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Adapted teaching: A chance to reduce the effect of social origin? A comparison between Germany and Norway, using PIRLS 2011

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Abstract

Adapted teaching is associated with high hopes regarding its potential to meet heterogeneity in the classroom and has, as such, been anchored in nearly all federal school laws in Germany. As this is a fairly new, not yet fully implemented development that comes with a number of obstacles, an international comparison was conducted to estimate its capability of reducing social disparities in school, giving prospects of its potential development in Germany. For this, Norway was chosen since adapted teaching has a long tradition there. Using a multilevel structural equation model and data from PIRLS 2011, it is analysed whether adapted teaching reduces the effect that social origin has on reading achievement and self-concept in reading.

1. Introduction and research interest

In the discussion on conditions of academic achievement it is evident that in Germany, achievement and achievement-related attitudes of students are highly influenced by family characteristics such as their socio-economic situation. One predominant finding is that, in reading literacy, fourth graders with the lowest social background rank about half a standard deviation below children with the highest social background – which equals the learning and achievement gains of one whole year of schooling (cf. Wendt, Stubbe & Schwippert, 2012). This effect of social origin also reflects in more differentiated analyses: In the German results for PIRLS 2011 (Progress in International Reading Literacy Study), fourth graders whose parents have a university degree earn an average of 51 points more in read-

ing than students whose parents do not have a university degree. This also applies to children of academics, engineers or managers. Compared to children of manual workers, the average disparity in reading ability is 61 points on the international scale with a mean of 500 and a standard deviation of 100. Using the amount of books a family possesses as an indicator of cultural capital, the advantage of children from families that own more than 100 books is 40 points on average, compared to children living in households with a maximum of 100 books (cf. Wendt et al., 2012). This effect has not changed considerably over the past ten years: It was, for example, 43 points in PIRLS 2001, 40 points in 2006 and 43 points in 2011 for children of the upper working class (EGP-classification, see Erikson, Goldthorpe & Portocarero, 1979) compared to children from (skilled) workers. Considering that 40 points roughly equals the learning gains of one whole year of schooling (cf. Baumert & Artelt, 2002), these findings elucidate the significance that applies to the social origin and its influence on the academic development and achievement of students. Hence, it is of interest if and how schools can compensate this effect. It is assumed that teaching methods that adapt to these different achievement and learning conditions of students could contribute to reducing the impact that social origin has on school achievement. Whether this can be accomplished by settings of individualised instruction[1] will be subject to the following analysis.

As adapted teaching is a fairly new concept in Germany that especially gained popularity with the recent debate on inclusion and is not yet largely implemented (cf. Bohl, Batzel & Richey, 2011; Fischer, 2014; Klieme, Jude, Baumert & Prenzel, 2010; Schulz-Heidorf, in press), the focus of the analysis will be put on an international comparison. This follows the assumption that the comparison with a country where adapted teaching has been implemented for a longer period of time and is more frequently used by teachers could allow perspective conclusions on the impact of adapted teaching as well as its ability to reduce effects of social origin on school achievement in Germany. For this, Norway represents a suitable option as adapted teaching is not only embodied in the school law but also significantly more frequently used by teachers (in reading) as it is in Germany. Also, the impact that social origin has on school-related achievement is comparable to Germany.[2]

The Nordic countries are often perceived as countries with a high level of equity, and indeed the principle of equity has a long tradition in the Nordic education systems. In Norwegian educational policy the ambition has been to develop *one school for all* – a school that can facilitate conditions of learning for all children, regardless of their background and aptitudes (Nilsen, 2010). Even so, there is a strong effect of social background in the Norwegian context as well. The effect is evident on academic achievement as reflected in national test scores and grades (Bakken & Elstad, 2012; Ekren, 2014; Hernes & Knudsen, 1976, p. 46), in comple-

tion rates in upper secondary and tertiary education (Opheim, 2004), in dropout rates among secondary and tertiary education students (Lundetræ, 2011), and in education as well as career choices. Research has also found that the effect of social background on academic achievement in Norway increases throughout schooling as students with high education parents have a better development, measured in grades, throughout lower secondary school than students with low education parents (Bakken, 2010).

The relationship between social background and academic achievement in a Norwegian context was first documented by Hernes and Knudsen (1976) in the 1970s. Even though we miss comparable data that makes it possible to draw conclusions about how this might have changed over the last 40 to 50 years, there is some evidence for a minor increase in the effect of social background in the last 20 years. For instance Bakken (2004) found an increased effect of the number of books in the home and parents' labour participation on self-reported grades in Norwegian, English and Mathematics from 1992 to 2004.

International comparative studies of educational achievement can give us an indication of how strong the effect of socio-economic background in Norway is compared to other countries. In PISA 2000 the relationship between Norwegian 15 year-olds' reading literacy scores and the International Socio-Economic Index of Occupational Status (ISEI, for details see OECD, 2001) were close to the OECD average (Lie, Linnakylä & Roe, 2003). When the relationship between reading literacy and different aspects of social background were broken down, Jensen and Turmo (2003) found that cultural and social capital had nearly the same effect on Norwegian students' reading literacy skills as in the OECD as a whole; whereas the relationship with economic capital was weaker in Norway. This is in line with previous research on modern welfare states like the Nordic countries. The main reason for this is the fact that family expenses related to children's education is limited, due to a large degree of public financing. Securing equal opportunities for all students is a main goal in the Norwegian school system. As such, large and potentially growing social inequities have received a lot of attention as it may be viewed as an indication of the school system's decreasing ability to even out the effect of social background on school achievement.

As shown, the influence of socio-economic family characteristics on school-related achievement causes concern in both countries, as it predicts how well students do in school and later in life to a high extent. In Norway, actions have been undertaken to address these issues, with a strong focus on adapted teaching. In Germany, it is also discussed whether this didactical setting might help meeting these challenges. However, it is not yet as implemented as it is in Norway, making

a cross-national comparison of its potentials in addressing social disparities in the classroom interesting.

Before going into detail on adapted teaching, the following section will illustrate how socio-economic family characteristics influence how well students do in school.

2. How do socio-economic family-attributes effect school achievement and motivational-affective student characteristics?

As described above, social disparities may be explained mostly by the family as the environment of primary socialisation (cf. for example Becker, 2010; Pekrun, 2001; Wild & Lorenz, 2010). It is their different cultural, economic and social capital (cf. Bourdieu, 1983) but also the level of encouragement and stimulation that children experience at home that show prognostic relevance for the development of competencies, educational aspirations as well as the achieved level of educational qualification (Becker, 2010; Boudon, 1974; Wild & Lorenz, 2010). Wendt et al. (2012) summarise the effects of family resources. According to this, a family could for example support their children in the acquisition of cultural capital (here in form of education) by using their economic (e.g. investing in private lessons), cultural (e.g. supporting the child in school works) and social capital (e.g. support by a teacher the parents are friends with). These children will be encouraged and supported much more frequently in school-related activities and as a result show higher knowledge and more learning-beneficial requirements at the point of school entry and later than children who grow up in comparably less beneficial family environments. Furthermore, it is also the effect of cultural socialisation, shown in the teaching of language culture, in motivation on learning and education and in habitualised learning practices at home that influence educational achievement and the educational pathway of children and young adults (Becker, 2010; Boudon, 1974).

This reflects for example in Bernstein's socio-linguistic theory of language codes (1975). The theory was originally developed to account for the relatively poor performance of working-class students in language-based subjects. Bernstein claims that children who grow up in different social classes also learn different languages – what he calls language codes – and further that the language that children from higher classes grow up with is more in line with the language of the school than the language in lower social classes.

Bernstein identifies two forms of language: a restricted code and an elaborated code (1964). The essence of the distinction is what language is suited for: The restricted code works better in situations in which there is a great deal of shared and

taken-for-granted knowledge in the group of speakers as it is economic and conveys a vast amount of meaning with just a few words. Because the restricted code draws on a store of shared meanings and background knowledge, it also creates a sense of includedness, a feeling of belonging to a certain group. It works within, and is tuned to a restricted community like a family, group of friends or a work group. The elaborated code on the other hand does not assume that the listeners share these assumptions or understandings, and as a consequence it is more explicit and thorough. The elaborated code is also the language of the school; partly because schools are concerned with the introduction of new knowledge which goes beyond existing shared meanings and partly because schools can be considered as relatively anonymous institutions which may not share many taken-for-granted meanings in their formal structures.

Bernstein argues that working-class children have access to their restricted code(s) while middle-class students have access to both restricted and elaborated codes. As such, middle class students can be said to have an advantage already as they enter school because they are familiar with the language code in which the school conveys knowledge. Working class children, on the other hand, are disadvantaged as they speak in a restricted code and arrive in an environment where it is normal to speak in the elaborated code, widening social disparities.

Bourdieu and Passeron (1977) also add to this perspective by pointing out that cultural capital can be understood as the familiarity with the dominant culture in a society, and especially the ability to understand and use 'educated language'. This affects the communication between teachers and students with children from higher social backgrounds being more able to decode the informal and implicit rules at school. As such they have a better starting point in adapting to and developing the cultural skills and preferences that are rewarded in school (Aschaffenburg & Maas, 1997). As DiMaggio (1982) states, teachers even seem to respond more positively to students who convincingly demonstrate that they master the dominant cultural codes. Whether this happens consciously or unconsciously, it shows that these children receive more attention and help by their teachers; not necessarily because they are more skilled, but because teachers perceive these students as more bright and intelligent than students who lack cultural capital.

Such links between the cultural capital and performance in school can also be found in a study by Betz (2006) who showed that differences between the social classes also exist in the organisation and the compatibility of formal and informal educational contexts outside of school that foster a continuing disparity: Whereas children with lower social backgrounds tend to spend their free time in unstructured contexts, the out-of-school experiences of children from academically privileged families are more closely linked to the demands and contents of the school. Typi-

cally, these are engagements in clubs (e.g. football, music) whose activities are more structured, happen at prearranged times and are commonly organised and instructed by adults and/or can be used for the compensation of school-related deficits (private lessons, homework mentoring). As the time spent outside of school also differs between the children of different social classes, the habitus of students with high social backgrounds shows higher compliance with the school habitus. This results in students from less privileged families reporting difficulties following classes in school and anxiety of making mistakes in educational settings more frequently. Hence, these children tend to be more insecure and anxious at school than their classmates, resulting in them experiencing less confidence in earning higher grades (cf. Betz, 2006). This so-called primary effect of stratification (Boudon, 1974) is one reason why some children fail more often at school system related barriers such as the transition from primary school to *Gymnasium*, the most advanced form of secondary schools in Germany[3] (see also Becker, 2010).

A vital role in the maintenance of social disparities is also played by the secondary effect of stratification: As it was shown in a large number of studies, family decisions regarding the school track their children follow after primary school[4] and later in their school career are strongly linked to their social status – even when controlling for school achievement and grades (Baumert et al., 2010; Baumert, Maaz & Trautwein, 2009; Neugebauer, 2010; for an overview, see Stubbe, 2009b). This can be explained by different patterns that underlie educational decisions, varying between social classes and accounting for a substantial share of variance (Pietsch & Stubbe, 2007; Stubbe, 2009a, 2009b). One criterion is the preservation or improvement of the intergenerational social status: A child from a low background might decide to leave school with a *Realschulabschluss* (German certificate of secondary school usually after grade 10, this does not enable to enroll in university) and still improve its social status in comparison with its parents' level of education – the same could be handled as a decline of social background for a child of an academically privileged family where the *Abitur* (as the highest school certificate in Germany that enables to go to university) is handled as status preservation. Another criterion is the (social and monetary) cost-value-ratio that families attribute to different levels of education: The Abitur might not be as attractive for children from lower backgrounds as it comes with up to three more years of schooling in which the child is monetarily dependent on its parents. Also, friends might leave school earlier which results in high 'social costs' (social distance to friends), making it more difficult to stay in school longer. The opposite applies to children from higher social backgrounds: Leaving school early comes with a social descent (friends staying in school to work towards the Abitur) and monetary deficits (lower income due to lower educational level). Hence, children from less privileged back-

grounds have – even with equal school achievements – less chance and aspiration to go to the Gymnasium than their classmates from higher social backgrounds. Boudon puts the (fairly reduced) causalities of these factors as follows: "The lower the social status, the poorer the cultural background – hence the lower the school achievement, and so on" (Boudon, 1974, p. 29).

Following this trend it becomes obvious that these social disparities could be obtained for generations: As shown by Stubbe, Bos and Euen (2012), children of parents of the highest ranks (highest EGP-class, see Erikson et al., 1979) have a 3.41 higher chance to receive a recommendation for the Gymnasium by their teachers[5] as children of skilled workers. For parents favouring the Gymnasium for their child, this advantage is even 3.76 times higher. Both values are controlled for cognitive skills in reading, mathematics and science which shows that – even with equal achievements – fourth graders from educationally less privileged families receive recommendations for the Gymnasium (teachers' or parents' decision) substantially less frequently than their classmates from more privileged families. As a result it is very likely that these children less frequently earn the Abitur, study at university, take on high-status jobs and consequently tend to possess less economic and cultural resources – which, in turn, influence their children's success and achievement in school and thus preserve social disparities.

Summarising these effects of social origin it becomes obvious that children from less privileged backgrounds face manifold disadvantages: Because of fewer social, economic and cultural resources, they receive less school-related support as children from higher social backgrounds. Also, their language cultures differ, resulting in some children experiencing more difficulties adapting to the elaborated codes used in school, and hence showing lower achievements in language-based subjects. With their out-of-school-experience also not being in line with the school habitus, children from less privileged backgrounds report anxiety and difficulties following the teachers far more frequently than more privileged students, all of which influence their achievements negatively. Apart from these heterogeneous learning conditions teachers face in their classrooms, it is also status-related aspirations and cost-value-evaluations that influence the educational pathways children follow, which may result in social disparities being obtained for generations. Even though the social conditions that children grow up with will not be explicit subject to the following analysis, their impact on how well students do in school will be.

Here, it was the general question whether schools, teachers and classroom conditions can moderate the effects of social origin and lessen their impact on school achievement that led to putting a focus on adapted teaching. In both Germany and Norway, this didactical setting is attributed with high hopes towards meeting the challenges that teachers experience when facing social disparities in their class-

rooms. But what is adapted teaching and how can it be linked to the different learning conditions that children from different social backgrounds show?

3. Adapted teaching: Its definition and why it could help uncouple student's achievement from socio-economic background

As shown above, children from different social backgrounds do not only show different levels of knowledge and beneficial learning attitudes at the point of school entry and later on, they also differ in learning strategies, learning motivation and the extent to which they are being stimulated and supported at home. Hence it is of interest to analyse whether adapted teaching offers a didactical approach to meet these heterogeneous learning dispositions and skill levels within the classroom. For this, adapted teaching shall be defined as a setting in which inner differentiation is applied, meaning arrangements where the students do not have to learn the same contents in the same amount of time. Here, a special focus is put on students to work on different tasks and contents in different ways that are adapted to their individual dispositions, abilities and interests – sometimes even to the extent of different learning goals (goal-differentiated teaching). In extreme cases, all students work on different tasks or even topics that allow individual forms of engagement, handling and processes. The goal, however, is the subject- and content-related initiation of learning processes in which the encouragement and support of the individual student is embedded (Bräu, 2007). A special characteristic of individualised teaching is the *planning* of the educational opportunities to suit the learning dispositions of the individual learner by offering different tasks and flexible settings that provide learning approaches and goals adapted to the individual potentials, capabilities and interests. This adaption then might lead to an optimal fulfilment of learning potentials (Altrichter, Trautmann, Wischer, Sommerauer & Doppler, 2009). With regards to psychological (e.g. Bruns, 2014; Corno & Snow, 1986; Cronbach & Snow, 1977; Hanke, 2005; Kirschhock, 2003; Weinert, Schrader & Helmke, 1989) and lately even neuroscientific (e.g. Herrmann, 2010; Roth, 2009) theories of learning it is especially this planning of adaptivity of learning opportunities (methods, contents, goals) to the learning dispositions (previous knowledge, learning strategies and styles) that plays an essential role for the success of learning processes. In the light of the discovery that knowledge is not transferable but has to be newly generated in the brain of each and every learner (a fact that has been proclaimed in progressive education for a long time, see e.g. Salzmann, 1784, also Herder, 1970) it is especially the student-ascribed relevance of learning situations and contents that play an important part in the initiation of learning processes: As Roth (2009) describes, every learning situation is tested by the learner on whether

listening, learning, practicing and actively engaging are worthwhile and profitable. If so, the conscious control of cognitive effort and performance, the declarative memory power and the emotional conditioning are being stimulated. Neuromodulatory systems regulate processes of general and specific attention up to motivation and learning ability that are being rewarded by brain-affiliated opiates (Herrmann, 2010). On the other hand this means that situations need to be evaluated as 'attractive' (whereas 'attractiveness' may be highly dependent on the individual) and linked to the prospect of success for the maintenance of motivation and ongoing learning efforts. Usually, this applies if the matters to be learned can be linked to already existing knowledge and are of importance and relevance to the learner. If this is not the case, learning will be tedious and exhausting, resulting in 'mechanical' learning by heart that contradicts an independent and intrinsically motivated understanding of the subject matter as an active process of generating meaning that assures a timely stable learning success. Learning settings offering the students the chance to learn according to their own interests, competencies, potentials and skills and allowing them to study with individually adequate learning techniques could create such attractive learning situations, where subject matters are relevant to the individual student and can be linked to already existing knowledge – which in turn assures a high learning success. As shown above, adapted teaching very much relates to these findings. Hence it can be assumed that it offers the chance to meet every student's learning needs and conditions, in whatever way they might have been shaped by social family characteristics, enabling students to show their individually highest achievement, and in this, uncoupling it from the effect of social origin.

In what way adapted teaching is linked to school achievement as well as non-cognitive student characteristics is subject to the next section, giving a brief overview over the current state of research.

3.1 Effects of adapted teaching: Current state of research

As shown above, adapted teaching could be a solution to meeting the learners needs as they are postulated by neuroscientific and psychological research. However, individualised teaching and its impacts have only been subject to very few studies so far and in these, with very heterogeneous definitions of the didactical method. Hence it is difficult to summarise the findings, as they – as a logical result of the differing understandings – vary extremely. However, two main results can be derived: Adapted teaching seems to have an influence especially on affective-motivational characteristics of the students such as self-concept and learning motivation; its influence on cognitive attributes (test/school achievement) is seemingly lower.

Regarding the effects on *cognitive student characteristics*, domain-specific effect sizes and correlation coefficients of -0.30 (e.g. Gruehn, 2000 for 'internal differentiation') and up to +0.32 (e.g. Helmke & Weinert, 1997 for 'individualised subject-related support', similar for Hattie's meta-analysis for 'individualized instruction', Hattie, 2009) were found. Apart from these, effects close or statistically not significant from zero are common, too, for example in a meta-analysis from Seidel and Shavelson (2007) as well as in a meta-analysis from Giaconia and Hedges (1982), where single characteristics of adapted teaching, such as adaptivity, diagnostic evaluation, feedback and monitoring were focused. The same difficulty in summarising these findings applies to *domain-specific* effects and relationships, as these also differ in the same range. The negative relationships, as found by Seidel and Shavelson (2007), Gruehn (2000), and Schulz-Heidorf (in press), are interpreted contrary to first presumptions: Adapted teaching might be implemented more frequently when the academic level of a class is low – resulting in negative correlation parameters, which then are interpreted in a reverse causal direction.

For the influence of individualisation on *affective-motivational student characteristics* (mainly domain-specific self-concepts, enjoyment and learning motivation), a different picture shows: Here, most findings range between 0.14 and 0.20, for instance in the meta-analyses by Giaconia and Hedges (1982) and Seidel and Shavelson (2007), but also for Lipowsky, Kastens, Lotz and Faust (2011), who focus on achievement-related task-differentiation. In this last study it was shown that adapted teaching influences the development of the self-concept in writing ($\beta = 0.14$), not, however, the development of the self-concept in reading ($\beta = 0.05$ n.s.) of first- and later second-graders. For Krätzschmar (2010), effects of adapted teaching on the academic and reading-related self-concept could even be explained in total by person characteristics such as gender, socio-economic status and achievement. Summarising these results, adapted teaching shall provisionally be considered to having a weak positive – compared with effects on cognitive aspects slightly stronger – effect on affective-motivational aspects. However, it needs to be pointed out again that the missing of a consistent understanding of adapted teaching and a related concept does not only complicate summarising what little research was undertaken, it also limits the scope and significance of the results. Further theoretical and practical examination is needed, as well as empirical verification, particularly in form of quasi-experimental, longitudinal designs that allow for drawing conclusions on cause-effect relationships.

3.2 Adapted teaching and success in school: Research interest

Even so existing research seemingly points towards a stronger influence of adapted teaching on affective-motivational than cognitive student characteristics, it is still of interest whether individualisation could be a chance to reduce the effect of social origin on cognitive as well as affective-motivational school achievement, as this has not been subject to analysis so far. As stated above, children from educationally privileged family backgrounds not only possess more school-related knowledge but also more learning-beneficial attitudes than children from less privileged families. Schooling that does not adjust to making subject matters relevant for the individual learner (and in doing so, adapting it to their individual interests, dispositions, talents, learning abilities and previous knowledge), could lead to a systematic discrimination of children and young adults that show less beneficial learning and achievement requirements. Respectively, these students could face difficulties following lessons when they do not possess strategies to acquire subject matters that cannot be linked to previous knowledge and which might not be associated with out-of-school relevance. One result of this would be that achievement-related disparities between students from different social backgrounds might expand. Adapting teaching strategies to these individual achievement- and learning-related conditions might enable all students of a class to reach their best possible learning goals without making this dependent on social characteristics of their families. Adapted teaching would hence act as a moderator on the effect of social origin on how well students do in school.

In general, this school success is viewed as the essential criterion for evaluating the effects and outcomes of teaching. Cognitive learning and achievement gains of students can be obtained by school-, teaching- and teacher-related characteristics. These, however, also influence motivational-affective developments and other facets of learning processes. The aim of 'good teaching' then not only intents best-possible results in test achievements but also the encouragement and stimulation of self-confidence, motivation, interests and the reduction of anxiety. It is especially the development of a positive self-concept of abilities that represents – apart from subject-related achievements – an important result of schooling, as this does not only play a vital part in cognitive performances but is also of importance for out-of-school-contexts: As the day-to-day rating of self-related abilities results in a hierarchically structured self-concept over time that is strongly linked to the general learning and achievement disposition and motivation, it is highly desirable to support students not only in academic achievement but also in the development of a positive self-concept. In the following analysis, both dimensions of success in school – cognitive achievement as well as affective self-concept – shall therefore be included. These will be measured by their reading-specific subdomains (reading

achievement and self-concept in reading) as these are the main elements of the Progress in International Reading Literacy Study (PIRLS) that is used for the analysis. In line with the current state of research stated above it is hypothesised that adapted teaching in reading might have an influence on cognitive reading achievement as well as on the motivational-affective outcome of a strong self-concept in reading. It is assumed that students in adapted settings experience less disappointments and failures that are based on them not being able to follow the learning tempo of the class (or vice versa: not being challenged enough by it), show less anxiety of making mistakes in front of their classmates as lessons are held less frequently in the plenum, and experience fewer situations of social comparison as class-referential learning situations that could hinder the development of a positive self-concept are substituted by individual learning situations. Hence it is expected that adapted teaching shows a positive relationship with the self-concept (in reading of fourth-graders) and (presumably weaker) with the reading achievement. The hypotheses for this study are as follows:

H1: The occupational status of the parents (HISEI), the parent's level of education (ISCED) and the amount of books a family possesses have, as indicators of the socio-economic capital of a family, a positive influence on the reading achievement (cognitive school achievement) and the self-concept in reading (affective school achievement) of fourth graders.

H2: All six effects of social origin (as described in H1) can be moderated by the frequency of adapted teaching (negative influence). This effect is stronger in Norway than in Germany.

H3: The frequency of adapted teaching influences the class average in reading achievement positively. This effect is stronger in Norway than in Germany.

H4: The frequency of adapted teaching influences the class average of the self-concept in reading positively. This effect is stronger in Norway than in Germany.

Even though a general overview over how well adapted teaching is implemented in both Norway and Germany has been given in the introduction, the following section will give a more detailed description, also on its legal anchoring and difficulties that teachers face. From this, hypotheses on country-specific effect sizes can be formulated.

3.3 Adapted teaching: Legal anchoring and implementation in Germany and Norway

In the course of the debate on inclusion and heterogeneity, adapted teaching has stepped into focus of German educational policy makers. Recently, it was imple-

mented in almost all sixteen federal school laws,[6] albeit with different content-related definitions and purposes. A systematisation of adapted teaching and its representation in the legislations by Fischer (2014) draws the conclusion that individualised didactical settings are almost exclusively intended for (1) students with special needs (15 out of 16 federal states), (2) for students with advanced capabilities (12 federal states) and (3) for students who do not speak German as a mother tongue and hence have a high demand to learn it (8 federal states). Moreover, the realisation of adapted teaching is proclaimed (almost only) by special needs education in nearly all sixteen federal states. This also reflects the conception of teachers as surveyed in a study by Kunze and Solzbacher (2008) for lower secondary educators of all types of schools: Even though adapted teaching is regarded as an important and desirable goal, it is still seen as a didactical approach towards reducing deficient skills and achievements. An understanding of individualised teaching as the consideration of and adaption to the individual needs and interests of *each* student was found seldomly (cf. Solzbacher, 2008). Regarding the realisation of adaptation, teachers name instruments of special-needs education (*Förderunterricht*) or state that there are very few to no procedures, instruments, or concepts of individualisation systematically implemented. This might be one reason why teachers report a great uncertainty and even insecurity to use individualised settings in their lessons. Hence most of them state to only occasionally (at the maximum) apply adapted teaching that also follows a 'try-and-error'-approach as accredited concepts are missing. Wischer (2008) seconds these findings and notes that forms of differentiation (whereof adapted teaching is a subgroup) are mainly used to vary learning settings and make them more activating – more complex forms of adapting the teaching to the individual learner and their abilities and interests are realised far less frequently. In summary, the implementation of adapted teaching in Germany seems to be diffident: Even though its relevance for learning processes and meeting heterogeneous needs is recognised, its consequent implementation seems to be difficult as concepts and instruments as well as corresponding teacher trainings are missing.

In Norway, the situation is a different one. The Norwegian Educational Act states in paragraph 1–3 that: Education shall be adapted to the abilities and aptitudes of individual students. This is the formal basis for *Individually Adapted Education* in Norwegian schooling. The ambition of inclusive and individually adapted education has a long tradition in Norwegian education policy and entails all students taking part in the academic, cultural and social community based on their abilities and aptitudes. The paragraph on adapted education includes ordinary education. Special education is given to students with greater needs (within the ordinary schooling system) and entails a more extensive adaptation than that normally

provided in ordinary education with regard to the input of resources and expertise as well as differentiation of content.

The implementation of centrally formulated intentions like adapted education is, however, a complex process, which is largely dependent on the teacher's interpretations of the intentions (Goodlad, 1979). Several studies have revealed a discrepancy between intentions and reality. Imsen (2003) found that there were major differences between the students' and the teachers' perceptions of the degree to which the teaching was adapted to the individual student's needs. Other research shows similar tendencies with regard to the lack of coherence between what the teachers say they do and what they actually do in practice (Arnesen et al., 2008; Dale & Wærness, 2003).

Jenssen and Lillejord (2009) claim that the discrepancy between intentions and reality in Norwegian classrooms can be partially explained by the fact that adapted education has been a political rather than an educational concept, and that the meaning of the concept has changed with different governments. Based on an analyses of White Papers from 1975 to 2002 Jenssen and Lillejord identified four different periods in the history of adapted education in Norwegian education policy: an integration period (1975–1990), an inclusion period (1990), an individualization period (1997–2005) and most recent a period that highlights the learning community and quality of teaching (from 2005 onwards).

The understanding of individualisation has been one of the unclear points, and Jenssen and Lillejord (2009) claim that this, to a certain extent, can be explained by whether Norway has been governed by conservative or liberal politicians. Conservative governments have highlighted the individual's right to adapted and differentiated education whereas liberal governments have focused adapted teaching as a quality of ordinary instruction and a means for reducing social inequity. In the latest Norwegian education system reform – *The Knowledge Promotion* – from 2006 teaching methods adapted to students' different needs is described as variations in the use of work tasks, curriculum content, working methods, teaching aids, and in the organisation and intensity of teaching.

Even if adapted education has a relatively long history in Norwegian education policy, many teachers still find the concept fuzzy and hard to turn into classroom practice (Buli-Holmberg, Nilsen & Skogen, 2014). Recent research indicates that although Norwegian teachers have made progress in realising the intentions of inclusive and individually adapted education, there is still potential for improvement in relation to mapping and assessment, adapting goals for learning, method adaption and choosing suitable forms for organisation (ibid.). This is especially true for dynamic testing and assessment of students learning abilities and aptitudes which only a minority of teachers practice to a large degree. But the fact that Norwegian

teachers still report extensive use of traditional classroom teaching, verbal forms of presentations in the classroom and standard text books for the relevant class year also implies that practice has to be improved in order for the intentions of adapted education to be turned into reality (ibid.).

In summary, in both countries adapted teaching is a mainly politically promoted concept to meet individual learning conditions that shows different stages of implementation: In Germany, such didactical settings have only recently been included in almost all federal school laws with teachers reporting difficulties in realisation. In Norway, its legal anchoring as well as practical implementation has a longer tradition while teachers and research findings indicate that its realisation in class is highly dependable on the teachers. For the analysis, this could imply a bias in how teachers interpret and respond to the item on the frequency of adapted teaching. This needs to be taken into consideration in the interpretation of the results. Based on the general situations in both countries it is assumed that results for Norway might be stronger than for Germany as there might not be a substantial amount of teachers reporting to use adapted teaching frequently in Germany.

The frequency of adapted teaching as well as other forms of (non-)differentiation in teaching reading in grade four are subject to the next section, comparing the two countries in how reading lessons are structured.

4. Teaching reading in grade four in Germany and Norway: Comparing results from PIRLS 2011

When using PIRLS-data, items are usually linked to reading ability and teaching reading at the end of primary school (usually grade four). Hence the theoretical assumptions stated above will be applied to this domain-specific context and do not necessarily reflect the relations in other subjects and especially not in other grades or types of schools. The following section shall give a brief overview of what kinds of didactical settings are typically used to teach reading to fourth-graders in both Germany and Norway, as addressed in the teacher questionnaires in PIRLS. The mean differences between the countries were tested for significance using the t-test for independent samples (see p-values in table 1).

As shown below, four general didactical methods are distinguished in PIRLS that reflect different levels of adapting teaching to the individual learner. Teaching reading as a whole-class activity does not include any kind of individual adaption. Even though it may seem slightly more common in Germany, the difference is not significant. Hence frontal teaching is as common in Norway as it is in Germany with about two thirds of teachers using it often or (almost) always.

Table 1: Frequencies and t-test for mean differences for four different didactical settings of teaching reading in Norway and Germany – Results from PIRLS 2011

Item	Country	(Almost) Always	Often	Sometimes	Never	Mean*	p-value for t-test
I teach reading as a whole-class activity	GER	23.3%	42.7%	29.6%	4.4%	2.15	0.056
	NOR	20.6%	47.4%	29.0%	3.1%	2.15	
I create same-ability groups	GER	2.5%	22.5%	60.0%	15.0%	2.88	< 0.001
	NOR	8.6%	24.7%	56.4%	10.3%	2.68	
I create mixed-ability groups	GER	3.8%	20.7%	64.4%	11.1%	2.83	< 0.001
	NOR	1.4%	25.4%	57.9%	15.3%	2.87	
I use individualized instruction for reading	GER	3.6%	21.3%	55.4%	19.6%	2.91	< 0.001
	NOR	7.4%	40.5%	47.5%	4.6%	2.49	

* The lower the mean, the more frequently a method is used.

Creating same-ability groups to teach reading – a form of inner differentiation and an indication that instructions and learning materials might be adapted to the needs and dispositions of the gross of the students – is more commonly used in Norway (note: The lower the mean, the more frequently a method is used). The same applies to the item that is of interest for the following analysis: Individualised instruction as the strongest indicator for adapted teaching is used often or (almost) always by nearly half of the teachers teaching reading to fourth-graders in Norway but by merely one fourth of teachers in Germany. This is also reflected in the significant mean difference between the two countries that is the highest for the four items ($\Delta\mu = 0.42$), giving strong evidence that adapted teaching seems to be more implemented in Norway than it is in Germany. Splitting a class into mixed-ability groups as the last of the four items might follow the 'learning by teaching' or similar methods (see Cau, 2015), it is, however, not an indicator of adapted teaching. As shown above, this is more common in Germany. Summarising these findings, it seems that forms of inner differentiation that adapt the learning situations, methods, subject matters and contents to the abilities and interests of the learners, are more common in Norway with significantly more usage of same-ability groups and individualised instruction as in Germany.

With these findings confirming the basic assumption that adapted teaching (and forms that can be linked to it) is more frequently used in Norway than in Germany, the international comparison can be conducted.

5. Analysis

The following section will state the proceedings and results of the comparative analysis on whether the frequency of adapted teaching moderates the effect of social origin on both reading achievement and self-concept in reading in Germany and Norway. It is also assumed that adapted teaching has a direct, positive effect on both indicators of school success. For both assumptions, the effects should be stronger in Norway, as adapted teaching is more implemented there.

5.1 Data and items

As described above, PIRLS-data will be used from the most recent census of 2011. Here, the items used are mainly taken from the parent questionnaire. The socio-economic background of a family is (with regards to Bourdieu's classification of capitals, cf. Bourdieu, 1983) modelled by the parent's level of education (ISCED), their highest occupational status (HISEI) and the amount of books a family possesses as indication of their economic and cultural capital.

The HISEI is not available in the international PIRLS-data. However, it has proven in recent international comparative studies to be a valid indicator for comparing occupations across countries. A description on how to convert the in PIRLS available data on the occupational status of mother and father into the HISEI can be found at Caro and Cortés, 2012 (for more details see also Schulz-Heidorf, in press).

All three indicators of the socio-economic capital of a family will be included as manifest variables in the model. The reading achievement of the students is modelled using the five plausible values available in PIRLS. This implies a multiple imputation where all analyses are conducted five times, averaging the model parameters in a final step.[7] The reading-related self-concept of the students is modelled latently by four items such as "Reading is easy for me".[8] Fit-information will be stated in the next section.

The teacher information on how often they use adapted teaching is conveyed by one item, as presented in section 4. In English, it is phrased as "I use individualized instruction for reading". Because the phrasing is somewhat sensitive to interpretations, we also state the German and Norwegian translations here, as they were used in the country-specific teacher questionnaires: "Ich gebe individuell abgestimmten Leseunterricht" in German and "Eg arbeidar med individuell leseopplæring" in Norwegian. This item, too, will be included as manifest in the model.

The data was weighted by a variable based on the House Weight (HOUWGT, adds up to the sample size) in combination with a weight that takes into account multiple cases for individual students due to team teaching. The data was group-mean centred on the individual level (L1) and grand-mean centred on the context

level (L2). The sample consists of 3 188 fourth graders in 199 classes in Norway and 4 000 students in 205 classes in Germany.

5.2 Measuring invariance

For comparing latent models across groups (e.g. countries, but also age-, gender- and school-related groups), testing for measuring invariance (MI) is vital: Only then it can be assumed that latent constructs actually measure the same in all groups. Depending on the amount of variance of certain model parameters, comparisons may be limited or may not be conducted at all. There are three main types of MI, following a hierarchical order (cf. Christ & Schlüter, 2010). The configural MI is the least restrictive form, existent when the amount of factors and the loading structures on the latent constructs do not differ between the groups. Metric MI is based on these assumptions, but stating that the factor loadings between the groups must be equal, too. One of the strictest forms of MI is scalar MI where not only factor loadings but also the intercepts of the manifest variables do not differ between groups.

Since the self-concept in reading is the only latent construct here, measuring invariance is only tested for this model. Configural MI is tested by modelling the latent construct for both countries in the same way (same number of factors, same items) and comparing their fit indices. Table 2 shows the results for Germany and Norway.

Table 2: Fit indices for the latent construct 'self-concept in reading' for Germany and Norway

	χ^2	p	df	CFI	RMSEA	$SRMR_{L1}$	$SRMR_{L2}$
GER	25.227	< 0.001	4	0.991	0.038	0.015	0.033
NOR	52.626	0.004	4	0.971	0.063	0.023	0.220

As shown in table 2, all indices except the SRMR for the context level (L2) show a good fit verifying that the construct 'self-concept in reading' shows the same factor structures in both countries on the individual level (L1), not, however, on the context level – here, the $SRMR_{L2}$ indicates that the construct cannot be modelled on L2 for Norway. This also reflects in the test for variance in factor loadings (metric MI, see table 3).

In line with the findings presented in table 2, the L2-factor loadings for all four items on the latent construct 'self-concept in reading' for Norway show values that do not differ statistically from zero (see table 3). For Germany, factor loadings and p-values also show dissatisfying values on L2 in two cases (see item 1 and 3 in

table 3). Because of this, the construct cannot be modelled on L2 by these items and will not be included on L2 in the analysis. Hence hypothesis H4 (the influence of adapted teaching on the class average of the self-concept in reading) cannot be tested here.

Table 3: STDYX-standardised factor loadings and their p-values for the latent construct 'self-concept in reading' for Germany and Norway

		L1				L2			
		Item 1	Item 2	Item 3	Item 4	Item 1	Item 2	Item 3	Item 4
GER	Loading	0.844	0.767	0.376	0.542	0.674	0.397	0.064	0.714
	p-value	< 0.001	< 0.001	< 0.001	< 0.001	0.216	0.031	0.507	0.008
NOR	Loading	0.743	0.722	0.304	0.460	0.209	0.265	0.017	0.240
	p-value	< 0.001	< 0.001	< 0.001	< 0.001	0.774	0.757	0.800	0.767

For the loadings on L1, it is tested whether they do not differ significantly across the countries (metric MI) by specifying two models: One baseline-model without any restrictions between the countries and one restricted model where the factor loadings are fixed, following the assumption of non-variance between the groups. Both model fit information will then be compared by using the χ^2-test of difference, indicating what model fits best and whether the difference is significant.

- Baseline-model for self-concept in reading on L1:
  $\chi^2 = 61.111$ with $p < 0.001$ and $df = 4$
- Restricted model for self-concept in reading on L1:
  $\chi^2 = 154.143$ with $p < 0.001$ and $df = 8$

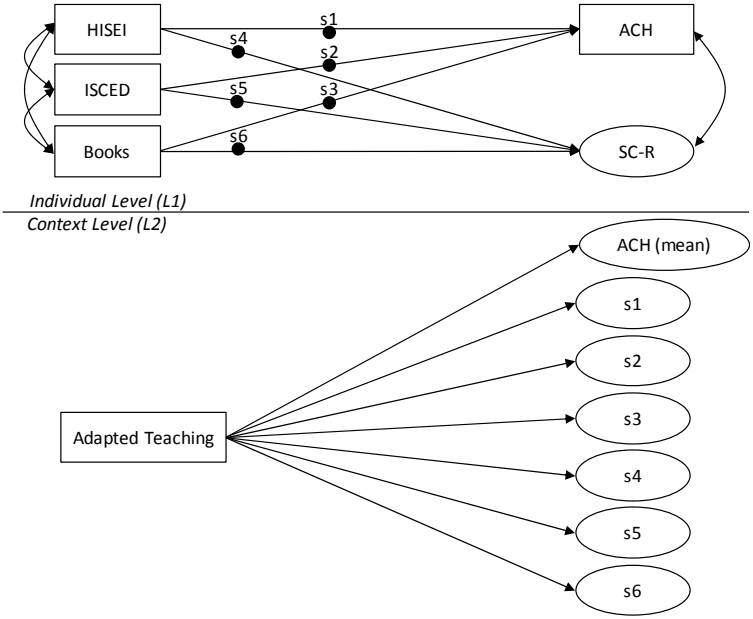
Applying the χ^2-test of difference ($\chi^2_{change} = 90.032$, $\Delta df = 4$, $\chi^2_{crit} = 9.49$ on a 5%-level) shows a significant difference between the models in favour of the baseline model. As this model assumes that all factor loadings differ between the countries (fitting better than the restricted model with the opposite assumptions), complete metric measuring invariance could not be proven. Modification indices, as they are provided by Mplus, can give hints on what restrictions for which items could be dropped in order to prove at least partial metric MI. This was applied to item 4 ("My teacher tells me I am a good reader"), dropping the assumption that the factor loadings for this item on the construct 'self-concept in reading' do not differ between Germany and Norway. The then re-assessed model fits for the baseline and the (somewhat less) restricted model showed no significant difference in factor loadings between the countries[9] so that partial metric measuring variance could be proven. As scalar measuring invariance is not necessary when comparing relationships between constructs (cf. Christ & Schlüter, 2010), (partial) metric MI

is sufficient for the analysis but it needs to be taken in consideration that comparisons are slightly limited.

5.3 Results of the multilevel structural equation models

The multilevel structural equation model to be analysed is shown in figure 1. On the individual level (L1), all three indicators for the socio-economic background of a family (HISEI, ISCED and the amount of books at home) influence the reading achievement (ACH) and the self-concept in reading (SC-R). These effects are marked with an 's' for 'slope'. The slopes are then modelled on the context level (L2) with a hypothetical regression on adapted teaching. On L2, the influence of adapted teaching on the class-average reading achievement is also modelled, not, however, its influence on the class-average of self-concept in reading as this could not be modelled on L2 for both countries.

Figure 1: Multilevel structural equation model



ACH = reading achievement; SC-R = self-concept in reading; s = slope.

The basic assumption behind the main effect (namely the influence of adapted teaching on the effect of social origin; these are shown as 's' for 'slopes' in

figure 1) is its variance between classes. As an L2-indicator, adapted teaching might explain why the effect of socio-economic background on achievement and self-concept in reading is somewhat stronger or weaker in some classes than in others – and in doing so, explaining (parts of) this variance. However, such variance could not be estimated.

Table 4: Between-class-variance and p-values of slopes for Germany and Norway

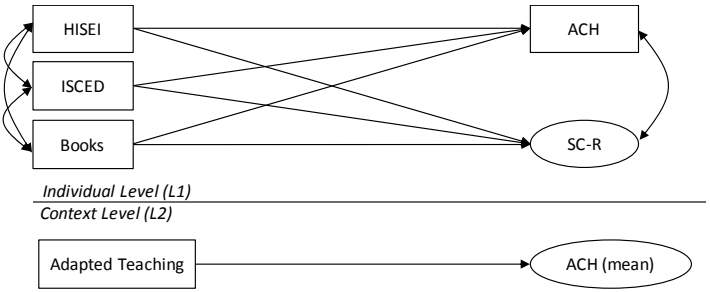
	Germany		Norway	
Slope	Variance	p-value	Variance	p-value
s1: ACH on HISEI	0.011	0.863	0.009	0.547
s2: ACH on ISCED	0.354	0.927	0.090	0.534
s3: ACH on Books	0.072	0.992	0.122	0.971
s4: SC-R on HISEI	0.001	*	0.001	*
s5: SC-R on ISCED	0.002	< 0.001	0.001	0.232
s6: SC-R on Books	0.004	< 0.001	0.001	0.128

* Mplus experiences estimation problems when variances in slopes are close to zero. Here, corresponding p-values for the variance in slope 4 (self-concept in reading on HISEI) could not be estimated. However, as the variance is 0.001 in both cases, p-values can be disregarded.

As shown in table 4, all variances of all slopes (tested in individual analysis runs with no predictors on L2) do not differ statistically significant from zero for all effects in both countries. Hence nothing can explain this (non-existent) variance, indicating that this effect is extremely strong. As these findings may be linked to the modelling of the socio-economic background, future analyses are necessary. For this analysis, however, the hypothesis that adapted teaching might help to uncouple achievement and self-concept from social origin (hypothesis H2) is to be falsified as there is no variance to be explained. This has been taken account for in the following figure 2 where the modified model is stated. It now only includes the effects of social origin on L1 and the influence of adapted teaching on the class-average in reading achievement.

The model in figure 2 shows acceptable fit indices ($\chi^2 = 405.865$ with df = 35., RMSEA = 0.064, CFI = 0.914, $SRMR_{L1} = 0.044$, $SRMR_{L2} = 0.001$); the standardised model parameters are displayed in table 5. From this it becomes evident that adapted teaching does not have an influence on reading achievement in both countries with effects not differing from zero. This falsifies the hypothesis H3 that adapted teaching influences how well students do in school.

Figure 2: Modified multilevel structural equation model



ACH = reading achievement; SC-R = self-concept in reading.

The estimates on L1 give some indications towards the effects of social origin in the two countries with the regression parameters only slightly varying. In Norway, the HISEI (the highest occupational level in the family) does not influence the self-concept in reading. However, this effect is only slightly not significant (with p = 0.038 over the cut-off-point). All other effects show as stated in hypothesis H1.

Table 5: STDYX-standardised model estimates for Germany and Norway for the modified multilevel structural equation model (baseline-model)

	Germany		Norway	
	Estimate	p-value	Estimate	p-value
Individual Level (L1)				
SC-R on HISEI	0.071	0.012	*0.062*	*0.048*
SC-R on Books	0.094	0.001	0.090	< 0.001
SC-R on ISCED	0.080	0.007	0.093	0.002
ACH on HISEI	0.127	< 0.001	0.084	0.003
ACH on Books	0.193	< 0.001	0.211	< 0.001
ACH on ISCED	0.179	< 0.001	0.133	< 0.001
ACH with SC-R	0.375	< 0.001	0.384	< 0.001
HISEI with ISCED	0.556	< 0.001	0.699	< 0.001
HISEI with Books	0.449	< 0.001	0.401	< 0.001
ISCED with Books	0.470	< 0.001	0.428	< 0.001
Context Level (L2)				
ACH on Adapted Teaching	*-0.111*	*0.234*	*0.009*	*0.940*

Non-significant estimates are displayed in italics; ACH = reading achievement; SC-R = self-concept in reading.

Whether these rather small differences between Germany and Norway are statistically significant is subject to the following analysis. The proceedings were adapted

from the testing for measuring invariance as described above. Alongside the baseline-model stated in table 5, a restrictive model is estimated, setting all effects to be equal in both countries. Using the χ^2-test of difference, the two models are then evaluated towards their fitting to the data. If, for example, the restricted model showed a better fit than the baseline, all regression parameters would not differ significantly between Germany and Norway. If, on the other hand, the baseline fitted better, all coefficients would differ. The restricted model, usually fitting less good, can be adapted in subsequent steps, releasing parameters one by one to see whether this improves the overall fit of the model in comparison with the baseline. This will then allow assumptions towards which parameters differ significantly between the groups.

The comparison of the baseline-model (see fit-information above) and the restricted model indicates that the restricted model fits the data less good.[10] In separate analyses, modifications that released items from being set to equal between the countries were undertaken. However, this did not result in a better or equally good fit statistics as the baseline-model. At a first glance, this is somewhat contradictory: Even though the baseline (= all parameters are allowed to vary) fits significantly better, the gradual release of items does not result in better model fits. This suggests that all tested parameters do not differ significantly between the countries. Yet, the baseline (that does not come with restrictions) still shows a better fit. It is assumed that parameters that were not part of the cross-national comparison (e.g. the intercepts of the variables) differ and hence are responsible for the poorer fit.

Apart from these findings, two regression parameters were close to showing a significant effect, meaning there was a slight hint towards them differing between Germany and Norway: For both the influence of HISEI on reading achievement and ISCED on self-concept in reading, dropping the assumption of non-variance led to near-significance (χ^2_{change} = 11.807 for HISEI on achievement, χ^2_{change} = 8.869 for ISCED on self-concept, with χ^2_{crit} = 12.59 on a 5%-level). However, with differences of $\Delta\beta = 0.027$ (HISEI on achievement) and $\Delta\beta = 0.031$ (ISCED on self-concept), the findings can barely be described as relevant.

6. Discussion

As described in the previous sections, both Germany and Norway show a strong relation between the socio-economic status of a family and how well students do in school. This effect of social origin results in vastly heterogeneous learning dispositions that teachers face in class. With regards to psychological and neuroscientific theories of learning it was assumed that adapted teaching might help to meet this heterogeneity, adapting subject matters to the individual learner and hence lowering

the impact of social origin on achievement and, in this analysis, self-concept. A comparison between Norway and Germany was conducted to see whether the high hopes that are associated with adapted teaching can be affirmed for a country where the didactical setting has been implemented for a longer period of time than it has in Germany. However, such a moderating effect could not be proven since the effect of social origin does not differ systematically between classes. A direct effect of adapted education on reading achievement could also not be proven. Both findings might have different causes.

The first finding, the non-existence of variance in the effects of social origin between classes might be explained by the model itself. As an indicator of how well students do in school, the reading literacy was used. This might be the reason why the effects are so very robust that they do not differ significantly between classes in both countries: The reading literacy is an essential cultural technique; hence out-of-school learning opportunities and situations might be of more relevance for its acquisition than for e.g. mathematical or science-related competencies. It is also not the goal of PIRLS to adjust the measuring of reading literacy to the school curriculum. This might increase the influence of the home literacy environment (which is strongly linked to the socio-economic situation of a family, see Schulz-Heidorf, in press), especially compared to the influence of school-related learning opportunities on the overall reading literacy of the students. Further research needs to evaluate how the effect of social origin differs when other measures of school achievement, especially measures that are more closely linked to the school curricula, are used.

For the second finding, the non-significance of the effect of adapted teaching on reading achievement in both countries, a number of reasons – theoretical, empirical, and political – need to be considered: With regards to Bernstein's sociolinguistic theory of language codes (1975), teachers might not be aware that some students have limited experience with the elaborated code that dominates in school settings. So even if teachers state that they adapt their teaching to the needs and dispositions of the individual student, they might not be able to do so equally well for all learners. If teachers are unaware of the underlying mechanisms of communication this may result in situations where they adapt their teaching in a language that students with lower social backgrounds have difficulties deciphering. One could even hypothesize that a combination of unawareness of language codes and the implementation of adapted teaching (in language-related subjects) might increase social disparities as children with higher social backgrounds might have a 'double advantage': They are not only privileged in itself (which shows in higher achievements etc.), they might also profit more from forms of adapted teaching as they are familiar with the elaborated code spoken in school.

With clear definitions, substantial concepts and practical instructions on how to implement adapted teaching in class missing in both countries; it is also possible that teachers interpreted the item in different ways. Differentiation, for example, does not necessarily include adapting the teaching to the needs and interests of each and every student but might be associated with it in a broader sense of the term (as tasks might be divided into varying levels of difficulty but not with the specific needs of individual learners in mind). Besides this, political reasons might also play a role: As implementing adapted teaching was a political decision, teachers especially in Norway might have felt the need to state a frequent use of the didactical setting. While this is clearly an assumption, it can be substantiated to some degree by students reporting much less frequently that the teaching was adapted to their needs than teachers themselves (Arnesen et al., 2008; Dale & Wærness, 2003; Imsen, 2003). Combining this with the findings that teachers report difficulties in implementing adapted teaching and the absence of a clear framework and practical guidance highlights the need for further actions on a practical (development of concepts and frameworks), political (infrastructure) and empirical (effectiveness studies) level.

In summary, the generalisation of the findings stated here are restricted: Representing a didactical approach by only one item (for one subject) that might be interpreted in different ways and is also rated by the teachers themselves cannot justify the overall evaluation of the effects of a didactical setting. Future research should hence focus on a broader measurement of adapted teaching (such data are available in the German extension of PIRLS and show a negative relationship with reading achievement which points towards teachers adapting to the needs of the students especially in low-achieving classes, cf. Schulz-Heidorf, in press), but also on assessing the actual *understanding* of the didactical setting that underlies item interpretations as well as creating research designs that allow for cause-effect-evaluations (e.g. longitudinal studies), as such designs and subsequent findings are rare.

Notes

1. Individualised instruction, individualisation and adapted teaching are often used as synonyms. The most common term, however, is adapted teaching.
2. Comparing countries of course comes with a number of limitations, one particular being the different migration structures in Germany and Norway and, most importantly, the different society- and system-related conditions that come with their historical developments. As these are extremely complex, they will not be subject to the analysis. However, their impact needs to be considered carefully when drawing cross-national conclusions. The aim of this article is to get an impression of the capabilities of adapted teaching as a didactical method that is fairly new and not yet strongly implemented in Germany but is attributed with high hopes to-

wards being a chance to address social disparities and with it, achievement-related heterogeneity in the classroom.

3. The Gymnasium leads to the Abitur, a qualification for university matriculation.
4. In most federal states in Germany, parents can decide on the type of school their children attend after primary school (that is – after grade 4 or, in two states, after grade 6).
5. In six of sixteen federal states in Germany, teachers decide which types of schools students mandatorily attend after primary school, depending on their grades and achievements (KMK, 2010; for more information on the German school system, see Döbert, 2010).
6. Education in Germany is mainly regulated by the sixteen federal states resulting in sixteen school systems that can differ to some extent.
7. This is done automatically in Mplus by using the imputation-command.
8. The other three are "I usually do well in reading", "I have trouble reading stories with difficult words" (reverse coded) and "My teacher tells me I am a good reader" with answering options being "agree a lot", "agree a little", "disagree a little" and "disagree a lot".
9. Modified restricted model for self-concept in reading on L1 (with free loadings for item 4): $\chi^2 = 100.313$ with $p < 0.001$ and $df = 7$. $\chi^2_{change} = 39.202$, $\Delta df = 3$, $\chi^2_{crit} = 7.81$ on a 5%-level.
10. Fit of the restricted model: $\chi^2 = 420.634$ with $df = 42$. RMSEA = 0.059, CFI = 0.912, $SRMR_{L1} = 0.045$, $SRMR_{L2} = 0.010$. χ^2-test of difference: $\chi^2_{change} = 14.769$, $\Delta df = 7$, $\chi^2_{crit} = 14.07$ on a 5%-level.

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