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## Educational Gradients in Parents' Child-Care Time Across Countries, 1965–2012

*Parental time with children leads to positive child outcomes. Some studies have reported a positive educational gradient: More educated parents devote more time to children than other parents. Furthermore, some research finds that parental child care increased over time. Less certain is whether more educated parents increased their time more than less educated ones did, whether parenting trends for mothers and fathers are the same, and whether observed patterns characterize all Western countries or only some. Hypotheses inspired by theories of social diffusion, class differentiation, and ideologies of child rearing are tested with time-use data for 11 Western countries between 1965 and 2012. For both mothers and fathers, results indicated a widespread educational gradient and an increase in child-care time. In a number of countries, the positive educational gradient increased; nowhere was it diminished. Thus, the advantages of intensive parenting continued to accrue to the well-educated elite.*

The time parents devote to child care is important. Children benefit from parental

interaction, notably in terms of academic achievement (Bernal & Keane, 2011; Hill, Waldfogel, Brooks-Gunn, & Han, 2005), cognition (Lugo-Gil & Tamis-LeMonda, 2008; Tucker-Drob & Harden, 2012), language acquisition (Leibowitz, 1977; Rowe, 2008), and behavior (Laird, Pettit, Bates, & Dodge, 2003; Vandell et al., 2010). Parents in several Western countries have been reported to be spending increasingly more time in child care (Bianchi, 2000; Gauthier, Smeeding, & Furstenberg, 2004; Sayer, Bianchi, & Robinson, 2004). Paradoxically, the parents who spend the most time with children seem to be more educated ones: those whose time commanded the highest earnings in the labor market (England & Srivastava, 2013; Guryan, Hurst, & Kearney, 2008; Sayer, Gauthier, & Furstenberg, 2004). Although the well educated may use higher incomes to free up time for children, their behavior is consistent with an intensive parenting ideology that promotes practices that not only benefit children but also can be considered a status marker differentiating higher from lower social classes (Lareau, 2003). Although social class is a multidimensional concept, this article focuses on the educational facet, which has figured prominently in the literature on parental child care. Because the positive educational gradient defies the logic of economic opportunity costs, it points up the need to consider education not merely as human capital but also as a pipeline for new ideas about parenting. Moving beyond prior research to a systematic analysis of country-to-country differences, this article asks

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how parents' education has figured in changes in the time mothers and fathers spend caring for children.

Trends over time in the positive educational gradient in parental child care are not entirely understood. Higher social classes are typically the first to adopt new practices (Rogers, 1962). Thus, we would expect to find increases over time in the educational gradient as the more educated increase their time with children. But innovations diffuse eventually to lower social classes. We would expect less educated people ultimately to narrow the education gap in child-care time by adopting the intensive parenting practices of their more educated counterparts. If this parenting style consequently loses its status-conferring association with the elite, the more educated might retreat from intensive parenting. Even a negative educational gradient is a possibility, because the better educated have the means to outsource child care to paid helpers. Whether the educational gradient is increasing or decreasing may well depend on when intensive parenting practices were introduced into different societies. A historical account of the rise of intensive mothering in the United States outlines such developments (Hays, 1996), but the onset of such parenting has not been established across countries for mothers and for fathers.

Drawing on surveys from the Multinational Time Use Study for 11 Western countries between 1965 and 2012, this article has three main objectives. First, we develop and test alternative hypotheses regarding parents' child-care time that are informed by theories on diffusion of innovations, class differentiation, and cultural ideologies of child rearing. Second, to clarify trends and differentials in parent time spent caring for children, we move beyond piecemeal and sometimes conflicting findings with a systematic, cross-national analysis of a comparatively large and diverse set of 11 Western countries. Third, for these countries, we ask whether more educated mothers and fathers have increased the time they spend in child care to a greater extent than their less educated counterparts. That is, we ask whether the positive educational gradient is increasing and whether an increase is occurring everywhere. Because parental time is linked to many positive child outcomes, any growth in the gap in parental time in child care has serious implications for the perpetuation of inequality across generations.

## BACKGROUND

Parenting norms have undergone considerable change in response to new scientific evidence on child development as well as cultural shifts in relationship ideals for men and women, parents and children. Already responsible for more child care than men (Gauthier et al., 2004; Sayer, Bianchi, et al., 2004), women have been called on to do "intensive mothering," an evolving maternal ideal that is "child-centered, expert-guided, emotionally absorbing, labor-intensive and financially expensive" (Hays, 1996, p. 54). Articulating an essentialist and ecological philosophy of child well-being, the ethos of "natural motherhood" described for France justifies demanding child-rearing practices, such as lengthy breast-feeding and use of cloth diapers (Badinter, 2012). Although new child-rearing philosophies are directed explicitly or implicitly at mothers (England & Srivastava, 2013), "new fatherhood" celebrates the paternal role in child development and fathers' active engagement in children's lives (Henwood & Procter, 2003; Marsiglio, Amato, Day, & Lamb, 2000). Originally described for the United States, new fatherhood norms have been identified in other countries as well (Duyvendak & Stavenuiter, 2004; Hook & Wolfe, 2012; Kim, 2014; Svab, 2013). In the American middle class, a cultural repertoire of child rearing dubbed "concerted cultivation" encourages both mothers and fathers to prepare children for success by engaging them in time-consuming verbal interaction, reasoning, and structured enrichment activities (Lareau, 2000). Parental engagement is viewed as necessary not only to protect children in anonymous urban environments (Bianchi, 2011) but also to ensure their success in an increasingly competitive economy (Ramey & Ramey, 2009). Parenting is a valued priority. Not only did Dutch, American, and British fathers and mothers find child care more enjoyable than housework; they also reported holding higher standards for child care (Poortman & van der Lippe, 2009; Sullivan, 2013).

More and more, parents' time use resonates with contemporary parenting ideologies that emphasize high parent engagement in children's lives. According to studies on individual countries in North America and Europe (Bianchi 2000; Gauthier et al., 2004), parental time spent in child care increased over time. Similar results were reported when countries were pooled—for

example, across Canada, Denmark, the Netherlands, Finland, the United States, and the United Kingdom (Sullivan & Gershuny, 2001) or across 16 Western nations (Gauthier et al., 2004). Although pooled results did not identify whether some countries deviated from the overall trend, there were exceptions to the upward shift in parenting time. An analysis by Kan, Sullivan, and Gershuny (2011) raised questions about how closely individual countries have tracked the general increase in parents' child-care time. For 16 Western countries, they charted daily minutes of caring labor done by men and women from the 1960s into the 21st century. Caring included care of any family member, not children exclusively. Their graphic presentation clearly showed declines, not increases, in caring time for the French and Swedes, especially women, who displayed more country-to-country variation than men did in their time trajectories. Consistent with the adoption of new ideologies that cause shifts in fathers' time use, Maume (2011) estimated that 70% of the increase in U.S. fathers' time with children was due to their changing behavior and only 30% to their changing characteristics. Taken together, these piecemeal and sometimes conflicting results invited a closer look at country-specific trends in parents' investments in child care.

The increase in parental time with children was an unexpected development. In the absence of any decline in fathers' working hours (Organisation for Economic Co-operation and Development, OECD, 2014), the growth in mothers' labor-force participation pointed to competing time demands that should deter parents from devoting more time to child care (Craig, Mullan, & Blaxland, 2010; Kan et al., 2011). Employed mothers did spend less time caring for children than mothers not working for pay, but time in child care increased for American mothers and fathers, working or not, as well as for European parents (Gauthier et al., 2004; Sullivan, Billari, & Altintas, 2014). Paradoxically, women's wages related positively to their caregiving (Guryan et al., 2008; Kimmel & Connelly, 2007) but negatively to their housework (Bryan & Sevilla-Sanz, 2011; Gupta, 2006). Denying the logic of time availability and the opportunity costs of earnings forgone in child care, this behavior invites cultural explanations for historical increases in child-care time. Because parents' schooling was more consequential for child-care time than earnings

and employment constraints were, England and Srivastava (2013) argued for closer attention to child-rearing values, which are closely associated with parental education.

Parents' education is positively associated with child care (England & Saraff, 2010; Lareau, 2003; Sayer, Gauthier, et al., 2004; Sullivan et al., 2014). For educational, recreational, and travel-related activities (e.g., museum going, reading books together) associated with the concerted cultivation of the middle class, mother's education proved critical in Spain and the United Kingdom (Gimenez-Nadal & Molina, 2013) as well as in Italy (Mancini & Pasqua, 2009). This positive educational gradient in parental child care is consistent with class-based ideals of intensive parenting (Gauthier et al., 2004; Sayer, Gauthier, et al., 2004; Sullivan et al., 2014). From other perspectives, the positive gradient is surprising. Parents with more education should be disposed to do less child care, given their ability to pay for babysitters, higher employment rates, more flexible jobs, greater opportunity costs for time not spent working for pay, safer environments, fewer children, and possibly greater productivity in the time they do devote to offspring (England & Srivastava, 2013; Lyness, Gornick, Stone, & Grotto, 2012; Yamauchi & Leigh, 2011).

In the United States, the more educated logged no more time in the presence of children, but they did devote more time to direct child care (Guryan et al., 2008). Parents with more schooling are better informed on the norms and rationale for intensive parenting (Benasich & Brooks-Gunn, 1996). Conscious of the link between time investments and positive child outcomes, they engage in activities that promote children's cognitive growth (Hofferth & Sandberg, 2001; Lareau, 2000), use child-directed speech to enhance vocabularies (Rowe, 2008), and fine-tune their efforts to the child's developmental stage (Kalil, Ryan, & Corey, 2012; Gracia, 2014). Having high standards, more educated parents find it hard to locate acceptable substitutes for their own time with children (Sayer, Gauthier, et al., 2004).

Whether positive educational gradients hold for both men and women and across countries remains to be seen. A pooled analysis on Australia, Denmark, France, and Italy showed significant positive effects of fathers'—but not mothers'—higher level of education on their share of routine child care (Craig & Mullan,

2011). Whatever the parent's gender, higher education was associated with more time in basic child care in Spain but not the United Kingdom (Gimenez-Nadal & Molina, 2013). As for cognitively enriching educational child care, U.K. mothers and Spanish fathers showed no association with parental education net of the spouse's schooling, U.K. fathers a negative association, and Spanish mothers a positive one. In contrast, for Australian mothers and fathers, education had no association with the interactive, talk-based care (e.g., listening, playing games) that contributed most to children's cognitive development (Craig, Powell, & Smyth, 2014).

Studies of changes over time in the educational gradient also led to inconclusive results. A study focused on the United States reported college-educated mothers and fathers increasing their weekly hours of child care more than less educated parents (Ramey & Ramey, 2009). In Australia, by contrast, education's impact on child-care time declined and ceased to be significant (Craig, et al., 2014). In analyses with pooled U.S. and U.K. data on fathers, educated men increased their child care more than other men between 1975 and the early 2000s (Sullivan, 2010). Although there was also an increase in the paternal educational gradient in most of the seven countries considered by Gimenez-Nadal and Sevilla (2012), the results for mothers showed more cross-national variation. Large-scale, cross-national comparisons of trends in the educational gradient in child care are lacking. For 13 OECD countries, Sullivan et al. (2014) reported a greater increase in domestic time for college-educated fathers than for others, but their analysis did not consider mothers or distinguish child care from core housework activities.

Indirect evidence on education's role in trends comes from studies of particular types of child care. There is evidence of an increase in the child-oriented, enrichment activities that are favored by the middle class (Lareau, 2003). According to 1988–2002 Italian time-use data, “quality time” (e.g., helping with homework, playing) increased compared to “basic care” (e.g., supervision, physical care; Mancini & Pasqua, 2009). In Canada, the increase in child care was mostly due to parent–child interaction time (Gauthier et al., 2004). A long-run increase in interactive child-care activities was also reported for the United States (Bianchi, Robinson, & Milkie, 2006). Some evidence also

linked child-care practices to parenting ideals. In a small, Midwestern U.S. city, parents in 1924 were less likely than those in 1978 to say they preferred children's independence over strict obedience. In both years, the “business” class more so than the “working class” favored independence, behavior that presumably required the time-intensive parenting (e.g., verbal interaction, reasoning with children) associated with concerted cultivation (Alwin, 1988). Not known is whether the overall increase in parental time in child care reflected a diffusion of parenting practices from the middle to lower classes or a doubling down on intensive parenting on the part of the middle class. In other words, we do not know whether the positive educational gradient became steeper over time.

Of course, other variables predict parental time in child care (Monna & Gauthier, 2008). For example, having more and younger children is linked to spending more time in child care (Sayer, Bianchi, et al., 2004). As a result of competing time demands, employment is associated with less child-care time, as is being a nonpartnered, single parent (Bianchi, 2011). Older parents are reported to spend less time in child care (Sayer, Bianchi, et al., 2004), and mothers do less on weekends than on weekdays (England & Srivastava, 2013; Sayer, Bianchi, et al., 2004).

Across countries, key issues on parents' time in child care remain unsettled. Several studies have offered valuable insights, but results have not necessarily cumulated. In part, this reflects the difficulty in drawing comparisons from studies that have employed different measures of care, focused on different countries and time periods, adjusted for different covariates, and provided information on only fathers or only mothers. To clarify patterns in parental time in child care, including trends in the important educational gradient, systematic analysis over a large set of countries is needed.

#### HYPOTHESES

Contemporary ideologies of child rearing that emphasize time-intensive parenting are consistent not only with an increase in parental time in child care but also with the positive educational gradient that shows parents with more education doing more child care than other parents. According to the classic theory on the diffusion of innovations, new practices are embraced first by educated elites (Rogers,



1962). Stressing mundane practices and cultural capital acquired in childhood, Bourdieu's (1984) theory of class distinctions also observes that dominant upper classes dissociate themselves from lower classes by deploying unique social practices. Thus, the time-intensive parenting style of the well educated may be a means of social closure, separating elites from the masses (Weber, 1922/1978). Diffusion and distinction processes predict an increase in the positive educational gradient over time as well-educated parents double down on their time spent in child care.

We would not expect the gap in child care time between more and less educated parents to grow indefinitely. There is a ceiling to the amount of time well-educated mothers and fathers can spend with their children. Furthermore, the theory of diffusion predicts that practices adopted by elites will eventually be taken up by parents in lower social classes, portending a narrowing of the class difference in time invested in children. More educated early adopters may well retreat from child care if intensive parenting loses its cachet as a marker of elite status. Without timing information on the onset of intensive parenting, it is hard to predict a tipping point at which a widening education gap in child care would begin to narrow or a positive educational gradient turn negative. Nonetheless, this possibility cannot be discounted across nations.

In short, prior research is at odds with economic theories emphasizing economic opportunity costs. Consistent with culture-based, sociological theories emphasizing new norms of intensive child rearing, parents have increased their time in child care in at least some countries. Furthermore, more educated parents seem to do more child care than those with less schooling. We do not know whether the positive educational gradient in parental child care has increased, and if so, whether the increase is driven by developments in a few countries or many. Although both parents seem to have been subject to intensive parenting expectations, we do not know whether mothers and fathers have responded in the same way. Given the strong evidence linking parental time to a host of positive child outcomes, a pronounced shift toward more hours in child care among more educated mothers and fathers has important implications. If the educational gradient is growing, this stands to compound the advantages of children growing

up in middle-class families, thus entrenching a mechanism by which parents sustain social inequality.

The prior research on changing cultural norms for parenthood inspires hypotheses about the allocation of time to child care. First, more educated parents are more aware of the advantages of spending time with their children (Benasich & Brooks-Gunn, 1996). Thus, the education-gradient hypothesis ( $H_1$ ) holds that more educated parents will spend more time on child care than less educated mothers and fathers. Second, more educated parents may intensify their child care and/or their parenting practices may diffuse to those with less schooling. Either way, the increasing-care hypothesis ( $H_2$ ) anticipates that parents in Western countries will devote more time to child care over the years. Third, because intensive parenting practices not only contribute to positive child outcomes but also distinguish elites from lower social classes, we expect more educated parents to increase their time in child care more rapidly than other parents. This implies a widening educational gradient (increasing-gradient hypothesis,  $H_{3A}$ ). Innovations, however, eventually diffuse downward from higher social classes, losing the status marker attraction for elites as they become more widely adopted. In this case, more educated parents will not step up their intensive parenting as much as their less educated counterparts do. The decreasing-gradient hypothesis ( $H_{3B}$ ) predicts a decline in the educational gradient over time.

## METHODS

Data come from the Multinational Time Use Study (MTUS) Heritage Simple Files (Fisher & Gershuny, 2013). A harmonized collection of cross-national time-use studies recoded to provide consistent data across surveys, the MTUS is the only data set that allows for the comparative study of historical changes in time allocation. Therefore, the MTUS is the most suitable data source for analyzing changes in child care across a large number of countries and over time. The analysis focuses on parents, aged 18–65, living in households with at least one child under 13 years old. Excluding the 2.3% of respondents with missing values on independent variables leaves 122,271 observations (68,532 mothers and 53,739 fathers) nested in 11 countries.

For one or more days, respondents were asked to keep a diary recording all their activities in their own words. In terms of data quality, time-use diary results are generally preferred to survey self-reports for unpaid household labor (Schulz & Grunow, 2012). For diaries with multiple days, we randomly selected one day for each respondent. Alternative procedures (e.g., excluding multiday countries, using robust standard errors clustering days within respondents) yielded consistent results. Dating to the 1960s, the harmonized time-use surveys include a large number of countries. Given the post hoc MTUS harmonization, comparable information on two or more time points is not available for all countries. We chose the 11 countries with comparable data from multiple time points. The diversity of the countries is indicated by the range of welfare-regime types (Esping-Andersen, 1999): Canada, United Kingdom, and United States belong to the liberal welfare regime; Denmark and Norway are so-called social democracies; France, Germany, and the Netherlands are part of the conservative group; Italy and Spain are classified as “southern”; and Slovenia is representative of formerly socialist countries. Multiple time points are available for each country: Canada, 1971–1972, 1981, 1986, 1992, 1998–1999; Germany, 1992, 1993, 2001, 2002; Denmark, 1987, 2001; Spain, 1992–1993, 1997, 1998, 2002, 2003, 2008; France, 1965, 1974, 1998–1999; Italy, 1989, 2002, 2003; the Netherlands, 1975, 1980, 1985, 1990, 1995, 2000, 2005; Norway, 1980–1982, 1990–1991, 2000–2001; Slovenia, 1965 (Yugoslavia), 2000–2001; United Kingdom, 1974–1975, 1983–1985, 1987, 1995, 2000, 2001, 2005; United States, 1965–1966, 1975–1976, 1985, 1994–1995, 1999–2000, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012. Some other country-years could not be used because information on independent variables was lacking.

### Variables

Top coded at 12 hours, the harmonized dependent variable for daily minutes in child care consists of feeding and preparing food for babies and children, washing, changing, putting to bed or getting up, unpaid babysitting, providing medical care, reading to or playing with children, helping with homework, and

supervising. The variable includes both interactive child care and routine child care, because only a few countries disaggregate by type of activity.

To test the education-gradient hypothesis ( $H_1$ ), a dummy independent variable contrasts higher education (postsecondary education) and lower education (incomplete or completed secondary education), the omitted reference category. Survey year captures changes in parental time for the increasing-care hypothesis ( $H_2$ ). The variable is centered at its median to facilitate the interpretation of the intercepts. An interaction between survey year and parent's education tests the hypotheses on increasing and decreasing gradient ( $H_{3A}$  and  $H_{3B}$ ), which anticipate alternative results for changes over time in child-care time by education.

Controls include important respondent characteristics: age (mean centered), partnership status (*not living with partner* = 1; *other* = 0), number of children younger than age 13 in the household, age of the youngest child (5–12 years, with 0–4 as the omitted reference), and whether the respondent is employed (*employed* = 0, *not employed* = 1). We also controlled for whether the diary day was a weekend day (1) or weekday (0). Table 1 reports summary statistics by country and gender and for the total sample.

### Models

We are interested not only in testing hypotheses regarding parental time use but also in ascertaining whether the results differ from country to country. Moving beyond the limited generalizations possible with earlier research, we take a rigorous multivariate approach with formal statistical tests for the significance of differences over time, between education groups, and for changes in the educational gradient over time. We address the cross-national consistency of results with models that allow effects to vary by country. Separately for mothers and fathers, we analyze child-care minutes using multilevel, random intercepts–random slopes models for respondents nested in 11 countries. Multilevel models are the best strategy for taking into account the nested structure of the data and for modeling the within-country versus between-country variation. Following previous time-use studies (Craig, Powell, & Brown, 2015), we apply a generalized linear model

Table 1. Descriptive Statistics for Mothers and Fathers, by Country and Total

	Mothers											
	CA	DE	DK	ES	FR	IT	NL	NO	SL	UK	US	Total
Child-care minutes per day	109.29	102.24	77.53	95.33	106.10	74.24	91.66	122.49	80.61	97.85	104.30	98.48
Age (18–65)	32.98	35.63	34.80	36.68	33.27	35.11	33.93	33.46	34.49	33.87	36.09	35.32
Not in a couple	0.20	0.18	0.15	0.16	0.13	0.11	0.08	0.12	0.16	0.24	0.29	0.21
Number of children	1.94	1.81	1.85	1.72	1.70	1.77	2.04	1.94	1.55	2.01	2.04	1.92
Youngest child age 0–4	0.52	0.45	0.56	0.43	0.60	0.35	0.56	0.69	0.62	0.51	0.49	0.48
Youngest child age 5–12	0.48	0.55	0.44	0.57	0.40	0.65	0.44	0.31	0.38	0.49	0.51	0.52
Not employed	0.52	0.34	0.18	0.49	0.46	0.52	0.20	0.31	0.31	0.42	0.35	0.40
Weekend	0.27	0.30	0.44	0.37	0.30	0.65	0.28	0.28	0.43	0.37	0.49	0.44
Lower education	0.52	0.71	0.51	0.75	0.69	0.92	0.82	0.70	0.86	0.78	0.38	0.59
Higher education	0.48	0.29	0.49	0.25	0.31	0.08	0.18	0.30	0.14	0.22	0.62	0.41
Survey year	1988	1996	1994	2002	1989	1995	1988	1992	1991	1994	2004	1999
<i>N</i>	5,308	3,680	964	7,511	2,964	9,011	3,501	1,613	1,030	3,122	29,828	68,532
	Fathers											
	CA	DE	DK	ES	FR	IT	NL	NO	SL	UK	US	Total
Child-care minutes per day	46.46	41.58	39.83	42.43	28.83	30.96	39.27	55.48	32.41	42.74	59.44	46.74
Age (18–65)	35.38	38.26	37.48	38.88	35.48	38.23	36.04	35.83	36.10	36.52	38.18	37.70
Not in a couple	0.05	0.05	0.10	0.09	0.06	0.08	0.03	0.03	0.13	0.07	0.11	0.09
Number of children	1.98	1.85	1.91	1.73	1.69	1.78	2.07	2.02	1.55	2.03	2.05	1.92
Youngest child age 0–4	0.56	0.47	0.54	0.43	0.62	0.35	0.58	0.69	0.59	0.51	0.50	0.48
Youngest child age 5–12	0.44	0.53	0.46	0.57	0.38	0.65	0.42	0.31	0.41	0.49	0.50	0.52
Not employed	0.11	0.07	0.05	0.12	0.10	0.09	0.06	0.06	0.14	0.09	0.10	0.10
Weekend	0.27	0.30	0.42	0.41	0.30	0.65	0.31	0.32	0.45	0.37	0.50	0.45
Lower education	0.49	0.60	0.61	0.76	0.72	0.91	0.72	0.68	0.89	0.74	0.39	0.61
Higher education	0.51	0.40	0.39	0.24	0.28	0.09	0.28	0.32	0.11	0.26	0.61	0.39
Survey year	1988	1995	1994	2001	1989	1995	1989	1992	1992	1993	2004	1998
<i>N</i>	3,867	3,168	825	7,356	2,742	8,531	2,101	1,150	844	2,271	20,884	53,739

(GLM) with a log link and the gamma family. This takes into account the many mostly male respondents reporting zero time in child care and ensures that time estimates are not negative, as might occur with a linear model.

Baseline Model 0 consists of a null random intercept model with no covariates. Model 1, a random intercept with fixed slope model, adds not only control variables but also survey year and education level, which test for the time trend and the educational gradient, respectively. Model 2 introduces the interaction between year and education to determine whether the education gradient for child-care time has increased or decreased over time. To assess whether the historical changes in child care time by education exist for all countries, Model 3 also allows the interaction of education and year and the related main terms of year and education to vary by country.

## RESULTS

Multilevel results addressed, first, the hypotheses for the main effects of education and survey year. This established whether, net of covariates, mothers and fathers in this set of 11 countries showed the predicted positive education gradient ( $H_1$ ) and the anticipated increase over time ( $H_2$ ) in daily minutes devoted to child care. Formal tests assessed whether the educational gradient increased ( $H_{3A}$ ) or decreased ( $H_{3B}$ ) over the period and whether this general trend described all the countries.

### *Trend and Gradient*

Table 2 reports multilevel GLM results for mothers and fathers separately. In the baseline Model 0, the random intercept terms for the average time spent on child care showed that mothers do more child care than fathers. Models 1 and 2 allowed for random intercepts and fixed

Table 2. Multilevel Generalized Linear Models Predicting Child-Care Minutes Daily for Mothers and Fathers: 11 Countries, 1965–2012 (Unstandardized Gamma Coefficients)

	Model 0		Model 1		Model 2		Model 3	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Intercept	4.570*** (0.047)	3.734*** (0.102)	4.782*** (0.038)	4.044*** (0.072)	4.774*** (0.038)	4.036*** (0.073)	4.768*** 0.060	3.976*** (0.125)
Year (median centered)			0.014*** (0.001)	0.028*** (0.001)	0.013*** (0.001)	0.027*** (0.001)	0.021** (0.007)	0.028** (0.011)
Higher education			0.199*** (0.010)	0.345*** (0.017)	0.207*** (0.010)	0.354*** (0.017)	0.191*** (0.035)	0.368*** (0.030)
Higher education × Year					0.005*** (0.001)	0.003* (0.002)	0.001 (0.001)	0.002 (0.003)
Variance of the random components								
Residual	1.190	2.603	1.237	2.965	1.239	2.963	1.236	2.974
Country	0.025	0.113	0.014	0.051	0.014	0.052	0.037	0.163
Year (median centered)							0.001	0.001
Higher education							0.010	0.007
Higher education × Year							0.001	0.001
AIC	749,065	471,051	739,010	464,934	738,988	464,931	738,481	464,630

Note. Standard errors in parentheses. AIC = Akaike information criterion. Models 0–2 are random intercept models. Model 3 allows random intercepts and random slopes. Models 1–3 control for age, partnership status, number of children, age of youngest child, employment status, and day of week.  $N$  mothers = 68,532;  $N$  fathers = 53,739.

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$  (two-tailed tests).

slopes. In both models, net of covariates, the positive and significant coefficients for survey year ( $p < .001$ ) confirmed that daily minutes in child care increased over time for both fathers and mothers across the 11 countries ( $H_2$ ). To get a sense of the magnitude of the increases in caring time, we calculated predicted time in child care from Model 1 setting at their sample means the other covariates. While the mean time the average mother in the 11 countries spent daily on child care in 1965 was calculated to be about 54 minutes, it increased to a predicted 104 minutes by 2012. For fathers, the estimates increased from a scant 16 minutes daily in 1965 to 59 minutes in 2012.

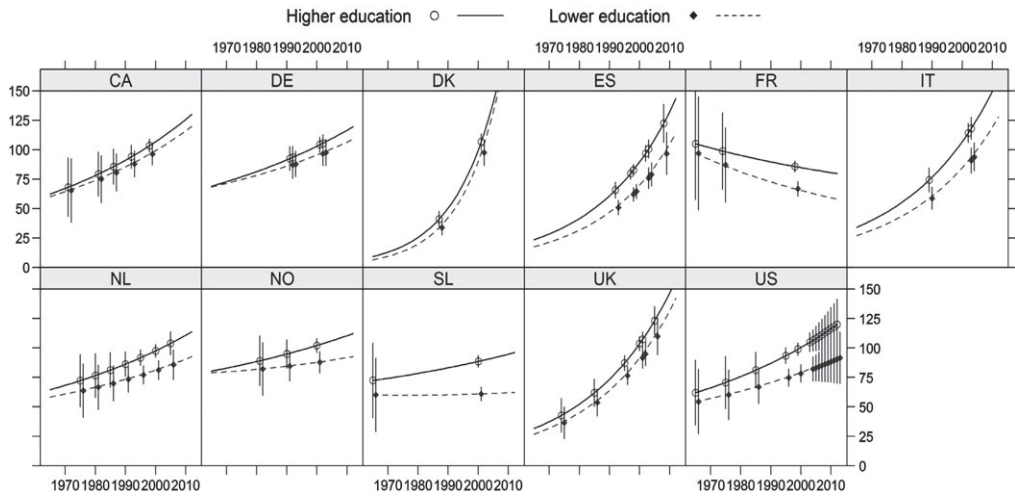
Now, consider the educational gradient. Adjusting for covariates, both models showed that more educated mothers ( $p < .001$ ) and fathers ( $p < .001$ ) spent more time on child care than parents with less education ( $H_1$ ). The results were consistent with a positive educational gradient. Comparing Models 0 and 1, note that the variance of the country-level intercept was reduced when education and time were included, underscoring the importance of these variables for mothers' and fathers' child-care time. Setting the covariates to their

overall sample means, we estimated that more educated mothers devoted 18 more minutes to child care than did mothers with less schooling. More educated fathers spent 16 more minutes in child care than other fathers.

In Model 2, the interaction between survey year and education tests whether the gradient was increasing ( $H_{3A}$ ) or decreasing ( $H_{3B}$ ), that is, whether the better educated increased their child-care minutes more or less than other parents over time. The positive and significant interaction between higher education and year ( $p < .001$  for mothers,  $p < .05$  for fathers) was consistent with an increase in the education gradient ( $H_{3A}$ ). Over the decades, more educated parents in the pooled data adopted intensive time-use patterns that further differentiated them from parents with less education. At the beginning of the period, the expected time in child care was the same for mothers with more and less schooling, that is, about 50 minutes per day. By 2012, however, more educated mothers spent an estimated 123 minutes daily on child care and less educated mothers, 94. The growing educational gradient among fathers was even more striking. Reporting 18 minutes a day in 1965, more educated fathers did only three



FIGURE 1. MOTHERS' PREDICTED CHILD-CARE MINUTES DAILY BY EDUCATION AND YEAR FOR 11 COUNTRIES.



Note. The predictions and confidence intervals are calculated from Model 3. The predicted values are adjusted by setting age, partnership status, number of children, age of youngest child, employment status, and day of week at the overall sample means.

more minutes of child care than men with less schooling. By 2012, they were estimated to have done 74 minutes daily, or 24 more minutes than their less educated counterparts. Regardless of schooling, parents spent more time in child care, but the increase was greater for the more educated.

#### Country-Specific Results for Education

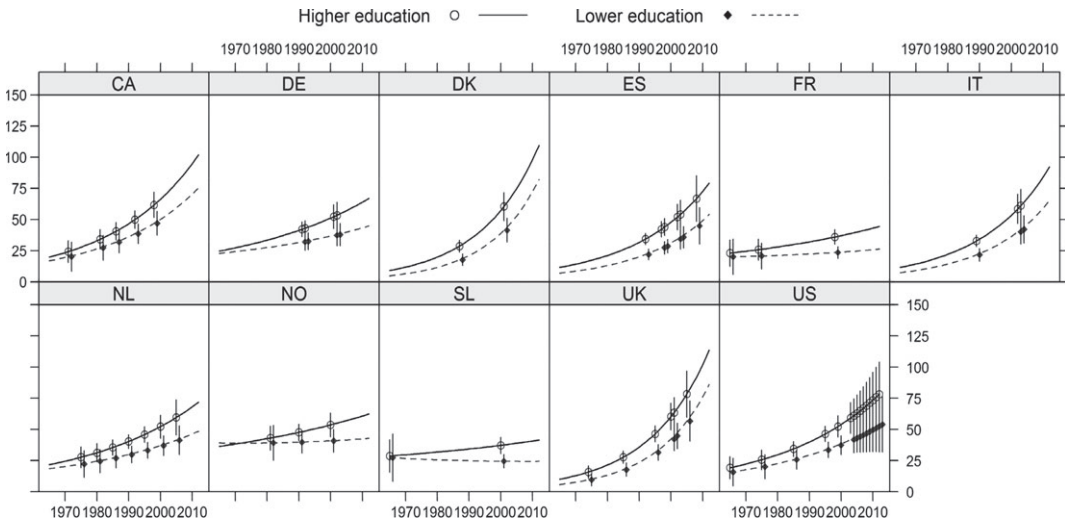
To address whether the overall increase in the education gradient in child care that we observe in the pooled analysis held for all countries, Model 3 allowed the intercept and the slopes for (higher) education, time, and their interaction to vary. Survey year ( $p < .01$ ) and education ( $p < .001$ ) were statistically significant for both mothers and fathers, again indicating both an increase in parental time ( $H_2$ ) and a positive educational gradient ( $H_1$ ). When countries were allowed to differ in slopes, however, the interaction term no longer showed a significant increase in the educational gradient over time for either parent. Apparently, the parent education gap in child-care time did not widen in all 11 countries.

To better illustrate this finding, we calculated for each country the predicted minutes in child care by education and survey year on the basis of the estimates in Model 3, which allowed year, education, and their interaction to vary. In calculating the predicted values, all

other covariates were set to the overall sample means. In Figures 1 and 2, for mothers and fathers, respectively, the plotted results show the changes over time by education, holding all other covariates at their sample means. The dots mark the survey years observed. Extrapolating over all possible time points between 1965 and 2012, we fit solid lines that show more educated parents and dashed lines that show parents with less education. For each country, any overlap in the 95% confidence bounds for survey year indicates that educational differences were not statistically significant.

In most countries, the overlapping confidence bounds were not consistent with a statistically significant educational gradient for mothers at the .05 level ( $H_1$ ), if only because the disaggregated  $N$ s were small. In no country and no year, however, were more educated mothers seen to do less child-care than their less educated counterparts. Most of the lines in Figure 1 trend upward, consistent with an increase in mothers' child-care time over the period ( $H_2$ ). Furthermore, the increase in child care was not a new phenomenon, dating to the earliest surveys (e.g., 1965–1966 in the United States). France, however, was an anomaly. Contrary to the increasing-care hypothesis ( $H_2$ ), French mothers' child-care time fell visibly over the years.

FIGURE 2. FATHERS' PREDICTED CHILD-CARE MINUTES DAILY BY EDUCATION AND YEAR FOR 11 COUNTRIES.



Note. The predictions and confidence intervals are calculated from Model 3. The predicted values are adjusted by setting age, partnership status, number of children, age of youngest child, employment status, and day of week at the overall sample means.

As for the trends in the gradient, Figure 1 shows that more educated mothers in at least some countries, notably Slovenia, but also the United States, Italy, and Norway, increased their child-care time more than other mothers did ( $H_{3A}$ ). Even in France, the educational gradient seems to have widened over time, because better educated mothers cut back on their child care less than their less educated counterparts did. In Slovenia, the positive gradient increased not only because better educated mothers stepped up their child-care time, but also because over three decades their intensive mothering practices failed to diffuse to mothers with less schooling. In other countries (e.g., Denmark), any differences by education were small, and mothers with more and less schooling tracked one another closely over time in increasing their child care. No support, however, was seen in any of the 11 countries for the decreasing-gradient hypotheses ( $H_{3B}$ ).

Figure 2 reported the predicted values for fathers in 11 countries. Less educated fathers were never seen to devote more time to child care than more educated fathers did ( $H_1$ ), but education differences were seldom statistically significant, probably because of small sample sizes. A notable exception was France, where a statistically significant positive education gradient

emerged in the late 1990s, when more educated fathers took on more child care than other fathers did. There was evidence of increases for men in all countries ( $H_2$ ), even France, where women decreased their child care. As for trends in fathers' educational gradient, some modest increase seemed to characterize all countries ( $H_{3A}$ ). There is no evidence of the theoretical mechanisms that could lead to a decline in the education gradient ( $H_{3B}$ ). Not only do no countries show a slowing increase in more educated fathers' child care; several countries (France, Norway, Slovenia) give no indication that lower education groups were beginning to catch up. In these three countries, the intensive fathering behavior of more educated fathers had yet to diffuse to less educated men.

## DISCUSSION

Both fixed- and random-effects models for 11 Western countries confirmed that mothers and fathers increased the time they spent caring for their children, as anticipated by the increasing-care hypothesis ( $H_2$ ). France, where mothers decreased their time in child care, stood out as an anomaly, but one that was also reported by Kan et al. (2011), who used a broader measure of "caring for family members." In addition

to the upward time trend, there was evidence supporting the hypothesis of a positive educational gradient ( $H_1$ ) in both random- and fixed-effects models. In general, more educated mothers and fathers devoted more minutes to child care each day than less educated ones did. The gradient was substantively important in countries such as the United States, where women with postsecondary schooling spent a half hour more each day caring for their children than did other mothers.

Less certain is whether findings were consistent with the increasing-gradient hypothesis ( $H_{3A}$ ). Fixed-effect models found the interaction between education and survey year to be statistically significant; however, random-effects models (allowing each country's historical trends to differ for parents with high education and low education) did not find a significant education-by-year interaction. If the statistical results were inconclusive (for reasons to be discussed), visual inspection of the data certainly pointed to a trend toward a steeper gradient for mothers in most countries and for fathers everywhere. Nowhere had the positive educational gradient in child care diminished, as the decreasing-gradient hypothesis ( $H_{3B}$ ) suggested. Increasing or stable gradients argued that the advantages of intensive parenting continued to accrue to the more educated elite.

In the unsettled cross-national literature on parental time use, this study's most important contribution may well be showing that the shift to more intensive parenting could not be traced only to mothers or only to fathers. With the notable exception of French mothers, both parents across countries showed similar behavior in increasing the time spent caring for children. In several countries (France, Norway, Slovenia), the child-care time of fathers with lower education was unchanged, which suggests that new fathering ideals had not yet diffused to less educated men.

Given a comparatively large number of countries with comparable data, this formal and systematic analysis has offered greater clarity than previously existed on cross-national issues of parental child-care time. Nonetheless, the existing data fell short of what was needed to detect statistically significant trends and differentials at the country level. For mothers and fathers, the 95% confidence bounds often overlapped for the two education groups. The

samples were typically too small to support statistical tests in education-by-gender analyses for mothers and fathers of young children within country-years. This was illustrated by the wide confidence intervals for the annual U.S. surveys in the 21st century. Mothers' confidence intervals also tended to be large in the early survey years, when relatively few women had postsecondary educations. Nonetheless, sensitivity tests contrasting incomplete secondary education against completed secondary or postsecondary education did not change the results. Unfortunately, because we had relatively few time points and cases, modeling any nonlinear effect of trends in the educational gradient proved problematic. Conflicting trends reported here for different countries also compromised efforts to generalize. There was, for example, the contrarian decline in mothers' child care in France, as well as the fact that some less educated parents (Slovenian mothers and Slovenian, French, and Norwegian fathers) did not conform to the general increase in time with children. These incongruities worked against finding statistical significance for trends. Our countries reflected the expedient of comparable surveys with multiple observations of harmonized data on key variables. A different set of countries might have yielded different results. Trends and differentials might well be clearer for time spent on the cognitively enriching child care that cultural theories describe as appealing to the middle class. Unfortunately, this detail was not collected in all countries and was not available in the harmonized data. Similarly, only a few countries collected data needed to evaluate how a partner's education related to the respondent's child care.

Across various country contexts, the pervasive educational gradient in parental child care, coupled with the increase in that gradient over time, provided a compelling explanation for the historical increases in parental child care that have been widely reported. Mothers' and fathers' child-care time rose, in part, because those parents with the highest levels of schooling lavished more and more time on their children. This is not surprising. Not only are more educated parents more aware of the developmental payoffs to parental time with children; their intensive parenting practices confirm their privileged social status by differentiating them from parents in lower social classes. Of course,

ideas and behavior that take root among the privileged are known to diffuse eventually to the less advantaged. In most countries, less educated parents also increased their time in child care, albeit not as much as the more educated did. Although the cultural theories align with this parental behavior, this is not to deny that a lack of resources may constrain less educated parents' ability to act on intensive parenting norms. Any downward diffusion of intensive parenting has yet to deter more educated parents' efforts. They show no sign of hitting a ceiling on child-care time or of abandoning practices that might have been losing their cachet as a marker of higher social class. Greater time investments in child care by parents with less schooling may even encourage the most educated parents to escalate their own involvement in order to maintain a relative advantage for their children.

This article builds on neglected cultural explanations for the increase in parents' time in child care. Our focus on social diffusion, class differentiation, and class-based ideologies of child rearing suggests hypotheses that prove largely consistent across countries with observed parental behavior. This approach brings a distinct class dimension to parental time. We know that children whose parents have less education are disadvantaged in numerous ways. This research highlights another disadvantage for children from lower classes, namely, the more limited time their parents spend caring for them. At least in some countries, trends over time in the educational gradient appear to exacerbate the intergenerational transmission of inequality.

The growth in parental time in child care shows that most parents, whatever their education, are prioritizing children in the allocation of time. Children benefit from parental time, and parents undoubtedly find children rewarding. Although parents' intensive time may be good for children, we know less about the consequences for adults of the high expectations for time-intensive parenting. Trends in child care indicate that mothers are being called on to reconcile enhanced norms of parenting with increased labor-force participation. Without particularly supportive public programs and employer policies, these conflicting demands on mothers seem to bode poorly for gender equality, workforce attachment, and occupational advancement (Abendroth, Huffman, & Treas, 2014). At the same time, fathers must

accommodate the demands of the "new father" norm, gender-egalitarian expectations for shared housework, and continuing breadwinner roles. Both the causes and consequences of intensive parenting trends merit further attention.

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