



Institutional characteristics of education systems and inequalities: Introduction II

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Abstract

This is the second special issue of the International Journal of Comparative Sociology on the role of education systems as institutional settings on the reproduction of inequalities. The first was published in January 2021 and included papers that explored the role of shadow education and country characteristics during early childhood on educational inequalities. This special issue includes three papers that focus on stratification of the education system as a key driver of educational inequalities, cumulative (dis)advantage in the access to higher education, and student experiences in national educational systems. While we already elaborated on the research program, conceptual framework, and methodological challenges in the first introduction, we will deal with the current state-of-research in this second introduction.

Keywords

Education system, social inequality, standardization, stratification, tracking

Rising interest in education systems and inequalities

During recent decades, the issue of how education systems and other institutional settings shape educational inequalities received growing scientific as well as public and political attention. Educational inequalities are not just disparities or differences. According to an equality of opportunity perspective, educational inequalities are defined in terms of educational outcomes—namely, achievement in terms of competencies and skills, attainment in terms of grades and certificates,

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and education-related factors such as aspirations, values of education, and social and learning behavior—being structured by ascriptive characteristics such as social origin, ethnic origin, gender, or ability. Over the life course, educational inequalities translate into inequalities in life chances. The growing interest particularly links to the shock after the first results of the international comparison of educational achievement (Program for International Student Assessment/PISA), when nations discovered that they were underperforming or had high educational inequalities. Researchers increasingly attributed low educational achievement and high educational inequalities to the institutional settings of the education systems. The increasing scientific interest manifests itself in a rising number of peer-reviewed journal articles and volumes (Blossfeld et al., 2016; Hadjar and Gross, 2016) dedicated to the analysis of how education systems shape (educational) inequalities.

The state-of-research on education systems and inequalities already has been studied in several review papers (e.g. Van de Werfhorst and Mijs, 2010; Zapfe and Gross, 2021). The recent systematic review by Zapfe and Gross (2021), for example, analyzes the current state-of-research on how education systems link to educational inequalities. First, a Web of Science literature search revealed 604 articles explicitly linked education systems and educational inequalities along the axes of social origin, gender, ethnic, and migrant origin. Research to be included in the systematic review had to consider at least one education system characteristic (e.g. organization, differentiation, input), at least one educational inequality axis (e.g. gender, socioeconomic status (SES), migration background), at least one educational outcome (e.g. competencies, certificates, attainment), as well as comparing at least five countries. Finally, only 13 English-language journal articles met their systematic review criteria and were analyzed regarding the research question.

In the following, we will summarize the current state-of-research, structured along education system characteristics. Stratification/external differentiation, standardization, and vocational specificity appear to be the major factors covered in inequality studies (Hadjar and Gross, 2016; Van de Werfhorst and Mijs, 2010). The systematic review of journal articles by Zapfe and Gross (2021) indicates stratification, standardization, and input as the most studied factors in the latest journal articles.

Stratification of the education system

Stratification or external differentiation (Van de Werfhorst and Mijs, 2010) relates to the question of whether students are selected into distinct school tracks existing in parallel at a rather early age. The early review paper of Van de Werfhorst and Mijs (2010), focusing on research on international student assessment studies such as PISA, TIMSS (Trends in International Mathematics and Science Study), and PIRLS (Progress in International Reading Literacy Study), indicates that a higher degree of tracking in terms of external differentiation/stratification goes along with more educational inequalities. The systematic review of recent journal articles by Zapfe and Gross (2021) reveals that low stratification—meaning that students are instructed in integrative school and classroom settings at least until upper-secondary education, instead of being selected into differential schools and educational pathways directly after primary schooling at an early age (high stratification)—relates to lower socioeconomic inequality. Low stratification in the form of course-by-course tracking—the tracking takes place within a school and students are placed into courses with varying levels of difficulty for one or more subjects (Chmielewski, 2014)—leads to lower educational inequalities, that is, less segregation by SES, and higher achievement of disadvantaged student groups, in the education system, while high stratification such as an early selection of students into academic versus vocational tracks is more inequality-prone (Hadjar and Gross, 2016; Zapfe and Gross, 2021). Moreover, the achievement of advantaged groups is not negatively affected by low stratification

(Chmielewski, 2014, cf. Zapfe and Gross, 2021). But the results for ethnic and gender inequalities are ambiguous depending on the educational outcome analyzed. For example, low stratification, for example, tracking in higher grade levels, is beneficial for girls, that is, the gender gap in mathematics competencies decreases and the gender gap in reading competencies increases, while high or early stratification is beneficial for boys (Zapfe and Gross, 2021). The results of Hadjar and Buchmann (2016) even more clearly show that low stratification leads to lower gender inequalities in education. Dronkers and Korthals (2016) demonstrate that stratification has a positive effect on performance of migrant students if the school considers prior performance of students. The findings of Hadjar and Becker (2016) indicate that low stratification (and even a larger size of the upper-secondary education system, i.e. proportion of students in upper-secondary schooling) is associated with lower educational inequalities related to social origin. The major role of tracking and between-school heterogeneity in educational inequalities can also be concluded from the studies presented in the volume of Blossfeld et al. (2016). The mutually reinforcing primary and secondary effects of origin (Boudon, 1974) are the main reason why early tracking fosters the SES gap in educational achievements.

Standardization of the education system

Standardization is linked to the question of whether access and evaluation procedures as well as teacher training and school equipment are organized in a standardized way across a certain education system. Research differentiates between standardization of output, for example, central examination, and input, for example, central curriculum (Bol and Van de Werfhorst, 2016). The review of Van de Werfhorst and Mijs (2010) indicates a generally positive link between standardization—they focus on standardized examinations and curricula—and equality of opportunity. A higher degree of standardization seems to reduce educational inequalities, although findings are also ambiguous.

In line with this, Zapfe and Gross (2021) refrain from drawing a clear conclusion regarding the findings on the link between standardization and inequalities. On one hand, standardization seems to reduce educational inequalities because educational certificates seem to be more strongly linked to students' actual achievements than ascriptive or family characteristics, such as SES. Furthermore, certain biases, such as teacher stereotypes influencing their ways of instruction toward different groups and evaluations, may be reduced through standardization measures. For example, in standardized education systems, which centralize the curriculum or have national examinations, teachers' stereotypes concerning their perception of girls' and boys' competencies in mathematics or reading are less influential. All students have to achieve high competencies in certain subjects to attain specific educational certificates. Therefore, gender does not determine the importance of mathematics and reading. On the other hand, certain biases in favor of disadvantaged groups may also be reduced leading to even better results of advantaged groups. Furthermore, in standardized systems, teachers have less possibilities to fit the curriculum, instruction material, and methods to the needs of their students, which may lead to even lower educational outcomes of disadvantaged groups. These adverse circumstances may lead to more severe consequences, because in standardized education systems, the results of standardized tests may be even more important for employers' decisions.

Regarding gender inequalities, standardization seems to work in favor of women's achievement and negatively affects the achievement of male students—leading to even stronger educational inequalities, for example, greater gender gaps in reading competencies in favor of girls (Zapfe and Gross, 2021). This ambiguous state-of-research is also reflected in the study of Ballarino et al. (2016) who reveals no effect of standardization of input (low autonomy of schools) on educational

inequalities, whereas standardization of output (centralized exams) is associated with higher educational inequalities.

Input

The aspect of input—brought forward by Esser (2016)—relates to the duration of compulsory schooling and size of the education system as well as quantitative and qualitative institutional demands (e.g. financial expenditure, class size, teacher qualifications; cf. Zapfe and Gross, 2021). The systematic review by Zapfe and Gross (2021) shows that input reduces gender and migration inequalities. More precisely, the quality of the educational system leads to higher reading competencies of migrant students. Furthermore, the effect is constant over time (Riederer and Verwiebe, 2015). High input in the form of early entry into the education system, which often leads to a long duration of compulsory education, is beneficial for migrant students. When migrant students enter the education system early, the gap in mathematics achievement between native and migrant students decreases (Borgna and Contini, 2014). Considering gender inequalities, high input (i.e. low variability in school size, proportion of 15-year-olds enrolled in school, percentage of teachers fully certified by appropriate authority, number of years at preprimary school) decreases the gender gap in mathematics competencies. Especially girls profit from high input because the proportion of girls in the group of mathematics high performers increases (Breda et al., 2018).

If size of the education system, in particular regarding educational opportunities in upper-secondary education, is considered as an aspect of input, a larger size of the system in terms of increased educational opportunities is associated with lower socioeconomic educational inequalities (Hadjar and Becker, 2016) and lower gender inequalities (Hadjar and Buchmann, 2016a). This seems to apply to the higher education sectors as well: both characteristics seem to slightly reduce inequalities for disadvantaged socioeconomic groups (Griga and Hadjar, 2014). Meanwhile, the increase of enrollments in the higher education sectors does not affect educational inequalities between boys and girls. Girls have a higher expectation to complete higher education in almost all analyzed countries (Zapfe and Gross, 2021).

Other education system characteristics

Articles and volumes such as the systematic review of Zapfe and Gross (2021) and the international volume of Hadjar and Gross (2016) indicate further impact factors. The effect of *vocational specificity*, that is, the content and degrees of (secondary) schooling are strongly oriented toward the occupational structure and the labor market (e.g. in dual systems with a high linkage between education and employment; Müller and Shavit, 1998), on educational inequalities is ambiguous. On one hand, high vocational specificity may increase the chances of disadvantaged groups (e.g. working class) to receive qualified vocational certificates that are linked to better labor market chances (Bol and Van de Werfhorst, 2016; Hadjar and Gross, 2016). On the other hand, high vocational specificity is strongly linked to stratification, as vocationally specific education systems often include early tracking procedures (Hadjar and Gross, 2016). The strong linkage between education and the labor market may also lead to longer spells of (youth) unemployment (Bol and Van de Werfhorst, 2016).

More instruction time (e.g. in all-day schooling) may also decrease inequalities, as a longer exposure of disadvantaged groups to education and the stronger support that can be given in these educational organizations may compensate for certain resource deficiencies and increase educational opportunities for disadvantaged groups. Early childhood education also means a longer exposure to education. In many countries, such as Luxembourg and Switzerland,

pre-schooling is already compulsory. An all-day and well-structured early education program helps to equalize educational opportunities for different groups and thus to reduce educational inequalities (Hattie, 2009).

The different findings of the state-of-research seem to give hints about which changes regarding the characteristics of education systems appear to be most promising, such as compulsory schooling, increasing the size and input of the education system, and making early childhood education and care compulsory. However, most empirical results should not be interpreted in terms of causal links and handled with care because longitudinal studies analyzing educational system characteristics are still rare and experimental designs are hardly feasible (see also Gross and Hadjar, 2021).

Beyond the education system, welfare-state regime and certain role models the parental generations provide (Hadjar and Gross, 2016) as well as gender and societal inequality (Zapfe and Gross, 2021) also seem to be linked to inequalities. But this opens up a different field of inquiry beyond this issue's purview.

Contributions in this themed issue

The contributions in this second themed issue present research on the role of various institutional characteristics of education systems in the reproduction of educational inequalities. While *Traini* in this volume contributes to the classic debate of how the level of stratification within educational systems fosters the SES gradient of educational outcomes, the contribution of *Triin and Saar* examines the role of education systems in mediating the link between parental background and educational attainment. Both *Traini* and *Triin and Saar* follow a cross-cultural perspective, whereas the third contribution by *Chiang* compares the function of two modes of selection within a single country (Taiwan) for the justification of elite students' advantages. All three contributions, despite their different goals, highlight the incessant and robust role of the socioeconomic background for educational outcomes.

In detail, the contribution of *Traini* in this volume distinguishes between two dimensions of stratification: the age at first selection and the degree to which this selection is ability based. Previous comparative research on long-term educational outcomes has examined either the first or the second, but none both within one study. In doing so, *Traini* combines data of the European Social Survey (ESS; individual level) including 32 countries and 9 ESS waves (resulting in 182 country-wave combinations) with indicators of the educational systems on the country level, which are newly collected via an online expert survey (these valuable data are also provided). While the overall-“effect” of stratification on the SES gradient is well-known, *Traini* moves beyond previous research by showing the ambivalent “effect” of these two dimensions of stratification by applying multilevel analyses, resulting in new insights on a well-established topic.

The contribution of *Triin and Saar* in this volume focuses on the well-documented link between parental resources and educational attainment. The authors first elaborate on the theoretical argument of cumulative (dis)advantages in educational attainment depending on education system characteristics. Second, they describe the diversity of cumulative parental resources across countries and birth cohorts. Third, they analyze under which education system conditions the cumulative advantage in (cumulative) parental resources translates into higher education attainment based on fuzzy-set Qualitative Comparative Analysis (fsQCA). They use data of the Programme for the International Assessment of Adult Competencies (PIAAC) of six countries and three birth cohorts to account for between- and within-variation of education system characteristics. *Triin and Saar* find three combinations of education system characteristics that weaken the intergenerational inheritance of educational attainment in terms of higher education access: (a) high stratification

and high standardization, (b) high stratification and high decommodification, and (c) high standardization and decommodification.

Finally, the contribution of *Chiang* in this volume focuses on the perception of fairness regarding two different admission systems to college in Taiwan: exam- versus application-based. While most of previous research “portray elite students as self-interested adolescents who overemphasize merit to justify educational selection systems that favor them,” *Chiang* focuses on the evaluation of these two access options to college by the elite student themselves. *Chiang* uses a mixed-methods approach by combining the strengths of quantitative longitudinal surveys, qualitative in-depth interviews with elite students, and ethnography with an admissions committee. By using these multiple perspectives, *Chiang* is able to elaborate and differentiate the former picture of elite students and gives new insights on the reproduction of educational inequality.

The three contributions add to the literature on education systems and inequality in several ways: *Traini* illustrates the long-term implications of stratification in an even more detailed way as previous research since she uses several waves of the ESS (allowing a dynamic view) in combination with data on educational systems including two dimensions of stratification within one study. In doing so, she illustrates the opposite effects of these two measures of the same theoretical construct. *Triin and Saar* are focusing on a well-known phenomenon (intergenerational transmission of educational attainment) through a new lens. Unlike previous research, they follow a set-analytical approach (fsQCA) to examine both between- and within-variation of education system characteristics affecting the intergenerational transmission of educational attainment. *Chiang* extends previous research by looking behind the curtain of alleged knowledge regarding the elite students in Taiwan. By using different methodological approaches and target persons, *Chiang* differentiates the picture of elite students and their view on a legitimized access to college in Taiwan, which gives important impulses for further research in other countries or education systems.

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