Schmollers Jahrbuch 129 (2009), 169 – 180
Duncker & Humblot, Berlin

Family Determinants of the Changing Gender Gap in Educational Attainment: A Comparison of the U.S. and Germany*

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Abstract

Trends in the gender gap in college completion for the U.S. and Germany show that the gender gap has closed in Germany as it has in the U.S., but, unlike the U.S., women have not yet achieved inequality in rates of tertiary degree attainment, let alone overtaken men. A central reason for this difference is the fact that the relationship between parental education and gender-specific rates of tertiary degrees has not changed over time in Germany as it has in the U.S. The lack of change in Germany is consistent with both environmental and family resource explanations for the reversal in the U.S., and provides additional support for resource and incentive-based theories of the female-favorable trends in rates of higher education completion in much of the industrialized world.

JEL Classification: I20, J16, O57

1. Introduction

Trend statistics in the United States reflect a striking reversal of a gender gap in college completion that once favored males. Young women now outperform young men with respect to high school graduation, college entry, and persistence to a four year college degree. The American trends mirror similar trends in other industrialized countries. Out of 30 member nations of the Organization for Economic Cooperation and Development (OECD), men retain significant advantages in only Switzerland, Turkey, Japan and Korea (OECD, 2006).

Several forces are probably driving this trend. The international women's movement produced a slow though uneven cultural transformation. This trans-

* This paper was presented at the 8th International Socio-Economic Panel User Conference (SOEP 2008) in Berlin, July 9 – 11, 2008, and at the spring, 2008 meeting of the Research Committee 28 of the International Sociological Association in Florence, Italy. The paper outlines first results from an ongoing project. We thank the participants of both conferences and the reviewer for useful comments and suggestions.

formation created greater autonomy for women and more opportunity for work and careers, often even after marriage and sometimes even during the childbearing phase of adult life. Partly in response to the changing culture, the pay gap between men and women shrank from the late 1960s through at least 1990 in many European countries as well as the U.S. (Blau / Kahn, 1995), and this may also have played a role in increasing the attractiveness of education to women. These changes have been uneven, however. One source of evidence for unevenness concerns cross-national variation in the female occupational distribution (Charles / Grusky, 2004). More evidence comes from variation in the relative working hours of married men and women (Medalia / Jacobs, 2007) as well as cross-national variation in the gender gap in cognitive achievement (Penner, 2007). Structural differences of school systems can also play a role in the gender educational gap.[1]

This study addresses the possible role of family resources in the changing gender gap in education from a comparative perspective. Gender inequality differs from class inequality in that daughters and sons have the same distribution across the class structure; neither gender is class disadvantaged relative to the other. However, the family can still play an important role in producing gender differences through how they socialize sons and daughters and through how they allocate resources between sons and daughters.

Buchmann / DiPrete (2006) provide strong evidence for the potential importance of such family effects as an explanation of the changing gender gap in education in the United States. They show that boys in relatively low-educated families would go from a position of relative advantage to a position of relative disadvantage in educational attainment. Our question is whether the American pattern is an example of a world-wide trend. As a test case, we examine trends in the gender gap in college completion in Germany. Germany is similar to the U.S. and virtually all other industrialized countries in that women's rate of college completion has risen faster than that for men. It differs from the U.S., however, in several respects:

First, the relative position of women in Germany has lagged behind that of women in the U.S. Unlike in the U.S., the tertiary education rates of German women have not yet surpassed those of men. Second, labor market opportunities for German women have certainly increased during recent decades, but not at the same pace as for American women. Germany has been considered by many to be more traditional in its attitudes towards gender than the U.S. (Alwin et al., 1992). Occupational sex-segregation (Charles, 1992) and the gen-

[1] Aarum / Gamoran / Shavit (2007) found that the gender gap in tertiary education become more female advantaged in countries where the higher educational system was growing more rapidly, which suggests that the size of the constraint on attending tertiary education might play a role in producing heterogeneity in the size of the gender gap across countries.

der gap in wages (Blau / Kahn, 2000) are higher in Germany than in the U.S. Third, overall inequality has not grown as fast in Germany as in the U.S. Fourth, the German educational system differs from the American system in several respects including the differentiation of post-primary education into three tracks of which one – the Gymnasium – traditionally has led to higher education. Students who graduated from the Gymnasium with the Abitur could then pursue either the traditional University or the less prestigious *Fachhochschule* for pursuit of a more applied program of study.[2] Our question concerns the implications of these country differences for how family effects produce gender-specific trends in college completion rates.

2. Explaining the Role of Family Determinants for the Changing Gender Gap in the United States

Some scholars (Bozick / DeLucca, 2005; King, 2000) have recently discovered that the contemporary gender gap in the U.S. is wider among working class than among middle class families. Buchmann / DiPrete (2006) determined that this pattern represented a reversal of the effects that previously linked families to the gender-unequal outcomes of their children. In the middle of the 20th century, the American pattern was for girls to do as well as their brothers only in the minority of families where both parents were highly educated.[3] Over about three decades, this pattern gradually changed from one where the sons of high school educated fathers had the largest advantage over their sisters to one where these sons were at the greatest educational disadvantage.

There are two major explanations for this transformation. One focuses on the environment, and the other focuses on the changing characteristics of families. The environmental explanation builds from evidence that girls historically have better work habits and perform better in schools than boys (Buchmann et al., 2008; for Germany see Rodax / Hurrelmann, 1986, 138), but that until very recently had lower educational attainment than boys. Expectations for educational attainment were lower for women, labor market opportunities for women were relatively limited, and they had good marriage pro-

[2] In regard to educational inequality, Mayer et al. (2007) note that class differences in educational attainment are high when compared with other industrialized countries.

[3] This pattern is consistent with evidence that higher educated people in both the U.S. and in Europe tend to have more gender egalitarian attitudes than do lower-educated people (Thornton / Freedman, 1979; Cherlin / Walters, 1981; Thornton et al., 1983; Alwin et al., 1992; Dryler, 1998). A second potential explanation is that higher educated people, who have greater resources than most families, are better able to expend surplus resources on their daughters even if they were inclined to give their sons priority in their educational investments.

spects even with only a high school education. These environmental constraints offset female advantages in academic skills and work-habits and produced a net educational advantage for boys. However, as the environmental factors which disadvantaged females gradually diminished as part of the cultural transformation, their academic advantages remained and boys increasingly found themselves at a net disadvantage relative to girls.

The family-based explanation for the changing relationship between parental education and female educational success emphasizes the more difficult position of blue-collar families in the globalized economy. In the 1940s and 1950s, families whose male breadwinner was a well-paid blue-collar worker with a high school education – often second generation immigrants – could hope that their sons would live better than they did through jobs that could but need not require a college education. Their daughters could also enjoy a higher standard of living by marrying men who had good white collar or blue-collar jobs, but in either case, college education was not a prerequisite for gaining access to this marriage market.

Through the 1960s, 1970s, and 1980s, however, the American population became increasingly well educated, and families with high school-educated fathers fell in relative terms in the socioeconomic hierarchy.[4] This fall arguably had a more negative impact on sons than on daughters. The sons in these families may have used their father as a role model for an occupational career that would turn out to be much less rewarding for them than for their fathers. The daughters in these families, in contrast, would be aware of two facts. First, they may well have realized that the skilled blue-collar jobs that their fathers had were generally male-dominated and thus not an attractive career choice for them. Well-paying jobs for women required a college education. Second, they arguably realized that the marriage market was changing; declining labor market returns and growing inequality made college-educated men more desirable as marriage partners both in relative and absolute terms. They may also have realized that the chances of marrying a well-paid man with a white-collar job were substantially higher if they had a college education. Occupational sex-segregation, the changing marriage market, and the more forward-looking orientation of teenage girls relative to teenage boys would all mitigate the negative consequences of having a high school educated dad for daughters relative to sons. Paralleling these changes was the fact that the incentive for even traditionally minded parents to favor their sons over their daughters in educational investment was diminishing.

Finally, the changing relative economic position of college and high-school educated parents may have importantly affected their relative ability to help

[4] In addition, the real wages of high school educated workers fell considerably with the onset of the industrial restructuring of the 1980s and the decline of the American labor movement (Autor et al., 2006).

daughters and sons achieve educational success. In a world where the educational opportunities for girls are no longer inhibited by traditional gender orientations of parents and schools, boys may have increasingly been at relatively greater risk for academic problems. College-educated parents are better situated to take appropriate (and often expensive) actions to raise the educational achievement of children who otherwise appear to have gotten into academic trouble; while the resource limitations of working-class families may have more serious consequences for the educational attainment of their sons than of their daughters.

In the following sections we address the question whether the German pattern resemble the U.S. pattern and whether possible country differences can be understood in terms of the two theoretical frameworks.

3. Trends in the Gender Gap in Education: Germany and the U.S.

We first present trends (see Figure 1) in rates of earning an *Abitur* according to the Mikrozensus data 1976 – 2005. Starting with the expansion of the secondary and tertiary educational system in the 1950s, the overall completion rate began to rise rapidly in the birth cohorts since the late 1930s. However, it was not until the cohorts of the 1950s that the gender gap begin to abate reaching parity for those born in the early 1970s (see Geissler, 2008). Although less pronounced in regard to the overall growth, the trend for university completion shows a similar pattern (graph not shown here). The trends differ insofar as the beginning of the closing coincides with a period where university completion becomes less likely for men born in the 1950s. Such a catch up, however, is lacking for the *Fachhochschule* (graph not shown here). Because women made almost no gains relative to men in *Fachhochschule* degrees, the overall rate of higher education completion obtained by German women continues to lag behind the rate for German men (see Figure 2).

These trends resemble the American change but are clearly not the same: Both countries show a clear trend in favor of women. In the US, however, women have surged past men in rates of tertiary degree completion, while in Germany they have not yet reached full parity with men in term of higher education.

4. Role of Family Background for the Changing Gender Gap

To examine whether the German trends resemble the processes in the US, we use the German Socio-Economic Panel (SOEP) to replicate Buchmann / DiPrete's analysis (2006, 522) of the relationship between parents' education,

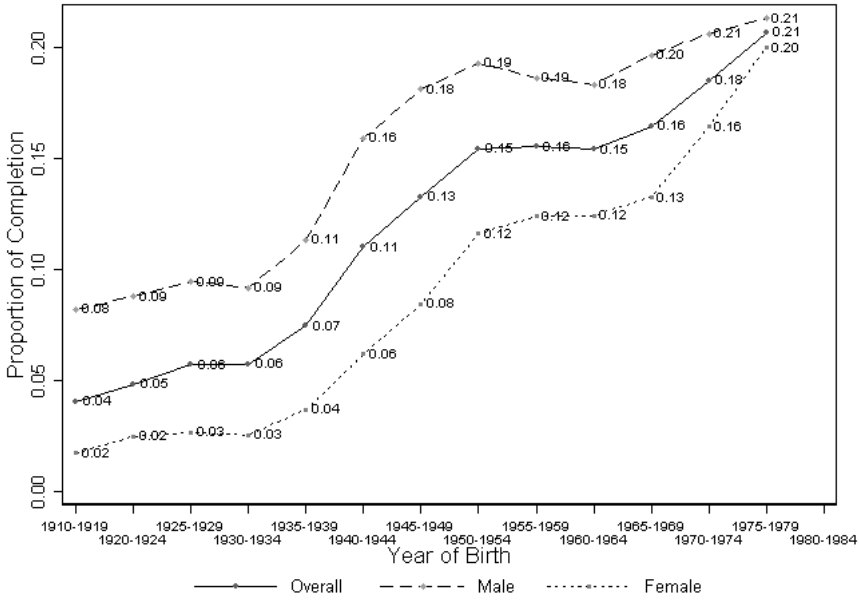
birth cohort and male and female rates of college completion.[5] As illustrated in figure 1, we compare two groups of cohorts. The earlier cohorts covers the birth years between 1940 and 1959 and embraces the period of rapid growth in higher secondary education without significant changes in the gender gap. The later cohorts (born between 1960 and 1982) includes the people who grew up after the gender gap began to close. The sample is restricted to West German respondents who are aged between 22 and 44 for Abitur (born 1940-1984) and between 30 and 44 for the analysis of higher education (born 1940-1974).[6] Definitions of all variables are provided in Table 1.

Source: Authors' calculation of the Mikrozensus 1976, 1980, 1989, 1995, 2000 and 2005.
Sample: West German respondents aged 22 – 85 and born between 1910 and 1983.

Figure 1: Proportion of Abitur Completion for Males and Females by Five-Year Birth Cohorts

[5] Together with the Allbus, the SOEP is the main German data source which covers the last two decades and therefore provides a sufficient basis for long term trend analysis in regard to educational attainment of the respondent, family background such as the educational attainment of the parents and other measures (Haisken-DeNew / Frick, 2005).

[6] This restriction of the sample to German respondents who grew up in the post-war period Federal Republic of Germany attempts to focus the analysis on uniform processes. The experience of educational attainment is quite different for native Germans and for immigrants as well as in West and East Germany. For this reason, we compare West German citizens with white Americans used in Buchmann / DiPrete's (2006) analysis.



Source: Authors' calculation of the Mikrozensus 1976, 1980, 1989, 1995, 2000 and 2005.
Sample: West German respondents aged 30 – 85 and born between 1910 and 1975.

Figure 2: Proportion of Higher Education Completion for Males and Females by Five-Year Birth Cohorts

Recall that in the earlier U.S. cohorts, women lagged behind males in all family types except those in which both parents had college education. In the later American cohorts, however, daughters had opened up a considerable lead over sons in families where the father had a high-school education or less, while the rough gender equality of educational attainment in families with college-educated parents persisted. As shown in table 2, the German results are different. Female chances of *Abitur* completion were lower *regardless* of parents' education for those born before 1960. The odds ratio of gaining an *Abitur* was actually *lower* for families where both parents had relatively high education, which is opposite the U.S. pattern.

The later cohorts in Germany show an overall convergence between women and men in *Abitur* completion rates. Girls in the later cohorts have caught up or overtaken boys in families where the father had low education. This pattern bears some similarities to the American pattern, though it is much weaker in Germany than in the U.S. Table 3 shows logistic regressions for the effects of parents' education, birth cohort and gender on *Abitur* completion, higher education, university and Fachhochschule including all 2-, 3- and 4-way interaction effects. In model 1 for *Abitur* completion, only the two-way interaction

Table 1

Variable Definitions for SOEP Analysis

Dependent Variable	
Abitur	Completion of German Abitur
Higher Education	Completion of either university or Fachhochschul degree
University	Completion of university degree
Fachhochschule	Completion of Fachhochschul degree
Independent Variables	
Cohort	Birth cohorts defined as: 0 = Born between 1940 and 1959 (Earlier Birth Cohort) 1 = Born between 1960 and 1982 for Abitur and between 1960 and 1974 for Higher Education, University or Fachhochschule
Female	0 = male; 1 = female
Father's Education	Dichotomous variable coded as: 1 = Abitur (Upper Secondary School Degree), Fachabitur (Technical School Degree) or Realschule (Intermediate School Degree) 0 = Hauptschul degree (Lower Secondary School Degree) or no school degree
Mother's Education	Dichotomous variable coded as: 1= Abitur (Upper Secondary School Degree), Fachabitur (Technical School Degree), Realschul degree (Intermediate School Degree) or Hauptschul degree with vocational training 0 = Hauptschul degree (Lower Secondary School Degree) without vocational training or no school degree

Table 2

Odds Ratios for Abitur Completion by Parents' Education and Birth Cohort

		Earlier Cohort (1940 – 1959)		Later Cohort (1960 – 1982)	
		Odds	Odds Ratio (Female / Male)	Odds	Odds Ratio (Female / Male)
MEdu Low / FEdu Low	Mal	0.143	0.520	0.139	1.184
	Female	0.074		0.164	
MEdu Low / FEdu High	Male	0.652	0.523	0.758	0.705
	Female	0.341		0.535	
MEdu High / FEdu Low	Male	0.385	0.837	0.398	0.960
	Female	0.323		0.382	
MEdu High / FEdu High	Male	1.884	0.454	1.448	0.938
	Female	0.855		1.359	

Source: Authors' calculation of the SOEP 1984 – 2006.

Sample: West German respondents aged 22 – 44 and born between 1940 and 1982.

Note: MEdu = Mother's Education; FEdu = Father's Education.

term between cohort and female is statistically significant. The terms allowing for heterogeneity in this interaction by family background are not significant. The decreasing gender gap in Germany cannot, therefore, be attributed to a structural shift in the gender-specific effects of parents' education. Rather, the change seems to result from a general trend in favor of women that cuts across families with varying levels of parental education. This pattern holds under various model specifications including attempts to create a more parsimonious model as well as models which use different measures for family background (results not shown here).

Model 3 for university completion reveals a similar picture with a stronger trend in favor of women in families with low educated parents compared to those with high educated mothers and low educated fathers. In contrast, model 2 and 4 for higher education and *Fachhochschule* do not show any significant cohort effects suggesting only slight trends towards a closing gender gap. The lack of a cohort-gender interaction in the overall higher education model clearly stems from the lack of significant change over time in the gender pattern of graduation from the *Fachhochschule.*

5. Discussion

German gender trends are clearly moving in the same direction as American trends, with three clear differences. First, German women have closed the gap in higher education with German men, but have not overtaken them. Second, their failure to achieve parity with men in rates of higher education completion is due to their failure to converge with men in rates of obtaining degrees from Fachhochschulen. Third, female gains have come about relatively independently of family type. An understanding of these differences may help explain both why the female-to-male gap in college completion is so large in the U.S. and also what the likely prospects are for future trends in Germany.

Here we can only offer hypotheses for future exploration. Discrimination against women has declined in Germany as in the U.S., but the potential for compensating investments particularly from lower-educated parents may be greater in Germany than in the U.S., for several reasons. First, income inequality has been lower in Germany than in the U.S. and blue-collar wages have been higher. In both relative and absolute terms, German families at the lower end of the distribution may have more resources available to invest in their sons. Additionally, German families have fewer children on average than American families, and German boys with lower-educated fathers spend a greater share of their childhood with two parents in the household. These facts may also work to the relative benefit of lower educated German families and their sons.

Table 3: **Logistic Regressions of Abitur, Higher Education, University and Fachhochschul Completion on Parents' Education, Birth Cohort and Gender**

	(1) Abitur		(2) Higher Education		(3) University		(4) Fachhochschule	
Cohort	–0.030	(0.147)	–0.240	(0.180)	–0.792***	(0.225)	0.372	(0.259)
Female	–0.654***	(0.174)	–1.131***	(0.187)	–1.156***	(0.237)	–0.947**	(0.288)
MEdu. Low / FEdu. Low	–1.272***	(0.121)	–0.988***	(0.120)	–0.888***	(0.144)	–0.687***	(0.177)
MEdu. Low / FEdu. High	0.246	(0.168)	0.357*	(0.166)	0.426*	(0.186)	0.176	(0.233)
MEdu. High / FEdu. Low	–0.280	(0.187)	–0.473*	(0.194)	–0.620*	(0.247)	0.046	(0.257)
MEdu. High / FEdu. High	1.306***	(0.151)	1.103***	(0.156)	1.082***	(0.165)	0.464	(0.241)
Female x MEdu. Low / FEdu. Low	–0.086	(0.181)	–0.395*	(0.192)	–0.559*	(0.233)	–0.250	(0.294)
Female x MEdu. Low / FEdu. High	–0.080	(0.240)	–0.066	(0.249)	–0.084	(0.275)	0.050	(0.412)
Female x MEdu. High / FEdu. Low	0.389	(0.272)	0.602*	(0.279)	0.592	(0.347)	0.439	(0.388)
Female x MEdu. High / FEdu. High	–0.223	(0.220)	–0.141	(0.234)	0.051	(0.257)	–0.239	(0.363)
Cohort x Female	0.822***	(0.224)	0.525	(0.287)	1.265***	(0.353)	–0.477	(0.458)
Cohort x MEdu. Low / FEdu. Low	–0.002	(0.152)	0.048	(0.182)	–0.290	(0.219)	0.234	(0.262)
Cohort x MEdu. Low / FEdu. High	0.178	(0.211)	–0.065	(0.256)	–0.127	(0.282)	0.113	(0.374)
Cohort x MEdu. High / FEdu. Low	0.059	(0.218)	0.347	(0.245)	0.450	(0.308)	0.023	(0.326)
Cohort x MEdu. High / FEdu. High	–0.235	(0.181)	–0.330	(0.210)	–0.033	(0.225)	–0.370	(0.324)
Cohort x Female x MEdu. Low / FEdu. Low	0.326	(0.227)	0.156	(0.289)	0.640	(0.344)	–0.272	(0.453)
Cohort x Female x MEdu. Low / FEdu. High	–0.198	(0.311)	0.227	(0.435)	0.435	(0.483)	–0.486	(0.697)
Cohort x Female x MEdu. High / FEdu. Low	–0.359	(0.316)	–0.830*	(0.364)	–1.000*	(0.446)	–0.233	(0.514)
Cohort x Female x MEdu. High / FEdu. High	0.230	(0.263)	0.446	(0.317)	–0.075	(0.347)	0.991*	(0.496)
Constant	–0.911***	(0.151)	–0.526**	(0.198)	–1.114***	(0.234)	–1.871***	(0.331)
Observations	9556		7337		7337		7337	
df	15		15		15		15	

Note: Deviation contrasts are used for categorical variables. They sum to zero over the categories and refer to the deviations from the mean. MEdu = Mother's Education; FEd u= Father's Education.

Source: Author's calculation of the SOEP 1984 – 2006.

Sample: West German males and females aged 22 – 40 (30 – 40) and born between 1940 and 1982 (1940 and 1974) for Abitur (Higher Education, University and Fachhochschule). Robust Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

It is also possible that discrimination against women is higher in Germany than in the U.S. in precisely those sectors of the educational system and the labor market in which the sons and daughters of lower-educated fathers would be found. The failure of women to make gains in the *Fachhochschulen,* which is the lower-status sector of the higher education system in Germany, is at least consistent with the possibility that barriers to female advancement remain greater in Germany. Moreover, the German labor market remains more segregated than is the American labor market, and the barriers to combining work and family are greater (DiPrete et al., 2003). The relative height of these barriers may be unequal across the socioeconomic hierarchy, with the expected gains from higher education perhaps being comparatively small for the daughters of lower-educated fathers relative to the daughters of highly-educated fathers, precisely because German women must sacrifice more labor market opportunities as the price for having children.[7] Finally, the incentives stemming from the value of education in the labor and marriage markets may vary in the two countries in ways that are consistent with the pattern we find. In the U.S., it is the daughters of lower-educated men whose incentive to "marry up" has grown because of the declining relative labor market earnings of the blue-collar men they otherwise might have married. In Germany, these incentives have not risen as much precisely because the earnings of blue-collar men have not declined as much.

In short, the differing pattern of family effects on gender-specific educational outcomes is consistent with our theory as to why these gender-specific trends exist. The next step is to establish that the hypothesized mechanisms producing these country-specific differences also work as predicted and to investigate these underlying mechanisms empirically. This should be a focus for future research.

References

Alwin, D. F. / *Braun,* M. / *Scott,* J. (1992): The Separation of Work and the Family: Attitudes Towards Women's Labour-Force Participation in Germany, Great Britain, and the United States, European Sociological Review 8, 13 – 37.

Arum, R. / *Gamoran,* A. / *Shavit,* Y. (2007): More inclusion than diversion: Expansion, differentiation, and market structure in higher education, in: Arum, R. / Gamoran, A. / Shavit, Y. (eds.), Stratification in Higher Education: A Comparative Study, Stanford.

Autor, D. H. / *Katz,* L. F. / *Kearney,* M. S. (2006): The Polarization of the US Labor Market, American Economic Review 96, 189 – 194.

Blau, F. D. / *Kahn,* L. M. (1995): The Gender Earnings Gap: Some International Evidence, in: Freeman, R. B. / Katz, L. F. (eds.), Differences and Changes in Wage Structures, Chicago, 105 – 43.

[7] This possibility would also imply that the fertility gap between German and American women would be greater for daughters of more highly educated fathers.

Blau, F. D. / *Kahn,* L. M. (2000): Gender Differences in Pay, Journal of Economic Perspectives 14, 75 – 79.

Bozick, R. / *DeLuca,* S. (2005): Better Late than Never-Delayed Enrollment in the High School to College Transition, Social Forces 84, 531 – 554.

Buchmann, C. / *DiPrete,* T. A. (2006): The Growing Female Advantage in College Completion: The Role of Family Background and Academic Achievement, American Sociological Review 71, 515 – 541.

Buchmann, C. / *DiPrete,* T. A. / *McDaniel,* A. (2008): Gender Inequalities in Education, Annual Review of Sociology 34, 319 – 337.

Charles, M. (1992): Cross-National Variation in Occupational Sex Segregation, American Sociological Review 57, 483 – 502.

Charles, M. / *Grusky,* D. B. (2004): Occupational Ghettos: The Worldwide Segregation of Women and Men, Stanford.

Cherlin, A. / *Walters,* P. B. (1981): Trends in United States men's and women's sex-role attitudes: 1972 to 1978, American Sociological Review 46, 453 – 460.

DiPrete, A. D. / *Morgan,* S. P. / *Engelhardt,* H. / *Pacalova,* H. (2003): Do Cross-National Differences in the Costs of Children Generate Cross-National Differences in Fertility Rates? Population Research and Policy Review 22, 439 – 477.

Dryler, H. (1998): Parental role models, gender and educational choice, British Journal of Sociology 49, 375 – 398.

Geißler, R. (2008): Die Metamorphose der Arbeitertochter zum Migrantensohn. Zum Wandel der Chancenstruktur im Bildungssystem nach Schicht, Geschlecht, Ethnie und deren Verknüpfungen, in: Berger, P. A. / Kahlert, H. (eds.), Institutionalisierte Ungleichheiten: Wie das Bildungswesen Chancen blockiert, München, 71 – 100.

Haisken-DeNew, J. P. / *Frick,* J. R. (2005): Desktop Companion to the German Socio-Economic Panel, Berlin: DIW-Berlin.

King, J. E. (2000): Gender Equity in Higher Education: Are Male Students at a Disadvantage?, Washington, DC: American Council on Education.

Mayer, K. U. / *Müller,* W. / *Pollak,* R. (2007): Institutional Change and Inequalities of Access in German Higher Education, in: Shavit, Y. / Arum, R. / Gamoran, A. (eds.), Stratification in Higher Education: A Comparative Study, Stanford, 240 – 265.

Medalia, C. / *Jacobs,* J. (2007): Working Time for Married Couples in 28 Countries, OECD (2006), Education at a Glance 2006, Paris: OECD.

Penner, A. M. (2008): Gender Differences in Extreme Mathematical Achievement: An Inernational Perspective on Biological and Social Factors, American Journal of Sociology 114, 138 – 70.

Rodax, K. / *Hurrelmann,* K. (1986): Die Bildungsbeteiligung der Mädchen und Frauen, Zeitschrift für Sozialisationsforschung und Erziehungssoziologie 6, 137 – 147.

Thornton, A. / *Alwin,* D. F. / *Camburn,* D. (1983): Causes and consequences of sex-role attitudes and attitude change, American Sociological Review 48, 211 – 227.

Thornton, A. / *Freedman,* D. (1979): Changes in the sex role attitudes of women, 1962 – 1977: Evidence from a panel study, American Sociological Review 44, 831 – 842.