Non-academic involvement of international students and its role for academic progress

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Internationale Studierende sind für den deutschen Arbeitsmarkt ein wichtiger Faktor zur Bewältigung des demografischen Wandels und des Fachkräftemangels. Allerdings sind ihre Abbruchsquoten nach wie vor hoch. In dieser Studie untersuchen wir den Einfluss sozialer Einbindung auf den Studienfortschritt internationaler Studierender. Wir erfassen Einbindung in drei nicht-akademische Bereiche: Arbeit, Freizeit und Wohnsituation. Einbindungen haben zwei gegenläufige Effekte. Sie verschaffen den Studierenden Zugang zu vorteilhaften Informationen. Sie können jedoch auch vom Studium ablenken (Tinto, 1975). Auf der Basis von Daten von 671 internationalen Studierenden in Thüringen zeigt sich, dass Einbindungen in viele verschiedene Bereiche negativ mit dem Studienfortschritt verbunden sind. Vor allem nicht-europäische Studierende, Bachelor-Studierende und Studierende im ersten Studienjahr profitieren aber davon.

1 Introduction

Germany is among the countries that attract many international students (OECD, 2020). At the same time, not all of them successfully complete their studies. Dropout rates among international students are high – ranging from 26 per cent in master programmes to 49 per cent in bachelor programmes (Heublein et al., 2020) – and exceed by far dropout rates by natives (Banschbach, 2007; SVR, 2019). Losing these students over the course of their studies is not only worrying from a personal perspective, but also from the perspective of the host country. When students do not manage to acquire a degree, resources that have been privately and publicly invested are wasted. Moreover, a substantial share of international students has an intention to stay in Germany or even in the region of the university (for an analysis of stay intentions, see Koenings et al., 2021). For regions which are confronted with demographic change and a skilled-labour shortage, international students who successfully complete their studies and stay after graduation to enter the labour market are one way to overcome these challenges.

In this paper, we study how student involvement in non-academic areas is related to study progress where we view the latter as a precondition for academic success. We make use of a survey of international students at universities and universities of applied sciences in Thuringia, in the Eastern part of Germany, in the summer semesters 2017 and 2018. In our final sample, we have 671 international students. Students were asked about their life and their study situation in Germany. We proxy study progress with being able to understand the academic system and meeting the academic standards. Both measures address different, but equally important preconditions for academic success: To know the written and unwritten rules and regulations of the system allows for good planning and avoids missing deadlines; to cope well with the academic material is important for passing exams and successfully graduating. We capture involvement in three different non-academic areas: work, leisure and living situation. We focus on the number of areas, in which students get involved, to account for the variety of involvement and the exposure to different experiences. We also consider possible differences across the individual areas. We abstain, however, from saying anything about the intensity of the involvement. Involvement in non-academic areas may foster study progress as it helps to acquire organisational and academic information. At the same time, it may distract students' attention from studying (Rienties et al., 2012; Tinto, 1975; Tinto, 1993). We expect that the information aspect is more important for groups of students who have less experience with studying, or for whom the cultural distance to Germany and the German university system is larger, while the distraction aspect might dominate for students who are already more familiar with living and studying in Germany.

We find that involvement in non-academic areas does not show a correlation with understanding the academic system, while being involved in two or more areas is negatively related with meeting the academic standard. This provides some indication that the information and distraction aspects balance one another when it comes to a general understanding of the system, while the distraction aspect becomes more prevailing with regard to academic performance. Looking at the areas of involvement separately, the distraction aspect seems especially important for involvement related to the students' living situation and leisure activities, whereas for work, the information aspect tends to be stronger. Furthermore, we conduct subsample analyses for different groups of international students to test our hypothesis about a differential effect for students with a smaller or larger need for information. For this, we consider European and non-European students separately. We also distinguish between students enrolled in bachelor or master programmes as well as students at the beginning of their studies and more advanced students. In accordance with our hypothesis, we find that students from non-European countries, bachelor students and students at the beginning of their studies benefit more from the information aspect of involvement outside of university compared to the other groups.

Our paper adds to the literature of academic success of students in higher education that studies the perspective of international students and their involvement outside of university (see Rienties et al., 2012; Zhou & Zhang, 2014; and the discussion in section 2). More specifically, we advance the literature by investigating whether involvement in too many non-academic areas can be adversely related to academic progress (Tinto, 1975; Tinto, 1993). Furthermore, we also highlight the role of different areas of involvement (Neri & Ville, 2008; Rienties et al., 2012) and of different groups of international students.

The paper proceeds as follows: In the next section, we outline our theoretical foundation and show in more detail how this study contributes to the literature. In section 3, we present our dataset and the empirical strategy. The main results and the subsample analyses are discussed in section 4. Section 5 concludes.

2 Theoretical foundation and contribution to the literature

For our core theoretical consideration, we build upon very early theoretical work that analyses the study success of students. In his model, Tinto (1975) shows that, among others, students' social integration exhibits a positive effect on not dropping out from institutions of higher education. The social interactions of students are important as they transmit the value patterns of studying and increase the commitment to their studies. However, Tinto (1975) also points out that too many social interactions might exhibit a negative effect on academic performance as *"too much time is (for example) given to social activities at the expense of academic studies"* (p. 92). In his later work, Tinto (1993) revised his initial model and explicitly separated informal peer-group interactions and formal extracurricular activities which he summarised under the heading of social system from external commitments. The areas of involvement we focus on in this paper can be considered to belong to the informal and formal activities when we think about leisure activities and the living situation, and are likely part of the external commitments when we think about working beside the studies.

In this paper, we focus on student involvement, which we see as a first step towards social interactions. We study whether involvement in too many areas can be detrimental to the study progress by looking at the possible conflict between the information aspect of involvement and the distraction aspect.[1] We focus on international students, since the academic environment seems to be particularly challenging for them, as underlined by the high dropout rates (see Heublein et al., 2020; SVR, 2019). Therefore, involvement in non-academic areas seems to be particularly important, despite its possible distracting effect, as it not only transmits value patterns of studying at an

[1] For studies which refer to Tinto's (1975) model in a comprehensive way, see, for example, Klein (2019) for Germany, and Bers and Smith (1991) for the US, and Mannan (2001) for Papua New Guinea.

institution of higher education (Tinto, 1975), but also of the academic structures of the host country more generally. Lowering the dropout rates is also in the interest of host countries confronted with skilled-labour shortage and demographic change.

We complement the literature which shows that social interactions in extra-curricular activities might distract from studying and might affect the academic performance negatively (Mannan, 2001; Rienties et al., 2012) in several ways: First, in order to better capture how well international students "adapt to the academic system", we make use of two measures as proxies for study progress: how well international students understand the academic system and how well they meet the academic standards. Using these measures, instead of often used measures such as the grade point average scores (Rienties et al., 2012; van Rooij et al., 2018), enables us to more directly analyse the role of student involvement outside of university for transmitting information versus distracting study effort at different stages during the studies. We expect that the information aspect is more positively linked to understanding the academic system, while the distracting aspect deriving from involvement in too many areas dominates when it comes to meeting the academic standards.

Second, not only do we consider the number of areas of student involvement, but we also look at three different areas.[2] In general, the information aspect and the distraction aspect may differ across areas, and we want to understand which areas are more closely linked to study progress. Literature shows that there is a negative association between spending too much time with friends and academic performance (Neri & Ville, 2008). Living with flatmates could lead to similar results. Leisure activities such as being a member of a club tend to be unrelated or slightly negatively related to academic performance, depending on the type of club activity (Baker, 2008; Neri & Ville, 2008). Similarly, Body et al. (2014), Darolia (2014) and Neyt et al. (2019) find a zero or negative correlation between student employment and academic performance, depending on how much time students contribute to working (for a comprehensive analysis of student employment and its implication for educational outcomes, see Staneva, 2020). In a causal analysis, Sprietsma (2015) finds no effect of student employment on academic performance even if students work more than ten hours. She points out that jobs relevant to the field of studies are associated with better grades, but better students might select themselves into these jobs. Overall, we expect the information aspect to be more relevant when it comes to involvement related to work and – possibly – the living situation, while for involvement in leisure activities, the distraction aspect likely dominates.

[2] For Rienties et al. (2012), social integration is the extent to which students adapt to the social way-of-life at university. They extended the model of Tinto (1975) by considering five additional social integration factors that are relevant for international students, namely: perception of the faculty by the social network of students; social support by family and friends; social life; ethnic background, and financial support. Our focus on student involvement in non-academic areas and the role of different areas highlights additional aspects.

Third, we investigate different student groups, as the information aspect and the distraction aspect may differ between them as well. For students who are less familiar with the academic system of the host country, the information aspect may be more important and, hence, may dominate the detrimental distraction effect. We differentiate between European and non-European students to capture a possibly larger need for information for the latter group due to a larger cultural and linguistic distance. Furthermore, we separately consider students enrolled in a bachelor programme and a master programme, and students at the beginning of their studies and more advanced students. The latter two analyses take into account that the need for information may change during the course of the studies (Mannan, 2001; Tinto, 1982). We expect that the information aspect of student involvement in non-academic areas is more important at the beginning of the studies, when the need for information is larger.

Hence, our paper more broadly relates to the literature that studies the factors associated with international students' academic success. Against this background, we provide the first empirical analysis which evaluates if student involvement in too many areas is detrimental to the study progress, and we specifically investigate differences across different areas of involvement and across groups of international students.

3 Data and empirical method

We collected the data using an online questionnaire, which we conducted among international students in the first weeks of the summer semesters in 2017 and 2018 at universities and universities of applied sciences in the Federal State of Thuringia, Germany. Students received an email with a link to the survey. Moreover, posters and flyers were used for further advertisement of the study. The students were asked to provide information on individual characteristics, experiences and difficulties during their studies, funding of their studies, their knowledge of the German and the English language, and their living situation, among others. The questionnaire was available in German and English. 886 international students participated in the survey. We excluded students with German citizenship and restricted the sample to students who were studying for no more than 10 semesters at the time of the survey, which also excluded PhD students. This reduced the sample to 795 students. Due to missing values, which mostly concerned missing information about the home country of the students, our final sample comprises 671 international students from four institutions: Friedrich Schiller University Jena, the University of Erfurt, the Technical University Ilmenau and the Ernst-Abbe University of Applied Sciences Jena. In our survey, an international

student is considered a student with a foreign citizenship who is enrolled at a German university.[3]

Table 1 presents the descriptive statistics. Slightly more than half of the students in our sample are female. They are on average in their third semester. Close to two-thirds of them study at the largest university in Thuringia, the Friedrich Schiller University Jena. The majority of students comes from Europe or Asia and is enrolled in a master programme. Students are relatively evenly distributed across study fields except for Medicine/Health Sciences and Art, Art History with comparably low numbers of enrolled students in our sample. The surveyed students have an average (self-reported) level of German proficiency and a somewhat higher (self-reported) level of English proficiency. According to our survey, international students feel quite welcome in Thuringia and are open-minded to new cultures and traditions.[4]

Table 1: Descriptive statistics

Variable	Mean	Std. dev.	Min	Max
Depending variables				
Understanding academic system	0.522	0.500	0	1
Meeting academic standards	0.644	0.479	0	1
Explanatory variables				
Flatmates	0.511	0.500	0	1
Club membership	0.377	0.485	0	1
Working	0.407	0.492	0	1
Student involvement				
No involvement (R)	0.203	0.402	0	1
Involvement in one area	0.404	0.491	0	1
Involvement in two areas	0.289	0.454	0	1
Involvement in three areas	0.104	0.306	0	1
Controls				
Semester	3.021	1.888	0	10
Female	0.544	0.498	0	1
Studying at Friedrich Schiller University Jena	0.654	0.476	0	1

To be continued next page

[3] In our sample, 21 students with a foreign citizenship have acquired their general qualification for university entrance (Abitur) in Germany. As all indicated a foreign place of birth and none of them stated to have German language skills at the level of native speakers, we are confident to not confuse them with second-generation migrants.

[4] We comment more on the variables used to proxy ability at the end of this section.

Table 1 continued

Variable	Mean	Std. dev.	Min	Max
Geographical region				
Africa	0.083	0.277	0	1
Americas	0.083	0.277	0	1
Asia Pacific	0.563	0.496	0	1
Europe (R)	0.270	0.444	0	1
Study programme				
Humanities (R)	0.125	0.331	0	1
Law, Economics, Social Sciences	0.222	0.416	0	1
Mathematics, Natural Sciences	0.207	0.406	0	1
Medicine/Health Sciences	0.027	0.162	0	1
Engineering Sciences	0.092	0.290	0	1
Art, Art History	0.006	0.077	0	1
Other/No Answer	0.320	0.467	0	1
Degree				
Bachelor (R)	0.186	0.390	0	1
English Master	0.444	0.497	0	1
German Master	0.203	0.402	0	1
Other/No information	0.167	0.373	0	1
Ability				
German language proficiency	3.136	1.478	0	5
English language proficiency	4.523	0.972	0	6
Scholarship	0.240	0.427	0	1
Patience	7.510	2.560	1	11
Other controls				
GDP/capita in PPP (in 1000)	17459.19	14819.47	2058.4	112308.2
I feel welcome in Thuringia	3.590	1.003	1	5
I am open-minded to new cultures and traditions	4.405	0.769	1	5
Observations	**671**			

Notes: (R) indicates the reference categories for the regression. Americas include North and South America, Asia Pacific includes Asia and Australia. Values are shares except for semester, German/English language proficiency (scale: 0–5 very high proficiency, 6 natives), patience (scale: 1–11 very patient) and Feeling welcome in Thuringia/Being open-minded (scale: 1–5 strongly agree).

For a study of international students, the universities and universities of applied sciences in Thuringia are well suited. Their shares of international students over all students in the winter semester of 2016/2017 (13.1 %) and 2017/2018 (14 %), respectively, are close to the median share of all German higher education institutions with 12.8 per cent in winter semester 2016/2017 and 13.2 per cent in winter semester 2017/2018,

respectively (see Federal Statistical Office, 2017; 2018). In general, a comparison with the German averages reveals some similarities, but also some differences. In our sample, for example, the share of students enrolled in Mathematics and Natural Sciences is larger, while the share of students of Engineering Sciences is much smaller[5] and the share of students enrolled in Law, Economics, and Social Sciences is somewhat smaller. Furthermore, students from the Asia Pacific region are overrepresented in our sample, while the share of European students is smaller compared to the German averages. As for the distribution of students across the universities and universities of applied sciences in Thuringia, the sample captures well the overall shares of students enrolled at three of the four institutions in our sample: the University of Erfurt, the Technical University Ilmenau and the Ernst-Abbe University of Applied Sciences Jena. Students at the Friedrich Schiller University Jena are, however, overrepresented with a share in our sample of close to two-thirds, while their share among students in Thuringia is about one third.[6] In total, when looking at the four universities and universities of applied sciences, about 5,000 international students were enrolled in the winter term 2016/2017 and about 4,850 in the winter term 2017/2018.[7]

We cannot measure academic success directly as we observe students at some point during their studies and do not have information about their final academic success nor their grade point average scores. As we focus on the information and distraction aspects from student involvement outside of university, we therefore focus on two measures, which can be seen as preconditions for academic success of international students: understanding the academic system and meeting the academic standards. Both variables are identified by answers to the following question: "Did you have difficulties during your studies at this university in the following areas?". The possible options were "Problems in understanding the academic system" and "Problems with meeting the academic standards", which students answered separately with Yes or No. We transformed the answers to both questions into two separate binary variables where the value 1 indicates that a student has no problem understanding the academic system or meeting the academic standards, respectively, and 0 otherwise. Knowing about the importance of deadlines, the grading structure, the requirements of lectures and tutorials, etc. is important to study successfully. It then depends on whether students can use this knowledge to meet the academic standards. In our sample,

[5] Engineering studies are almost exclusively offered at only one university in Thuringia, the Technical University of Ilmenau.

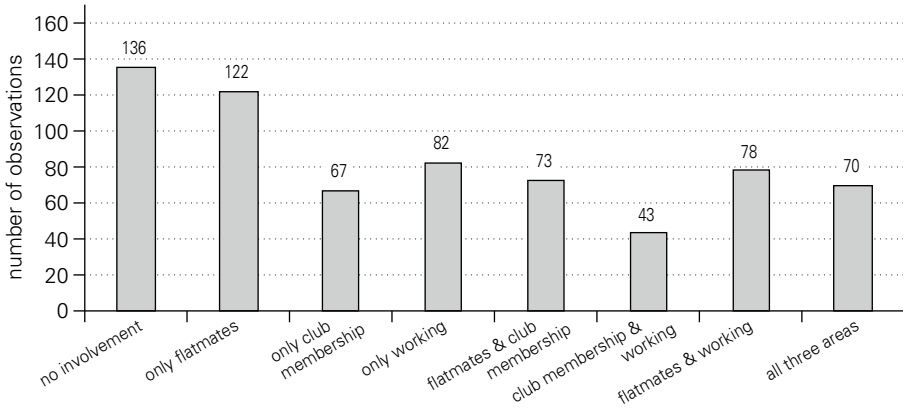
[6] The remaining one third of international students is enrolled in other universities and universities of applied sciences in Thuringia, which are not part of our sample. We control for this overrepresentation of the Friedrich Schiller University Jena in our estimations.

[7] Our samples in 2017 and 2018 correspond to 8.7 per cent and 5.6 per cent, respectively, of the total number of international students in the four institutions. When relating our sample to all international students in Thuringia, the rates are 6.1 per cent and 4.0 per cent, respectively.

close to 50 per cent stated that they understand the academic system and roughly two-thirds of the students said that they meet the academic standards.

In terms of student involvement, we expect that the number of different areas matter as this captures the variety of the involvement. We therefore identify three different areas in our data. We observe students' living situation, i. e. whether they live alone or have flatmates. We construct a dummy variable "flatmates" whose value is 1 if a student has at least one flatmate. We have data on students' leisure activities, i. e. whether they are active in a club. The dummy variable "club" takes the value 1 if students indicate at least one club membership. Furthermore, students that also work alongside their studies are captured by the dummy variable "work".[8]

Figure 1: Student involvement by area



When talking about the variety of student involvement, we refer to the number of different areas – work, leisure, living situation – in which students are active. Students can be involved in one, two or all three areas; it is also possible that they did not indicate any kind of non-academic involvement. From Table 1, we know that about 50 per cent of the international students in our sample have at least one flatmate, while close to 40 per cent are members of at least one club and about the same number work alongside their studies. Summing up over the different areas of involvement, we see that 20 per cent are not involved in any area, while 40 per cent are involved in one area, close to 30 per cent in two areas and 10 per cent in all three areas. Figure 1 provides a more detailed breakdown of the number and areas of student involvement outside of university. Importantly, when talking about the number of areas

[8]We observe that most students in our sample (94 %) work less than 20 hours per week (60 students work 5 hours or less per week, 99 students work between 6 and 10 hours, 96 students work between 11 and 20 hours and 17 students work more than 20 hours).

of student involvement and thus its variety, we do not intend to say anything about the intensity of the involvement.

We use a linear probability model (LPM) with an ordinary least squares (OLS) estimator[9] to estimate the correlations between involvement and our outcome measures for study progress.[10] In all our regressions, we include the socio-economic controls for gender, the geographical region where the students come from and the Gross Domestic Product (GDP) per capita in purchasing power parities (PPP) of their home country. We also control for study-related information, such as the semester of the students, the degree and its language, the study programme and whether someone studies at Friedrich Schiller University Jena.[11] In addition, we consider if students feel welcome in Thuringia and if they are open-minded to new cultures.

The OLS estimation might be biased due to a problem which can be caused by omitted variables. Individual ability is likely such an omitted variable, as it is possibly correlated with the outcome variables of academic progress and with our variables of student involvement. Considering the outcome variables, international students with higher ability can be expected to perform better academically. At the same time, ability might also affect their involvement as more able students might more easily engage with people and more easily find a job alongside their studies. The OLS results then overestimate the relationship between involvement and study progress. But the relationship can also be underestimated if international students with higher ability spend more time studying, which makes them more successful academically while at the same time it is harder for them to get involved in non-academic areas. To address this potential source of endogeneity and to account for omitted variable bias, we control for ability in an indirect way by adding the level of patience, German and English language skills, and whether students have a scholarship, which is merit-based. Patience can be a proxy for ability as higher levels of cognitive ability are related to higher levels of patience (Burks et al., 2009; Dohmen et al., 2010). Similarly, merit-based scholarships can be expected to be correlated with ability. Language proficiencies might more broadly capture abilities, which are important for living and studying in Germany (Andrade, 2006). Nevertheless, our set of controls might not be able to cover all aspects related to individual ability and possibly other confounding factors. Overall, we are careful and abstain from a causal interpretation of our results.

[9] This estimation method minimises the sum of the squares of the differences between the values of the observed dependent variable in the given dataset and those predicted by the linear function of the independent variables.

[10] The results are qualitatively the same when we use a Probit model, which more directly takes the binary character of our outcome variable into account.

[11] We obtain the qualitative same results when we only look at students who study at Friedrich Schiller University Jena.

4 Results

In a first step, we analyse the relationship between the number of areas of student involvement and our outcome variables. We then highlight differences across different areas of involvement – having flatmates, being a member of a club and working alongside one's studies. Lastly, we take a look at different groups of international students.

4.1 Main results: number of areas of student involvement

In Table 2, we find no significant correlation between the number of areas of involvement and understanding the academic system. The information aspect and the distraction aspect seem to be balanced. Student involvement shows, however, a negative and significant correlation with meeting the academic standards when students are involved in at least two areas, where the distraction is much stronger for three areas of involvement than for two.

Table 2: Main estimation results – full sample

	without ability		with ability	
	(1) Understanding academic system	(2) Meeting academic standards	(3) Understanding academic system	(4) Meeting academic standards
Involvement in one area	−0.017 (0.050)	−0.059 (0.046)	−0.029 (0.050)	−0.056 (0.047)
Involvement in two areas	−0.048 (0.055)	−0.089* (0.050)	−0.057 (0.055)	−0.087* (0.050)
Involvement in three areas	−0.088 (0.073)	−0.293*** (0.071)	−0.101 (0.074)	−0.271*** (0.073)
English Master	0.130** (0.056)	0.145*** (0.056)	0.147** (0.067)	0.137** (0.065)
German Master	−0.007 (0.064)	−0.101 (0.064)	−0.016 (0.063)	−0.096 (0.064)
Other/No information	0.217*** (0.068)	0.182*** (0.064)	0.179** (0.076)	0.149** (0.072)
German language proficiency			0.017 (0.018)	−0.011 (0.017)
English language proficiency			0.003 (0.022)	−0.004 (0.021)
Scholarship			0.114** (0.048)	0.059 (0.045)
Patience			0.005 (0.007)	0.004 (0.007)
Observations	**671**	**671**	**671**	**671**
Adjusted R^2	0.089	0.094	0.093	0.097

Notes: Further controls include gender, semester, geographical area, fields of study, feeling welcome in Thuringia, being open-minded to new cultures and GDP in PPP of home country. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

As for the other control variables, international students who are enrolled in an English master programme tend to better understand the system and meet the academic standards compared to those who are enrolled in a bachelor programme or a German master programme. A possible explanation is a higher awareness of the informational needs of international students in an English degree programme. Such degree programmes already have more resources specifically tailored to help international students to bridge any gap and get along at the foreign university. As to our proxies for ability, we do not find that they play an important role for our outcome variables as the coefficients for our ability proxies are mostly insignificant.

4.2 Different areas of student involvement

For a more detailed picture, in a second step, we analyse the different non-academic areas of involvement separately (see Table 3). In accordance with our expectations, the distraction aspect dominates the information aspect for the areas "flatmates" and "club membership". The coefficients for having flatmates and being a member of a club are negatively and significantly associated with our outcome variable "meeting the academic standards" and, in the case of flatmates also for our second outcome variable "understanding the academic system". On the contrary, we do not find a significant relationship between working alongside one's studies and academic progress. The information aspect seems to be more important for this area of involvement. Overall, the information and the distraction aspects are balanced. Moreover, our results on working alongside one's studies are in line with the literature (Body et al., 2014; Darolia, 2014; Sprietsma, 2015).

Table 3: Estimation results – different areas of student involvement

	(1) Understanding academic system	(2) Meeting academic standards	(3) Understanding academic system	(4) Meeting academic standards	(5) Understanding academic system	(6) Meeting academic standards
Flatmates	−0.073* (0.038)	−0.094*** (0.036)				
Club membership			−0.022 (0.040)	−0.099** (0.039)		
Working					0.002 (0.040)	−0.055 (0.039)
Observations	**671**	**671**	**671**	**671**	**671**	**671**
Adjusted R^2	0.098	0.088	0.093	0.081	0.092	0.075

Notes: Further controls include gender, semester, geographical area, fields of study, feeling welcome in Thuringia, being open-minded to new cultures, GDP in PPP of home country and ability (German and English language proficiency, scholarship, patience). Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.3 Different groups of students

International students are by no means a homogenous group. They have different cultural backgrounds, are enrolled in different degree programmes and are in different stages of their studies. Therefore, some groups of international students might have a larger need for information. In the following section, we take a closer look at students from European and non-European countries, students enrolled in bachelor or master programmes, and students at the beginning of their studies and more advanced students.[12]

4.3.1 Students from European and non-European countries

For the distinction between students from European and non-European countries, we rely on the students' birth country and define European countries in geographical terms. Accordingly, students from Russia are part of the European group while students from Turkey are assigned to the Asia Pacific group. On average, students from non-European countries have a larger cultural distance to Germany compared to students from European countries. Hence, we expect that non-European students benefit more from the information aspect of their involvement, as this helps them to understand the German academic system better and to meet the academic standards more easily.[13]

Table 4: Estimation results – students from European and non-European countries

	non-European students		European students	
	(1) Understanding academic system	(2) Meeting academic standards	(3) Understanding academic system	(4) Meeting academic standards
Involvement in one area	0.007 (0.058)	−0.030 (0.057)	−0.102 (0.106)	−0.145 (0.093)
Involvement in two areas	−0.055 (0.067)	−0.072 (0.063)	−0.050 (0.104)	−0.161* (0.083)
Involvement in three areas	−0.050 (0.092)	−0.264*** (0.092)	−0.224* (0.132)	−0.328*** (0.121)
Observations	**490**	**490**	**181**	**181**
Adjusted R^2	0.064	0.076	0.154	0.147

Notes: Further controls include gender, semester, geographical area, fields of study, feeling welcome in Thuringia, being open-minded to new cultures and GDP in PPP and ability (German and English language proficiency, scholarship, patience). Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

[12] We also ran our estimations for a subgroup of students who are supported financially by their parents to see whether the socio-economic status has an impact. As our results did not change, we did not include this subgroup analyses in the paper.

[13] Note that in general, international students from countries outside the European Union (plus Liechtenstein, Iceland, Norway and Switzerland) are allowed to work 120 full days or 240 half days per year. They are not allowed to be self-employed or work as freelancers.

In Table 4, we find a negative correlation for meeting the academic standards for European students, which indicates that the distraction aspect of involvement in non-academic areas dominates the information aspect. We also observe that involvement in three areas is negatively and significantly associated with being able to understand the academic system. Students from European countries can be expected to be more familiar with German culture and customs due to a larger cultural proximity on average. Hence, the information aspect is less relevant and the distraction effect is larger for this group. On the contrary, for students from non-European countries the information aspect of involvement seems to be more important counteracting the distraction aspect as long as involvement is observed for only one or two areas.

4.3.2 Bachelor and master degree programme

The information requirement for students enrolled in a bachelor degree and a master degree may vary. Master students already have academic experience, either in their home country or in Germany. At the same time, a master degree comes with a larger focus on the labour market and a larger awareness of the importance of successful graduation. On the contrary, bachelor students are still comparatively new to the academic environment and are not as close to the labour market as master students.

In Table 5, we report similar results for the master students as for the main sample (cf. Table 2). Involvement in too many different areas is associated with less academic progress. The results indicate that master students already have a higher prior understanding of the academic system. In addition, distractions may affect master students more in being able to meet the academic standards due to the higher workload as graduation approaches. On the contrary, the results for bachelor students indicate a negative and significant correlation only between involvement in three areas and meeting the academic standards. In general, involvement in non-academic areas can provide helpful information at the beginning of one's studies.[14]

[14]Note, however, the much smaller number of observations in the bachelor's subsample.

Table 5: Estimation results – bachelor and master students

	Bachelor		Master	
	(1) Understanding academic system	(2) Meeting academic standards	(3) Understanding academic system	(4) Meeting academic standards
Involvement in one area	−0.158 (0.152)	−0.116 (0.163)	−0.003 (0.060)	−0.060 (0.058)
Involvement in two areas	−0.242 (0.156)	−0.022 (0.164)	−0.043 (0.066)	−0.117* (0.061)
Involvement in three areas	−0.170 (0.152)	−0.341** (0.171)	−0.098 (0.106)	−0.237** (0.102)
Observations	**125**	**125**	**434**	**434**
Adjusted R^2	0.034	0.042	0.093	0.109

Notes: Further controls include gender, semester, geographical area, fields of study, feeling welcome in Thuringia, being open-minded to new cultures and GDP in PPP and ability (German and English language proficiency, scholarship, patience). Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.3.3 Low- and high-semester students

Table 6 reports results for low-semester and high-semester students. Low-semester students are students who are in their first year in their degree programme, hence semester one and two. This covers both, first-year bachelor and first-year master students. High-semester students are students from semester three onwards.

As low-semester students are not yet familiar with the university system and have a higher need for information, the correlations between involvement outside of university and academic progress is mostly insignificant for them. The information aspect and the distraction aspect seem to balance. The picture is different for high-semester students. The distraction aspect of student involvement dominates the information aspect in one, two or three areas for both outcome variables. Moreover, the correlation becomes more negative with an increasing number of areas.

Table 6: Estimation results – low- and high-semester students

	Low-semester		High-semester	
	(1) Understanding academic system	(2) Meeting academic standards	(3) Understanding academic system	(4) Meeting academic standards
Involvement in one area	0.043 (0.063)	0.001 (0.060)	–0.152* (0.086)	–0.153** (0.074)
Involvement in two areas	–0.020 (0.072)	–0.030 (0.067)	–0.167* (0.090)	–0.187** (0.081)
Involvement in three areas	–0.054 (0.097)	–0.208** (0.097)	–0.273** (0.116)	–0.399*** (0.111)
Observations	**399**	**399**	**272**	**272**
Adjusted R^2	0.080	0.112	0.125	0.075

Notes: Further controls include gender, semester, geographical area, fields of study, feeling welcome in Thuringia, being open-minded to new cultures and GDP in PPP and ability (German and English language proficiency, scholarship, patience). Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

To better understand the relation of student involvement in non-academic areas for low- and high-semester students with our outcome variables – especially as Table 6 points towards interesting results for the latter group of students, we also provide results for both groups of students differentiated by the area of involvement (see Table 7).

Similar to our results for the total sample (see Table 3) and in accordance with our expectations, the distraction aspect dominates the information aspect for the area "flatmates". We also see that it is more pronounced for the high-semester students. The coefficients for being a member of a club are negatively associated with our outcome variable "meeting the academic standards", but they are barely significant. We now also find a significant negative relationship between working alongside one's studies and academic progress for the high-semester students as measured by meeting the academic standard.

Table 7: Different areas of student involvement

A: Low-semester students	(1) Understanding academic system	(2) Meeting academic standard	(3) Understanding academic system	(4) Meeting academic standard	(5) Understanding academic system	(6) Meeting academic standard
Flatmates	−0.054 (0.050)	−0.080* (0.047)				
Club membership			−0.020 (0.054)	−0.094* (0.052)		
Working					0.035 (0.055)	0.002 (0.052)
Observations	**399**	**399**	**399**	**399**	**399**	**399**
Adjusted R^2	0.084	0.111	0.081	0.102	0.082	0.094
B: High–semester students	**(1) Understanding academic system**	**(2) Meeting academic standard**	**(3) Understanding academic system**	**(4) Meeting academic standard**	**(5) Understanding academic system**	**(6) Meeting academic standard**
Flatmates	−0.136** (0.062)	−0.143** (0.062)				
Club membership			−0.049 (0.063)	−0.095 (0.061)		
Working					−0.057 (0.067)	−0.127* (0.065)
Observations	**272**	**272**	**272**	**272**	**272**	**272**
Adjusted R^2	0.130	0.056	0.118	0.044	0.119	0.050

Notes: Further controls include gender, semester, geographical area, fields of study, feeling welcome in Thuringia, being open-minded to new cultures, GDP in PPP of home country and ability (German and English language proficiency, scholarship, patience). Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5 Conclusion

This paper investigates the relationship between involvement of international students in non-academic areas and their academic progress. The focus lies on the number of areas, and thus on the variety of involvement. Student involvement provides information for international students, but is also a way of distracting them from studying. The analysis is based on a survey of international students conducted in 2017 and 2018 at Thuringian universities. Our main outcome variables are understanding the academic system and meeting the academic standards. In our sample, involvement of international students is measured in three different areas: the students' living situation, leisure and work.

We find that the number of areas of student involvement can be important. Involvement is not related to the general understanding of the academic system. However, involvement in more areas is associated with problems in meeting the academic standards. This points towards a higher distraction aspect from involvement in non-academic areas which dominates the information aspect. However, the size of the correlation depends on the specific area of involvement and the respective student group. We observe that especially for students at the beginning of their studies (first year of bachelor and master studies), bachelor students, in general, and students from non-European countries, the information aspect of involvement is more prevalent than the distraction aspect. On the contrary, for high-semester students and master students, involvement is rather distracting, as the information aspect becomes less important.

Similar to our results, Rienties et al. (2012) also do not find a positive correlation between social activities and academic progress for most of the cases they consider. They argue that a main driver for academic success is how well international students are adjusted to the academic life. Students with fewer social activities are able to contribute more time towards studying and therefore perform better academically (Rienties et al., 2012). We observe similar dynamics in our sample when we focus on meeting the academic standards.

We provide empirical evidence for the theoretical considerations (cf. Tinto, 1993) that student formal and informal activities outside of university as well as external commitments may lead to distractions, but international students may also gain information that can be beneficial for their academic progress and ultimately their academic success. We have shown that the different groups of international students respond differently to involvement in non-academic areas. These insights can help policymakers when thinking about higher education policies aimed at reducing dropout rates. These policies might include measures within the universities like more counselling, but they might also comprise measures outside of the universities. When it comes to fostering student involvement, the possibly negative aspects as well as the differences across international students need to be taken into account.

There are a few limitations of our study. Our sample is based on students from one state located in the East of Germany. While the sample is close to German averages for some variables, there are also differences, as discussed above. We do not see any obvious reasons why the relation between student involvement and academic progress should differ across states. Nevertheless, it cannot be ruled out that students with different observed and unobserved characteristics select into specific states and that this affects our results. A replication of this study based on a sample comprising more states in the East and in the West of Germany could be a possible next step. Furthermore, our analysis informs about the direction of the relationship between student

involvement and academic progress. But our data do not allow us to make casual statements about the effects of non-academic involvement on academic progress. This is left for future research.

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