-9.418504	-6.76743
imp_dist	-.4538391	.5840206	-0.78	0.437	-1.601128	.6934502
inter	-.8144276	.9670401	-0.84	0.400	-2.714146	1.085291
diff	2.175312	.7385405	2.95	0.003	.7244731	3.62615
_cons	30.90165	9.175941	3.37	0.001	12.87581	48.92748

5.1.3 Discrepancy between beliefs and actual behavior

When students were asked to fill out how distracted and productive they believed to be on a 7-point scale while studying at the four locations given, 49.9% of the students answered they study mostly from the location they study most productive and/or are least distracted. Table 6 shows that only 77,4% of the students who study most of their time only in the UB, think they are most productive and least distracted at that location. For students who study most of their time only from home, this is only 44.1%. Most interesting finding here is that 28.1% of the students, who study most of their time at home, believe they can be more productive and/or distracted at other locations. This is only 9.5% for students studying at the UB.

Table 6: Productiveness and distraction students at home and UB

Studies most from location(s)	Descriptions about distraction / productiveness	Elsewhere more productive	Most productive at this location	Observations
UB	Elsewhere less distracted	8 (9.5%)	10 (11.9%)	84 (100%)
	Least distracted at this location	1 (1.2%)	65 (77.4%)	
Home	Elsewhere less distracted	112 (28.1%)	96 (24.1%)	399 (100%)
	Least distracted at this location	15 (3.8%)	176 (44.1%)	
TOTAL				483

5.2 Descriptive statistics, ideals and discrepancies of two groups of students

5.2.1 Descriptive statistics

Figure 1 showed that students study most of their time from home. The big difference of 18.6% (28.1% compared to 9.5%) from Table 6 shows that students studying most of their time from home think they could be much more productive and less distracted from somewhere else compared to students studying in the UB. Although students who like being at home seem to study statistically significantly ($p = 0.000$, $c = 9.3$) more from home, students who do not think being at home is that important, may choose for other locations to study. And so, it is likely that students who are less satisfied with their homes as places to study, sort themselves into other locations. In line with this expectation, there might be a huge difference in students' home situations between two groups of students. The first group would be students who live in Rotterdam and the second live outside Rotterdam. Table 7 shows us a summary of descriptive statistics about these two groups' home situations. There seem to be three major differences which may be important for students living in Rotterdam to sort them to study from other locations than home. At first, students who live in Rotterdam live almost six times less (91.9% compared to 15.4%) with their parents. Probably these

students live for the first time in their lives on themselves. (I expect this to be since the students I am talking about are probably between 18 and 21 years old.) This means that it is very likely that they have more responsibilities and more decisions to make on their own, where in the past parents may have influenced them. Now, they have on average 2.7 housemates who may encounter them to hang out, drink and go out. The statistics indeed give evidence that the students living in Rotterdam drink on average six glasses of alcohol more than their fellow students and sleep 18 minutes less per night. Therefore, these students may be more likely to find another spot to study which gives less distraction and where they can study more productive. Since travel time is for them 3.7 times less to get to the UB, these students may indeed study more from the UB or somewhere else at the Erasmus University.

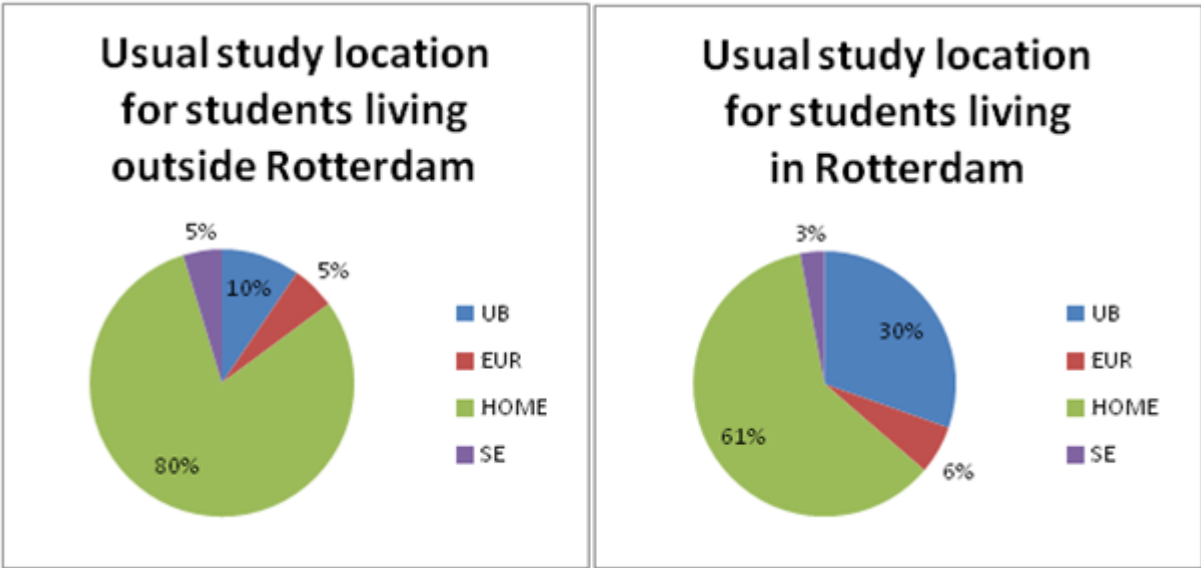
Table 7: Home situation of students living in and outside Rotterdam

Variables / Residence	Measurement unit	Rotterdam	Outside Rotterdam	Observations
Residence	Students (in %)	299 (54.9%)	246 (45.1%)	545 (100%)
Lives with parents	Students (in %)	46 (15.4%)	226 (91.9%)	272
Does not live with parents	Students (in %)	253 (84.6%)	20 (8.1%)	273
Housemates	Persons (on average)	2.69	3.43	539
Travel time	Minutes (on average)	14.16	52.24	544
Alcohol usage	Glasses (on average per week)	14.69	8.73	540
Hours sleep	Hours per night (on average)	7.3	7.6	542

Fig. 5 shows the differences in choices of study locations in percentages by the students living in and outside Rotterdam. These two groups indeed differ a lot in their choices. Most interesting to see is

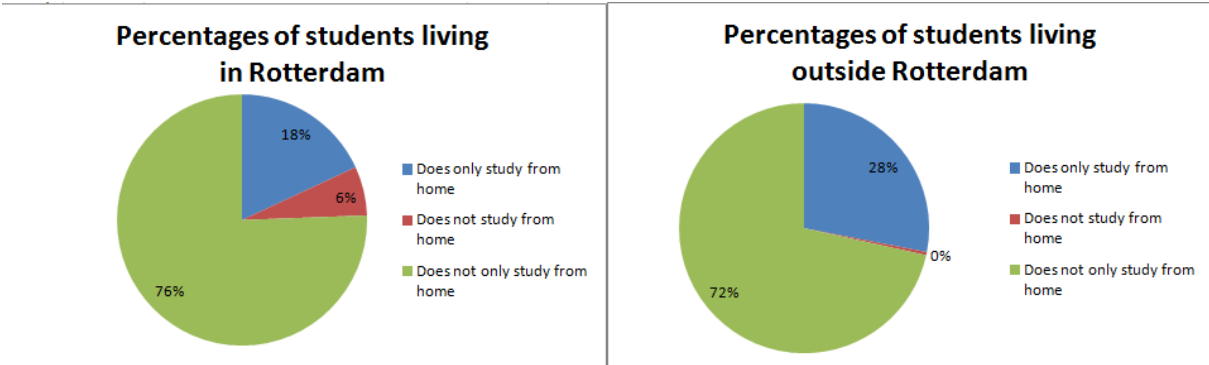
that students living in Rotterdam study three times more in the UB than students living outside Rotterdam. The other locations at the Erasmus University are also slightly favored by students living in Rotterdam. Somewhere else is slightly favored by students living outside of Rotterdam. These students indeed account for 72.4% of the students who study in other libraries than the UB. Also, these students are 60.9% of the students studying on the road.

Fig. 5 Usual study location for students living outside and in Rotterdam



From Fig. 6 can be seen that students living outside Rotterdam are more likely to study from home. Interesting to see is that students living outside Rotterdam do all study from home and that 10% more of the students living in Rotterdam study in the UB than students living outside Rotterdam.

Fig. 6 Percentages of students living in Rotterdam and their study behavior at home



Although students who are living in Rotterdam are more likely to use the UB than students living outside Rotterdam, not all of them do. Only 71.6% of the students living in Rotterdam use the UB and much less, 51.2% of the students living outside Rotterdam. These percentages can be read from Table 8.

Table 8: Frequency of students who uses other study locations than home

Frequency of students who uses study location	UB		EUR		SE	
	Residence outside Rotterdam	Residence in Rotterdam	Residence outside Rotterdam	Residence in Rotterdam	Residence outside Rotterdam	Residence in Rotterdam
Do	126 (51.2%)	214 (71.6%)	70 (28.5%)	77 (25.8%)	51 (20.7%)	45 (15.1%)
Do not	120 (48.8%)	85 (28.4%)	176 (71.5%)	222 (74.2%)	195 (79.3%)	246 (82.3%)
TOTAL	246	299	246	299	246	299

5.2.2 'Ideal' study locations

From Table 3 can be read that silence, avoiding distraction and distance are overall the most important factors by the students in their choice where to study from. Table 9, which shows the averages of aspects which are important for each group of students in their choice where to study, shows that this holds for the separated groups of students as well. Silence is equally important for both groups. Differences appear in avoiding distraction, distance and the appearance of being at home as an overall important factor. Students living in Rotterdam seem to prefer avoiding distracting more than students living outside Rotterdam. This may be a result of the home situation in which they are more vulnerable to be distracted, like described earlier in Section 5.2.1. Also, it does not come as a surprise that the biggest difference in the aspects important for both groups of students, appears to be being at home. It seems to be that students living outside Rotterdam value being at home 0.8 points more on a 7-points scale than students living outside Rotterdam. At last, students living in Rotterdam think distance is less important in choosing the location where to study from. This may be because they do not have to travel that far to go to the UB or another library in the city.

Table 9: Aspects important in students' choice from which location to study given their residence

Residence	Statistic	Silence	Other students around	Avoiding distraction	Computers and printers /scanners	Being at home	Distance	SE
Outside Rotterdam	Mean	5.7	3	5.2	4.4	4.8	5.19	3.1
	Std. Dev.	1.4	1.8	1.6	1.9	1.6	1.6	2.1
	Min	1	1	1	1	1	1	1
	Max	7	7	7	7	7	7	7
	Obs	246	246	245	245	246	246	57
Rotterdam	Mean	5.7	3.3	5.6	4.3	4.0	4.8	3.2
	Std. Dev.	1.4	1.9	1.4	2.0	1.9	1.9	2.3
	Min	1	1	1	1	1	1	1
	Max	7	7	7	7	7	7	7
	Obs	297	296	297	297	296	298	92

The same aspects as used in Table 9, as well as the studies' difficulty and students' interest in it, will be put in regressions on studying from home and the UB again. This time the outcomes are separated for the students living in and outside Rotterdam. Table 10 shows the regression of the independent variables on home as study location by students living outside Rotterdam. Since the Breusch-Pagan / Cook-Weisberg test found heteroskedasticity in both models, robust White standard errors were used to make the models more homoskedastic and therefore more BLUE.

Table 10: Aspects important in choice for studying at home by students living outside Rotterdam

Linear regression Number of obs = 244
F(8, 235) = 3.63
Prob > F = 0.0005
R-squared = 0.1644
Root MSE = 21.536

stHOME	Robust HC3					[95% Conf. Interval]	
	Coef.	Std. Err.	t	P> t			
imp_sil	.3211247	1.144628	0.28	0.779	-1.933919	2.576168	
imp_stud	-1.34713	.9246626	-1.46	0.146	-3.168817	.4745572	
imp_avoid	-.6692927	1.011538	-0.66	0.509	-2.662135	1.323549	
imp_comp	-1.525272	.7718072	-1.98	0.049	-3.045817	-.0047265	
imp_home	5.269182	1.207626	4.36	0.000	2.890026	7.648337	
imp_dist	.439221	.9049114	0.49	0.628	-1.343554	2.221996	
inter	-1.048824	1.803445	-0.58	0.561	-4.60181	2.504162	
diff	-.327267	1.120958	-0.29	0.771	-2.535678	1.881144	
_cons	72.21514	13.59076	5.31	0.000	45.43984	98.99044	

According to Table 10, students who live outside Rotterdam prefer with statistical significant certainty a different location than home when they believe computers and scanners/printers ($p = 0.049$, $c = -1.5$) are important. Also, when these students think being at home is important, it is with enough statistical evidence ($p = 0.000$, $c = 5.3$) to say that they will prefer home as a place to study.

Table 11: Aspects important in choice for studying in the UB by students living outside Rotterdam

Linear regression Number of obs = 244
F(8, 235) = 2.35
Prob > F = 0.0188
R-squared = 0.1374
Root MSE = 14.807

stUB	Robust HC3					[95% Conf. Interval]	
	Coef.	Std. Err.	t	P> t			
imp_sil	-.5652207	.7345305	-0.77	0.442	-2.012327	.8818853	
imp_stud	.2335103	.563916	0.41	0.679	-.8774663	1.344487	
imp_avoid	1.325936	.6804137	1.95	0.053	-.0145536	2.666426	
imp_comp	.264275	.4923233	0.54	0.592	-.705656	1.234206	
imp_home	-3.023487	.8520755	-3.55	0.000	-4.70217	-1.344805	
imp_dist	-.5494677	.566884	-0.97	0.333	-1.666292	.5673563	
inter	-.7366016	1.316882	-0.56	0.576	-3.331004	1.857801	
diff	.9548639	.6720045	1.42	0.157	-.3690589	2.278787	
_cons	21.63701	9.356721	2.31	0.022	3.203235	40.07078	

When the students live outside Rotterdam, as can be seen from Table 11, it is with statistical significant certainty on a 10%-level to say that when they prefer avoiding distraction ($p = 0.053$, $c = 1.3$), they sort themselves more in the UB. In addition to the previous table, students who prefer to be at home when studying are statistical significant ($p = 0.000$, $c = -3.0$) to study from somewhere else than the UB. This is most likely home.

Table 12: Aspects important in choice for studying at home by students living in Rotterdam

```
Linear regression                                Number of obs =      293
                                                F( 8, 284) =    44.30
                                                Prob > F      =    0.0000
                                                R-squared     =    0.4612
                                                Root MSE     =    24.756
```

stHOME	Robust HC3		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
imp_sil	-1.279805	1.117091	-1.15	0.253	-3.478633	.9190235
imp_stud	-3.413484	.7958439	-4.29	0.000	-4.979985	-1.846983
imp_avoid	-2.077547	1.096152	-1.90	0.059	-4.23516	.0800656
imp_comp	-1.147224	.7366896	-1.56	0.121	-2.597289	.3028403
imp_home	10.78656	.7658524	14.08	0.000	9.279094	12.29403
imp_dist	.1139475	.8151677	0.14	0.889	-1.49059	1.718485
inter	.4164462	1.148005	0.36	0.717	-1.843231	2.676124
diff	-1.354063	1.047577	-1.29	0.197	-3.416063	.7079371
_cons	55.38685	12.15351	4.56	0.000	31.46447	79.30923

Table 12 shows that with statistical significant certainty ($p = 0.000$, $c = -3.4$) is to say that students living in Rotterdam who enjoy the presence of other students around are more likely to sort themselves away from home to study. Also, when these students prefer to avoid any distractions, they are likely to sort them away from home ($p = 0.059$, $c = -2.1$). This variable is only statistical significant on a 10%-level. The biggest statistical significant difference for students who live in and outside Rotterdam appears to be the preference for being at home. Where students who live outside Rotterdam study more from home when they prefer being at home ($p = 0.000$, $c = 5.3$), the effect for students living in Rotterdam is even double ($p = 0.000$, $c = 10.8$).

Table 13: Aspects important in choice for studying in the UB by students living in Rotterdam

Linear regression		Number of obs = 293				
		F(8, 284) = 31.28				
		Prob > F = 0.0000				
		R-squared = 0.4089				
		Root MSE = 25.441				
stUB	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
imp_sil	2.023688	1.215651	1.66	0.097	-.3691415	4.416518
imp_stud	2.581909	.8285549	3.12	0.002	.9510215	4.212797
imp_avoid	2.005916	1.134726	1.77	0.078	-.2276241	4.239457
imp_comp	.5686018	.7527669	0.76	0.451	-.9131085	2.050312
imp_home	-10.00706	.8176575	-12.24	0.000	-11.61649	-8.397618
imp_dist	.0783525	.8158566	0.10	0.924	-1.52754	1.684246
inter	-.2810486	1.18748	-0.24	0.813	-2.618428	2.056331
diff	2.080208	1.07363	1.94	0.054	-.0330744	4.19349
_cons	29.09455	12.83353	2.27	0.024	3.833641	54.35546

In addition to the results of Table 12, Table 13 shows that students who live in Rotterdam are respectively with statistical significant certainty to sort themselves into the UB when they believe silence ($p = 0.097$, $c = 2.0$), the presence of other students ($p = 0.002$, $c = 2.6$) and avoiding distraction ($p = 0.078$, $c = 2.0$) are important. Both the importance of silence and avoiding distraction are significant at the 10%-level. Also, the more difficult these students believe their study is, the more likely they study in the UB ($p = 0.054$, $c = 2.1$). The importance of difficulty is also only statistical significant on a 10%-level. At last, students who like being at home, study statistical significant less in the UB ($p = 0.000$, $c = -10.0$).

5.2.3 Discrepancy between believes and actual behavior

Section 5.1.3 showed that 50.1% of the students chose a location to study most while in fact another location would be more productive or less distracted. Only 77.4% of the students, who study most of their time at the UB, think this is the most productive and less distracted place to study from. When this group of students will be separated in a group of students living in Rotterdam and outside Rotterdam, more students living in Rotterdam (79.4%) believe this is the best location to study than students outside Rotterdam (76%). These findings can be read from Table 14. In addition to these findings, respectively 14.7 and 6.0 percent of the students living in and outside Rotterdam believe they could study more productive and less distracted at another place. And so, although more students living in Rotterdam study more productive and less distracted in the UB than outside Rotterdam, there is also 8.7% of the students more who believes another location is better to study.

In contrast, only 44.1% of the students who study most of their time at home, as can be read in Section 5.1.3, feel least distracted and most productive from this location. It appears to be that more students living outside Rotterdam (46.6%) believe to study most productive and least distracted from home than students who live in Rotterdam (42.2%).

Table 14: Productiveness and distraction students at home and UB by students living in and outside Rotterdam

		Outside Rotterdam	Rotterdam	Total outside Rotterdam	Total Rotterdam
UB	Most productive / least distracted	38 (76%)	27 (79.4%)	50 (100%)	34 (100%)
	Elsewhere more productive / less distracted	3 (6%)	5 (14.7%)		
	Elsewhere more productive or less distracted	9 (18%)	2 (5.9%)		
Home	Most productive / least distracted	82 (46.6%)	94 (42.2%)	176 (100%)	223 (100%)
	Elsewhere more productive / less distracted	50 (28.4%)	62 (27.8%)		
	Elsewhere more productive or less distracted	44 (25%)	67 (30.0%)		
TOTAL				483	

5.3 Location effects on grades

5.3.1 Location effects on grades for all students

The huge difference of at least 29.4% between the satisfaction of students studying in the UB and at home as most productive and least distracted place to study from, raises the suspicion that studying from the UB is indeed a location in which students perform better than home, like stated in the hypothesis. In order to learn about the effect of studying from home compared to other locations on the students' grades, a multiple linear regression like stated in the Section Methodology, can be used. To give some power to the decision to include a variable for difficulty as an indicator for IQ, Tables 15 and 16, which shows regressions with and without this variable, will be compared. Both regressions are adjusted with robust White standard errors since the Breusch-Pagan / Cook-Weisberg test found heteroskedasticity in the regressions.

Table 15 shows that study time from home is statistical significant ($s = 0.038$, $c = 0.027$). This means that studying one hour more from home has a 0.027 point effect on the grade of Applied Statistics 1. Stated differently, it means that for each 0.5 point higher in a students' grade, the student has to study 18.5 hours from home. The other variable which is significant is being an IBEB student ($s = 0.081$, $c = 0.277$). It seems important to have a dummy for this particular group since they probably behave statistical significant differently from other students. But so far, the model does almost not explain the variation of the outcome variable Applied Statistics 1. This can be seen from the very low R-squared of the regression of 0.0448. When I add a control variable for difficulty, which functions as indicator of IQ, the R-squared raises to 0.1651. This can be read from Table 16. Also, the model will be more significant ($p = 0.000$ compared to 0.0241). Adding this variable makes also studying from the UB and home, more significant. Studying from home seems to have a higher effect with more statistical significance ($p = 0.001$, $c = 0.037$). This means a student should only study 13.5 hours from home to get a 0.5 point higher grade instead of 18.5 hours when not controlled for IQ via the variable of difficulty. The 95% Confidence Interval shows that this effect is with the same statistical significance always positive. This means that studying from home seems to work. Studying from the UB remains not statistically significant.

Other variables which are statistical significant now are lectures ($p = 0.010$, $s = 0.10$) and difficulty ($p = 0.000$, -0.34). It is interesting especially these variables are heavy statistical significant since lectures and IBEB students can be seen as indicator for motivation and difficulty as indicator for IQ.

Table 15: Linear regression of location and other independent variables on the Applied Statistics 1 grade (excluded variable for difficulty)

Linear regression

Number of obs = 505
 F(11, 493) = 2.03
 Prob > F = 0.0241
 R-squared = 0.0448
 Root MSE = 1.308

as1gr	Robust HC3		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
UBhrs	-.0066601	.0177983	-0.37	0.708	-.04163	.0283097
EURhrs	-.0504819	.0392154	-1.29	0.199	-.1275318	.0265679
HOMEhrs	.0268777	.0129405	2.08	0.038	.0014523	.0523032
SEhrs	.0410039	.0599608	0.68	0.494	-.0768063	.1588141
lect	.0555909	.0439763	1.26	0.207	-.0308133	.141995
alc	-.0067718	.0059225	-1.14	0.253	-.0184082	.0048646
avsleep	.0388078	.0554028	0.70	0.484	-.0700469	.1476625
dumpar	-.0919034	.1422831	-0.65	0.519	-.3714595	.1876527
house	.010212	.0312	0.33	0.744	-.0510893	.0715134
gender	-.0637399	.1426329	-0.45	0.655	-.3439833	.2165035
dumibeb	.2766767	.1584014	1.75	0.081	-.0345484	.5879019
_cons	6.219987	.4725492	13.16	0.000	5.291529	7.148446

Table 16: Linear regression of location and other independent variables on the Applied Statistics 1 grade (included variable for difficulty)

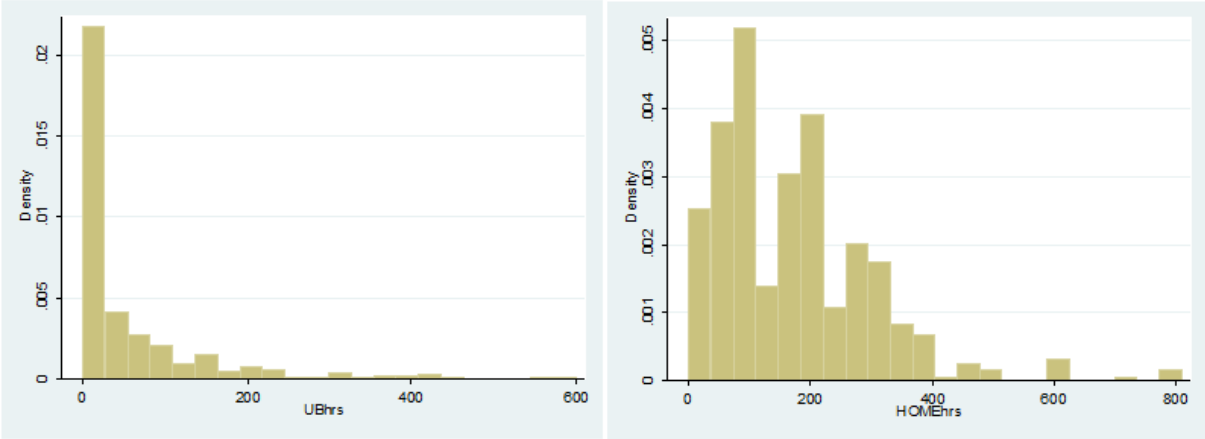
Linear regression

Number of obs = 504
 F(12, 491) = 9.35
 Prob > F = 0.0000
 R-squared = 0.1651
 Root MSE = 1.225

as1gr	Robust HC3		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
UBhrs	.0078907	.0178969	0.44	0.659	-.0272734	.0430547
EURhrs	-.0275555	.0405428	-0.68	0.497	-.1072142	.0521032
HOMEhrs	.0369969	.0114874	3.22	0.001	.0144264	.0595675
SEhrs	.0099995	.0499872	0.20	0.842	-.0882156	.1082147
lect	.1044712	.0404359	2.58	0.010	.0250224	.1839201
diff	-.3426212	.0383421	-8.94	0.000	-.4179561	-.2672864
alc	-.007797	.0055959	-1.39	0.164	-.018792	.0031979
avsleep	.0361022	.0496074	0.73	0.467	-.0613668	.1335712
dumpar	-.1214246	.131316	-0.92	0.356	-.3794353	.136586
house	.0165973	.0298202	0.56	0.578	-.0419935	.0751882
gender	.1004523	.1326787	0.76	0.449	-.1602358	.3611403
dumibeb	.3744898	.1530867	2.45	0.015	.073704	.6752755
_cons	7.399934	.4607859	16.06	0.000	6.494578	8.305289

So, statistical significant effect of study time from home on students' grades has been found. But maybe some students study only from certain locations until they studied enough for a pass. In the end, Fig. 1 showed that only 21% of the usual study time is in the UB. Next, students study much shorter time periods in the UB than from home, which can be read from Fig. 7. Therefore, a logit (logistic) regression will help to reveal if students study from the UB or home just enough to pass their exams. The outcomes of this logistic regression can be found in Table 17.

Fig. 7: Study hours at the UB and home



From Table 17 can be read that none of the locations have a statistical significant effect on passing the course Applied Statistics 1. This means that it is not with enough statistical evidence to say that studying from a certain location results in more or less passes for the course Applied Statistics 1. The only statistical significant effects are for difficulty and being an IBEB student. It is logical that students who believe their study to be difficult, perform less ($p = 0.000$, -0.46). Also, the effect of being an IBEB student is very significant and positive ($p = 0.007$, $c = 0.92$). It is in line with earlier findings that these students are well motivated and perform better.

Table 17: Logistic regression on passing Applied Statistics 1

```
Iteration 0: log likelihood = -252.47983
Iteration 1: log likelihood = -235.51549
Iteration 2: log likelihood = -234.75291
Iteration 3: log likelihood = -234.75089
Iteration 4: log likelihood = -234.75089
```

```
Logistic regression                                Number of obs   =      504
                                                    LR chi2(12)     =      35.46
                                                    Prob > chi2     =      0.0004
Log likelihood = -234.75089                       Pseudo R2      =      0.0702
```

aslpass	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
UBhrs	.0044853	.0351058	0.13	0.898	-.0643208 .0732915
EURhrs	-.0278693	.0711669	-0.39	0.695	-.1673538 .1116152
HOMEhrs	.0244294	.0223964	1.09	0.275	-.0194667 .0683254
SEhrs	.0589142	.1226737	0.48	0.631	-.1815219 .2993502
lect	.0908089	.0860371	1.06	0.291	-.0778208 .2594386
diff	-.4630298	.0959007	-4.83	0.000	-.6509917 -.275068
alc	-.008475	.0112947	-0.75	0.453	-.0306123 .0136623
avsleep	.0924512	.1094783	0.84	0.398	-.1221224 .3070247
dumpar	-.0493624	.2818982	-0.18	0.861	-.6018727 .5031479
house	.0834386	.0710175	1.17	0.240	-.0557531 .2226302
gender	.1006547	.2690888	0.37	0.708	-.4267497 .6280591
dumibeb	.9181607	.3420038	2.68	0.007	.2478456 1.588476
_cons	1.99838	1.02822	1.94	0.052	-.0168939 4.013655

5.3.2 Location effects on grades for both groups of students

Since two groups of students, a group living in and another outside Rotterdam seem to differ in their study behavior, it is interesting to see how these students behave and if studying from a certain location affects their grades. Table 18 shows the differences in study behavior. The most eye-catching difference is the hours studied by both groups. According to the results students living in Rotterdam study on average two hours and 15 minutes more than students who live outside Rotterdam. The grades of both types of groups are more or less the same.

Table 18: Study behavior and results students

Study behavior and results students				
Variables / Residence	Measurement unit	Rotterdam	Outside Rotterdam	Total observations
Study hours	Hours (on average)	10.91	8.66	528
Lectures	Amount (on average)	2.25	2.39	544
Interest	Amount (on average)	5.26	5.42	544
Difficulty	Amount (on average)	4.36	4.07	544
Macroeconomics grade	Amount (on average)	6.62	6.7	537
Applied Statistics 1 grade	Amount (on average)	6.7	6.8	533

In order to see if the study behaviors of the groups of students living in and outside Rotterdam have different effects on their grades, linear and logistic regressions will be used. First, Table 19 shows a linear regression for students living in Rotterdam.

Table 19: Linear regression for students living in Rotterdam

Source	SS	df	MS	Number of obs = 274		
Model	83.4212622	12	6.95177185	F(12, 261) =	4.61	
Residual	393.327825	261	1.50700316	Prob > F =	0.0000	
Total	476.749088	273	1.74633365	R-squared =	0.1750	
				Adj R-squared =	0.1370	
				Root MSE =	1.2276	

as1gr	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
UBhrs	.0102827	.017583	0.58	0.559	-.0243398	.0449052
EURhrs	-.0194	.0435711	-0.45	0.657	-.1051956	.0663955
HOMEhrs	.0403927	.0132936	3.04	0.003	.0142163	.0665691
SEhrs	-.0340024	.0707003	-0.48	0.631	-.1732179	.105213
lect	.0694291	.0559199	1.24	0.216	-.0406826	.1795407
diff	-.3272212	.0544094	-6.01	0.000	-.4343584	-.2200839
alc	.000381	.0068896	0.06	0.956	-.0131854	.0139473
avsleep	.0086376	.0667109	0.13	0.897	-.1227225	.1399978
dumpar	-.1433061	.2403277	-0.60	0.551	-.6165342	.329922
house	-.0144054	.0413817	-0.35	0.728	-.0958899	.067079
gender	.2732297	.1687703	1.62	0.107	-.0590949	.6055544
dumibeb	.405908	.1731933	2.34	0.020	.064874	.746942
_cons	7.413703	.5848114	12.68	0.000	6.262154	8.565252

The regression showed in Table 19 shows different variables which have statistical significant effects on students' grades. With statistical significant certainty can be said that studying from home for students living in Rotterdam does work ($p = 0.003$, $c = 0.040$). The meaning of this variable is that students have to study 12.4 hours from home for a 0.5 higher grade. Again, the 95% Confidence Interval contains only positive numbers which suggests that studying from home also works for the students living in Rotterdam. Besides, IBEB students among them get statistical significant higher grades ($p = 0.020$, $c = 0.41$). At last, students living in Rotterdam who believe their study to be more difficult on a 7-point scale, get statistical significant lower grades ($p = 0.000$, -0.33). The difference with Table 16, in which all students were included, is missing a statistical significant effect of lectures attended on the grades. This means that it cannot be said with statistical certainty that attending lectures results in higher grades for the students living in Rotterdam.

Table 20 shows that studying from home for students living outside of Rotterdam also works ($p = 0.017$, $c = 0.039$). This means that a student has to study 12.8 hours from home to get a 0.5 point higher grade. In comparison with students who live in Rotterdam, this is only 24 minutes more. This is not that much, which suggests that students living in and outside Rotterdam have to study more or

less the same time from home to get a 0.5 point higher grade. Again, difficulty is significant and negative ($p = 0.000$, $c = -0.357$). This time lectures attended and parents are also statistical significant. This means that students living outside of Rotterdam who visit lectures, result in having 0.146 points higher grades per visited lecture ($p = 0.019$, $c = 0.146$). Students who live with their parents, will get 0.83 points lower grades ($p = 0.007$, -0.83). This does not necessarily mean that parents have a negative influence; it can also mean that those students differ from other students. This time being an IBEB student is not significant ($p = 0.323$, $c = 0.289$). This is probably because there are too little observations of IBEB students living outside Rotterdam.

Table 20: Linear regression for students living outside Rotterdam

Source	SS	df	MS	Number of obs = 230		
Model	85.3962524	12	7.11635437	F(12, 217) =	4.85	
Residual	318.534182	217	1.46789946	Prob > F	= 0.0000	
				R-squared	= 0.2114	
				Adj R-squared	= 0.1678	
Total	403.930435	229	1.76388836	Root MSE	= 1.2116	

aslgr	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
UBhrs	.0629854	.0564058	1.12	0.265	-.048188	.1741587
EURhrs	-.0750887	.0691694	-1.09	0.279	-.2114186	.0612412
HOMEhrs	.0390285	.0161556	2.42	0.017	.0071864	.0708705
SEhrs	.0660566	.0747457	0.88	0.378	-.0812639	.213377
lect	.1463746	.0618619	2.37	0.019	.0244474	.2683018
diff	-.3570552	.064587	-5.53	0.000	-.4843533	-.229757
alc	-.0203274	.0107676	-1.89	0.060	-.0415499	.0008952
avsleap	.0671762	.079494	0.85	0.399	-.089503	.2238555
dumpar	-.8249651	.3030827	-2.72	0.007	-1.422328	-.2276022
house	.0329383	.0578496	0.57	0.570	-.0810807	.1469572
gender	-.1199108	.1988176	-0.60	0.547	-.5117715	.2719499
dumibeb	.288835	.2915166	0.99	0.323	-.2857314	.8634014
_cons	7.923262	.8089175	9.79	0.000	6.328921	9.517603

To check if studying from a certain location has different effects on passing the exam of Applied Statistics 1 for students living outside and in Rotterdam, the logit regressions shown in respectively Tables 21 and 22 will be used. From Table 21 can be read that studying from home has only a little effect on passing the Applied Statistics 1 grade at the 10%-level ($p = 0.09$, $c = 0.057$). It also shows a 95% Confidence Interval which starts with a negative value. This can mean that there is not enough statistical significance found to make the interval more reliable and therefore, in line with previous results of studying from home found, positive. Another meaning is that studying from home may

indeed have positive or negative effects on passing the exam in Applied Statistics 1, but this cannot be said with statistical certainty as well. Regarding other locations, Table 21 does not show statistical significant results on passing grades. There is enough statistical evidence to say that these students get higher grades when they are an IBEB student ($p = 0.048$, $c = 0.76$) and lower when they believe the study to be difficult ($p = 0.000$, $c = -0.444$).

Table 21: Logistic regression for students living in Rotterdam

```
Iteration 0:  log likelihood = -137.38707
Iteration 1:  log likelihood = -127.95009
Iteration 2:  log likelihood = -127.49283
Iteration 3:  log likelihood = -127.49169
Iteration 4:  log likelihood = -127.49169
```

```
Logistic regression                                Number of obs   =      274
                                                    LR chi2(12)     =      19.79
                                                    Prob > chi2     =      0.0711
Log likelihood = -127.49169                       Pseudo R2      =      0.0720
```

asipass	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
UBhrs	.0146807	.0375998	0.39	0.696	-.0590136 .0883751
EURhrs	-.0047647	.0871232	-0.05	0.956	-.1755232 .1659937
HOMEhrs	.056758	.0335153	1.69	0.090	-.0089308 .1224468
SEhrs	-.0460671	.1541748	-0.30	0.765	-.3482442 .2561101
lect	-.019651	.1183891	-0.17	0.868	-.2516895 .2123874
diff	-.443901	.126971	-3.50	0.000	-.6927597 -.1950423
alc	.0019697	.0143365	0.14	0.891	-.0261292 .0300687
avsleep	.0182975	.1456029	0.13	0.900	-.267079 .303674
dumpar	.2765989	.5193556	0.53	0.594	-.7413193 1.294517
house	.0333732	.0874726	0.38	0.703	-.1380699 .2048163
gender	.2956271	.3594297	0.82	0.411	-.4088422 1.000096
dumibeb	.7603846	.384019	1.98	0.048	.0077212 1.513048
_cons	2.386177	1.306403	1.83	0.068	-.1743268 4.946681

Table 22 shows the same regression but now for students living outside Rotterdam. Now, no statistical evidence has been found if studying from any locations results in more or less passes, not even on a 10%-scale. Since there will be probably not enough observations for IBEB living outside Rotterdam, the only significant result here is difficulty ($p = 0.003$, $c = -0.46$).

Table 22: Logistic regression for students living outside Rotterdam

```
Iteration 0: log likelihood = -115.09256
Iteration 1: log likelihood = -104.00221
Iteration 2: log likelihood = -102.96313
Iteration 3: log likelihood = -102.94456
Iteration 4: log likelihood = -102.9445
Iteration 5: log likelihood = -102.9445
```

```
Logistic regression                                Number of obs   =      230
                                                    LR chi2(12)     =      24.30
                                                    Prob > chi2     =      0.0185
Log likelihood = -102.9445                        Pseudo R2      =      0.1056
```

aslpass	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
UBhrs	.0551874	.135071	0.41	0.683	-.209547 .3199217
EURhrs	-.1503079	.146365	-1.03	0.304	-.4371781 .1365623
HOMEhrs	-.0022949	.0334822	-0.07	0.945	-.0679187 .063329
SEhrs	.2440974	.2409479	1.01	0.311	-.2281519 .7163466
lect	.2229864	.1353377	1.65	0.099	-.0422706 .4882434
diff	-.4617248	.1544254	-2.99	0.003	-.764393 -.1590565
alc	-.0222372	.0226444	-0.98	0.326	-.0666195 .022145
avsleep	.2037922	.1782345	1.14	0.253	-.145541 .5531255
dumpar	-1.022924	.8523005	-1.20	0.230	-2.693402 .6475548
house	.1287747	.1448112	0.89	0.374	-.1550501 .4125995
gender	-.2403334	.422305	-0.57	0.569	-1.068036 .5873693
dumibeb	1.579864	1.078676	1.46	0.143	-.5343023 3.694031
_cons	2.007199	1.911858	1.05	0.294	-1.739973 5.754371

6. Discussion

There are some major and minor limitations to this research. Although the regressions are tested for homoskedasticity and multicollineary, they probably do not satisfy the strict exogeneity and no serial correlation assumptions for Ordinary Least Squares (OLS) to be BLUE (Wooldridge, 2002). Strict exogeneity in terms of this research means that the expected error term will be independent of the study time per location and other variables related to the Applied Statistics 1 grade ($E\{\varepsilon|stHOME\} = 0$) (Bosker, 2013). This means that everything that will be known about the study time per location does not tell anything about the error term ε and does not show any connection with other variables related to the grade in Applied Statistics 1 when all else remains equal. This problem can arise in an omitted variable bias, reverse causality and measurement error. I will discuss these problems related to this research step by step.

An omitted variable bias is a bias which results from at least omitting one control variable from the right-hand side of the regression, which biases the regression since it is related to studying from a certain location and has an effect on the outcome variable of Applied Statistics 1. That is the reason why control variables such as study hours, amount of attended lectures and more were taken into the regression. Unfortunately, there were at least two control variables I could not totally control for. The first is intelligence (IQ). Measuring every students IQ is almost impossible. Therefore, in this research, an indicator of how difficult the student believes his or her study is, was used. But, IQ may still influence the regression even more since there was no better variable included than the indicator of difficulty. And so, IQ is such an omitted variable. The second missing control is motivation. It is most likely that someone who is motivated to achieve something will get to the finish line. Although the variable for visited lectures was added to the regressions, it does not capture the full effect of motivation. An indicator I have thought about to include was the grade for Macroeconomics. Since the exam for Macroeconomics was done eight weeks before the Applied Statistics 1 exam, this exam could function as an indicator for study achievements from the past. In the end, since first year students in Economics have to pass all their exams within a year, it is possible that a student who failed in courses as Macroeconomics make different decisions in stimulating their study achievements. The reason why I did not implement the grade for Macroeconomics is because the grade does not measure all study achievements so far. Also, both grades for Macroeconomics and Applied Statistics 1 correlate with statistical certainty quite high ($p = 0.000$, $\rho = 0.4743$) since both measure more or less the same which may have influenced the results too much for wrong reasons. Table 23 shows the correlation between both grades.

Table 23: Correlations between the grades for Applied Statistics 1 and Macroeconomics

	as1gr	macgr
as1gr	1.0000	
macgr	0.4743	1.0000
	0.0000	

The second violation which might be a problem in this research is reverse causality. Reverse causality means that not only studying from home and control variables influence the grade in Applied Statistics 1, but that this grade affects the independent variables as well. The only reason I can think of to have reverse causality in this regression, is related to the second omitted variable earlier

described. Normally, I assume students have the same study pattern. But, if a student does not pass his or her courses, or gets grades so high that it can lean back, the student' study behavior may change since these kind of students may study and visit lectures respectively more and less hours as before, but may also change the location they study from since they have to become more or less productive. In the end, students' interest ($p = 0.000, \rho = 0.2259$) and difficulty ($p = 0.000, \rho = 0.2120$) of their study are with statistical significant evidence quite correlated with going to lectures, which can be read from Table 24. Finally, these students may party respectively less and more which results in changes in alcohol consumption and average hours of sleep as well, which influences the regression results.

Table 24: Correlations between attending lectures and interest and difficulty study

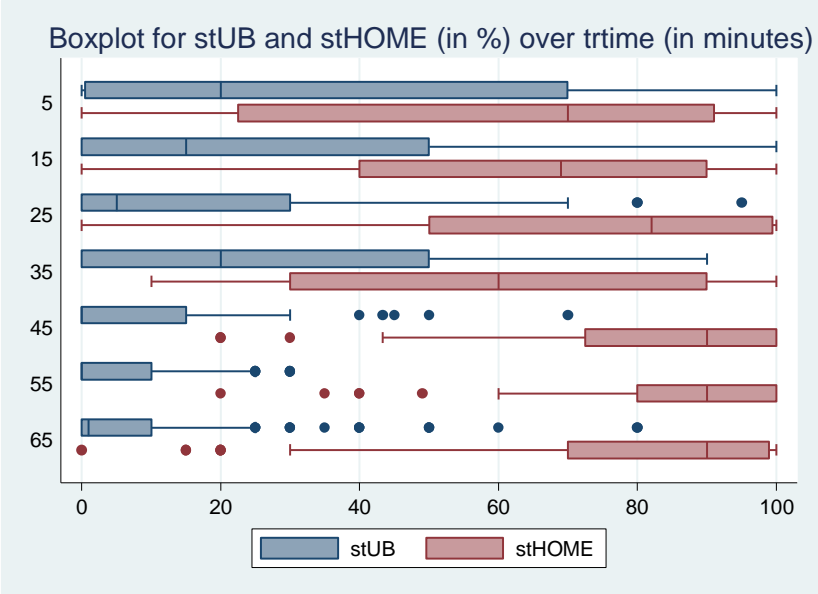
	lect	inter	diff
lect	1.0000		
inter	0.2259 0.0000	1.0000	
diff	0.2120 0.0000	0.0301 0.4835	1.0000

The third violation possible is measurement error. This error means that the data and so the variables are not precisely measured. Measurement error in this study can be a result of memory bias. Since students were asked about e.g. their study behavior and alcohol consumption in the past, it is likely to assume students were not able to precisely remember what their actual behavior was. In order to get the best results though, students were asked about recent events (e.g. last week) so they could remember these events better. Also, the students were able to discuss their answers, which sometimes happened. And so, even when these answers are quite comparable with reality, they may differ. Furthermore, the question regarding housemates was not interpreted the same way by every student. First, students were wondering if 'housemates' included family. When changing this question after the first day handing out surveys, students were still wondering (and noting this for the first time), if they had to include themselves or not. Another disputable question is about how important students think the presence of other students is important in their choice where to study. Although the follow-up question is about avoiding distraction, some students were not sure to interpret this question in a positive or a negative way. In order of completeness, I meant this to be positive and believe most students did.

Serial correlation on its turn may be caused by omitted variables, non-linearity and measurement bias (Gau, 2002). Therefore, the regressions build so far are not without limitations. But, the strict exogeneity problem and the serial correlation problem can be solved using an instrumental variable (IV) (Bosker, 2013). Although revealing a causal relationship with certainty is only possible with a randomized experiment, by using a good instrumental variable in this setting an assumption of having a causal relation between studying from home and the student' grade can be made. A good instrumental variable in this case is a variable which is not taken into the regression, has a relationship with studying from home, not with the error term, and has only a relation with the grade in Applied Statistics 1 via studying from home.

My initial plan was to use students' travel time to the university as an instrumental variable. Since students live both close and further away from the university, it was likely that students do not travel to the university just to study in the UB if they want to. Table 7 showed that the average distance in travel time for students living in and outside Rotterdam is even 38.1 minutes. This is a huge difference which raises the suspicion that the travel distance may affect the place to study. On top, Fig. 8 gives a pretty good idea that travel time indeed affects the location where to study. This figure shows that the further away a student lives from the Erasmus University, the less the student studies from the UB and the more from home.

Fig. 8: Study time in the UB and home over travel time



So travel time has a relation with choosing a location. But, does it not affect the grade directly? I do not think so. It does probably affect another control variable, namely alcohol usage. Again, table 7

showed that students living in Rotterdam drink 6 glasses of alcohol more than students living outside Rotterdam. Therefore, I should have focused on only the group who does not deviate from the standard usage. By using the instrument travel distance given the student lives in Rotterdam, I thought there would be no further problems. But unfortunate, travel time given a student is living outside Rotterdam does not only affect the location to study, but also study time per se and time to do other things which may affect grades as well. Indeed, from Table 25 can be read that the correlation between travel time and study hours is with statistical significant evidence negative ($p = 0.005, \rho = - 0.121$).

Table 25: Correlation between travel time and study hours

	sthrs	trtime
sthrs	1.0000	
trtime	-0.1212 0.0053	1.0000

Also, students living close to the University may visit more lectures as well. These lectures are given 500 meters away from the UB. This means travel time may not only affect the location to study, but also if a student is attending the lectures, which has a significant statistical effect on the grade in Applied Statistics 1 for students living outside of Rotterdam ($p = 0.019, c = 0.146$ – see Table 20).

And so, no causal relationship between studying from home and the grade could be revealed. Therefore, it is important to understand that this research has its limitations. Although I knew finding a good instrument is very hard and building a BLUE linear regression is quite difficult, I now experienced it myself.

Another point to discuss is the usage of the locations ‘Somewhere else at the Erasmus University’ (EUR) and ‘Somewhere else’ (SE). Since these locations include different types of locations, e.g. libraries and public transport, the locations should be separated in the regressions to see if these locations have an effect on students’ grades. At last, since 37.6% of the students do not use the UB at all, they may not even know about the existence or how it looks like. This might have been the reason why not every student filled out questions about productivity and distraction for the UB.

7. Further research

The best way to solve the omitted variable biases and definitely the measurement error, is by getting better data (Bosker, 2013). Since revealing a causal relationship with most certainty between studying from home and grades in survey research is only possible by using an instrumental variable, one should really think about finding a good instrumental variable when doing another survey research with regressions. In this research, the instrument of travel time given the student lives outside Rotterdam could become better if this variable should be controlled by how many times the student visits the university in general. Since the survey which was used only asked questions about amount of lectures visited, it is not possible to use this instrument with this dataset. Still, it is probably not the best instrumental variable possible since travel time is still time. Therefore, further research will be necessary to reveal a certain causal effect between studying from locations as home and the UB and students' grades.

Even a better option would be to do a (randomized) experiment. Performing such a (randomized) experiment will be the only way to reveal a causal relationship between studying from home and the UB and students' grades (Bosker, 2013). One could pay students to study only from one location for a semester and at another location in another semester. Important here is that one should control for study hours since this gives weight to what is being estimated. In the end, someone who studies more will probably get higher grades. Therefore, study time should be the same or controlled for every student. By comparing the differences per person over time, one should be able to reveal a causal effect. In addition, this approach will result in no, or at least less, memory bias since students will not be asked about their behavior in the past. One major disadvantage of such experiment will be controlling the experiment. A participant may not tell he or she is studying from somewhere else than the agreed location. Therefore, one should think hard to in order to reveal a causal relationship between studying from certain locations and grades.

Another extension to this research would be to investigate the marginal effects of study hours from certain locations on students' grades and compare these. It is most likely that studying until a certain time does not result in a pass and that the positive effects on students' grades do not last forever, which would be in line with the law of diminishing returns (Frank, 2008). In the end, at a certain point in time studying may not result in higher grades anymore since students get tired and distracted. It is also important there will be controlled for other study locations which are used while studying. It is possible that a student, who e.g. does only study for 30% at home, and 70% in the UB, gets the best

grade. In that case, it does not necessarily mean that studying from the UB really works. It may be even more a result of the study time at home. Therefore, more research can be done to test non-linearity between studying from a certain location on students' grades. In order to reveal this, quadratic functions of study hours per location can be used in regressions on grades.

Since this research is only representative for first year students in Economics who study at the Erasmus University, further research can be done among students who are enrolled in other studies and study at other universities. By surveying these students as well, it would be possible to compare the outcomes among the universities. Therefore, for students' different home situations and study environments in the universities' libraries should be controlled since these may differ.

At last, in order to reveal discrepancies in students' beliefs and behavior more accurate, students have to be asked if they are familiar with the UB and if they studied there before to fully understand their knowledge about studying from the UB.

8. Conclusion

Studying from home seems to work. There has been statistical evidence found that studying from home has a positive effect on students' grades for both students living in and outside Rotterdam. No statistical evidence has been found that studying from a certain location results into passes or failures. These answers answer my research question.

In contrast, there has no statistical significant results been found if studying from the UB, or other locations, have an effect on students' grades. There are no statistical significant results found that studying from the UB results into passes or failures as well. Therefore, I cannot confirm my hypothesis that studying from the UB results in better grades than home and have to reject the hypothesis since there is not enough statistical evidence.

There is evidence that respectively 28.1% and 9.5% of the students who respectively study more from home and the UB, believe they could study more productive and less distracted from another location. Therefore, my expectation students choose different locations than 'ideally', which is based on the first and third assumptions of the Western Carolina University (Ramsey & Witter, 2010), is at least partly right. Although I expected students living further away from the university to show more discrepancies between their beliefs and actual behavior, this cannot be said. Both the groups of

students living in and outside Rotterdam stated more or less equally to study usually from a location while knowing that another location is least distracting and more productive. But, the high percentages of satisfaction about the UB by students studying most from the UB, who live respectively in (79.4%) and outside Rotterdam (76%), compared to the percentages about home by the students who study most from home (respectively 42.2% and 46.6%), suggest that the UB is indeed a more 'ideal' place to study for both types of groups. Therefore, it is strange that students study 3.3 times more from home than the UB.

Students seem to have different reasons to choose the location to study. The four main reasons on average given were an environment which is silent, which gives little distractions, is not that far and is preferred to be home. Although students who live in Rotterdam are with 90% statistical significance to choose more for the UB when they appreciate silence, are having difficulties in their studies and like to avoid distractions, there is much more statistical significance for them to study from home when they prefer being at home. Students who are living outside Rotterdam are only with statistical certainty to study more from the UB when they like to avoid distraction. These students prefer being at home as well, but only half as the students living in Rotterdam do. The interest of students in their study does not result in a statistical significant result on choosing the location to study from. At last, but only shown with a box plot, travel distance between the Erasmus University and home seems to affect if students choose to study from home or the UB a lot.

And so, it seems to be that there is a sorting effect of students who are not able to ignore the distractions at home. Although there is no statistical significant evidence been found via the variable 'interest', which functioned as an indicator for motivation, there is for IQ via the variable of 'difficulty', which functioned as an indicator of IQ, among students living in Rotterdam. This suggest that students who need concentration to focus on their study, which is more likely if a student believes the study to be difficult, sort themselves to the UB. There is no such evidence for students living outside Rotterdam. It is most likely that the UB is too far for them to sort into. Therefore, these students probably stick in studying from home or sort themselves into other locations, as a library nearby. This means the students weight (un)conscious the costs and the benefits of studying from home compared to the other locations. If the benefits are higher than the costs of studying somewhere else, the student will sort him- or herself out. This explains why especially students in Rotterdam study more from the UB. Their home situation offers more distraction from e.g. housemates and the vibes of the city center. It also explains why a lot of students study only little percentages of their time from the UB. Students who believe the UB is more productive and offers less distractions for them, but believe it is not worth to come to the UB just to study, are likely to sort

themselves in the UB to study when they are near for the time being, e.g. after attending a lecture. This makes the UB an 'ideal' and, sometimes, an 'occasional' place to study.

Theoretical and practical implications

The findings are in line with the findings of Bloom et al. (2013). Studying from home works and students seem to sort themselves into locations after making an (un)conscious cost-benefit analyses. But, companies should take into account that workers may not only take the costs and benefits of the companies into account, but their own as well. That is why there might be a discrepancy between what is good for a company and good for the workers. Therefore, companies should think about what their own costs and benefits are of implementing a policy change, but understand the decision making process of a worker in comparing the costs and benefits as well. And so, there is no location to work or study from which is better to work, as long as not being proved. But, it is especially important both workers and students should be motivated well to perform. Therefore I would like to recommend everyone to think critically about which location he or she works or studies best and if sorting into this location results into more benefits than costs. If there are more benefits than costs, change the location to work or study. If a certain location suits better, but it just takes too much time to get there, use the occasion when being near. In the end, studying or working from such an 'ideal' location will probably be with less distractions and will be more productive.

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10. Appendix

Appendix A: Schedule of surveying

Week 21 – Economie en Bedrijfseconomie				
Time	Location	Code	Event	Description
Tuesday 20 May 2014				
11:00 - 12:45	C2-4	FEB11006-13/MD03A	Day-time class	Organisatie en strategie (vaardigheden groep MD03A)
11:00 - 12:45	H15-32	FEB11006-13/MD03B	Day-time class	Organisatie en strategie (vaardigheden groep MD03B)
15:00 - 16:45	C2-4	FEB11006-13/FI03A	Day-time class	Organisatie en strategie (vaardigheden groep FI03A)
15:00 - 16:45	H15-32	FEB11006-13/FI03B	Day-time class	Organisatie en strategie (vaardigheden groep FI03B)
Wednesday 21 May 2014				
09:00 - 10:45	C1-6	FEB11017-13/EC14	Workgroup EC14	Financial Accounting (practicum groep EC14)
09:00 - 10:45	C1-5	FEB11017-13/EC15	Workgroup EC15	Financial Accounting (practicum groep EC15)
09:00 - 10:45	C1-4	FEB11017-13/EC16	Workgroup EC16	Financial Accounting (practicum groep EC16)
09:00 - 10:45	C1-3	FEB11017-13/EC17	Workgroup EC17	Financial Accounting (practicum groep EC17)
11:00 - 12:45	H4-10	FEB11017-13/EC01	Workgroup EC01	Financial Accounting (practicum groep EC01)
11:00 - 12:45	H4-02	FEB11017-13/EC02	Workgroup EC02	Financial Accounting (practicum groep EC02)
11:00 - 12:45	H5-05	FEB11006-13/EC11A	Day-time class	Organisatie en strategie (vaardigheden groep EC11A)
11:00 - 12:45	C2-4	FEB11006-13/EC11B	Day-time class	Organisatie en strategie (vaardigheden groep EC11B)
11:00 - 12:45	C2-6	FEB11017-13/MD01	Workgroup MD01	Financial Accounting (practicum groep MD01)
11:00 - 12:45	C2-1	FEB11017-13/MD02	Workgroup MD02	Financial Accounting (practicum groep MD02)
15:00 - 16:45	H4-10	FEB11017-13/EC03	Workgroup EC03	Financial Accounting (practicum groep EC03)
15:00 - 16:45	C2-6	FEB11017-13/EC04	Workgroup EC04	Financial Accounting (practicum groep EC04)
15:00 - 16:45	C2-1	FEB11017-	Workgroup FI01	Financial Accounting (practicum groep FI01)

		13/FI01		
15:00 - 16:45	C1-6	FEB11017-13/FI02	Workgroup FI02	Financial Accounting (practicum groep FI02)
Thursday 22 May 2014				
09:00 - 10:45	C1-1	FEB11017-13/EC05	Workgroup EC05	Financial Accounting (practicum groep EC05)
09:00 - 10:45	C2-2	FEB11017-13/EC06	Workgroup EC06	Financial Accounting (practicum groep EC06)
09:00 - 10:45	T3-35	FEB11017-13/EC07	Workgroup EC07	Financial Accounting (practicum groep EC07)
09:00 - 10:45	L1-132	FEB11017-13/EC08	Workgroup EC08	Financial Accounting (practicum groep EC08)
11:00 - 12:45	C2-1	FEB11017-13/EC10	Workgroup EC10	Financial Accounting (practicum groep EC10)
11:00 - 12:45	C1-5	FEB11017-13/EC12	Workgroup EC12	Financial Accounting (practicum groep EC12)
11:00 - 12:45	C1-4	FEB11017-13/EC13	Workgroup EC13	Financial Accounting (practicum groep EC13)
Friday 23 May 2014				
09:00 - 10:45	L1-086	FEB11006-13/EC09	Workgroup EC09	Organisatie en strategie (practicum groep EC09)

Week 21 - IBEB				
Time	Location	Code	Event	Description
Tuesday 20 May 2014				
13:00 - 14:45	H4-16	FEB11006X-13/IB01A	Day-time class	Organisation and Strategy (skills group IB01A)
Wednesday 21 May 2014				
13:00 - 14:45	H5-06	FEB11006X-13/IB01B	Day-time class	Organisation and Strategy (skills group IB01B)
13:00 - 14:45	C2-1	FEB11017X-13/IB04	Workgroup IB04	Financial Accounting (IBEB) (tutorial group IB04)
Thursday 22 May 2014				
09:00 - 10:45	T3-29	FEB11017X-13/EE01	Workgroup EE01	Financial Accounting (IBEB) (tutorial group IB07,EE01)
09:00 - 10:45	T3-29	FEB11017X-13/IB07	Workgroup IB07	Financial Accounting (IBEB) (tutorial group IB07,EE01)
13:00 - 14:45	C1-1	FEB11006X-13/IB03	Workgroup IB03	Organisation and Strategy (tutorial group IB03)
15:00 - 16:45	L1-110	FEB11006X-	Workgroup IB05	Organisation and Strategy (tutorial group IB05)

		13/IB05		
15:00 - 16:45	G2-21	FEB11006X-13/IB06	Workgroup IB06	Organisation and Strategy (tutorial group IB06)
Friday 23 May 2014				
09:00 - 10:45	VB-19	FEB11006X-13/IB02A	Day-time class	Organisation and Strategy (skills group IB02A)
09:00 - 10:45	C2-4	FEB11006X-13/IB02B	Day-time class	Organisation and Strategy (skills group IB02B)

Appendix B: Survey

Dear Participant,

This survey will be held anonymous and for research purposes only. Please read the 18 questions carefully and answer them as honest and precise as possible. *When you are enrolled in another study next to IBEB (e.g. Law), do NOT base your answers on this (other) study.*

Thank you very much!

Jesper Riske

Bachelor student Economics and Business Economics

Question 1: How many hours did you study for IBEB last week? *Do NOT include attended lectures and practical sessions.*

0-5 5-10 10-15 15-20 20-25 25-30 30-35 35-40 40 or more

Question 2: Where do you usually study?

• UB (University Library)

• Somewhere else at EUR

If so, where? _____

• Home

• Somewhere else outside EUR

If so, where? _____ 100%

Question 3: How productive do you study at each of the following locations? *Make sure you at least fill out the answer possibilities for 'UB' and 'Home'. If you answered 'Somewhere else' for question 2, please fill out the matched answer possibilities as well.*

• UB (University Library) Not productive Productive

• Somewhere else at EUR Not productive Productive

• Home Not productive Productive

• Somewhere else outside EUR Not productive Productive

Question 4: How easily do you consider yourself to be distracted while studying from each of the following locations? *Make sure you at least fill out the answer possibilities for 'UB' and 'Home'. If you answered 'Somewhere else' for question 2, please fill out the matched answer possibilities as well.*

- UB (University Library) Not distracted Easily distracted
- Somewhere else at EUR Not distracted Easily distracted
- Home Not distracted Easily distracted
- Somewhere else outside EUR Not distracted Easily distracted

Question 5: How important are the following aspects in your choice where to study?

- Silence Not important Important
- Presence of other students Not important Important
- Avoiding distraction Not important Important
- Computers and printers/scanners Not important Important
- Being at home Not important Important
- Travel distance Not important Important
- Something else Not important Important

If so, what? _____

Question 6: How many lectures of 'Organisation and Strategy' and 'Financial Accounting' did you attend last week in total?

- none 1 2 3 4

Question 7: How interesting is the study IBEB for you?

- Not interesting Interesting

Question 8: How hard is the study IBEB for you?

- Not difficult Difficult

Question 9: What is your grade for Macroeconomics?

Question 10: What is your grade for Applied Statistics 1?

Question 11: How many glasses of alcohol did you drink last week?

0-5 5-10 10-15 15-20 20-25 25-30 30-35 35-40 40 or more

Question 12: How many hours do you sleep on average per night?

Demographical questions

Question 13: Where do you live?

Rotterdam

Somewhere else, namely _____

Question 14: How much time does it take you to get to the EUR in minutes?

0-10 10-20 20-30 30-40 40-50 50-60 60 or more

Question 15: Do you live with your parents / caretakers?

Yes

No

Question 16: How many persons (housemates, family, caretakers, etc.) do you live with?

none 1 2 3 4 5 6 7 8 9 10 or more

Question 17: What is your gender?

Male

Female

Question 18: What is your nationality?

Dutch

Other

END

Appendix C: Codebook

Var#	Variable abbreviation	Variable description	Measurement
1	alc	Glasses of alcohol consumed	Scale per 5 from 2.5 to 42.5
2	as1gr	Grade for the course Applied Statistics 1	Scale 1 (very weak) to 10 (perfect)
3	as1pass	Passing Applied Statistics 1 or not	No pass (<5.5) = 0, pass (≥ 5.5) = 1
4	avsleep	Average hours of sleep per night	In hours
5	diff	Difficulty of study	Scale 1 (not difficult) to 7 (difficult)
6	dumibeb	IBEB student?	0=no, 1=yes
7	dumpar	Do you live with your parents / caretakers?	0=no, 1=yes
8	EUR	Somewhere else at the Erasmus University than in the UB	-
9	EURhrs	Study hours somewhere else at the Erasmus University than the UB	stEUR*sthurs
10	gender	What is your gender?	0=male 1=female
11	HOMEhrs	Study hours at home	stHOME*sthurs
12	house	How many persons (housemates, family, caretakers) do you live with?	Scale none to 10
13	imp_avoid	Importance of avoiding distraction in choice where to study	Scale 1 (not important) to 7 (important)
14	imp_comp	Importance of computers and printers/scanners in choice where to study	Scale 1 (not important) to 7 (important)
15	imp_dist	Importance of travel distance in choice where to study	Scale 1 (not important) to 7 (important)
16	imp_home	Importance of being at home in choice where to study	Scale 1 (not important) to 7 (important)
17	imp_sil	Importance of silence in choice	Scale 1 (not important) to 7 (important)

		where to study	
18	imp_stud	Importance of presence students in choice where to study	Scale 1 (not important) to 7 (important)
19	inter	Interest in study	Scale 1 (not interesting) to 7 (interesting)
20	lect	Lectures attendance	Scale none to 4 (all lectures given in week 20)
21	macgr	Grade for the course Macroeconomics	Scale 1 (very weak) to 10 (perfect)
22	SE	Somewhere else outside the Erasmus University but not at home	-
23	SEhrs	Study hours somewhere else than at the Erasmus University and home	stSE*sthurs
24	stEUR	Study time at the Erasmus University but not in the UB	In percentages (%)
25	stHOME	Study time at home	In percentages (%)
26	sthurs	Study hours	Scale per 5 from 2.5 to 42.5
27	stSE	Study time somewhere else than the Erasmus University and home	In percentages (%)
28	stUB	Study time in the UB	In percentages (%)
29	trtime	Travel time to the Erasmus University	Scale per 10 from 5 to 65
30	UB	Universiteitsbibliotheek (Dutch for 'University Library')	-
31	UBhrs	Study hours in the UB	stUB*sthurs