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Culture and the Spatial Dissemination of Ideas— Evidence from Froebel’s Kindergarten Movement

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Abstract

Friedrich Froebel, a German pedagogue, established the first kindergarten worldwide in Thuringia in 1839. We study the spatial dissemination of the kindergarten movement in Germany in the 19th and beginning of the 20th century. Spatial dissemination can be explained by the cultural proximity, measured by dialect similarity at the end of the 19th century, to Froebel’s place of activity. We further show that the spatial pattern of child care use is highly persistent over time. End of 19th century cultural proximity to Froebel’s place of activity can explain the spatial pattern of child care use in the 1990s and 2000s.

Keywords: culture, spatial diffusion, public child care

JEL Codes: N33; J13; Z13

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1 Introduction

The American English word *kindergarten* for a preschool educational institution has its origins in the 19th century German child care movement initiated by the German pedagogue Friedrich Froebel. While the common religious belief at that time was that children were inherently sinful, Froebel was convinced that children were essentially good and that their will should be shaped but not broken (Wollons 2000). Inspired by this educational idea, Froebel established the first “kindergarten” worldwide in Bad Blankenburg, Thuringia, in 1839. He chose the name “kindergarten” because his child care institution should be like a garden (German “Garten”) where experienced gardeners in harmony with nature should cherish children (German “Kinder”) like small plants. This idea soon diffused across Germany mainly through personal contacts with Froebel or his disciples. When the German revolution of 1848/49 failed, many Germans who supported the revolution had to leave their home country to find refuge in the United States. Amongst them were some of Froebel’s disciples who brought Froebel’s ideas with them and established the first kindergartens in the United States. These kindergartens soon found supporters and imitators across the United States.

This is just one example where anecdotal evidence suggests that personal contacts and human interactions are particularly relevant for the spatial diffusion of new ideas. Moreover, a common cultural background positively influences the probability that people meet and talk to each other; for example, Falck et al. (2012) show that cultural proximity of regions is still a crucial determinant of individuals’ migration decisions. Therefore, a common cultural background which facilitates interaction between people might also be crucial for the spatial diffusion of ideas. In this paper, we concentrate on the spatial diffusion of Froebel’s new pedagogical ideas and trace the kindergarten movement from its beginnings in the 19th century until the 2000s in a systematic attempt to find quantitative evidence for the importance of a common cultural background for the spatial diffusion of ideas.

We start our quest by explaining the spatial diffusion pattern of Froebel kindergartens within Germany at the end of the 19th and beginning 20th century by cultural similarity to Froebel’s place of activity. In order to proxy cultural similarity between counties, we exploit unique data on the similarity of local dialects spoken in the 19th century. We find that cultural similarity to Froebel’s place of activity can indeed explain the spatial distribution of Froebel kindergartens between 1843 and 1905. Thus, our results are compatible with the hypothesis

that ideas spill over through human interaction; and that human interaction needs a common basis, namely a common culture.

With this analysis, we contribute to the literature on the spatial diffusion of new ideas. However, note that the existing literature has widely used geographic distance in order to explain the spatial dissemination of innovations and inventions (e.g. Becker and Woessmann (2009) and Cantoni (2012) for Protestantism, or Dittmar (2011) for the printing press and Comin et al. (2012) for 20 major technologies), but also to explain spatial patterns in migration flows (Schwartz 1973) and trade flows (Tinbergen 1962). Thereby geographic distance is meant to be a catch-all proxy for any kind of transaction costs, e.g., travel and transportation cost, but also for social interaction. Using historic dialect data as a measure for cultural similarity between places allows us to disentangle the latter from pure distance-related transaction costs.

Proceeding to the end of the 20th and start of the 21st century, we show that the historical spatial distribution of kindergartens in Germany is highly persistent over time. In particular, we find that mothers living today in counties which are culturally more similar to Froebel's place of activity are more likely to use public child care for their youngest child. Precisely, a one standard deviation increase in cultural similarity to Froebel's place of activity increases the likelihood of using public child care by roughly 6 percentage points. This result is robust to the inclusion of individual-level and county-level control variables. This high persistence might be explained by arguing that familiarity to Froebel's ideas is transmitted over generations and thus persistent in locations culturally close to Froebel's place of activity (see e.g., Voigtländer and Voth (2012) for the persistence of anti-Semitism). Child care usage might thus be more acceptable, or even desirable, if people hold the view that external child care can be a beneficial complement to maternal care and thus foster a child's development. An alternative explanation could also be that child care institutions are long-living, i.e., locations that built kindergartens in the tradition of Froebel in the 19th century still have these kindergartens at the end of the 20th and the beginning of the 21st century. A similar point has been made by West and Woessmann (2011), who show that resistance to public schooling by the 19th century Catholic church resulted in a high private school share in predominantly Catholic countries in the 19th century which is persistent until today.

Our cultural similarity measure, i.e., the historical dialect data, stem from an encompassing language survey conducted by the linguist Georg Wenker between 1879 and 1888. This survey was intended to provide an in-depth inquiry into language variation within the newly created German Empire. It includes detailed grammatical and phonological attributes (such as the pronunciation of consonants and vowels) of the German spoken by pupils in about 45,000 schools from all over the Empire. This data has been introduced in the economic literature by Falck *et al.* (2012), who show at length that the historical dialect data give a unique opportunity to comprehensively measure cultural differences across German regions. These authors indeed provide evidence that the geography of dialects is the outcome of an evolutionary process and—almost like a genome—stores information about historical interactions across the German regions. We combine these data with information about the location of Froebel kindergarten openings between 1834 and 1909 as well as with rich contemporaneous individual (mother)-level data on child care attendance from the German Socio Economic Panel (SOEP).

The remainder of the paper is organized as follows. Section 2 gives detailed background information on Froebel’s kindergarten movement. Section 3 introduces our historical data on dialects as well as historical and recent data on child care in Germany. Section 4 presents our empirical results on the relevance of cultural proximity to Froebel’s ideas for the prevalence of child care institutions from the 19th century until today. Section 5 concludes.

2 Froebel’s kindergarten movement

2.1 Child care institutions before Froebel

At the end of the 18th century, the so-called “Bewahranstalt” was the only established day-care facility for children at pre-school age in the territory which should later become Germany. The name “Bewahranstalt” already suggests that it was mainly an institution where children at a minimum age of two could virtually be “stored”, often for 12 hours a day. A “Bewahranstalt” was mostly located in one big room with one person to look after the children. Hygiene played a big role due to childhood diseases and other illnesses. In most institutions children were also offered a simple warm meal at lunchtime. However, the child-minder was not specially trained for her job and her only aim was to keep the children quiet rather than support their development and socialisation (Konrad 2004). As such, a

“Bewahranstalt” was not a well-accepted child care institution supporting child development but merely a lender of last resort for lower class women who could not always care for their children on their own, such as day-laborers, prostitutes, or field workers. Typically, a “Bewahranstalt” was completely publicly funded.

With the beginning of the 19th century, infant schools were established for three to seven year old children. In contrast to the “Bewahranstalt”, infant schools had a clear educational target: children should start to learn letters and counting and be introduced to bible reading (Konrad 2004). On average, 65 to 80 children were educated in one big classroom. Funded mostly by the church or other charitable and religious societies, infant schools were mainly offered to and drawn on by poor and needy women or families. Women from the bourgeoisie, to the contrary, did not rely on these infant schools but rather trusted house maids with the care and education of their pre-school children.

2.2 Froebel’s innovative approach to child care

The real peculiarity of the development of child care facilities in Germany was the establishment of so-called “kindergartens”, a name coined by their inventor Friedrich Froebel. These “kindergartens” should not be mere “storage” institutions for children of disadvantaged women but pedagogical child care centers where fostering children’s development was at the core of the whole concept. The name “kindergarten” was chosen by Froebel because this child care institution should be like a garden (German “Garten”) where experienced gardeners in harmony with nature should cherish children (German “Kinder”) like small plants. Additionally, there was always a virtual garden attached to the building of the day-care facilities so that children could spend time in nature (Konrad 2004). This approach stood in clear contrast to the prevailing view at that time that children were inherently sinful and that their will must therefore be broken in order to educate them (Wollons 2000).

Friedrich Froebel was born in the tiny village Oberweissbach, Thuringia, in 1782 as a son of an evangelic pastor. Froebel’s mother died soon after his birth and therefore he was raised by domestics and later by his stepmother. In 1805, Froebel became employed as a teacher in a reform school in Frankfurt. It was then when he started to study the ideas of the Swiss pedagogue Pestalozzi (1746-1827). In the following years, Froebel visited Pestalozzi twice at

his famous institute for education in Switzerland and even spent two years there. After fighting in the anti-Napoleonic wars, he returned to Thuringia as he felt obliged to care for his three nephews who had lost their father. There, in Griesheim, he founded the "Allgemeine Deutsche Erziehungsanstalt", a boarding school following Pestalozzi's ideas in 1816. In the following year, the educational institution was moved to Keilhau near Rudolstadt, Thuringia. Froebel stayed at Keilhau and managed the institute until 1831 when he moved to Switzerland where he wanted to realise similar projects. As the head of an elementary school and an orphanage in Switzerland, Froebel developed his revolutionary idea of a pre-school education for children. He wanted to establish maternal education methods which should support children in their development, for example by using songs and pictures. In order to realise this idea, Froebel gave up his job in Switzerland and moved back to his roots in Thuringia where, in 1839, he founded the first kindergarten in Bad Blankenburg (Konrad 2004) and, in the following year, the second one in nearby Rudolstadt (Weiland 1983). Both places are situated in today's county Saalfeld-Rudolstadt, Thuringia. By 1847, seven kindergartens applying Froebel's methods had been built up in Germany. Apart from the kindergartens, Friedrich Froebel also established a seminar to educate kindergarten teachers in Bad Liebenstein, which lies in today's Wartburgkreis, the neighboring county of Saalfeld-Rudolstadt. Ida Seele, arguably Froebel's favourite student, soon became known as the first "Kindergaertnerin" (kindergarten teacher) worldwide. However, in 1851, Karl Otto von Raumer, minister of education and the arts in Prussia, banned kindergartens by law. Raumer referred to the "destructive tendencies" [of kindergartens] with respect to religion and politics" and claimed that the kindergarten was part of a conspiracy, a socialistic system, which wanted to educate children to atheism. However, it is controversial until today if this action was part of the restrictive politics of the time after the revolution, or if Friedrich Froebel was mistaken for his nephew Karl Froebel, an ardent supporter of the German revolution (Aden-Grossmann 2002). It is also discussed whether this law should mainly keep women at home caring for their children and ensure that they stay away from other jobs (Weiland 1983). The ban of kindergartens lasted for nine years; this was not enough to stifle the movement.

2.3 The spread of Froebel's kindergartens

The spread of kindergartens and kindergarten teacher institutes in Germany mainly worked through personal contacts with Froebel or his disciples and through the foundation of societies. By 1877, twenty kindergarten teacher training institutes had been established, the most famous one by Friedrich Froebel's grandniece Henriette Breymann in Berlin. The institute was called Pestalozzi-Froebel House and not only included a training institute but also a kindergarten. Educators from all over the world visited and studied at the Pestalozzi-Froebel House (Allen 2000). Interestingly, teachers educated in the Pestalozzi-Froebel House in Berlin established the first kindergartens in Palestine (Wollons 2000).

Particularly important in the dispersion of the kindergarten idea was the German Froebel Society ("Deutscher Froebelverband" – DFV) which did a lot of determined lobbying in favour of the kindergarten (Konrad 2004). From 1859 on, this association planned the expansion of the kindergarten starting from Froebel's home county Saalfeld-Rudolstadt (Thuringia) and offered conferences for kindergarten teachers as well as public exhibitions where people could get in touch with Froebel's methods. In the beginning, the German Froebel Society was just a loose association of kindergartens and societies in Thuringia in Bad Blankenburg, Weimar, Eisenach, Gotha, Erfurt, and Jena. In 1867 the society assimilated further local and regional societies which were not only located in Thuringia but all over Germany. In 1873, there were societies and kindergartens in Hof (Bavaria), three institutions in Berlin and one in Danzig (today's Poland) associated with the Froebel society. One year later, Froebel societies of Breslau (today's Poland), Iserlohn (Northrhine-Westphalia), Speyer (Rhineland-Palatinate) and Munich (Bavaria) joined the DFV. In 1878, Heidelberg (Baden-Wuerttemberg), Kaiserslautern (Rhineland-Palatinate), and Koenigsberg (today's Kaliningrad in Russia) followed (Carstens 1998). In 1895, the association published a general course of instruction for kindergartens, which was a shining example for public pre-school education. When in the 1910s public and communal child teacher seminars were founded, Froebel pedagogics were an integral part of it (Konrad 2004). Froebel societies also played an important role in funding the kindergartens. They raised money from membership fees, donations, charity events, testamentary donations and the so-called "Spendenbuechse" (= donation box) which was located in the institutions and interested visitors were quietly asked for a donation.

Given the prevailing resentments towards child care facilities in the early 19th century, probably the biggest success of Friedrich Froebel was the fact that now especially richer, bourgeois families were attracted to his methods and often funded the establishment of Froebel kindergartens in their neighbourhood. Child care institutions were now not longer seen as mere “child storage facilities”. Rather, Froebel made people realize that child care institutions can foster children’s development and thus provide a valuable complement to maternal child care. In the 19th and early 20th century, Froebel kindergartens constituted still a minority of child care institutions. Political and religious conservatives often opposed the kindergarten movement, amongst others because the women’s movement discovered the occupation of a kindergarten teacher as a means to foster women’s economic independence (Allen 1988). Indeed, Helene Lange, Auguste Schmidt, and Marie Loeper-Housselle – three protagonists of the first wave of the women’s movement in Germany - intensively studied the work of Friedrich Froebel. Subsequently, they founded the German female teacher association (*Allgemeinen Deutschen Lehrerinnen Verein (ADLV)*) in Friedrichroda (Thuringa) in 1890, and Marie Loeper-Housselle even founded the first Froebel-kindergarten in Alsace where she lived since her marriage in 1862 (Artaria 1894). By 1920, Froebel’s methods “had become standard in almost all pre-school institutions” in Germany (Allen 2000).

During the Nazi regime, kindergartens in Froebel’s sense were condemned again because they encouraged “softness, sensitivity, and intellectual precocity” (Allen 2000); this stood in contrast to the idea of the Nazi regime to “raise a hardened generation – strong, reliable, obedient and decent” (Benzing 1941 quoted by Allen 2000). Accordingly, in 1934, the German Froebel Society’s president was dismissed and replaced by Nazi educator Hans Volkelt, while kindergartens were converted according to the Nazi regime’s needs. However, the Nazi regime never officially favoured kindergartens but regarded maternal care as the “ideal form of child rearing” (Allen 2000). The only reason why the number of kindergartens increased during that time was the demand for women’s work.

After World War II, Germany was separated into the Democratic Republic of Germany (socialist East Germany) and the Federal Republic of Germany (market-oriented West Germany). The original ideas of Froebel and the true value of kindergartens were gradually rediscovered (Allen 2000). Already in 1946, kindergartens were officially included into the educational system as a “pre-school institution” by the East German School Law. As a consequence, we saw a massive expansion of kindergartens in East Germany. However, this

expansion was largely motivated by the intention of the socialist regime to indoctrinate children already very early in life with the socialist propaganda. In West Germany, the idea of having universal public kindergartens was long resisted by conservatives who argued that the family “should not be relieved of its primary responsibility” by such a system (Soziographisches Institut 1962 quoted by Allen 2000). This view went hand in hand with policies that rather supported the traditional male breadwinner model. However, from the 1970s at the latest, kindergartens have become a well-accepted part of the educational system also in West Germany (Allen 2000). Today, the value of public child care is undisputed and the argument that public child care can foster children’s development is prevalent in virtually all discussions on public child care and early childhood education.

Interestingly, Froebel’s ideas were even more broadly accepted and more quickly adapted in the United States or England than in Germany, while they were hardly taken up at all in France, at that time a country with a general “culture hostile to Germany” (Allen 2000). After the German revolution of 1848, many liberal Germans, supporters of the revolution, had to leave their home country for exile. Many of those moved to the United States, amongst them also some of Froebel’s disciples. Thus, Froebel’s idea of the “kindergarten” reached the United States. The first US kindergarten was founded in Wisconsin in 1854 by Margarethe Meyer Schurz, one of Friedrich Froebel’s students. However, she was by far not the only one to build up Froebel style kindergartens in the United States. The language of instruction in these “kindergartens” was German. And this was the reason why many of these early institutions for pre-school education were closed in World War I (Allen 1988, 1996). The first English-language kindergarten in the US was founded in Boston in 1860 by Elizabeth Peabody after she got acquainted with Froebel’s methods. Some years later, after a visit to Germany to closely study Froebel’s methods, she opened many new kindergartens and, in 1877, organized the American Froebel Union, of which she was also the first president.¹

3 Data on child care and cultural similarity to Froebel’s place of activity

We would like to address the question whether proximity to Froebel’s ideas can explain the spatial diffusion pattern of the first kindergartens within Germany at the end of the 19th and beginning 20th century. Further, we are interested in whether proximity to Froebel’s ideas

¹ <http://www.froebelweb.org/images/peabody.html>

can still explain public child care usage at the end of the 20th and the beginning of the 21st century. This might be the case if familiarity to Froebel's ideas makes child care usage (already for rather young children) more acceptable, or even desirable, if people hold the view that external child care can be a beneficial complement to maternal care and thus foster a child's development. An alternative explanation could be that child care institutions are long-living, i.e., locations that built kindergartens in the tradition of Froebel in the 19th century still have these kindergartens at the end of the 20th and the beginning of the 21st century.

In order to address the question whether a region's proximity to Froebel's ideas was indeed a determinant of early kindergarten foundations, we need a variable measuring how intensely a region was connected to Saalfeldt-Rudolstadt, Froebel's place of activity, in the early 19th century. The more intense the contact to Saalfeldt-Rudolstadt, the more likely a region should have got acquainted with Froebel's ideas. Let us define this connectedness between regions, which might have gradually emerged over centuries and is therefore deeply rooted in history, as cultural similarity (Guiso et al. 2009). Our measure of cultural proximity to Froebel is based on extraordinarily rich historical dialect data from the 19th century which have been introduced into the economic literature by Falck et al. (2012) and have already been used by Bauernschuster et al. (2012). As is discussed at length in Falck et al. (2012), dialects are the outcomes of an evolutionary process and store—almost like a genome—information about historical interactions that occurred over centuries in the area of today's Germany. Common religious history, political borders, unique historical events, previous mass migration waves, etc., all left some long-lasting imprints on local dialects structures. A higher degree of dialect similarity between any two regions indicates that those regions had more intensive interaction in the past resulting in a common culture (Michalopoulos 2012). And this is exactly what we would like to have when it comes to measuring cultural distance to Froebel.

Our unique linguistic data were collected in a comprehensive language survey conducted by the linguist Georg Wenker between 1879 and 1888. The survey was intended to be an in-depth investigation of language variation within the newly created German Empire. At the time the survey was conducted, a standardized national language (Hochdeutsch) had not yet become prevalent; in fact, people even from neighboring villages sometimes were not able to properly communicate with each other. The survey asked pupils to read 40 German

sentences, designed to reveal specific linguistic features, in their local dialect. In an extensive evaluation process, linguists have determined 66 prototypical characteristics that are most relevant for structuring the German language area. These characteristics have to do with the pronunciation of consonants and vowels as well as with grammar. These 66 characteristics are matched to Germany's current administrative classification scheme to quantify each region's dialect and to construct a dialect similarity matrix across all 439 regions.

Using these historical dialect data, we compute a variable which, for each and every county of Germany, depicts the dialect similarity to Saalfeld-Rudolstadt, Froebel's place of activity. Figure 1 presents a graphical overview of the emerging pattern. As expected, we see that geographic distance plays an important role for dialect similarity between Saalfeldt-Rudolstadt and a specific county. However, it also becomes evident that there is far more to our dialect measure than mere geographic distance.

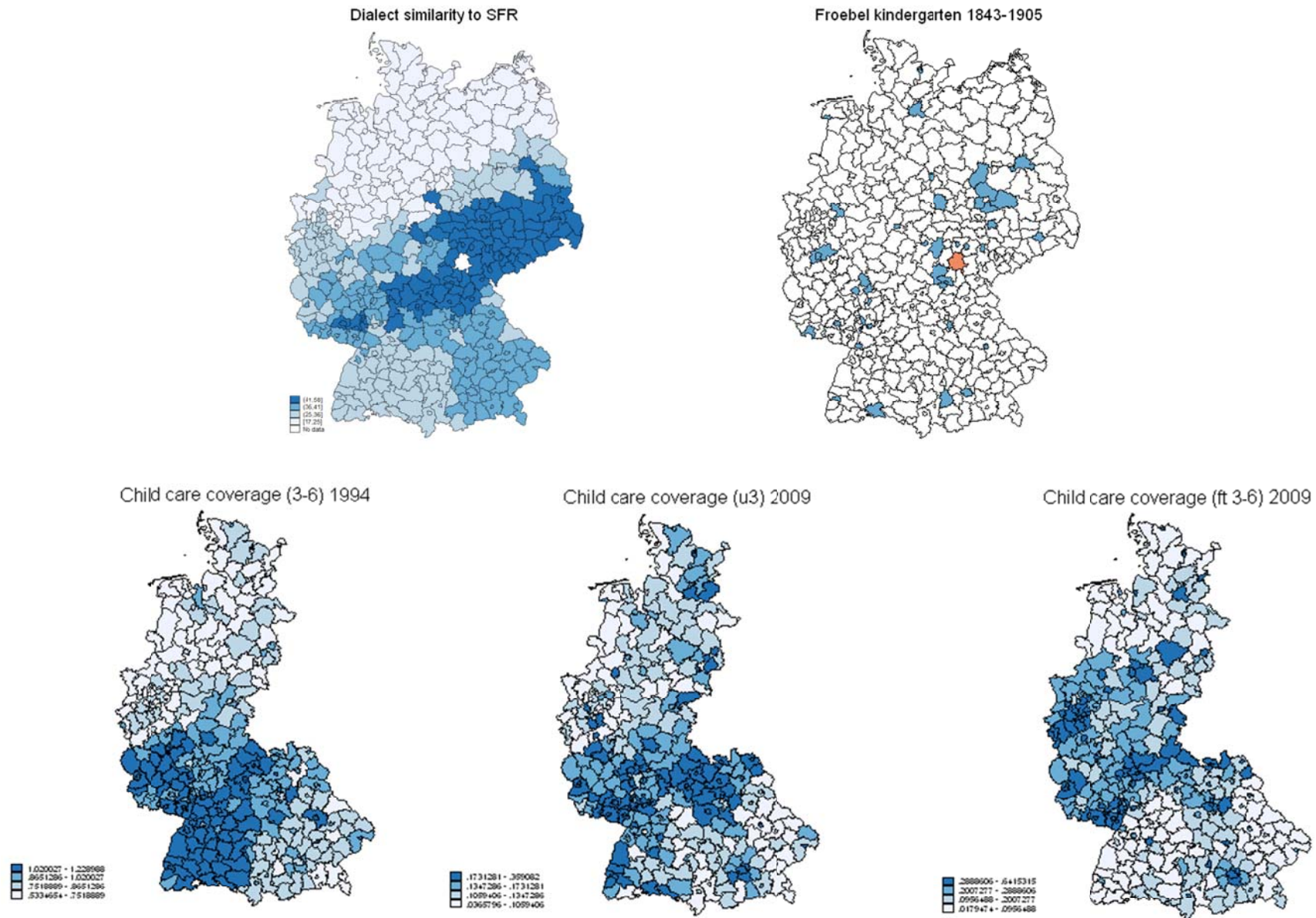
We merge these historic dialect data to different regional data sets covering information on the prevalence of child care from the 19th century until present days. The first historical child care data set provides information on the very first Froebel kindergartens in Germany. We have collected information on the existence of Froebel kindergartens in the years 1843 to 1905 from reports and personal letters by Friedrich Froebel as well as from early issues of the journal "Kindergarten" published by the German Froebel Society. In particular, in his report "Nachricht und Rechenschaft von dem Deutschen Kindergarten" from 1843, Friedrich Froebel mentions existing child care institutions employing his pedagogical concepts in Blankenburg, Dresden, Frankfurt, Gera, Rudolstadt, Hildburghausen, Coburg, and Breslau (see Lange 1862, p.478 as quoted in Heiland 1997). In a personal letter to August Haerter from 28 February 1847, Froebel refers to kindergartens in Dresden, Frankfurt, Gera, Annaburg, Quetz, Gotha, Homburg vor der Hoehe, and Luenen. Additionally, there were child care institutions applying Froebel ideas in Darmstadt and Hildburghausen (Heiland 1997). In his letter to Karoline Luise von Schwarzburg-Rudolstadt from 30 April 1847, Friedrich Froebel alludes to kindergartens in Hildburghausen, Darmstadt, Homburg vor der Hoehe, Frankfurt, Gotha, Annaburg, Quetz, Luenen, Dresden, Milau, and Darmstadt. (Heiland 1997). Apart from these reports and personal letters by Friedrich Froebel, we use data from the "Statistik der Froebelschen Anstalten im Deutschen Reiche" published in the 1895 and 1905 issues of the journal "Kindergarten". As explicitly mentioned in the magazine "Kindergarten" (vol. 5, 1895, p. 65), this data collection is the first attempt to systematically

gather information on Froebel institutions in Germany. We assign each place for which we identified an early Froebel kindergarten to the county the place is located. This allows us to merge these Froebel kindergarten data to our dialect data on the county level. A graphic overview of the distribution of early Froebel kindergartens across Germany is presented in Figure 1.

The next year for which we observe the prevalence of child care institutions is 1994. In particular, we draw on information about public child care coverage for children at kindergarten age (i.e., aged three to six) on the county level. Indeed, we have exact county-level data on the number of public child care slots from the Statistical Offices of the German Laender. At the same time, the Statistical Offices of the German Laender also publish data on the number of children aged three to six in each county. This enables us to compute public child care coverage rates on the county level and merge these data to our historic dialect data. In 1994, we still see large variation in public child care coverage for three to six year olds across West Germany (see Figure 1). We focus on West Germany because in East Germany, as relict of the socialist past, we observe universal public child care coverage without any meaningful variation throughout all counties in the 1990s. Indeed, the socialist regime of the former GDR established an extensive public child care system with universal access to public child care already for very young children. By and large, this extensive public child care system survived reunification and is still present in today's East Germany.

In order to increase public child care coverage in West Germany, in 1996, the German government introduced a legal claim to a place in kindergarten for virtually all children aged three to six. During the first years after the introduction of the legal claim, cut-off rules had to be applied because child care slots were still scarce (see Bauernschuster and Schlotter 2012). By 2002, the expansion of public child care for three to six year olds finally slowed down and reached a level where enough child care slots were available to meet the demand. Note that in the 1990s, child care facilities for three to six year old children were officially called "kindergartens" and Froebel's pedagogical ideas formed an integral part of institutionalized child care in Germany.

Figure 1: Dialect similarity to Saalfeld-Rudolstadt and historical and contemporaneous child care



Although we see full provision of public child care for three to six year old children in 2002, public child care for children younger than three was virtually non-existing in West Germany. It was not before 2005 that the German government started meaningful policy initiatives to also increase public child care coverage for under three year olds in West Germany. These initiatives triggered off an expansion of public child care coverage in the late 2000s that has not come to an end until the present day. The large expansion is indispensable since a legal claim to a place in public child care for all children aged one and above will be introduced in August 2013. We use data from the Statistical Offices of the German Laender on the number of public child care slots for under three year olds for each German county in the year 2009. Again, we can compute public child care coverage rates since the Statistical Offices of the German Laender also provide us with data on the number of children under the age of three living in each county. Figure 1 provides graphic evidence for the spatial distribution of public child care coverage for under three year olds across Germany in 2009.

For the years in which we measure early Froebel kindergartens or public child care coverage, we have also collected further county level data on regional characteristics. In particular, since the 19th century was the time of the industrial revolution in Germany, we might wish to control for a county's industry structure in our multivariate regressions covering this time period. The German workplace and population census for the year 1925 provides us with data on regional industry employment for 24 industry branches and for 97 functional regions (Raumordnungsregion). We can uniquely assign each of the 439 German districts to one of those functional regions. We then calculate an index measuring the dissimilarity between a region's industry structure and Saalfeld-Rudolstadt's industry structure as follows: i) for each industry and functional region we calculate the share of that industry in this region's total employment, ii) for all industries and functional regions we calculate the absolute value of the difference in the sectoral employment shares of the respective functional region to the sectoral employment shares of Saalfeld-Rudolstadt, iii) we sum those absolute differences across the 24 industries for all functional regions, iv) we then assign the resulting value of industrial dissimilarity to all counties within a functional region. Moreover, in order to account for unobserved but time-invariant regional heterogeneity in our regressions we have gathered information on the state to which each county belonged to during the German Confederation ("*Deutscher Bund*") from 1815 until 1866. Based on historic maps, we have assigned all counties to one of 35 states. Also for the years 1994 and 2009, we draw on

additional county level characteristics in order to minimize problems from unobserved heterogeneity. These measures include the counties' population density, GDP per capita, male employment rate, and an indicator whether the county is an urban municipality ("kreisfreie Stadt") or not. These administrative data on the county level are available from the Statistical Offices of the German Laender. A descriptive overview of all variables included in our three regional data sets is provided in Table 1.

Table 1: Regional level data: Descriptives

	N	Mean	Std.dev.
<i>1839-1909</i>			
Dialect similarity to SLF	439	34.815	10.265
Geographic distance to SLF (in meter)	439	239,131	99,606
Industry dissimilarity	439	0.142	0.108
Froebel kindergarten	439	0.096	0.294
<i>1994</i>			
<i>West sample</i>			
Dialect similarity to SLF	326	32.475	8.022
Geographic distance to SLF (in meter)	326	259,498	86,694
Public child care coverage (3-6)	326	0.882	0.156
Population density	326	433.912	664.804
GDP per capita (in 1,000€)	326	22.863	8.295
Urban municipality	326	0.276	0.448
Ratio of Catholics in 1987	325	0.475	0.274
<i>2009</i>			
<i>West sample</i>			
Dialect similarity to SLF	325	32.789	8.031
Geographic distance to SLF (in meter)	325	259,167	86,621
Public child care coverage (0-3)	325	0.142	0.050
Public full-time child care coverage (3-6)	325	0.204	0.121
Population density	325	565.865	692.904
GDP per capita (in 1,000€)	325	29.208	10.688
Employment rate (male)	325	0.611	0.060
Urban municipality	325	0.274	0.447
Ratio of Catholics in 1987	324	0.474	0.274

Note: The table shows mean values (Mean) and standard deviations (Std.dev.). Observational units are counties; Germany consists of 439 counties, of which 326 counties are in West Germany. Data source: 1895 and 1905 issues of the journal "Kindergarten" published by the Froebel Society, Heiland (1997), Statistical Offices of the German Laender.

Table 2a: Descriptives I

Variable		N	Percent
Public child care attendance	No	14,907	0.53
	Yes	13,361	0.47
	thereof at age 0	24	0.02
	at age 1	284	0.05
	at age 2	809	0.16
	at age 3	1,433	0.33
	at age 4	2,823	0.72
	at age 5	3,319	0.91
	at age 6	3,225	0.95
	at age 7	1,434	0.95
Migration background	No	20,523	0.73
	Yes	7,665	0.27
Single mother	No	25,888	0.92
	Yes	2,380	0.08
Urban municipality	No	19,105	0.68
	Yes	9,163	0.32

Note: The table shows numbers of observations (N) and percentage shares (percent).

Data source: SOEP 1985-2008.

Table 2b: Descriptives II

Variable	N	Mean	Std.dev.
Age	28,268	32.146	5.718
Years of schooling	27,602	11.693	2.564
Dialect similarity to SLF	28,268	33.319	9.605
Geographic distance to SLF (in meter)	28,268	251,177	83,547

Note: The table shows numbers of observations (N), mean values (Mean) and standard deviations (Std.dev.).

Data source: SOEP 1985-2008.

In addition to aggregated regional data, we use rich individual (mother) level data on child care attendance from the waves 1985 until 2008 of the German Socio Economic Panel (SOEP). For these waves, we have access to information on the county each surveyed household is situated; data access was granted via controlled remote data processing. The county information is vital since it allows us to merge the SOEP data with the data on cultural proximity to Froebel's place of activity, Saalfeld-Rudolstadt. We use all observations of mothers whose youngest child is not older than 7 and at the same time does not attend a school yet. For these children, we observe whether they attend public child care or not. At the same time, we draw on information about the mother's socioeconomic background, such as her age, years of schooling, migration background, and whether she has a partner or is a single mother. Table 2a and 2b provide a descriptive overview over these variables. As we can see, the probability of attending public child care steadily increases with a child's

age. While only 5 percent of all one year old children attend public child care facilities, this number increases to 95 percent for the 6 year olds. The observed mothers are on average 32 years old and have 11.7 years of schooling. 27 percent of all observed mothers have a (direct or indirect) migration background; 8 percent are single mothers. 32 percent of all observations live in an urban municipality ("*kreisfreie Stadt*"). On average, they live 250 kilometers away from the county Saalfeld-Rudolstadt (Thuringia), Friedrich Froebel's place of activity. Apart from this geographic distance to Saalfeld-Rudolstadt, we can also express the average cultural distance to Saalfeld-Rudolstadt in terms of dialect similarity. It turns out that the average mother lives in a region whose dialect has 33 out of 66 prototypical language characteristics in common with the Saalfeld-Rudolstadt dialect.

4 Evidence for the role of culture for the spatial dissemination of Froebel's ideas

4.1 County-level evidence

We start our empirical investigation of the effects of cultural proximity to Friedrich Froebel's place of activity, Saalfeld-Rudolstadt, on the dissemination of his ideas using historical county level data. To this end, we first regress the dichotomous variable indicating the presence of an early Froebel kindergarten in the 19th century on our index variable measuring the county's dialect similarity to Saalfeld-Rudolstadt in the 19th century. As can be seen from column 1 of Table 3, this bivariate regression yields a highly significant and positive coefficient. A one standard deviation increase in dialect similarity to Saalfeld-Rudolstadt increases the likelihood that a county has adopted Froebel's ideas and established a Froebel kindergarten by 4.4 percentage points. This effect remains robust even if we control for geographic distance of a county to Saalfeld-Rudolstadt. Indeed, if at all, the dialect similarity coefficient even slightly increases whereas there is no additional effect of geographic distance to Saalfeld-Rudolstadt on a county's likelihood of having established a Froebel kindergarten in the 19th century (see column 2 of Table 3). Since the 19th century was the time of the industrial revolution in Germany, we might wish to control for differences and similarities between counties' industry structure. The results of the

respective regression presented in column 3 of Table 4 show that the introduction of this control variable leaves our main result unaffected.

Even controlling for an extensive set of 35 state dummies to capture institutional differences at that time does hardly affect the estimates as can be seen in column 4 of Table 3. We still observe a statistically significant and positive effect of dialect similarity to Froebel’s place of action on the prevalence of a Froebel kindergarten. Note that this specification is already very restrictive since we only exploit within state variation in our dialect similarity index to estimate the effect of dialect similarity to Saalfeld-Rudolstadt on the prevalence of a Froebel kindergarten. We might wonder whether dialect similarity to Saalfeld-Rudolstadt merely captures nonlinearities of geographic distance to Saalfeld-Rudolstadt. However, specifications which include the square of geographic distance to Saalfeld-Rudolstadt do not change the results (column 5 of Table 3). This picture does also not change if we additionally include the cubic and quartic terms of geographic distance. Detailed results are available from the authors upon request. The results are also very similar if we only use the Froebel kindergartens reported in the official statistics from the “Kindergarten” journals from 1895 and 1905 and dismiss the information provided in Friedrich Froebel’s reports and personal letters from 1843 and 1847.

Table 3: Cultural proximity to Saalfeld-Rudolstadt and the prevalence of Froebel kindergartens 1843-1905

	FROEBEL KINDERGARTEN 1843-1905				
	(1)	(2)	(3)	(4)	(5)
Dialect similarity to SLF	0.004*** (0.001)	0.004** (0.002)	0.005** (0.002)	0.005* (0.003)	0.005* (0.003)
Geographic distance to SLF		-0.001 (0.002)	-0.001 (0.002)	0.002 (0.002)	0.011 (0.007)
Geographic distance to SLF ²					-0.000 (0.000)
Industry dissimilarity			0.273 (0.214)	0.257 (0.231)	0.234 (0.232)
Princedom dummies	No	No	No	Yes	Yes
N	439	439	439	439	439
R ²	0.022	0.022	0.031	0.215	0.218

Note: The table shows results of linear probability models; robust standard errors in parentheses. *** 1% level of significance, ** 5% level of significance, * 10% level of significance.

We have argued that the reason why Friedrich Froebel founded the first kindergarten in Saalfeld-Rudolstadt simply was that this was the county where he grew up. Therefore, Saalfeld-Rudolstadt happened to be the cradle of Froebel kindergartens by mere chance,

and not because it was, for any other reasons, a particularly suitable location. As a consequence, a county's cultural proximity to Saalfeld-Rudolstadt should also be exogenous to the innovative pedagogical ideas of Friedrich Froebel. We can investigate this assumption by looking into associations between dialect similarity to Saalfeld-Rudolstadt and other historical data. In particular, we draw on data from the Statistical Yearbook of German Cities 1904 (*Statistisches Jahrbuch deutscher Städte 1904*). This yearbook contains data on German cities with more than 100,000 inhabitants. In a first step, we analyse whether the prevalence of a major city is partially correlated with dialect similarity or geographic distance to Saalfeld-Rudolstadt. As can be seen from column 1 of Table 4, this is clearly not the case. Further, although there are not more major cities in regions which are both, culturally or geographically closer to Saalfeldt-Rudolstadt, major cities which are close to Saalfeld-Rudolstadt might be different from major cities which are (culturally or geographically) more distant to Saalfeld-Rudolstadt. To investigate whether this is true, we take the subsample of major cities and regress some selected characteristics of these cities on both the dialect similarity as well as the geographic distance to Saalfeld-Rudolstadt. Columns 2 through 4 of Table 4 indicate that neither cultural nor geographic distance to Saalfeld-Rudolstadt is correlated with the founding year of the 1st library in a city, the growth of a city's population from 1871 to 1900, and population density in 1900. Thus, these estimates provide some quantitative evidence that the cultural proximity to Saalfeld-Rudolstadt was indeed exogenous to the innovative pedagogical ideas of Friedrich Froebel and that, thus, the correlation between cultural proximity and the prevalence of early kindergartens might indeed depict the effect of cultural proximity on the diffusion of Froebel's ideas.

The Statistical Yearbook of German Cities 1904 also provides us with data on the total number of "Bewahranstalten" (child storage facilities), infant schools and kindergartens in major German cities in 1901/02. Unfortunately, the data do not distinguish between these different kinds of facilities ("Anstalten"). However, at that time, most of the 649 facilities listed in the Statistical Yearbook of German Cities were not kindergartens in Froebel's sense but rather child storage facilities and infant schools. Therefore, cultural proximity to Saalfeld-Rudolstadt should not be correlated with the total number of "Anstalten" in a city in 1901/02. Indeed, as column 5 of Table 4 shows, the correlation is not statistically different from zero, which further supports our view that the cultural proximity to Saalfeld-Rudolstadt was indeed exogenous to the Froebel's ideas.

Table 4: Exogeneity of cultural proximity to Saalfeld-Rudolstadt

	Major city	Founding year 1 st library	City growth 1871-1900	Population density 1900	"Anstalten"
	(1)	(2)	(3)	(4)	(5)
Dialect similarity to SLF	-0.001 (0.001)	7.444 (5.300)	0.004 (0.011)	1.996 (0.755)	0.090 (0.380)
Geographic distance to SLF	-0.000 (0.000)	0.001 (0.001)	0.001 (0.017)	2.048 (1.766)	0.249 (0.391)
N	439	24	24	24	36
R ²	0.001	0.166	0.009	0.075	0.013

Note: The table shows results of OLS regressions; robust standard errors in parentheses. *** 1% level of significance, ** 5% level of significance, * 10% level of significance.

Moving forward in time, we now turn to public child care coverage rates for three to six year olds in German counties in 1994. Saalfeld-Rudolstadt is situated in today's East Germany, i.e., Saalfeld-Rudolstadt was affected by the socialist regime of the former German Democratic Republic (GDR). It is well-known that the socialist regime supported female employment and established full public child care coverage already for very young children whereas the West German government rather promoted the traditional male breadwinner model. As a consequence, when East and West Germany reunified in 1990, public child care coverage was far lower in West Germany than in East Germany. To ensure that our results are not driven by a mere East-West comparison in which the socialist past acts as a confounding factor, we focus on West German counties in the following analyses. Remember that in the 1990s, child care facilities for three to six year old children were officially called "kindergartens" and Froebel's pedagogical ideas were an integral part of institutional child care in Germany.

A bivariate regression of child care coverage rates on our cultural proximity index yields a highly significant and positive effect of cultural proximity to Saalfeld-Rudolstadt on public child care coverage for children at kindergarten age. The coefficient from column 1 of Table 5 indicates that a one standard deviation increase in dialect similarity to Froebel's place of activity is associated with an 11 percentage points higher public child care coverage rate in that county in 1994. Additionally controlling for the geographic distance of a county to Saalfeld-Rudolstadt in column 2 of Table 5 does hardly affect this result. The coefficient on cultural proximity to Saalfeld-Rudolstadt remains highly significant and positive; indeed, the size of the coefficient has hardly changed. In column 3 of Table 5, we include further covariates, namely a county's population density and GDP per capita as well as a

dichotomous variable indicating urban municipalities. However, the association between cultural proximity to Saalfeld-Rudolstadt and child care coverage rates remains remarkably stable. The same holds true if we add the ratio of Catholics as covariate to the regression (column 4 of Table 5).² In further regressions, which are available from the authors upon request, we also included the square and cubic terms of geographic distance to Saalfeld-Rudolstadt in order to test whether our dialect similarity measure simply picks up any nonlinearities of geographic distance. It turns out that our dialect similarity measure does not just capture nonlinearities of geographic distance; indeed, the coefficient on dialect similarity is virtually unaffected by this specification.

Table 5: Cultural proximity to Saalfeld-Rudolstadt and public child care coverage in 1994

	CHILD CARE COVERAGE (AGE 3-6) 1994			
	West Sample			
	(1)	(2)	(3)	(4)
Dialect similarity to SLF	0.011*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)
Geographic distance to SLF		0.002*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Population density			-0.059*** (0.014)	-0.059*** (0.015)
GDP per capita			0.004*** (0.001)	0.004*** (0.001)
Urban municipality			0.004 (0.025)	0.002 (0.025)
Ratio of Catholics (in 1987)				-0.009 (0.029)
N	326	326	326	325
R ²	0.317	0.329	0.370	0.369

Note: The table shows results of OLS regressions; robust standard errors in parentheses. *** 1% level of significance, ** 5% level of significance, * 10% level of significance.

In a next step, we look at child care coverage rates for children younger than three in 2009. Again, we focus on the West German sample for the reasons discussed above. Column 1 of Table 6 shows the results of a bivariate regression of public child care coverage for children younger than three on dialect similarity to Froebel's place of activity. Again, we find a highly significant and positive association between our cultural proximity measure and public child care coverage. A one standard deviation increase in cultural proximity increases a county's child care coverage by 2.2 percentage points. Conditional on cultural proximity, geographic distance to Saalfeld-Rudolstadt is not associated with public child care coverage for children

² 1987 is the latest year, for which we have detailed information from the Micro Census on a population's religious denomination on the county level. This information is missing for the county of Hannover.

under three. At the same time, the inclusion of the geographic distance measures leaves the effect of cultural proximity on public child care coverage unaffected (see column 2 of Table 6). In column 3 of Table 6, we show that our result is robust to the inclusion of county level control variables such as a county’s population density, GDP per capita, male employment rate, and a dichotomous variable indicating an urban municipality. In column 4 of Table 6, we additionally control for the ratio of the Catholic population in that county in 1987. Also in this specification, the coefficient on cultural proximity to Saalfeld-Rudolstadt is highly significant, positive, and virtually the same as in the bivariate regression from column 1 of Table 6.

In Table A.1, we present the results of regressions where we take full-day public child care coverage for children aged three to six as the outcome variable. Again, we find a statistically highly significant, positive coefficient on cultural proximity to Froebel’s place of activity, which is robust to the inclusion of our county level control variables.

Table 6: Cultural proximity to Saalfeld-Rudolstadt and public child care coverage in 2009

	CHILD CARE COVERAGE (AGE U3) 2009			
	West Sample			
	(1)	(2)	(3)	(4)
Dialect similarity to SLF	0.003*** (0.000)	0.003*** (0.000)	0.002*** (0.000)	0.003*** (0.000)
Geographic distance to SLF		-0.000 (0.000)	-0.001** (0.000)	-0.000 (0.000)
Population density			0.002 (0.006)	0.002 (0.006)
GDP per capita			0.001*** (0.000)	0.001*** (0.000)
Employment rate (male)			-0.236*** (0.057)	-0.194*** (0.060)
Urban municipality			-0.011 (0.009)	-0.015* (0.009)
Ratio of Catholics (in 1987)				-0.045*** (0.010)
N	325	325	325	324
R ²	0.203	0.204	0.303	0.350

Note: The table shows results of OLS regressions; robust standard errors in parentheses. *** 1% level of significance, ** 5% level of significance, * 10% level of significance.

4.2 Individual-level evidence

Let us now turn to the individual level data of the SOEP. One important advantage of the SOEP data is that we can control for individual characteristics of mothers. Table 7 presents

the results of multivariate regressions where we regress public child care usage on cultural similarity to Saalfeld-Rudolstadt while controlling for geographic distance to Saalfeld-Rudolstadt, year dummies and a set of potential individual level determinants of public child care usage such as a mother's age, years of schooling, partnership status, migration background.³ For discussed reasons, we again restrict the sample to West German mothers. As Column 1 of Table 7 depicts, we find that older mothers and single mothers are more likely to use public child care, whereas mothers with a migration background and more educated mothers are less likely to use public child care. Most importantly, however, we find that mothers living in counties which are culturally more similar to Froebel's place of activity, Saalfeld-Rudolstadt, are more likely to use public child care for their youngest child. A one standard deviation increase in dialect similarity to Saalfeld-Rudolstadt increases the likelihood of using public child care by roughly 3 percentage points.

Table 7: Determinants of public child care usage

	PUBLIC CHILD CARE (yes=1, no=0)			
	West (1)	East (2)	1985-1996 (3)	1997-2008 (4)
Dialect similarity to SLF	0.003*** (0.001)	-0.000 (0.001)	0.004*** (0.001)	0.002*** (0.001)
Geographic distance to SLF	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Age	0.028*** (0.001)	0.016*** (0.002)	0.027*** (0.001)	0.030*** (0.001)
Years of schooling	-0.007*** (0.002)	0.007 (0.004)	-0.009*** (0.003)	-0.006*** (0.002)
Single mother	0.192*** (0.017)	0.037* (0.020)	0.185*** (0.024)	0.197*** (0.022)
Migration background	-0.007 (0.009)	-0.071 (0.065)	-0.014 (0.014)	-0.002 (0.012)
Year dummies	Yes	Yes	Yes	Yes
N	22,587	4,937	9,941	12,646
R ²	0.134	0.067	0.111	0.125

Note: The table shows the results of OLS estimations on the sample of mothers whose youngest child is not older than seven years old and does not attend a school; standard errors are clustered at the county level. In column (1), the sample is restricted to all mothers living in West Germany, while column (2) restricts the sample to mothers living in East Germany. In column (3), the sample is restricted to observations of West German mothers from the years 1985 to 1996, while column (4) restricts the sample to observations of West German mothers from the years 1997 until 2008. *** 1% level of significance, ** 5% level of significance, * 10% level of significance.

Data source: SOEP 1985-2008.

³ Note that we do not control for a mother's employment status since the maternal labor supply decision is itself endogenous to public child care.

As argued above, any regional differences in the supply of public child care have been levelled out by the socialist regime in East Germany. Taking this into consideration, we would not expect any strong effects of cultural proximity to Saalfeld-Rudolstadt on public child care usage in East Germany. Our results presented in Table 7 confirm this presumption. Whereas we observe a highly significant and positive association between cultural proximity to Saalfeld-Rudolstadt on public child care usage for the sample of mothers living in West Germany, the respective association for the East German sample is virtually zero.

Drawing on similar arguments, we would also expect stronger effects of dialect proximity to Saalfeld-Rudolstadt on public child care usage in West Germany before 1996 than after 1996. The year 1996 marks a decisive moment in Germany's child care policy since this year saw the introduction of a legal claim for a half-day place in public child care starting from a child's third birthday. From 1996 until 2001, public child care for three and four year old children increased steadily. In recent years, huge political efforts have been carried out in order to provide public child care also for under three year olds. In 2013, the legal claim to a place in public child care will be extended in order to also include one and two year old children. Therefore, we expect that the cultural proximity to Froebel's Saalfeld-Rudolstadt should predict public child care usage in particular before 1996, while the playground is levelled out to some extent by the political efforts to extend public child care coverage from 1996 onwards. Splitting the sample and running regressions on observations of mothers living in West Germany from 1985 until 1996 on the one hand, and 1997 until 2008 on the other hand, we also confirm this presumption. While we see highly significant and positive effects for both periods of time, the effect comes out substantially stronger for the earlier years before 1996 (columns 3 and 4 of Table 7).

From Table 2a we know that only 5 percent of all one year old children in our SOEP sample attend public child care. This number steadily increases with the child's age and reaches 95 percent for the six year olds. Therefore, we expect the association between cultural proximity to Saalfeld-Rudolstadt and public child care usage not to be the result of a scenario where some mothers never use public child care (independent of the child's age) whereas other mothers always do (independent of the child's age). Rather, the association should emerge because mothers living in counties culturally closer to Froebel's Saalfeld-Rudolstadt put their children into public child care at an earlier age. In order to test this presumption, we create a balanced panel of mothers and follow these mothers from the birth of their

youngest children until they turn six. Then, we compute the age of the child at which she first enters public child care. Regressing this entry age variable on the cultural proximity to Saalfeld-Rudolstadt, we observe a highly significant and negative association (column 1 of Table 8). A one standard-deviation increase in the cultural proximity to Saalfeld-Rudolstadt decreases the age at which the youngest child enters public child care by roughly 0.26 years on average. Introducing the geographic distance to Saalfeld-Rudolstadt in column 2 of Table 8 does hardly affect this result. Moreover, the negative association between cultural proximity to Saalfeld-Rudolstadt and a child's age at entry into public child care is also robust to the inclusion of our individual level covariates as well as the year dummies (column 3 of Table 8). Finally, in column 4 of Table 8, we restrict the sample to a balanced panel of mothers living in West Germany. Again, we find a statistically significant negative effect of dialect similarity to Saalfeld-Rudolstadt on the age at which a mother's youngest child enters public child care. However, note that the point estimate is considerably smaller for this group of mothers. This might be the result of a severe shortage of supply of child care slots for under three year olds in West Germany.

Table 8: Determinants of age at entry into public child care

	CHILD'S AGE AT ENTRY INTO PUBLIC CHILD CARE			
	Whole sample		West sample	
	(1)	(2)	(3)	(4)
Dialect similarity to SLF	-0.026*** (0.004)	-0.023*** (0.005)	-0.019*** (0.005)	-0.012** (0.005)
Geographic distance to SLF		0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Age			0.012** (0.006)	-0.009 (0.006)
Years of schooling			-0.089*** (0.012)	-0.060*** (0.012)
Single mother			-0.245*** (0.092)	-0.294*** (0.105)
Migration background			0.271*** (0.092)	0.119* (0.070)
Year dummies	No	No	Yes	Yes
N	9,270	9,270	9,081	7,657
R ²	0.040	0.042	0.155	0.101

Note: The table shows the results of OLS estimations on a balanced panel of mothers whose youngest child is older than zero years but not older than six years old and does not attend a school; standard errors are clustered at the county level. Column (4) restricts the sample to a balanced panel of mothers living in West Germany. *** 1% level of significance, ** 5% level of significance, * 10% level of significance.
Data source: SOEP 1985-2008.

5 Conclusions

Friedrich Froebel, a German pedagogue, established the first kindergarten worldwide in Thuringia in 1839. We study the spatial dissemination of the kindergarten movement in Germany in the 19th and beginning of the 20th century to analyze whether a common cultural background facilitates the spatial diffusion of ideas by making interaction between people more likely. Using historical data on local dialects to proxy cultural similarity, we provide evidence for the relevance of human interactions for the spatial dissemination of Friedrich Froebel's new kindergarten idea. The spatial dissemination of Froebel's pedagogical idea did not happen in concentric circles around his place of activity but followed a pattern which can be explained by the cultural proximity, measured by dialect similarity at the end of the 19th century, to Froebel's place of activity.

Second, we trace the child care movement from its beginnings in the 19th century until the 2000s. We show that the spatial pattern of child care use is highly persistent over time. End of 19th century cultural proximity to Froebel's place of activity can explain the spatial pattern of child care use in the 1990s and 2000s. This high persistence might be explained by either arguing that familiarity to Froebel's ideas is transmitted over generations and thus child care usage might be more acceptable or that child care institutions are long-living, i.e., locations that built kindergartens in the tradition of Froebel in the 19th century still have these kindergartens at the end of the 20th and the beginning of the 21st century. Further research is needed to disentangle these two channels.

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Appendix

Table A.1: Cultural proximity to Saalfeld-Rudolstadt and full-day public child care coverage in 2009

	FULL-DAY CHILD CARE COVERAGE (AGE 3-6) 2009			
	West Sample			
	(1)	(2)	(3)	(4)
Dialect similarity to SLF	0.004*** (0.001)	0.003*** (0.000)	0.003*** (0.001)	0.003*** (0.001)
Geographic distance to SLF		-0.001 (0.001)	-0.002*** (0.001)	-0.002*** (0.001)
Population density			0.082*** (0.014)	0.084*** (0.015)
GDP per capita			0.001 (0.001)	0.001 (0.001)
Employment rate (male)			-0.364*** (0.105)	-0.351*** (0.111)
Urban municipality			0.011 (0.022)	0.007 (0.022)
Ratio of Catholics (in 1987)				-0.012 (0.021)
N	325	325	325	324
R ²	0.065	0.068	0.465	0.467

Note: The table shows results of OLS regressions; robust standard errors in parentheses. *** 1% level of significance, ** 5% level of significance, * 10% level of significance.