

## Gießener Beiträge zur Bildungsforschung

Stephan Kielblock/Amina Fraij

### How to Come Through University Well?

A new look at university student strategies using  
a mixed methods approach

Heft Nr. 12, Juli 2016



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**Impressum:**

Herausgeber:

Prof. Dr. Claudia von Aufschnaiter, Prof. Dr. Thomas Brüsemeister, Dr. Sebastian Dippelhofer, Prof. Dr. Marianne Friese, Prof. Dr. Sabine Maschke, Prof. Dr. Ingrid Miethe, Prof. Dr. Vadim Oswald, Dr. Alexander Schnarr, Prof. Dr. Ludwig Stecher

Geschäftsführende Herausgeber:

Dr. Sebastian Dippelhofer  
Institut für Erziehungswissenschaft  
Empirische Bildungsforschung  
Karl-Glöckner-Straße 21B  
35394 Gießen

E-Mail: Sebastian.Dippelhofer@erziehung.uni-giessen.de

Dr. Alexander Schnarr  
Institut für Erziehungswissenschaft  
Erziehungswissenschaft Fachgebiet Berufspädagogik/Arbeitslehre  
Karl-Glöckner-Straße 21B  
35394 Gießen

E-Mail: Alexander.Schnarr@erziehung.uni-giessen.de

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## 1 Introduction

Up until recently, relatively strict entrance requirements for admission to a university in Germany have been in place. As a general rule those were permitted to study at a university who hold the relevant formal qualification for university entrance (conventionally the “Abitur”). Although university entrance for those with professional qualifications (without the relevant formal qualification for university entrance) has existed in different variations in individual German states, these possibilities varied greatly from state to state. In 2009 however, the obstacles for admission to German universities were lowered so that enrolment to universities for professionally qualified applicants without the traditional qualification from secondary school became distinctly easier as well as comparably regulated by all German states. This change in university entrance requirements has an effect who attends university and why. This might lead to an increasing heterogeneity of the students’ backgrounds and to a greater variety of strategies to manage and to come through university well. The present *working paper* tries to shed light on these strategies that we would like to refer to as ‘student strategies’.

## 2 Framework of the study

Following this change there has been an increased interest in strategies to study at universities in Germany (Hanft, Zawacki-Richter & Gierke, 2015; Kamm & Otto, 2013). Research is commonly focussed on intentions and motivations for studying (examples of German-wide surveys with this focus are Middendorff et al., 2013; Ramm et al., 2014). Brändle (2014) discovered for example that traditional students are more likely to attend university without a specific goal, whereas non-traditionals use studies for specific vocational progress. In the study of Kamm and Otto (2013) the authors survey fifty non-traditional students and developed four (provisional) strategy types for student decisions and motives from semi-structured interviews: a rational maximizing-usage strategy (so to speak “I’m studying because it allows me the greatest net gains”), a goal-oriented strategy (so to speak “I’m studying because the degree itself is my goal”), a deductive strategy (so to speak “I did have various options, but studying is the only one left”) and an experimental strategy (so to speak “I’ll just study, and perhaps I’ll be successful – and perhaps I’ll fail – I’ll just wait and see”). These types could also prove to be general strategies and might not be solely limited to non-traditional students.

Besides this specific understanding of 'strategies' there are studies that focus strategies in the sense of concrete learning strategies. Seeber et al. (2006) investigated learning strategies of students enrolled at a distance teaching university. They conclude that the use of specific learning strategies is related to positive outcomes and positive transfers from theory into practice. There is a huge body of literature regarding these kinds of learning strategies in the field of higher/postsecondary education (for an overview, see Winne, 2013).

The literature reveals that student strategies are on the one hand commonly investigated in the sense of 'what is the strategy behind the choice of a specific major' or 'the strategy behind the choice of studying at all'. On the other hand, there are studies on learning strategies in the sense of 'how can learning be most effective'. Right in-between lies what we would like to call 'student strategies'. These strategies refer to the organisational structure (in the sense of 'what actions/investments might fit best to implicit requirements of the organisation') and provide rationales, for example, of whether learning is considered a relevant strategy in specific situations after all.

The basic assumption underlying this study is that for whom the organizational structure is transparent and who has a 'habitus' (Bourdieu, 1993, 2000) that fits the structural requirements of the organization, are more successful. Empirically this can be connected to the work by Maschke and Stecher (2006, 2009, 2010) concerning student strategies at schools. How secondary school students master school individually is revealed in their individual organisational knowledge. According to so-called 'students' recipes' (*Schülerrezepte in German language*) (Hoferichter, 1980; see also Eder, 1987) Maschke and Stecher operationalize three dimensions of student strategies: learning, relationship-building and self-assertion, for which they then provide statistical evidence. Maschke and Stecher (2009) show empirically that during secondary school, learning and relationship-building tend to make way for a self-assertion strategy.

In this study we link back to the work by Maschke and Stecher (2006, 2009, 2010) and expand it by using their measures in a university context. Even though school and university are structurally different, it is assumed in this paper that the organisational knowledge in both contexts – university and school – fulfils a similar function (specifically: 'how will I be successful'). Hence, the first research question is whether it is possible to use the student strategy instruments (Maschke & Stecher, 2006, 2009, 2010) in the context of university students. We assume that the knowledge concerning success within an organisation can be understood as 'subjective theory' (Dann, 1990) about the

functioning of the organisation. These subjective theories are at least partly explicable. Therefore, the second research question is how students with a specific strategic profile explain their strategies to come through university well.

The stated research questions have a superordinate and a subordinate component. This calls for an embedded mixed methods design (Plano Clark et al., 2013). According to Plano Clark et al. (2013), the data collection, the data analyses procedures, the presentation and interpretation of the results are also carried out using the differentiation between the superordinate and subordinate inquiry. For this reason, the following the quantitative procedures and the qualitative procedures are described in separate subchapters.

## 3 Method

### 3.1 Sample description

*Quantitative sampling procedures.* A sample of 351 students was surveyed in the winter semester 2012/13 at a public university in Hesse, a federal state in Germany. The content of this survey were student strategies and other aspects of studying and student life. The standardised questionnaire was realised using an online survey program called Limesurvey ([www.limesurvey.org](http://www.limesurvey.org)). Four out of eleven departments of the university were included in the sample.

Using the central information service of the university, the invitation to participate in the online survey was sent to the sampled students. The 351 students who completed the questionnaire represent approx. four percent of the student population in the selected departments. The response rate is relatively low, which might be explained on the one hand by the fact that not every student actively uses the official e-mail address that is deposited in the central information service. On the other hand, the information service sends many other invitations to participate in different studies. As a result, students do not participate in every study that is sent across the university mailing list. The sample characteristics are depicted in table 1.

In all departments and especially in the language-oriented department, the percentage of female students is relatively high. For example Engler (1993, 2014) confirms that there is an imbalance between different studies regarding gender (for gender imbal-

ance in education studies, see also Kaufmann & Fraij, 2013). Concerning age, the students in the sample (AM=23.47; SD=4.45; median=23) are comparable to the students in the so-called 12<sup>th</sup> Student Survey (12. Studierendensurvey) (Ramm et al., 2014) that found that students in the winter semester 2012/13 across Germany were on average 23.2 years (median) old. 17.2 percent of the students in the sample were not born in Germany and/or at least one of the parents was born in a foreign country ('migration background'). Representative studies report a percentage of 16.0 to 23.0 percent of migration background (Middendorff et al., 2013; Ramm et al., 2014). Although the response rate is relatively low the sample has no exceptional properties. Hence, we can take the sample as a *relevant* selection of individuals (see for the distinction between 'representative' and 'relevant' Stecher, 2005).

Table 1  
Sample description

Departments' scope	absolute	relative	females	age, AM(SD)	migration
Teacher education*	102	30.3%	75.0%	23.60 (6.08)	8.7%
Society and Culture	60	17.8%	79.6%	24.22 (3.93)	17.0%
History	19	5.6%	76.5%	22.59 (2.55)	23.5%
Language	59	17.5%	91.5%	23.26 (4.07)	35.1%
Environment	97	28.8%	85.2%	23.26 (3.26)	13.8%
Overall	337**	100.0%	82.4%	23.47 (4.45)	17.2%

\* Teacher education does not have its own specific department, but is located in multiple departments.

\*\* We asked these questions in the end of the questionnaire, so there are missing values in 14 cases on these items e.g. due to students not completing the whole questionnaire.

*Qualitative sampling procedures.* Interview partners volunteered within the quantitative survey for a second, qualitative part of the study. Three of the students who indicated in the survey questionnaire that they are willing to participate in additional interviews were selected for interview. Their specific strategic orientation was the core rational for selecting specific students. One student per cluster (see figure 2) was interviewed.

### 3.2 Data collection

*Quantitative data collection.* The items of the standardised questionnaire that are relevant for student strategies (dimensions: learning, relationship building and self-assertion) were adapted from Maschke and Stecher (2006, 2009, 2010). In the questionnaire, students were asked to imagine that they were asked by someone they liked how to manage and come through well at university. Fourteen possible answers were provided that indicate the dimensions of learning (e.g. "...always prepare and follow-up for seminars/courses"), relationship-building (e.g. "try to build a good relationship with

the instructor”) and self-assertion (e.g. “voice your own opinion”) and should be rated on a five-point Likert-type scale from “not true” to “completely true.”

The survey also contained other measures. For this study three more items are especially relevant for preliminary content validity testing. The students were asked to rate the following statements on a 5-point Likert-type scale: first, “I see a purpose in my studies”, second, “my studies are a good phase of my life” and third, “my studies limit my leisure time activities”.

*Qualitative data collection.* The methodology used for interviewing considers the interview partner as being self-reflective, so the actual interview is more like a discussion and not so much in the form of a question-and-answer game. This approach is referred to as problem-centred interview technique (Witzel & Reiter, 2012; Kielblock & Lange, 2013). According to Witzel and Reiter (2012) the interviewer does not represent a disrupting factor; on the contrary, narrations and explications are only generated *together* in a natural manner through discussion. Focus of the interviews was: how the students managed their studies and their strategies to succeed at university. The interviewer asked the interviewee to imagine that a younger person that she or he liked asked what should be done to get along at university well. The interviewee’s narration is principally not disturbed by the interviewer, yet the interviewer is not artificially quiet like in other interviewing techniques. If the interviewee mentions aspects that are noted on the list of specific topics (the three dimensions: learning, relationship-building and self-assertion), the interviewer gets – so to speak – specifically curious, and asks in a natural manner for more details.

## 4 Results

### 4.1 Quantitative results

*Exploratory factor analysis.* Although we presumed a specific factor structure due to our model (which would call for a confirmatory factor analysis), we were uncertain about the transferability of the model from school to university context. So we chose an exploratory approach and calculated a principal axis factor analysis with promax-rotation ( $Kappa=4$ ; cf. Bühner, 2011; Eid, Gollwitzer & Schmitt, 2011). The items that ought to indicate relationship-building, learning and self-assertion were examined em-

pirically using the statistics program IBM SPSS 22. The factor loadings on the three latent dimensions clearly represent the theoretically assumed dimensions (see table 2).

Table 2  
Pattern matrix of the principal axis factor analysis

Item	To come through University well, you have to...	Components		
		1	2	3
(01)	...learn steadily.	.618		
(06)	...take the university seriously.	.523		
(08)	...pay attention in seminars/courses.	.523		
(09)	...pay attention in lectures.	.549		
(11)	...prepare and follow-up the seminars/courses.	.784		
(12)	...prepare and follow-up the lectures.	.764		
(03)	...cooperate with the university teacher.		.654	
(04)	...be friendly to the university teachers.		.585	
(05)	...advocate the rights of other students.		.466	
(10)	...look for a good relationship with university teachers.		.696	
(02)	...not put up with everything.			.493
(07)	...fight back.**			.636
(13)	...assert your own opinion.			.561
(14)	...not always agree with the university teacher.**			.569

Original language is German.  
All loadings <.42 suppressed.  
\*\* marked items are already inverted.  
Component 1=learning; component 2=relationship-building, and component 3=self-assertion.

*Description of the central scales measuring student strategies.* In the next step, these single items are summarised to only one variable for each dimension using arithmetic means. In this manner three new variables are created, which each depict one measure for all facets of its corresponding dimension.

The distributions of the three scales (see table 3) are not centred right in between 1 and 5 (which would be 3). The arithmetic mean is 3.19 for relationship-building, 3.78 for learning and 3.94 for self-assertion. Although one could have guessed that all students find all items as being completely true, the data also show that all possible values (from min=1 to max=5) can be found in the empirical data, except for learning, where no-one actually ticked all items “completely untrue”, so there is no-one with the scale value of 1.00 (min=1.50).

Table 3  
Properties of the three student strategy dimensions

	Number of							
	Min	Max	items	Alpha	AM	SD	P25	P75
Relationship-building	1.00	5.00	4	0.69	3.19	0.74	2.75	3.75
Learning	1.50	5.00	6	0.79	3.78	0.65	3.33	4.17
Self-assertion	1.00	5.00	4	0.65	3.94	0.65	3.50	4.50

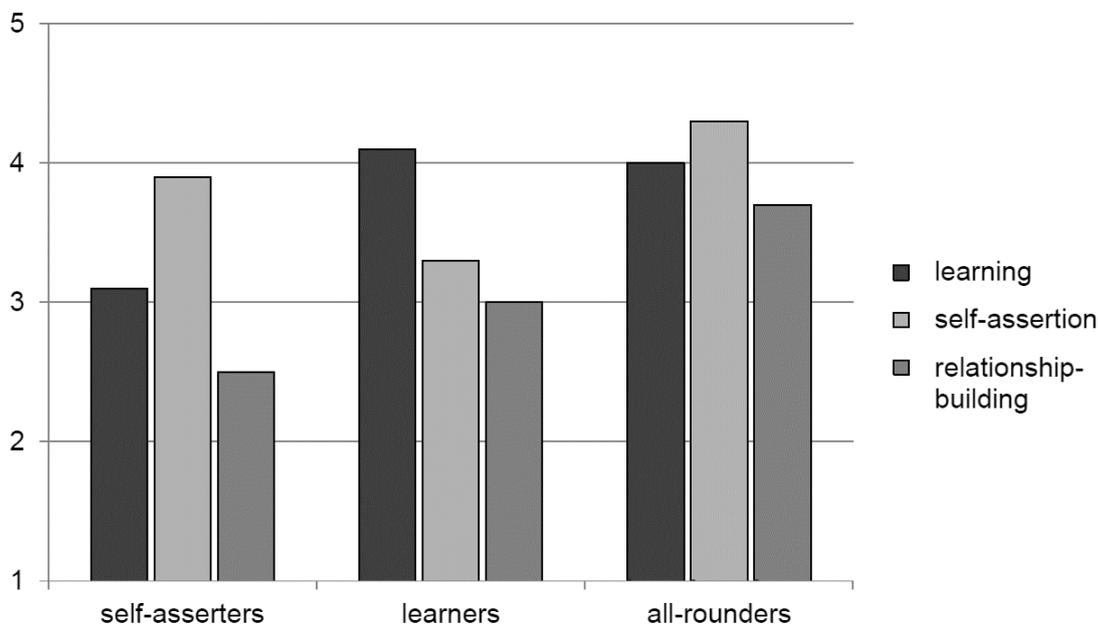
Note. Students could rate the items from 1='completely untrue' up to 5='completely true'. The higher the score, the more the importance of this strategy type is emphasised as being relevant; n=351.

*Content validity testing.* Preliminary evidence is reported in the following that learning, relationship-building and self-assertion are being measured by the three scales. This content validation seems to support the idea that measuring the three dimensions was successful. *First*, it could be supposed that those who invest much in learning do this because they have a particular goal in mind; so to speak that they see a purpose in studying. Students in the sample were asked this question and it correlates statistically (significantly) positively with learning ( $r=0.235$ ;  $p\leq.001$ ), yet not with self-assertion or relationship-building. *Second*, it also can be expected that those who have their strengths in self-assertion, also perceive their studies as being a good phase of their lives. A pronounced feeling that studies are a good phase of life is shown for high self-assertion values ( $r=0.329$ ;  $p\leq.001$ ). Relationship-building shows a statistically significant positive correlation as well ( $r=0.156$ ;  $p\leq.01$ ). Yet it is not shown in the data that those who favour learning view their studies as not being as good. *A third*, brief and final indication that the dimensions are measured as intended: the students were asked if the pressure of their studies limit their leisure time activities. Here it might be anticipated that learning would limit perceived leisure time activities and that those who follow a different strategy might feel exactly the opposite. The data show that a feeling of having to accept limitations in leisure time goes hand in hand with learning ( $r=0.197$ ;  $p\leq.001$ ). And a pronounced self-assertion correlates with not experiencing limitations in leisure time ( $r=-0.139$ ;  $p\leq.05$ ). For relationship-building no correlation can be found in the data.

*Cluster analysis.* The next step addresses whether there are groups of students who focus on specific strategies. For example, if there were students who focus more on learning than on the other strategies. A cluster centre analysis was calculated with a three cluster solution. The results of the cluster analysis (see figure 1) show the following: those individuals belonging to the first cluster (“self-asserters”) are characterised by a lower scale value regarding learning and relationship-building, but a high score in self-assertion. 28.5 percent of the students belong to this cluster. 25.9 percent of the students in the data are more focused on learning (“learners”), and do not view self-assertion or relationship-building as promising strategies. The relatively largest group, 45.6 percent of the students, show relatively high values in all three strategy dimensions (“all-rounders”). Figure 1 illustrates these distinctions in the three strategy dimensions according to cluster.

Except for the minimal difference between all-rounders and learners with respect to the learning dimension, all differences between the measures are statistically significant (according to ANOVAs with post-hoc tests).

Figure 1  
Distinction of the three strategy dimensions according to cluster allocation



Self-asserters (n=100); learners (n=91); all-rounders (n=160)  
Arithmetic mean values on a scale from 1=low value to 5=high value  
Source: Student Survey 2012/13

*Embedding of the interviewees within the quantitative framework.* The standardised questionnaire and the interview guide for the qualitative interview cover comparable topics. An individual code is generated for each interviewee, which allows the individual to effectively be found in the standardised data. In this manner, the three interviewed students can be assigned to their calculated clusters. This embedding of the qualitative material in the quantitative material is illustrated in figure 2. Each point in this diagram represents an individual according to their individual values in the dimensions of learning, relationship-building and self-assertiveness. The different cluster affiliations are made visible using different symbols (i.e. diamond for self-asserters). The quantitative characteristics of the three interviewed students are marked in figure 2 using large crosses. In the three cases demonstrated here, one interview exists for each cluster, which is systematically embedded in the (multivariate) quantitative data.

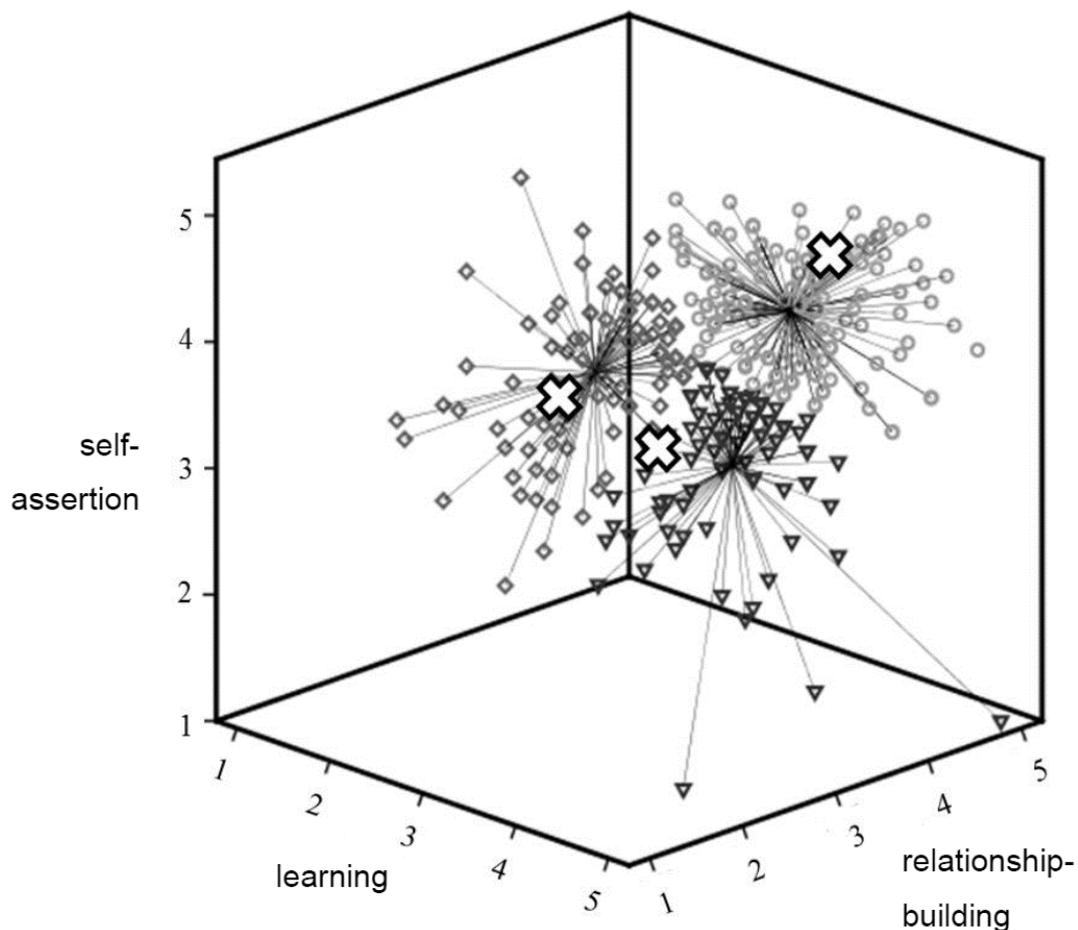
Anna (cross within the diamonds; all names are pseudonyms) belongs to the cluster of “self-asserters”. According to her answers in the standardised questionnaire she has a relatively high value in the dimension “self-assertiveness” (3.75; the average of the

other self-asserters is 3.90). She also shows clearly lower values in the dimensions of learning (3.00) and relationship-building (2.25). This corresponds with the distribution of the characteristics for the self-asserters (learning=3.10; relationship-building=2.53).

Steffanie (cross within the triangles), on the other hand, has clearly higher values in the dimension of learning in comparison to Anna. The cluster analysis therefore assigns her to the learners, for whom the average for the dimension learning is even higher (4.07) than Steffanie's value (3.83). For relationship-building, Steffanie's value is somewhat less pronounced in comparison to other learners: 2.50, whereas the average value for all learners is 3.01. It is exactly the opposite with self-assertion. Here Steffanie has a somewhat higher value of 3.50 than the learners with an average of 3.30.

Figure 2

Depiction of the values of the individuals according to cluster in the three dimensions of learning, relationship-building and self-assertiveness



Diamonds=self-asserters (n=100); triangles=learners (n=91); circles=all-rounders (n=160); crosses=interviewees (n=3). Individual values on a scale from 1=low value to 5=high value  
The figure shows how the interviewees (crosses) belong to the clusters.

Source: Student Survey 2012/13

All three values are comparatively high for Elli (cross within the circles). Accordingly, within the framework of the quantitative analysis she is allocated to the all-rounders, who display peak values in all three dimensions. This is particularly true for the dimension of learning (4.67; the other all-rounders have an average of 4.04) and self-assertiveness (5.00; the other all-rounders have an average of 4.33).

*Summary of quantitative findings.* In the quantitative data, the three clusters are identified. Content validity testing gives first hints that the dimensions are valid. A cluster analysis showed three clusters with different combinations of average measures on the strategy dimensions. Cluster names were 'Learner', 'Self-Asserter', and 'All-Rounder'. At the end of the quantitative treatment of data, the qualitative cases are embedded within the clusters, showing that there is one interview per cluster. These interviews are used in the following to deepen insights into the strategy clusters.

#### 4.2 Qualitative results

The interviews were (with the written permission of the interviewee) recorded with an audio recording device. The analysis of the qualitative material loosely follows the experiences of Bohnsack (1989, 2010). Accordingly, the audio material was first listened to in order to gain an overview of the thematic progress of the material. During this step of analysis, the topics discussed in the interviews are carved out, and the content is described. This topical structuring is then examined in a second step to see which passages seem particularly relevant for answering the research question and which passages are characterised by an especially dense and metaphorically rich language. The passages selected in this manner are paraphrased with an emphasis on a deeper understanding the perspective of the interviewee, and were then subjected to theming (Saldaña, 2013) and case related and explanatory interpretation. The interviews allow an insight into the strategies that the students believe to be suitable for being successful at university and in their studies.

*Self-asserters, based on the case Anna.* As a 'self-asserter', Anna does not feel it is necessary to maintain a good relationship with the instructors. She is quite happy to resolve small matters via email with instructors without having to have much contact to them. This corresponds to the broader picture of the self-asserters, who generally do not place much emphasis on 'relationship-building' (see figure 1). On the contrary, the relationships with friends are important to Anna. She gives examples that friends help to come through university well.

Anna reports that she does not find her studies to be too stressful. Everything concerning the studies is doable and it is more than enough to do only the work that seminars require. It stands out that, on the one hand, Anna explicitly states that she does not need any specific strategies to be successful at university. Yet her rationale is that one must *fight* one's way through alone anyway.

“I don't know if you have to adapt or somehow learn strategies or characteristics specifically for the university, I think, if you get on quite well in life and can hold your own in life, and there. Yeah, I think so too, yeah if you can just fight your way through normally, then you can fight your way through the university normally and deal and cope with conflicts there.” (Anna)

Having to *fight* your way through in life in general, as well as through university life in particular is seen as “quite normal”. For her that means both dealing as well as coping with conflicts at university and with a world full of conflicts. This is the core meaning of “having to assert oneself” as a strategy to come along at university well.

*Learners, based on the case Steffanie.* As a ‘learner’, Steffanie emphasises first and foremost and strongly that successful studies are linked to one's own organisational talent. It becomes apparent through the interview that she has a child and must travel quite a bit to the place of her studies by car. Someone who is well organised, she emphasises, does not have any problems at all. Studying is time-consuming, as she points out, but otherwise you don't have to have any other special skills. Steffanie says that she always tries to prepare for her seminar sessions. Yet she does not actively participate in the seminar because she does not like speaking in front of many people. She rather listens to the ideas discussed in the seminar for herself. From time to time, she has discussions with instructors via email. It is particularly important to deal with specific content intensively, as she points out. The notion of Steffanie, that learning and the preparation of courses is important, especially to complete studies quickly (so to speak: to come through university well and fast), explains the measures on the learning dimension of the learners (see figure 1). An additional aspect is that studies and learning have to be organised.

One further aspect discussed in the interview with Steffanie is that her learning is not solely focussed on lectures and seminars. Above all one should also deal with topics that are not dictated by instructors or others, according to Steffanie. For example, she bought a book on the following topic:

“Trauma! Working with trauma in residential social work. But that was just because I completed my internship in a youth home, and all of them were very traumatised, the kids and teenagers. And naturally somehow at the university we never did anything on it. And then I just bought a book and just dealt with it. Yeah, with the topic intensively for three months this way.” (Steffanie)

In this passage it becomes apparent that Steffanie picks up on the demands from her internship and transforms them into a personal learning challenge. She defines independently what she would like to read and immerses herself in a particular topic. To be open minded towards new topics is an interesting facet concerning the learning cluster, because one could have assumed that learners might only learn what is required, or at least defined or recommended by the instructor.

*All-rounders, based on the case Elli.* Needing to be actively involved in one’s studies is especially emphasised also by a third student in the interview. She will be called Elli here.

“It’s different than in school, it’s just that you have to be so disciplined, to familiarise yourself with the topics, because the seminars and lectures only give more or less a framework of the knowledge that is available, which is also conveyed to you. But then it’s your turn to discover, to research, to look where can I expand my knowledge? What’s also interesting for me?” (Elli)

Elli makes the comparison to school and emphasises how different university studies are. Only a small amount of the knowledge is touched upon in seminars and lectures and the main task (and with it the most responsibility) for successful studies lies in one’s own hands. Elli focuses strongly on the individual and she repeatedly speaks in the interview of discipline, which one must have oneself in order to create real studies from the ‘hollow’ courses. Accordingly she is quite strict about attending seminars and lectures: she attends courses either always or not at all. If a course is interesting, she is always there. If she clearly hears topics repeatedly in a course, she decides to no longer attend. In addition Elli raves about the incomparable possibilities offered by studies. She reports that she certainly does push herself to her physical limits. Because “the time at university is nothing else than a time of self-realisation, in my opinion” (Elli). Her interview confirms the high measures of all-rounders on all three dimensions.

*Summary of the qualitative findings.* In the qualitative findings the cluster affiliations of the three cases is illustrated using qualitative interview material. Although the self-asserter does not reflect it as a specific strategy, she emphasises the necessity of fighting her way through university and through life. The Learner is very focused and displays a lot of organisational talent. She is diligent in two ways: on the one hand she learns what she is told to by university teachers. On the other hand she learns what she personally defines as relevant to her. The all-rounder clearly gives emphasis to herself as an individual being responsible for her own education and learning. Courses at university are only events and, as the all-rounder emphasises, they have no effect at all if one does not become active and if one does not delve into the topics by oneself.

## 5 Discussion

The dimensions of the quantitative student strategy measures that were developed in the school context were reproduced in the university context. Additionally, clusters were constructed. The qualitative interviews explained and enhanced the understanding of the clusters.

*Self-asserter.* The self-asserter Anna said in the interview that relationship-building is not a very important strategy to come through university well, which corresponds to the self-asserters' low measures on the relationship-building dimension. On the other hand relationship-building amongst peers is seen as relevant. This perhaps provides hints that the items of the questionnaire (e.g. "try to build a good relationship with the instructor") rely too much on relationship building with respect to the instructor. Other facets of relationship building (e.g. amongst peers) might be considered explicitly as important in future versions of the questionnaire and in further surveys concerning student strategies.

*Learner.* The learner Steffanie emphasised in the interview the importance of organisational talent. This maybe is only specific to Steffanie, because she has a child. Or maybe it is specific to learners in general, because there actually is a logical connection between learning being quite time consuming and the fact that time is limited. So organising which learning or text reading comes first and second etc. is important for learning as a successful strategy. Further surveys might provide more detail and evidence in this regard.

Also in Steffanie's interview it became clear that on the one hand, she learns what is required in seminars. On the other hand, she learns what she defines as relevant. It is possible that the strategies might have a hierarchy in the sense of learning as a super-ordinate strategy with two subordinate strategies: a) learning what you are told to learn, and b) learning what you personally defined as relevant. Steffanie clearly represents both facets. Yet maybe other cases might emphasise just one of these aspects. This might be investigated in future studies in more detail.

*All-rounder.* Elli, the all-rounder, explains in the interview that her strategy is to do 'everything' that is possible. Maybe issues concerning stress or burn-out might appear. One might guess from her interview that on the one hand she actually controls the amount of work herself, but on the other hand the impression arises that she might be overdoing things. This is a further research question, too.

*Concluding remarks.* A few limitations must be mentioned. *First*, the selection of the students participating in the standardised study is not representative for students in general. However, the focus of this study was not so much to produce representative findings, but it was more or less a first approximation to the field of student strategies. *Second*, the selection of the qualitative material for this paper clearly underestimates the plurality of possible cases. This means that many more different cases might be found. And some of these might even contradict the three clusters presented in this study. Although we were not able to go into greater detail in this study, future qualitative studies might use for example a theoretical sampling approach (as described for example in Stecher, 2005) to cover a broader variety of cases. *Third*, the cluster analysis classifies individuals to separate groups and therefore also demarcates a clear boundary between individuals from two different groups who might be relatively similar. The group classification of each individual is thus quite reasonable when viewed statistically. From a qualitative perspective, however, the classification of persons into different groups who possibly have very similar values in the relevant dimensions is problematic. Particular caution is necessary here: one idea might be that the visualisation of the data (see figure 2) provides information where the individual is located within the clusters. This might help to interpret the cluster affiliation with caution. *Fourth*, the interview technique used here has only limited capacity to generate really 'new' insights. It is not a completely open interviewing technique because there are specific topics in the interviewing guide that the interviewer would like to deepen together with the interviewee. This interviewing technique fits very well to the quantitative part and to the embedded mixed methods study design. However, to create knowledge about which other

student strategies are of great importance to the students, a more open interviewing technique might be chosen. Fifth, the questionnaire needs a revision, in order to increase the reliability values (table 3) which are actually too low for the relationship-building scale ( $\alpha=.69$ ) and self-assertion ( $\alpha=.65$ ). A minimum of  $\alpha=.70$  is in most cases considered to be a sufficient value.

Future research might connect to these findings in the way indicated in this discussion section. First, it would be interesting to have further evidence of the presented dimensions. Second, it would be helpful to extend the dimensions with other relevant student strategies. Third, it would be interesting to utilise the student strategy instrument presented here in other contexts (like other universities in Germany, other universities of applied sciences in Germany, or other non-German contexts, etc.). And fourth, it would also be necessary to conduct further (more theoretical) research on strategies.

This research direction indicated by our working paper might not only inform research, but also practitioners and policy makers in the field of higher education, by creating knowledge on what strategies students actually use in higher education, because for example it is possible that a student does not consider learning as an appropriate strategy to manage studies well. As such, efforts in the direction of improving learning conditions of the students might be misleading. Positively formulated, the aim of this working paper and research in this direction is to facilitate and support successful studying and not only successful learning.



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