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Abstract

In this study, we analyze to what extent students' social background and, particularly, the motive of status maintenance, as proposed by the rational choice theory, are related to parents' decision to provide private tutoring in secondary school. Given the large share of students attending the highest type of secondary school in Germany (Gymnasium) in recent years, several researchers suggest that this type of school might no longer serve its long-lived purpose of ensuring that families maintain their social status. We propose that parents might employ private tutoring as a new means for status maintenance. Analyzing data from the National Educational Panel Study (NEPS), we find that the decision to take private tutoring in grades 5–8 depends on one aspect of students' social capital, that is, the school-related support that parents offer at home. Additional effects can be identified for the type of school that students attend, a migration history in the family, and students' performance in mathematics and German. Regarding the motive of status maintenance, we find no statistical support for the assumption that parents employ private tutoring to maintain their families' social status. Our analyses indicate, however, that at Gymnasium, parents might use private tutoring to increase their children's social status beyond that of their own.

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Jennifer Lorenz & Tobias C. Stubbe

Nachhilfe als Mittel zum sozialen Statuserhalt

Zusammenfassung

Diese Studie geht der Frage nach, inwiefern die soziale Herkunft von Schülerinnen und Schülern und insbesondere das Motiv des Statuserhalts, wie es von der Rational Choice Theorie vorgeschlagen wird, mit der Entscheidung für Nachhilfeunterricht in der Sekundarstufe I zusammenhängen. Angesichts des Anteils von Schülerinnen und Schülern, die in den vergangenen Jahren das Gymnasium besuchen, gehen verschiedene Forscherinnen und Forscher davon aus, dass diese Schulform ihrem langjährigen Anspruch, Familien den Erhalt ihres sozialen Status zu ermöglichen, nicht mehr gerecht wird. Wir nehmen an, dass Eltern Nachhilfe als neues Mittel einsetzen könnten, um den sozialen Status ihrer Familie zu erhalten. In Analysen mit Daten des Nationalen Bildungspanels (NEPS) zeigt sich, dass die Entscheidung für Nachhilfeunterricht in den Klassen 5–8 mit einem Aspekt des sozialen Kapitals der Schülerinnen und Schüler zusammenhängt, nämlich mit der Unterstützung der Eltern für schulbezogene Aufgaben. Darüber hinaus zeigen sich Effekte der besuchten Schulform, eines Migrationshintergrundes und der Schulleistungen in Mathematik und Deutsch. Im Hinblick auf das Motiv des Statuserhalts finden wir keinen statistischen Beleg für die Annahme, dass Eltern Nachhilfe einsetzen, um ihren Status zu erhalten. Die Analysen liefern jedoch Hinweise darauf, dass Eltern von Gymnasiastinnen und Gymnasiasten Nachhilfe nutzen, um ihren Kindern einen höheren sozialen Status zu verschaffen als ihren eigenen.

Schlagworte

Nachhilfeunterricht; Soziale Herkunft; Statuserhalt; Rational Choice Theorie

1. Introduction

Nowadays, half of the German students attend a school at the secondary level that leads to the highest school graduation certificate (*Abitur*) (Autorengruppe Bildungsberichterstattung, 2018). This can be seen as a consequence of the educational expansion, which started in the 1960s and aimed to increase the overall education level to overcome a shortage in the qualified labor force and diminish the relationship between social status and educational attainment (Geißler, 2014). As today's larger share of higher educated students suggests, the goal has been somewhat accomplished, although social disparities in education are still substantially higher in Germany than in many other countries (Weis et al., 2018). Next to the more obvious changes the educational expansion provoked in the schooling system and the labor market, it also had an impact on the social structure. According to the theory of social distinction (Bourdieu, 1986), families of higher social status seek to pass their social status on to their children and thus main-

tain their families' distinctive position in the social structure. Before the educational expansion, this could be accomplished by having children attend the highest secondary school (*Gymnasium*). In the 1970s, for example, this right was reserved to roughly ten percent of all students from a birth cohort (Autorengruppe Bildungsberichtersstattung, 2018). Given today's attendance rate, merely sending children to this type of school will probably not suffice to maintain a family's higher social status. Several researchers suggest that families of higher social status might seek out other options to distinguish themselves from families of lower social status (Reimer & Pollack, 2010). As Lucas (2001) puts it for the US American context, "Once that level of schooling [that is the high school level, the authors] becomes nearly universal, the socioeconomically advantaged seek out whatever qualitative differences there are *at that level* and use their advantages to secure quantitatively similar but qualitatively better education" (p. 1652). Several such qualitative measures have been proposed in recent studies, for example, stays abroad (Gerhards & Hans, 2012), class profiles with a special focus on subjects such as Musical Education or Science (Nonte, Haas, Krieg, & Stubbe, 2017), and private tutoring (Schneider, 2005).

In this paper, we build on the idea that parents of higher social status might use private tutoring as a mechanism to ensure their social status is passed to their children. This idea was also brought forth by Schneider (2005), who analyzed data from the German *Socio-economic Panel* (SOEP) and found that families from Western Germany might employ private tutoring strategically to further their children's educational advancement. Owing to the data source, Schneider (2005) did not have a specific measure for status maintenance at hand but rather analyzed it implicitly by looking at students' social backgrounds. Furthermore, his analyses were restricted to a cross-sectional perspective and did not include students' academic performance, which is the driving factor in the decision for private tutoring (Guill & Bonsen, 2011). In another study, Luplow and Schneider (2014) overcame many of these limitations, for example, by including students' academic performance and utilizing the measure of the importance that parents attach to status maintenance. However, their study focused on students in primary schools where private tutoring is less prevalent than at the secondary level (Autorengruppe Bildungsberichterstattung, 2018). Furthermore, they did not model time-varying aspects such as the development of students' grades. With data from the *National Educational Panel Study* (NEPS), it is now possible to examine the motive of status maintenance with a measure explicitly developed within the framework of rational choice theory (Steinberg & Hoenig, 2018). We can also analyze its relationship with private tutoring in secondary school from a panel perspective, including students' performance and changes in their performance.

2. Family's social status and private tutoring

2.1 Theoretical model of social status in educational research

Students' social background and its impact in the context of education are usually analyzed by referring to Bourdieu's theory of capital (1986). He differentiates three forms of capital that make up a person's social status: economic, cultural, and social capital. A person's professional status and financial means are their economic capital. Cultural capital refers to a person's level of education and possession of culturally valuable objects. It can be divided further into three subcategories: incorporated, objectified, and institutionalized cultural capital. The first is education or knowledge accumulated by a person. The second is capital in its material form, for example, musical instruments or books. The last is defined as education that has been recognized institutionally, for example, certificates. Compared to economic and cultural capital, social capital is rather abstract as it is defined as the resources that others can provide for a person. The amount of social capital a person has, therefore, depends on the size and variety of their social network. In the context of education, Bourdieu's (1986) ideas on social capital are often supplemented by Coleman's (1988) description of the matter, as he refers explicitly to education. According to Coleman (1988), social capital lies, on the one hand, in the social ties of the community, and on the other hand, inside the family. In the context of education, the latter can be interpreted as parents' support for school related-tasks, or more generally, as their involvement in their children's lives, which is an important factor in children's educational success (Coleman, 1988).

2.2 Private tutoring in the framework of rational choice theory

Different variations of the rational choice theory (e.g., Breen & Goldthorpe, 1997; Erikson & Jonsson, 1996; Esser, 1999) have proven useful in research on educational decisions, including the decision for private tutoring (e.g., Schneider, 2005). The most commonly used adaptation of the rational choice theory for the German education context was proposed by Esser (1999). Like other rational choice theorists, Esser (1999) assumes that individuals act rationally, that is, they weigh the costs and benefits of alternatives they face. Unlike others, Esser (1999) does not assume that individuals consider the objective conditions of the alternatives. He suggests that costs and benefits are assessed individually, that is, according to a person's perception of the circumstances of their decision. This implies that subjective self-reports, for example, surveys, can be used to assess these circumstances.

According to Esser (1999), the following elements are central to an educational decision, which in this paper is the decision to utilize private tutoring:

- benefit (*U*): enhancing students' school performance to achieve good school graduation certificates;

- cost (C): expenditures for private tutoring; and
- the possibility of not maintaining the family's social status (−SV): not being able to reach a similar professional status as the parents.

Esser (1999) claims that the direct and indirect costs (i.e., monetary or opportunity costs) for education are the same for everybody in Germany; however, the benefit (U) and status maintenance (SV) may or may not be realized and thus vary:

- with the probability of success (p) of realizing the benefit (U) and
- with the probability (c) of not maintaining the family's social status (−SV).

The following formulas can be employed to calculate the value-expectation weights (EU) for a decision with two alternatives. A higher EU weight will determine the alternative an individual will decide on (Esser, 1999). In this paper, we examine the decision for private tutoring (A), which may be realized (A_1) or not (A_2):

$$EU(A_1) = pU + (1-p)c(-SV) - C$$

where the benefit (U) is realized with a certain probability (p) at a certain cost (C). Status maintenance might not be attained (−SV) by a certain probability (c) if the benefit (U) is not realized, which might happen with the counter-probability (1−p).

$$EU(A_2) = c(-SV)$$

where, due to not arranging private tutoring, the benefit (U) will not be realized by any probability (p), and there will be no expenditures (C). What remains is the possibility of not maintaining the families' social status (−SV), which might occur with a certain probability (c).

In the context of the decision for private tutoring, parents will decide to arrange it for their children, when $EU(A_1) > EU(A_2)$. By integrating the above formulas accordingly, the following inequality is obtained:

$$U + c(-SV) > \frac{C}{p}$$

In line with Esser's (1999) considerations for educational decisions, we can assume that the costs (C) for private tutoring will not differ by parents' social status, as tutoring institutions in Germany have fixed prices. Similarly, the benefit (U) of private tutoring, that is, obtaining good grades and good certificates, should not vary by social status. However, the probability of success (p) in this endeavor might be positively linked with parents' social status. Parents who have higher education might be able to offer additional help with school-related tasks and thus increase the probability (p) of realizing the benefit (U). Furthermore, the higher a family's social status already is, the risk of not maintaining a family's social status (c(−SV) is more pronounced. Thus, for families of higher social status, the motivation for arranging private tutoring should be higher.

2.3 Factors driving the decision for private tutoring

In the course of their secondary education, one out of five German students receives private tutoring (Autorengruppe Bildungsberichterstattung, 2018). Nevertheless, for decades, this topic has attracted little attention in educational research (Hass & Jäger, 2011). Only in recent years has the number of studies increased (Luplow & Schneider, 2016). These show that the main factor driving the demand for private tutoring is students' performance (Guill & Bonsen, 2011; Ireson & Rushfort, 2014), although the effectiveness of private tutoring to attain this goal has not yet been proven (Guill, Köller, & Lüdtke, 2019). However, other factors also have an impact on parents' decision to arrange private tutoring for their children. One of these is parents' social status, as measured by their income, professional status, and educational attainment.

2.3.1 Parents' income

Using data from the German SOEP, Schneider (2005, 2006) found strong positive effects of parents' income on the chances of 17-year olds having received private tutoring at least once during their school career. Supplementing the SOEP data with data from a study on German families (*Familien in Deutschland* (FiD)), Hille, Spieß, and Staneva (2016) also reported that the arrangement of private tutoring is dependent on parents' income. Parents with higher and, in recent years, also middle incomes, are more likely to arrange private tutoring for their children than parents with lower incomes. Another study with data from students in the seventh and eighth grades from schools in Hamburg reported mixed evidence: a higher income is only a significant factor in the decision for private tutoring when students' performance is controlled for. The authors interpret that parents with higher incomes would already react to small decreases in their children's performance by arranging private tutoring (Guill & Bonsen, 2011). For younger students in primary school, Luplow and Schneider (2014) are unable to identify any significant relationship between parents' income and private tutoring.

2.3.2 Parents' professional status

When examining the relationship between parents' professional status and the chance that their children receive private tutoring, the evidence is again mixed. While Schneider (2005) cannot find any effects, Guill (2012) shows that in Hamburg, chances for private tutoring are slightly higher for students with parents who have a higher professional status.

2.3.3 Parents' educational attainment

Ireson and Rushforth (2014), who analyzed data from students in grades 6, 11, and 13 from South England, found that parents who have attained higher levels of education are more likely to arrange private tutoring for their children. For Germany, Schneider (2006) showed that the highest rates for private tutoring are found in families where at least one of the parents has obtained the highest German school certificate (*Abitur*). Similarly, Hille et al. (2016) observed that students whose mothers had received vocational training compared to those who had not were more likely to receive private tutoring. However, this effect is not present for higher educational certificates such as university degrees. For primary school students, Luplow and Schneider (2014) found evidence for the reversed effect: students whose parents have a higher educational status are less likely to arrange private tutoring for their children. Finally, Guill (2012) found no statistical evidence for the effect of parents' educational level on the decision to arrange private tutoring for children in Hamburg's secondary schools.

2.3.4 Parents' support at home

Luplow and Schneider (2014) suggested that the effect they found, that is, that parents of higher social status are less likely to arrange private tutoring for their children in primary school might stem from parents' ability to provide school-related support at home. Indirectly, they found evidence for this hypothesis in the higher shares of private tutoring that they observed when parents do not feel capable of offering support for school-related tasks, which should be especially true for parents with lower levels of education. This hypothesis is also supported by the findings of another study: the more children advance in their school careers, the less their parents support them with school-related tasks (Ireson & Rushforth, 2014; Luplow & Schneider, 2016). One interpretation for this is that parents might not know enough about the school curriculum and thus do not feel capable of helping their children with their homework (Ireson & Rushfort, 2014). Irrespective of the grade or type of school attended, another study revealed that when students feel sufficiently supported by their parents, they are also more likely to receive private tutoring (Birkelbach, Dobischat, & Dobischat, 2017). This might seem contradictory to the above findings, but it could also be interpreted as a general interest of parents in their children's school careers: those that offer support at home are also willing to pay for additional external support.

2.3.5 Motive of status maintenance

In their study with primary school students, Luplow and Schneider (2014) found statistical evidence for the role of the motive of status maintenance in the decision

for private tutoring. In the study they analyzed, parents were asked how important the motive of status maintenance was for them. The analyses showed that the importance of status maintenance has a significant positive effect on the decision to take up private tutoring in German. In their final model, this is one of the few effects that remain significant although several indicators for social status (e.g., parents' educational and professional status) were also included.

2.3.6 School-related factors

Guill (2012) found that not only parents' characteristics but also the specific schools students attend have an impact on private tutoring. In the multilevel model that she used for her analyses, the school attended has additional explanatory power in the decision for private tutoring. Adding information describing the schools, Guill (2012) revealed that lower rates of private tutoring are observed when the school attended provides after school hours where students are supported when doing their homework or when it is an all-day school. In a study with the same data preceding the before-mentioned, the effect for all-day schools is not found – this might, however, be due to the application of a different statistical model (Guill & Bonsen, 2011). The school-level effects reported by Guill (2012) might also be a phenomenon specific to the school system in Hamburg, as no similar effect can be found for students from across Germany (Schneider, 2006).

Regarding the difference between types of schools, the evidence is mixed. Guill (2012) reported higher rates of private tutoring at more challenging types of schools in Hamburg. The same holds for Birkelbach et al. (2017), who found that students at *Gymnasium* are more likely to receive private tutoring than those attending the lowest type of secondary school (*Hauptschule*). Hille et al. (2016), conversely, did not find any significant differences between the types of schools in Germany.

2.3.7 Migration background and students' sex

One characteristic that is regularly included in German education studies is a migration background measured by parents' country of birth (Hußmann et al., 2016). As this characteristic is usually strongly correlated with indicators of social background (Stanat, 2003), it is not surprising that mixed findings have been reported for its relationship with private tutoring. For Hamburg, Guill and Bonsen (2011) found statistical evidence for the higher use of private tutoring for families where at least one of the parents was born outside Germany. Contrarily, Luplow and Schneider (2014) could not find any significant relationship with private tutoring in primary school once students' performance is controlled for.

Regarding students' sex, most studies do not report any significant effects, with one exception: Luplow and Schneider (2014). They first found that girls have a sig-

nificantly higher chance of receiving private tutoring in mathematics in primary school. However, the effect becomes insignificant once students' performance is controlled for, indicating that it stems from differences in male and female students' performance.

3. Research questions

Current research on the relationship between students' social background and their demand for private tutoring has rendered mixed results. This might stem from the different scopes of the studies, which are specific for a certain region (Guill, 2012: Hamburg; Ireson & Rushfort, 2014: South England) or restricted to younger students (Luplow & Schneider, 2014: primary school). The ambiguous results might also be due to the data used for the analyses, which were not in all studies primarily designed for educational research, and therefore, did not contain central variables such as students' performance (Schneider, 2005, 2006: SOEP data). Furthermore, all the studies cited above adopt a cross-sectional perspective and do not model time-dependent factors in the decision for private tutoring explicitly. These include changes in students' performance, which might be a decisive factor for participation in private tutoring in a specific school year. Against the background of these mixed findings and open questions, in this study, we use NEPS data to determine the relationship between private tutoring and social background with a representative sample for secondary schools across Germany from a panel perspective. Accordingly, our first research question is as follows:

Research question 1: Does social background affect parents' decision to arrange private tutoring for their children in secondary school?

As Esser's (1999) adaptation of the rational choice theory shows, two elements are crucial for the decision to utilize private tutoring and its relationship with social background: the probability of not maintaining the family's social status and the probability of success for a given benefit, which in our case is enhancing students' school performance and attaining good school graduation certificates. From this, we derive the second research question:

Research question 2: Are the motive of status maintenance and the probability of success, as proposed by the rational choice theory, driving factors in parents' decision to arrange private tutoring for their children?

We assume that in the past, status maintenance in the German education system could be achieved by having children attend *Gymnasium*. Nowadays, as almost half of all German students attend this type of school, it may no longer serve that purpose. We propose that the effect of status maintenance is most pronounced at *Gymnasium,* as this is what private tutoring is used as a substitute for. Therefore, our third research question is as follows:

Research question 3: Is the motive of status maintenance more relevant for the decision for private tutoring at *Gymnasium* than at other types of schools?

4. Data and methods

For the following analyses, we use data from NEPS Starting Cohort 3 (Blossfeld, Roßbach, & von Maurice, 2011). The original panel started in November 2010 with students in fifth grade (see Aßmann et al., 2011). Additional students were sampled in the third wave when students were in seventh grade. In this paper, we analyze students from the original panel cohort to ensure continuity of the data (n = 5525). Data use is restricted to the first four waves (students in grades 5–8), as parents were not surveyed in the fifth wave, and thus, central information for our analyses, such as the extent of parental support at home or students' grades, is missing.

4.1 Measures

4.1.1 Private tutoring

Students' participation in private tutoring is measured by parents' responses to the question of whether their child currently receives private tutoring, defined as external, regular learning support.[1]

4.1.2 Parents' social status

The theoretical construct of social status is measured based on Bourdieu's theory of capital (see section 2.1). Economic capital is measured by the families' net household income. For reasons of interpretability, it is aggregated into four categories, which are defined by the quartiles of the income distribution in the sample. In addition to income, parents' occupation forms part of a family's economic capital. In the NEPS questionnaire, the interviewed parent was asked to state both parents' professions. We use the higher of the two stated professions, coded according to the *Socio-economic Index of Occupational Status 2008* (ISEI) (Ganzeboom, 2010). The number of books at home and parents' highest educational attainment are used to indicate parents' cultural capital. Similar to parents' occupational status, the higher of the parents' educational certificates is used. It is coded according to the *International Standard Classification of Education* (ISCED) (UNESCO, 1997). Parents' social capital is measured by their support for school-related tasks at home (four items) and the number of different occupations in their social network, as measured by the position generator (Lin & Dumin, 1986). With the first indicator, we refer to social capital within the family. The latter indicator is for social capital that is accessible through social networks outside the family. We use

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1   Question in the survey: "Now I would like to move on to the subject of private tuition. Does <target child's name> currently receive private tuition? «Private tuition includes all external educational, systematic, mainly regular support of pupils to overcome any learning issues or to improve their learning performance.»" (FDZ-LIfBi, 2019).

this to extend the view on social capital usually adopted in educational research, which is often limited to social capital within the family (see Lorenz & Stubbe, 2020).

4.1.3 Status maintenance

The probability of status maintenance is measured by parents' rating for two questions on the chances that their child would be able to attain a similar or better job than their mother's or father's when finishing school with a middle secondary school certificate, that is, the certificate of *Realschule*. Like the measurement of professional status and educational attainment, in the case of differing ratings, the higher of both ratings is used. Consequently, the resulting variable indicates whose job position can more easily be reached or exceeded with the school graduation certificate of *Realschule*; and thus, how far at least the lower of the mother's or father's status can be attained. The idea behind this measure is that the more likely it is for a family to attain status maintenance with the school graduation certificate of *Realschule,* the less afraid they would have to be of losing their social status. This is because, in general, this certificate can be attained more easily than higher ones, and, specifically, more easily when children attend *Gymnasium*. Thus, the higher the probability for status maintenance with the certificate of *Realschule*, the less interested parents should be to enhance their childrens' performance with private tutoring, specifically at *Gymnasium,* where they would also be less interested in their children attaining a better school certificate (*Abitur*).

4.1.4 Probability of success

The probability of success for a given benefit, which here is enhancing students' performance to attain good school certificates, specifically, a good *Abitur* at the *Gymnasium*, is measured by parents' answers to the question of how likely they think it is that their child will successfully attain the *Abitur*. The lower parents rate this probability, the more motivated they should be to arrange private tutoring.

4.1.5 Type of school

To determine whether the demand for private tutoring differs by type of school, we include the types of schools students attend. These are secondary school with the highest general education (*Gymnasium*), integrated secondary school (*Integrierte Gesamtschule*), secondary schools with several courses of education (*Schule mit Bildungsg*ängen), more extensive general education (*Realschule*), and basic gen-

eral education (*Hauptschule*), and primary school (*Grundschule*).[2] Whether the effect of the motive of status maintenance on the decision for private tutoring is different at *Gymnasium* compared to other types of schools is analyzed using a binary variable: *Gymnasium* vs. other types of schools.

4.1.6 Students' performance

Given that students' performance is a driving factor in the decision for private tutoring (Guill & Bonsen, 2011), students' grades in mathematics and German are included as control variables in the analyses. We use grades because we assume that for parents, they serve as an indicator of children's performance rather than their actual competencies, which would be measured by standardized tests. Additionally, for both subjects, we include the differences in grades compared to the previous school year. The idea behind this is to control for a possible delayed effect of grades from the previous school year, which might cause participation in private tutoring in the ongoing school year.

4.1.7 Control variables

Further control variables for all analyses are as follows: migration background, which is given if at least one parent was born outside Germany; the type of school recommendation students received after primary school, as those that were not recommended for *Gymnasium* might have to utilize private tutoring to ensure they can remain in this type of school; and students' sex, as this might be related to differences in performance and thus differences in the necessity for private tutoring.

4.2 Analyses

To model the binary outcome of the decision for private tutoring, we employ logistic regression analysis. The following variables were measured in all four waves and vary over time: private tutoring, parents' support at home, students' performance, and the type of school attended. The elements of the rational choice theory were measured in two waves. Given this data structure, we include a random intercept for the student level to capture unexplained variation between students.[3]

To answer research question 1, we first analyze the impact of all indicators of social background on parents' decision to arrange private tutoring for their chil-

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2   For a comprehensive overview of the German education system, please refer to KMK (2017).
3   Additionally, we tested whether there is unexplained variation at the school level by including a random intercept for the schools that students attend but found no substantial variation ($\sigma_{school} \leq 0.01$).

dren (Model 1). In the second model, we include students' performance and changes in their performance alongside other control variables (recommendation for *Gymnasium*, type of school attended[4], migration background, and sex). For research question 2, we look at a model with the elements of the rational choice theory (Model 3) to determine whether they are statistically relevant for the decision for private tutoring. In the fourth model, we include an interaction effect for attending the *Gymnasium* compared to other types of schools[5] and the motive of status maintenance to analyze whether the interaction proposed in research question 3 can be found. To answer research question 3, we add all social background, performance, and control variables (Model 5). All analyses were performed in R (R Development Core Team, 2019).[6]

4.3 Imputation of missing values

For those characteristics that are assumed to be time-invariant and were not available for all waves analyzed here (1–4), we imputed the values deterministically from subsequent and/or preceding waves (see Schulte Nordholt & Hooft Van Huijsduijnen, 1997). This applies to the following variables: parents' income, parents' professional and educational status, the number of professions in parents' social networks (position generator), the number of books at home, students' recommendation for *Gymnasium*, students' migration background, and students' sex. Subsequently, all missing values (including those of variables that were already missing in the wave used for deterministic imputation) were multiply imputed using the R-package *mice* (van Buuren & Groothuis-Oudshoorn, 2011). All analyses were conducted for five multiply imputed datasets, and the results were pooled according to Rubin's rule (Rubin, 1987), where possible.[7]

5. Results

5.1 Descriptive results

The share of students who receive private tutoring indicates that in fifth grade, 13 percent of students receive private tutoring. After the first year of secondary school,

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4   In Model 1 and 2 we include a polytomous variable for the type of school as we are interested in differences in the demand for private tutoring between all types of schools.
5   In Model 4 and 5 we include a binary variable for the type of school as we are interested in the effect of the motive of status maintenance at *Gymnasium* compared to any other type of school.
6   The following packages were used: *BIFIEsurvey* (Robitzsch & Oberwimmer, 2019), *dyplr* (Wickham, François, Henry, & Müller, 2018), *lme4* (Bates, Maechler, Bolker, & Walker, 2015), *lmerTest* (Kuznetsova, Brockhoff, & Christensen, 2017), *merTools* (Knowles, Frederick, & Whitworth, 2019) and *miceadds* (Robitzsch & Grund, 2019).
7   In lack of a pooling formula for pseudo-R^2 measures, the arithmetic mean of the five imputed data sets is reported.

Figure 1: Percentage of students receiving private tutoring by school year and previous school year
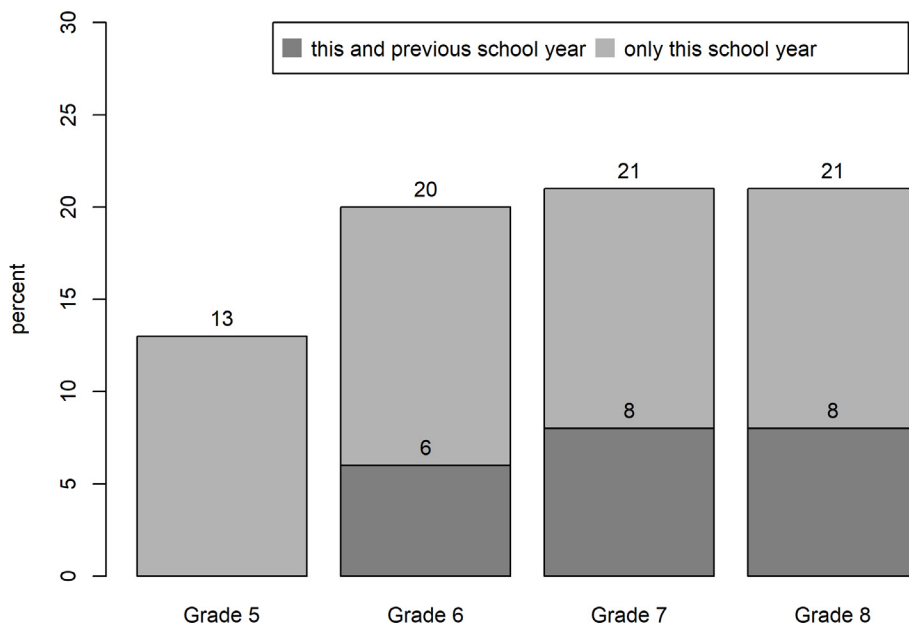
there is a rise in demand, which stabilizes at approximately 20 percent. Six to eight percent of students who received private tutoring in grades 6–8 had received private tutoring in the previous school year (see Figure 1).

Parents' characteristics that we consider for our analyses are distributed as follows in the NEPS sample. Parents have a mean net income of approximately 3,700 euros per month, which varies by almost the same amount around the mean. Mothers' or fathers' highest ISEI is at 56.7 on a scale from 12–80 points (see Ganzeboom, 2010). The most common educational degree is a vocational training certificate or the highest school graduation certificate at the secondary level, that is, the *Abitur*. Approximately one in four families has at least one parent with a university degree. Most families have less than 500 books at home, and only 16 percent stated that they had more. Almost one-third of students received a recommendation for *Gymnasium* after the fourth grade. Forty-eight percent of all students are female, and 22 percent have at least one parent born outside Germany (see Table 1).

Regarding the time-varying characteristics (see Table 2), overall, not much variation can be observed over the four school years analyzed here. For support at home, the average rating is always above 2.5 (theoretical average) on a scale of 1 "never" to 4 "often," showing that throughout grades 5–8, parents support their children rather often with school-related tasks. In the first year of secondary school, the mean of students' grades is 2.4 in mathematics and 2.3 in German. Both increase slightly over the following years. This shows that student perfor-

mance decreases as the grading scale in Germany ranges from 1 "very good" to 6 "insufficient". Parents ratings of the probability of success for the *Abitur* have a mean of 3.7 on a scale of 1 "not probable at all" to 5 "very probable" in the waves in which it was measured (grades 5 and 7). The chance for status maintenance with the school certificate of *Realschule is* on average, slightly lower, with a mean of 3.4 and 3.2 on a scale of 1 "very bad" to 5 "very good" in grades 5 and 7 when they were measured. In grades 5–8, 43.7 to 50 percent of students attend *Gymnasium*, which makes it the type of school with the highest attendance rates. Overall, the majority of students still attend the more "traditional" types of schools (*Gymnasium, Realschule, Hauptschule*), whereas between 15.3 and 16 percent attend secondary schools with several courses of education (*Schule mit mehreren Bildungsgängen, integrierte Gesamtschule*) in grades 5–8.

Table 1:   Time-invariant characteristics of students and parents

	M	SD
Monthly income (in Euro)	3713.9	3533.0
Highest ISEI (12–80 points)	56.7	19.4
Position generator (1–13 professions in social network)	8.3	2.6
	Percentage	
Highest educational degree		
None up to middle secondary school level[a]	4.2	
Vocational training or highest secondary school level (*Abitur*)[b]	42.8	
Tertiary education below university level[c]	21.0	
University level[d]	26.4	
PhD or higher[e]	5.5	
Number of books at home		
up to 100	37.4	
101- 500	47.1	
501 or more	15.5	
Recommendation for *Gymnasium*	29.0	
Migration background	21.6	
Female	48.3	

[a]ISCED level 0, 1, 2. [b]ISCED level 3, 4, 5, 6, 7. [c]ISCED level 5B. [d]ISCED level 5A. [e]ISCED level 6.

Table 2: Time-varying characteristics of students and parents

	Grade 5		Grade 6		Grade 7		Grade 8	
	M	SD	M	SD	M	SD	M	SD
Support at home[a]								
Talk to child about literature that was read together	3.2	0.9	3.0	1.0	2.8	1.0	2.7	1.0
Buying additional learning material	2.8	0.9	2.6	0.9	2.7	0.9	2.5	0.9
Searching for information on the internet together with child	2.8	0.9	2.8	0.8	2.8	0.8	2.6	0.8
Support with talks and presentations	3.1	0.9	2.9	0.9	2.8	0.9	2.7	0.9
Students' performance[b]								
German grade	2.4	0.8	2.6	0.8	2.6	0.8	2.7	0.8
Mathematics grade	2.3	0.9	2.6	0.9	2.7	0.9	2.7	0.9
Difference in German grade to previous school year			0.2	0.9	0.1	0.7	0.1	0.7
Difference in Mathematics grade to previous school year			0.2	0.8	0.1	0.6	0.0	0.6
Rational Choice Elements								
Probability of status maintenance with *Realschule*[c]	3.4	1.2	3.4	1.2	3.2	1.2	3.2	1.2
Probability of successful completion of *Abitur*[d]	3.7	1.2	3.7	1.2	3.7	1.3	3.7	1.3
	Perc.		Perc.		Perc.		Perc.	
Type of school attended								
Secondary school with highest general education (*Gymnasium*)	43.7		45.9		50.6		49.8	
Integrated secondary school (*Integrierte Gesamtschule*)	5.9		6.2		6.9		7.2	
Secondary school with several courses of education (*Schule mit mehreren Bildungsgängen*)	9.5		9.8		8.4		8.8	
Secondary school with more extensive general education (*Realschule*)	21.3		21.0		22.7		23.4	
Secondary school with basic general education (*Hauptschule*)	13.5		11.5		11.2		10.7	
Primary school (*Grundschule*)[e]	6.1		5.6		0.0		0.0	

[a]Scale from 1 (never) to 4 (often). [b]Scale from 1 (very good) to 6 (insufficient). [c]Scale from 1 (very bad) to 5 (very good). [d]Scale from 1 (not at all probable) to 5 (very probable). [e]In some German *Länder* primary school ends after grade 6 instead of grade 4.

5.2 Results from multivariate analyses

In Model 1 (see Table 3), parents' decision to arrange private tutoring for their children is analyzed in relation to their social status. The model shows significant effects for the measures for social capital within the family: parents who buy additional learning materials for their children are more likely to arrange private tutor-

Table 3: Effects on the decision for private tutoring (Model 1–2) [odds ratios]

	Model 1	Model 2
Intercept *(logit)*	-2.29	-5.85
Parents' social status		
Monthly income (reference "up to 2500 Euro")		
2501–3400 €	0.89	0.89
3401–4500 €	0.94	0.96
4501 € or more	1.01	1.08
Highest ISEI	1.00	1.00
Highest educational degree (reference "None up to middle sec. school level")		
Vocational training or highest secondary school level (*Abitur*)	0.87	0.98
Tertiary education below university level	0.83	0.98
University level	0.73	0.93
PhD or higher	0.77	1.00
Number of books at home (reference "up to 100")		
101–500	0.92	0.98
501 or more	0.83	0.85
Position generator	1.01	1.00
Support at home		
Talk to child about literature that was read together	0.87**	0.92**
Buying additional learning material	1.50***	1.42***
Searching for information on the internet together with child	0.99	1.00
Support with talks and presentations	1.00	0.99
Students' performance		
German grade		1.54***
Mathematics grade		1.79***
Difference in German grade to previous school year		0.90*
Difference in Mathematics grade to previous school year		0.99
Control variables		
Recommendation for Gymnasium		1.11
Type of school attended (reference "Hauptschule')		
Grundschule		1.26
Realschule		1.40*
Integrierte Gesamtschule		1.75***
Schule mit mehreren Bildungsgängen		1.43*
Gymnasium		1.69***
Migration background		1.15
Female		1.00
Random components		
Student level: Residual Variance (Intercept)	1.10	1.33
R²	0.16	0.24

***$p < .001$. **$p < .01$. *$p < .05$.

ing for them. For parents who talk with their children about the literature that they read together, the chance of arranging private tutoring decreases.

In Model 2 (see Table 3), which includes additional control variables, the effects for support at home remain significant and do not change substantially. Additional significant effects can be observed for students' grades and the type of school they attend. An increase in students' grades in mathematics and German (which on the German grading scale of 1 "very good" to 6 "insufficient" is to be interpreted as a decrease in performance) increases the chances of receiving private tutoring substantially. The difference in grades compared to the previous school year shows a significant negative effect for the subject German, indicating that a negative difference in grades, which corresponds to an increase in performance, increases the chances for private tutoring. Looking at the type of school that students attend, the model shows that at every type of school, except primary school, the chances of receiving private tutoring are higher than those at the lowest type of secondary school, *Hauptschule*. The sizes of the coefficients suggest that the highest chances can be observed at *Integrierte Gesamtschule* and *Gymnasium*. Adding students' performance and the control variables to the model increases the Pseudo *R*-squared, revealing that these factors have additional explanatory power for the decision for private tutoring.

Regressing the decision for private tutoring on the elements of rational choice theory (Model 3 in Table 4), we find a significant negative effect of the probability of successful completion of the *Abitur*. The lower the probability, the more likely it is that parents arrange private tutoring for their children. The motive of status maintenance is not significantly related to private tutoring in this model. The *R*-squared of the model suggests that the probability of successful completion of the *Abitur* is a relevant factor in the decision for private tutoring.

In Model 4 (see Table 4), we introduce an interaction term for the motive of status maintenance and attending *Gymnasium* instead of any other type of school. The resulting coefficient shows a significant positive relationship. According to this, students at *Gymnasium* have higher chances of receiving private tutoring when the probability of status maintenance with the school leaving certificate of *Realschule* increases.

Adding the variables for social status and the control variables (Model 5 in Table 4), the effect of the probability of successful completion of the *Abitur* is still significant, as is the interaction effect of *Gymnasium* and status maintenance. The effects of social background correspond to those found in Model 2. The same holds true for the effects of grades, except for the difference in grades compared to the previous school year in German (see Table 3). In Model 5 (see Table 4), we find an additional significant effect of migration background: students with a migration background are more likely to receive private tutoring.

Table 4:   Effects on the decision for private tutoring (Model 3–5) [odds ratios]

	Model 3	Model 4	Model 5
Intercept *(logit)*	-0.78	-0.50	-5.11
Rational Choice Elements			
Probability of status maintenance with school leaving certificate of *Realschule*	1.00	0.94	0.90
Probability of successful completion of *Abitur*	0.76***	0.70***	0.90**
School attended: *Gymnasium*		0.79	1.25
Gymnasium* Prob. of status maintenance (interaction effect)		1.16*	1.16*
Parents' social status			
Monthly income (reference "up to 2500 Euro")			
2501–3400 €			0.91
3401–4500 €			0.98
4501 € or more			1.12
Highest ISEI			1.00
Highest educational deg. (ref. "None to middle sec. school")			
Voc. training or highest secondary school level (*Abitur*)			0.93
Tertiary education below university level			0.96
University level			0.93
PhD or higher			0.98
Number of books at home (reference "up to 100")			
101–500			1.00
501 or more			0.88
Position generator			1.01
Support at home			
Talk to child about literature that was read together			0.92**
Buying additional learning material			1.43***
Searching for information on the internet together with child			1.00
Support with talks and presentations			0.99
Students' performance			
German grade			1.48***
Mathematics grade			1.73***
Difference in German grade to previous school year			0.91
Difference in Mathematics grade to previous school year			1.15
Control variables			
Recommendation for Gymnasium			1.10
Migration background			1.16*
Female			1.01
Random components			
Student level: Residual Variance (Intercept)	1.12	1.45	1.34
R^2	0.16	0.20	0.24

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

6. Discussion

The scope of this paper is, first, to examine the relationship of social background and the parents' decision to arrange private tutoring for their children in secondary school from a panel perspective, including aspects that vary over time, such as students' performance. The results of the statistical analyses indicate that overall, social background has only minor effects. Controlling for students' performance, the type of school they attend, their sex, and a possible migration history in their families, only parents' social capital, in the form of the support they offer at home, is relevant for the decision for private tutoring. On the one hand, parents who spend time with their children on learning activities are less likely to arrange private tutoring possibly because they can offer the necessary help themselves. On the other hand, parents that often buy additional learning materials for their children have a greater chance of arranging private tutoring, which could be an indication for a general tendency to invest financially in their children's education.

The driving factor in the decision for private tutoring is students' performance, accompanied by substantial effects of the type of school that they attend. The lower the students' grades in mathematics and German, the higher the chances that they receive private tutoring. Additionally, our analyses reveal a delayed effect of grades, indicating that an increase in students' achievement in German in comparison to the previous school year is associated with a higher chance for private tutoring in the given school year. This might be an effect of continued private tutoring from the previous school year, which had already led to an increase in students' performance. Regarding the type of school students attend, the results show the highest chances for private tutoring are at *Gymnasium* and *Integrierte Gesamtschule,* which can be seen as the more demanding types of schools in the German school system.[8]

Overall, our analyses on the effects of social background add to the mixed results found in other studies, revealing only more or less consistent effects of parents' support at home. The effects of parents' financial or professional situations as well as their educational attainment, could not be replicated. The effects of the type of school are in line with other studies that included this characteristic in their analyses, as are the strong effects of students' performance. That we only find minor effects of social background in this study does not necessarily imply that there are no effects. In Boudon's (1974) terminology, we only analyzed secondary effects of social status, which are direct effects of parents' social status on educational decisions. However, based on our analyses, we cannot rule out that there are primary effects included in the effects of students' performance. An indication for this might be seen in the results for parents' support at home, which is known to increase primary effects, as it is an important factor in students' school performance (Tillack & Mösko, 2013).

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8   It should be kept in mind that the student body at *Integrierte Gesamtschule* is quite heterogeneous (see footnote 2).

The second and third research questions of this study focus on the relationship between private tutoring and parents' social status against the background of rational choice theory (Esser, 1999). In our analyses, we find a significant negative effect of the probability of successfully attaining the *Abitur* on the chances to receive private tutoring, even when controlling for social background, students' performance, and the type of school that students attend. This indicates that private tutoring is employed, as suggested by the rational choice theory, as a means to increase the probability of realizing the benefit of enhancing students' grades and thus eventually attain better school graduation certificates. Examining the probability of status maintenance with the school certificate of *Realschule,* we find no main effect, but there is an interaction effect with the attendance of *Gymnasium.* This effect is contrary to what we expected: it is not a decreasing probability of status maintenance with the school certificate of *Realschule* but an increasing one that also increases the chances that parents, whose children attend *Gymnasium,* arrange private tutoring for them. According to this finding, our research question on the role of the motive of status maintenance in the decision for private tutoring can be answered as follows. Overall, the motive of status maintenance is not a driving factor in parents' decision to arrange private tutoring for their children, but it is relevant for parents whose children attend *Gymnasium.* However, for them, it is not the risk of not maintaining the family's social status that drives the decision as reasoned by the rational choice theory (Esser 1999), but rather the desire to achieve a higher social status for their children than their own. This motive might have also influenced their decision to send their children to *Gymnasium* in the first place. With our data, however, this has to remain an assumption that should be analyzed in further studies.

All in all, our results indicate that the decision for private tutoring does not depend on parents' economic or cultural capital and is influenced by one aspect of social capital: parents' support at home. As expected, we find that parents employ private tutoring when they perceive a reduced probability that their children will successfully attain the *Abitur.* The motive of status maintenance is only relevant for students at *Gymnasium.* However, it is not the risk of not maintaining the family's social status that affects the decision for private tutoring, but rather parents' desire to raise their children's social status beyond their own. The strong effects of students' performance and type of school in our analyses indicate that first and foremost, investments in the form of private tutoring are made when students' performance indicates the necessity to do so and when students attend a more demanding type of school.

For future research, it is recommended to analyze the decision for private tutoring in more detail. In this study, we used a rather broad definition of private tutoring as "external, regular learning support" (see footnote 1). More substantial effects of social background may be found if private tutoring is viewed as the usage of institutionalized, costly, educational support, or if it is analyzed in a subject-specific manner. Future studies should also closely examine the – from the viewpoint of the rational choice theory unexpected – relationship of attending *Gymnasium* and

using private tutoring as a means to enhance a family's social status. The measure for the motive of status maintenance we employed here might be seen as a limiting factor. However, the effort NEPS put into the development of the empirical representation of the concept, is, to our knowledge, unprecedented and not found in other quantitative studies (Steinberg & Hoenig, 2018). Therefore, it might be useful to employ qualitative methods to gain a more detailed understanding of the underlying mechanisms of status maintenance. Finally, there is, of course, a chance that parents do not employ private tutoring as a means for status maintenance. They might rely on other means such as sending their children to private schools, choosing classes with special profiles or arranging stays abroad, to name a few (e.g., Gerhards & Hans, 2012; Jungbauer-Gans, Lohmann, & Spieß, 2012; Nonte et al., 2017). These means have not received much attention in educational research and deserve further analysis.

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