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**PRESCHOOL CHILD CARE AND CHILD WELL-  
BEING IN GERMANY: DOES THE MIGRANT  
EXPERIENCE DIFFER?**

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# Preschool child care and child well-being in Germany: Does the migrant experience differ?

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## Abstract

*Because the value of preschool child care is under intensive debate among both policy-makers and society in general, this paper analyzes the relation between preschool care and the well-being of children and adolescents in Germany. It also examines differences in outcomes based on child socioeconomic background by focusing on the heterogeneous effects for migrant children. Our findings, based on data from the German Health Interview and Examination Survey of Children and Adolescents, suggest that children who have experienced child care have a slightly lower well-being overall. For migrant children, however, the outcomes indicate a positive relation.*

*JEL Classification:* J13, J15, I28

*Keywords:* Child care, migrants, preschool, well-being, education inequality

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## 1. INTRODUCTION

In Germany, the use of preschool child care ranks high on the political agenda and is the subject of an ongoing public debate about its implications for child and family outcomes. Whereas advocates highlight the importance of sufficient public child care to promote female employment and provide equal educational opportunity across social strata, opponents consider the familial environment most beneficial for child development. Because certain political groups are currently promoting legislation to make participation in preschool child care mandatory rather than voluntary, a better understanding of its outcomes is essential.

Although the share of parents who use child care has risen during past decades, discussion of the short and long term effects of its use in the early years is ongoing in both academic and general discourse. Evaluating these effects is important because parents need to know the risks and benefits of early care in order to provide their children with the best opportunities possible, whereas policy-makers need to evaluate its economic and social costs in order to make subsidization decisions that benefit society.

The child care discussion is also related to the recent debate on migrant integration into Germany as increased migration and ethnic segregation raise questions about how to foster migrant children's chances for economic and personal success. Because these children tend to come from families with low socioeconomic status and limited German language skills, they are often disadvantaged. Hence, participation in preschool child care is often promoted as a tool to improve integration into and acculturation to both the public school environment and German society as a whole (Crosnoe 2007; Dhuey 2011; Spiess, Büchel, & Wagner 2003). In this paper, therefore, we investigate the relation between experiencing preschool child care in Germany and well-being among children and adolescents, especially those from migrant families. The overall aim is to determine whether and to what extent children benefit from the

early child care experience. We begin the discussion by outlining the institutional background in section 2, reviewing the pertinent literature in section 3, and describing our methodology and data in section 4. We report the results of our estimations in section 5 and conclude with a discussion of policy implications in section 6.

## **2. INSTITUTIONAL BACKGROUND AND PRESCHOOL CHILD CARE IN GERMANY**

Preschool child care in Germany is organized into two phases based on child age. Between six months and three years, children can go to nursery school (Kindertagesstätte, henceforth Kita), after which they usually transfer to kindergarten before going to elementary school at around age six. Whereas regular schooling is compulsory, preschool child care is voluntary and allows families to choose a range of options from infrequent morning care to full day care during the work week. Although some families rely solely on home-based preschool education, most parents send their children at least to kindergarten (Statistisches Bundesamt 2012).

Hence, in 1996, the government passed a law that grants lawful entitlement to kindergarten access for all children from age three until elementary school. However, the provision of child care has traditionally been a local responsibility of the federal states (Evers, Lewis, & Riedel 2005). Preschool child care is usually higher in Germany's eastern region because of its close relation with the history of female employment. Because kindergarten costs are regulated on the community level, they differ substantially, often based on number of children and family income. This redistributive approach is designed to promote the use of preschool child care by low-income families and those needing social assistance, who are entitled to additional public support from youth welfare offices to cover additional expenses like child subsistence costs.

In recent years, however, despite Germany's long kindergarten tradition, the core tasks of preschool child care have shifted away from social and pedagogical care toward early child education. Following the recommendations of the PISA studies and the rising demand for increased female labor force participation, the German government has intensified its efforts to improve and modernize the supply of preschool child care (Hemmerling, 2007). For example, a 2008 law focused on extending Kita placement promised a stepwise expansion of early child day care that would ensure universal coverage by 2013. This legislation, however, failed to meet expectations, and the coverage of available Kita places remains limited. Another new law engendered by regional political pressure provided alternative financial compensation for families that chose to raise their children at home in a more traditional family model rather than exercising their lawful right to send them to Kita. This financial compensation, however, was criticized as a misdirected incentive because not only did it not benefit families on social security (Arbeitslosengeld II) but experts worried it would strengthen traditional gender roles and reduce the use of preschool child care by low-income households (Spieß, 2012). Nevertheless, even though the regulation was found unconstitutional and repealed in mid-2015, preschool child care remains a highly debated topic in Germany, with advocates frequently stressing its importance for child development and the ability of early interaction with other children to improve social competencies later in life. The increasing share of migrant families in Germany, particularly, are encouraged to take advantage of publicly offered day care as a means to foster social integration and improve language abilities. The scientific evidence for preschool child care's ability to achieve these goals, however, remains ambiguous.

### 3. RELATED LITERATURE

Although psychological evaluations of preschool care are numerous, most are U.S. studies on the relation with language and math skills and/or child behavior (i.e., problem externalization) whose findings are ambiguous. For instance, Burger (2010) drew a generally positive conclusion about the link between early child care and cognitive development, pointing to an overall beneficial impact on children's start in life, with short term effects usually exceeding those in the long term. Likewise, dependent on the quality of the preschool program, several studies provided evidence for a positive relation between experiencing early care and later cognitive development (Belsky 2006; Cryan, Sheehan, Wiechel, & Bandy-Hedden 1992; Votruba-Drzal, Li-Grining, & Maldonado-Carreo 2008).

Other evidence, however, suggested that children who experience care often have more problems with social compliance (Belsky 2006; NICHD 2002; NICHD 2004;), although these findings are highly sensitive to care duration and type, as well as to socioeconomic factors like family income and/or social background (NICHD 2001). Belsky (2006), in fact, identified both risky and beneficial effects of early center-based care for U.S. children, with center quality positively related to child linguistic and cognitive skills, but the overall duration of care associated with a higher probability of social noncompliance and riskier behavior (Magnuson, Ruhm, & Waldfogel 2007; NICHD 2003). The age at which the child begins preschool care also seems to be important for various outcomes: Loeb, Bridges, Bassok, Fuller, & Rumberger (2007) associated a starting age between two and three years with the best academic outcomes but link a longer duration and higher intensity of care with a higher risk of social noncompliance. This negative effect was also identified by Magnuson et al. (2007), who showed that detrimental outcomes tend to persist longer and be more imperishable than any positive effect on math and language skills.

An analysis of U.S. academic data also provided strong evidence for the positive impact of full-day kindergarten on behavioral and schooling outcomes (Cryan et al. 1992), a finding in line with later verification of a positive but diminishing effect on reading and math skills up to the age of 12 (Votruba-Drzal et al. 2008). Moreover, although studies of early preschool child care's long term effects are few, they did provide some evidence of a positive association between early child care and, for instance, labor market participation (Havnes & Mogstad, 2011) or cognitive achievements in upper social strata (Peisner-Feinberg et al., 2001).

One important factor for the long term development of a child's cognitive ability as well as his language skills is the quality of the early child care environment, including the child-teacher relationship and preschool class size (Peisner-Feinberg et al., 2001). Nonetheless, although several studies emphasized the importance of program quality for later school performance (Belsky 2006; Care & Development 2002; Vandell, Belsky, Burchinal, Steinberg, & Vandergrift 2010), other studies found no support for this link (e.g., Driessen 2004; NICHD 2001). Blau (1999), for instance, using National Longitudinal Survey of Youth (NLSY) data to estimate the effects on child development of several child care quality measures (e.g., group size, staff-child ratio), concluded that despite some evidence for a relation between development and child subgroup, on average there is little or no evidence for a causal impact of child care quality. The persistence of early child care effects becomes even more ambiguous when the analysis considers demographic characteristics: once controls are included for a rich set of covariates (e.g., social class, environmental circumstances, occupational status, or migrant background), participation in preschool child care programs is not significantly associated with higher cognitive and non-cognitive competency outcomes (NICHD 2001).

Dustmann, Raute, & Schönberg (2016) analyzed the impact of preschool (kindergarten) on school readiness and health. They exploited a political reform that subsidizes kindergarten as an



exogenous variation to estimate the heterogeneous effects of different subpopulations. They found kindergarten to work as an equalizer for children with differences in observed and unobserved characteristics. That is, their findings suggested that disadvantaged children are less likely to attain kindergarten, even though they tend to benefit the most. On the contrary, children who are most likely to attend kindergarten gain little from preschool child care in terms of overall school readiness. Those findings contrast the idea that selection into child care is the main explanation for observed differences in post kindergarten outcomes. Using similar methodology but data from a different German federal state, Felfe & Lalive (2014) analyzed the effect of child care before the age of three on school readiness and related outcomes. In line with Dustmann et al. (2016) they found that gains from child care are strongest among low SES children and support the notion that the effect of child care is heterogeneous. Focusing on non-cognitive outcomes, Datta Gupta & Simonsen (2010) found no effects in terms of behavioral measures (measured with the strength and difficulty (SDQ) index) from attending preschool in Denmark. However, they found family day care, as an alternative, to negatively affect boys from low SES households. Additionally, children may benefit through positive effects channeled through their parents, as, for instance, the German expansion of early childcare lead to some increases in parental well-being (Schober & Schmitt, 2017).

The literature evaluating the impact of preschool child care on migrants, particularly, by focusing virtually exclusively on school performance, supports the idea that preschool child care is beneficial for migrant children (Crosnoe, 2007; Dhuey, 2011). For instance, Magnuson et al. (2006) found that the English proficiency of U.S. migrants improves through child care, thereby increasing their “school readiness.” Likewise, Schlack, Hölling, & Kurth (2007), relying on the German Health Interview and Examination Survey of Children and Adolescents (KiGGS) data, showed that the preschool daycare participation rate of migrant children in

Germany is significantly lower than that of nonmigrant children. They also demonstrated that the share of migrants whose children ever experience preschool child care is significantly lower between the ages of two and three and higher between the ages of five and six but that the risk of mental problems is twice as high for migrant children as for nonmigrant children. They identified no negative risk of attending preschool child care on mental problems for their full child sample. Positive effects related to the preschool child care experience of migrant children are also identified by Spiess et al. (2003), who showed that migrant children in Germany who experience such care are less likely to be enrolled in lower track secondary education. The authors were unable, however, to detect any positive and significant effect for native children in the same study.

Given the above findings, the frequent statistical indication of lower child care participation among migrant children is surprising. One potential explanation is that, as shown by Obeng (2007) for migrants from Africa, it may be linked to a parental desire to instill the native cultural identity. In fact, Turney and Kao (2009), in an analysis of pre-kindergarten child care effects on child behavior, documented clear effect differences based on country and ethnicity of origin. They identified no effect, however, on children's feelings of sadness and loneliness, indicators of emotional well-being, a subject that has, to the best of our knowledge, yet to be analyzed in depth in the context of preschool child care outcomes.

Overall, however, empirical evidence on the relationship between early child care and overall well-being of children and adolescents is limited, which motivates our present attempt to glean new insights into the relation between preschool child care and psychometric measures for schoolchildren. In particular, we analyze the heterogeneous relationship for native German and migrant children, which is important when preschool child care is considered as a public instrument for the integration of migrant children.

#### 4. DATA AND METHODOLOGY

Our empirical analysis is based on data from the first wave of KiGGS, collected between 2009–2012 by the Robert Koch Institute (<http://www.kiggs-studie.de/english/home.html>). Designed primarily to gather information on the health status of Germany's youth, this survey offers 17,000 observations of 0- to 17-year-olds obtained through differently administered questionnaires (e.g., filled out by parents, physicians, or the children themselves; Kurth et al. 2006). To permit a more detailed subsample analysis, however, it also oversamples East German and migrant children, an unequal selection probability that we adjust for by using survey weights throughout the analysis.

Our main outcome of interest is preschool child care's effect on child well-being, which we approximate by the KiGGS' quality of life sum score ( $y$  in equation 1) derived from 24 Likert-scale items in six different dimensional scales (emotional well-being, physical well-being, self-esteem, family, friends, and school) in the parental version of KINDL (Bullinger, Brütt, Erhart, & Ravens-Sieberer, 2008). Those items are combined and transformed to a one-item sum score range ranging from 0 to 100. The reliability and validity of this score, one of the few German-language measures of child quality of life, has been verified using several tests (Ravens-Sieberer & Bullinger, 2000). In the KiGGS data set, parental information on the sum score is available for ages 3 to 17, which reduces the sample size to fewer than 15,000 observations, with self-assessed values collected only from children aged 10–17. We rely mostly on the values from this parental evaluation because of its larger sample size and demonstrated reliability (Erhart, Ellert, Kurth, & Ravens-Sieberer, 2009). Nevertheless, we later split the sample by different age groups and then take a detailed look at individual subscales of the sum score to identify the impact on different life domains.

As an explanatory variable, we focus primarily on the experience of child care. For the main analysis, we use a *child care* dummy equal to 1 ( $D = 1$ ) if a child has experienced any type of preschool child care (e.g., Kita and/or kindergarten) and 0 ( $D = 0$ ) if the child has been raised exclusively in the family household. To analyze the different effects for migrant children, we adopt the KiGGS definition of migrant ( $M$ ) as either (1) a child born in a foreign country with at least one non-German parent ( $M = 1$ ) or (2) a child with two non-German parents ( $M = 0$ ). Children born in Germany with only one non-German parent are not considered as migrants.

To identify the relation between preschool child care and child well-being, we rely on the following population model estimated by ordinary least squares (OLS):

$$y = x\beta + \gamma D + \delta M + \rho(D \times M) + \varepsilon \quad (1)$$

To allow for different effects of preschool child care on migrant children, we include an interaction term ( $D \times M$ ) in some of the regressions. We also address the question of preschool child care starting age by differentiating children who attended Kita from those who began on the kindergarten level (we attribute a starting age under 3 to Kita and one between 3 and 6 to kindergarten). In line with survey administrator suggestions, we cluster the standard errors ( $\varepsilon$ ) on the sample point level. To estimate a causal relationship of child care on well-being one needs to account for all characteristics that might correlate with the uptake of child care and also well-being. Selection into child care might differ between different socio-economic status and values. For instance, despite controlling for the need of child care, lower earnings still have a negative impact on uptake in Bulgaria (Meurs, 2006). To account for selection into child care, we rely on a rich set of child, parental, and household covariates that

capture differences in socio-economic status and residency, which are captured by the  $1 \times K$  vector  $x$  in the population model (see Table 1), with  $K$  equal to the number of covariates included in a particular model plus a constant. We cannot rule out the possibility that selection is based on unobserved characteristics, as our cross-section data do not provide a clearly exogenous variation of child care uptake. However, recent work studying this phenomenon show that such selection into child care does not constitute the main determinant for different outcomes between children with and without preschool child care experience (Dustmann et al., 2016; Felfe & Lalive, 2014).

The separation between children with and without experience of child care (Table 1) indicates that the former tend to come from families with a higher social status and higher employment levels. The statistics also show that the share of migrant children with child care experience is lower than the share of native children. In Figure 1, which separates the share of children formerly or currently in preschool care by migration and social status, all groups show an increasing rate of experience up to the age of kindergarten entry (the socioeconomic categories are based on the Winkler index (Winkler & Stolzenberg, 1999), which divides society into “classes” based on parental education, occupation, employment, and income). Among German natives, however, the share does not differ by social strata and remains fairly constant for older cohorts. Among migrants, we observe two notable differences: (1) the overall share is lower than for German children and (2) preschool child care experience is lower for older cohorts in the lowest socioeconomic strata. These observations stem from past, albeit declining, selections of low status migrants out of preschool child care. The descriptive statistics in Table 1 show not only that migrant children tend to come from lower socioeconomic backgrounds, but that they tend to live more frequently in large cities (city size is measured as categorical variable according to the number of inhabitants: rural area less than

5,000; small city 5,000 to 20,000; medium sized city 20,000 to 100,000; large city more than 100,000). On average, migrants also tend to have more behavioral problems (SDQ sum score) and lower well-being, signaled by differences in group means derived through multivariate regression analysis.

\*\*\* TABLE 1 ABOUT HERE \*\*\*

\*\*\* FIGURE 1 ABOUT HERE \*\*\*

## 5. RESULTS

The relation between child care and well-being is outlined in Table 2, whose first column reports the outcomes for the model without interaction effects. These results, although they do not attain statistical significance, suggest an overall negative impact of preschool care on child well-being that is especially high for migrant children. Over all the models, the KINDL sum score diminishes as age rises and is substantially lower for children in nontraditional families, with a notable reduction in well-being when the household includes a new partner. On average, children in East Germany and those from richer households show higher levels of well-being.

Column 2 then introduces the interaction term between migrants and preschool child care, which once its different effects on migrants are considered, changes the coefficients and yields a significantly lower level of well-being for migrant children. More specifically, the size of the coefficient is now comparable with that for children from single female parent (vs. two parent) homes. The overall child care coefficient also becomes negative, suggesting that children who experience preschool child care have lower levels of well-being. For migrant children, on the other hand, the opposite seems true: they appear to benefit from this

experience. In fact, the highly significant interaction term indicates that migrant children who experience preschool care score nearly 2 sum points higher than their counterparts who remain at home.

When we further divide child care based on age of entry (column 3), the results suggest that in general, children who attend Kita (i.e., experience preschool child care before the age of 3) have lower levels of well-being. The subsequent introduction of the interaction term (column 4) yields results similar to those from the previous model: the experiences of nonmigrants and migrants differ substantially, but the overall effect is significantly negative, with an early start in preschool child care seeming to produce an especially strong reduction in well-being. For migrant children, however, the positive interaction term suggests an overall beneficial relation, with higher levels of well-being among children who attend kindergarten only.

Given the substantial experiential difference between migrants and nonmigrants, in columns 5 and 6, we further investigate the intensive margin. In Sample II, we attempt to determine whether the year that child care is begun affects well-being by excluding all of the children with no experience of preschool child care. In line with previous results, a higher starting age appears to be associated with higher levels of well-being, implying that receiving preschool child care too early has detrimental effects that do not differ significantly between nonmigrant and migrant children.

\*\*\* TABLE 2 ABOUT HERE \*\*\*

To identify the different effects on elementary versus secondary school children, Table 3 divides the sample by age group (since our age data use 2-year increments, we include 10-year-olds in the secondary school sample). Because the data are cross-sectional, however, we cannot

rule out a possible bias through cohort effects, which cannot be distinguished from child age. For children aged 6 to 9, the results in column 1 reveal no differences in well-being based on either child care or being a migrant, but, as in the full sample, those in column 2 indicate that well-being among migrant children in elementary school (Sample I) varies greatly depending on early child care experience. Whereas the well-being of migrant children is nearly 5 sum score points lower overall than that of nonmigrant children, this difference is nullified when they have experienced preschool child care. Breaking the samples down by additional variables in columns 3 and 4 suggests that experiencing kindergarten only is slightly more valuable for well-being than experiencing early child care. For the older children, we find less heterogeneity between nonmigrant and migrant children but still observe a significantly negative coefficient for child care overall; particularly, for kindergarten only.

In Table 4, we attempt to identify which well-being domains are most affected by the child care experience based on the six different subscales that make up the KINDL sum score. We again control for possible heterogeneity among age groups by splitting the sample into elementary and secondary school children. For physical well-being (column 1), the coefficients are only significant for elementary school children (panel B). In this domain, migrant children score over 5 points less than nonmigrants, although this difference is more than offset for those who have experienced child care.

\*\*\* TABLE 3 ABOUT HERE \*\*\*

\*\*\* TABLE 4 ABOUT HERE \*\*\*



Based on the KINDL sum score, psychological well-being is lower overall for the full sample of migrant and nonmigrant (panel A), but a more pronounced difference emerges for migrants in the sample of elementary school children (panel B). Self-esteem, on the other hand, shows a long term effect in migrant children with experience of care, with a strong positive interaction term among secondary school children (panel C). For the family domain, child care experience seems slightly detrimental for nonmigrant children but differs between panels for migrant children. That is, whereas the full sample yields positive point estimates for the migrant dummy and interaction term, the elementary school age subsample has a 4.3 point higher sum score related to child care, and the interaction term is insignificant for secondary school children, among whom migrants generally score 3.5 points higher independent of preschool experience. In the friends domain, the coefficients again show the general pattern of child care experience making a strong difference, especially among younger migrants. The school domain, however, shows a systematically lower level for migrant children, one that does not change with child care experience. Overall, however, with a few exceptions, we observe stronger effects for elementary than for secondary school children, which suggests that long term effects are smaller than short term effects.

Finally, we investigate the heterogeneous impact of child care on other child outcomes. Columns 1 and 2, Table 5, for example, show the estimates for the children's self-assessed KINDL sum score, which is only available for ages 10 to 17. For the total sample (columns 2 and 4,

Table 2), migrant children score significantly worse overall, although the effect of child care is positive albeit not statistically significant. The next four columns report outcomes based on the SDQ, whose first subscale assesses pro-social behavior using a sum score of multiple subscales measuring child behavioral problems (on all SDQ subscales, a higher value equals a greater amount of the behavior measured). As column 4 shows, children with early child care experience exhibit slightly less pro-social behavior. The estimates for the overall SDQ sum score (column 5) mimic the well-being regressions. Children with preschool child care experience and migrants show generally higher scores, which deviates from previous results by Datta Gupta & Simonsen (2010) who only find negative effects among boys from low SES households in family care, but not preschool child care. However, the interaction term in our regression tends to mediate both effects, suggesting that migrants tend to benefit from child care or are at least not negatively affected by it.

\*\*\* TABLE 5 ABOUT HERE \*\*\*

The estimates in Table 5, also reveal a significant relation between preschool child care and math and German skills, measured on the local 6-point valuation scheme, whose highest score of 1 means that positive coefficients signal negative outcomes. Based on the estimates in columns 7 to 10, all else being equal, migrants perform better overall in math; however, child care participation seems to slightly reduce performance later in school. Kita experience has a significantly negative coefficient (column 8), indicating that math performance is higher overall among children who experience child care at a very young age. Migrant children that attend kindergarten only, however, tend to perform worse in school. The estimates for German skills

reveal a similar significantly negative relation with Kita participation, which is lower for migrant children, albeit not significantly so.

## 6. CONCLUSIONS

In analyzing the relation between preschool child care and child well-being, as well as other child outcomes, we focus particularly on a possible heterogeneous experience for migrants. Overall, our results suggest that child care experience is associated with a slightly lower level in child well-being, with some evidence on the intensive margin that more years of preschool child care attendance reduce overall well-being. Although in general our findings support the existing literature (Belsky, 2006; Loeb et al., 2007; Magnuson et al., 2007), they differ in their focus on well-being as the primary measure for potential child care effects rather than the well-established child outcome variables such as cognitive skills (e.g., math or language scores) or amount of externalizing behavior. We are therefore able to make a valuable contribution to the knowledge gap on the relationship between well-being and early preschool child care. Of particular interest is our finding of higher well-being levels among migrant children, particularly those of elementary school age. Those findings are in line with recent results on the effect of preschool child care on school readiness in Germany (Dustmann et al., 2016; Felfe & Lalive, 2014). Even though we cannot fully rule out selection into child care based on unobservable characteristics that positively affect well-being measures, the mostly positive experience for migrant children emphasizes the importance of preschool child care for more than mere school success.

Seemingly, for children with a migratory background, not participating in preschool child care is associated with substantially lower levels of well-being. One possible explanation for

this positive relationship with preschool child care (reflected by the large coefficients in columns 4 and 5, Table 2) may be that migrants with no preschool care experience enter compulsory elementary education without any familiarity with public education facilities, leading them to have more problems adapting to the new environment. Nonetheless, although this supposition is supported by the lack of evidence for a long term child care effect on the well-being of migrant children, it is contradicted by the persistently lower scores on the KINDL subscale for school readiness (column 6, Table 4). The math and language skill results also raise questions about preschool child care's ability to increase the "school readiness" of migrant children in Germany.

Rather, the analyses of the single domain KINDL sum scores suggest that well-being is more driven by a social component. For example, the measures for psychological well-being and friends are significantly higher for both the full sample and both subsamples (elementary and secondary school), suggesting a long term benefit. Likewise, self-esteem tends to be systematically lower among migrant than nonmigrant children. An additional analysis of the SDQ sum score, which measures child behavioral problems, supports this pattern. Whereas overall preschool child care seems to be associated with more behavioral problems, migrant children seem unaffected. We also identify a negative association between child care and migrant children's math performance even though early child care seems to improve math and German skills in the total sample.

The differences we observe between migrants and nonmigrants make it difficult to extrapolate general policy implications. Nevertheless, the negative outcomes for German children, although rather small, raise questions about the implementation of mandatory kindergarten laws. Admittedly, our results might be driven by the recent shift in preschool child care toward more educative goals. Yet even though Kita attendees seem to perform slightly

better in math and German, they show the strongest decline in well-being. It may be, therefore, that a focus on school outcomes comes at the expense of child well-being.

The results of our analysis also emphasize that migrant children who experience no preschool child care are much worse off than their German native counterparts in terms of the KINDL and most other scores. Hence, promoting preschool child care for migrant children might increase their overall well-being. Such promotion might take the form of information campaigns especially targeted at migrant families that explain the huge benefits of preschool child care and highlight the opportunities migrant children would miss by not attending.

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## Tables and Figures

Table 1. *Descriptive statistics*

	Full	Child care	Home care	Nonmigrant	Migrant
Child age (years)	10.203	10.249	9.954**	10.195	10.258
Child male	0.513	0.516	0.494	0.513	0.515
Parents single	0.043	0.044	0.040	0.043	0.042
More than 4 Persons in HH	0.302	0.294	0.342***	0.287	0.408***
Sibling in HH	0.823	0.815	0.862***	0.817	0.861***
Social category	12.213	12.338	11.540***	12.589	9.607***
Father					
Vocational training	0.269	0.267	0.282	0.264	0.305***
University degree	0.255	0.261	0.224***	0.269	0.162***
Part-time job	0.027	0.028	0.020**	0.025	0.038**
Full-time job	0.895	0.896	0.888	0.910	0.788***
Self-employed	0.141	0.142	0.137	0.148	0.093***
Age (group)	5.003	5.000	5.017	5.050	4.677***
Mother					
Vocational training	0.278	0.281	0.263	0.281	0.263
University degree	0.164	0.175	0.107***	0.165	0.159
Part-time job	0.497	0.499	0.485	0.520	0.332***
Full-time job	0.181	0.195	0.100***	0.176	0.211**
Self-employed	0.064	0.068	0.043***	0.067	0.044***
Age (group)	4.440	4.444	4.420	4.502	4.010***
East Germany	0.161	0.181	0.057***	0.175	0.068***
Rural area	0.195	0.193	0.200	0.215	0.055***
Small city	0.286	0.285	0.294	0.298	0.208***
Medium sized city	0.294	0.291	0.313	0.288	0.342***
Large city	0.225	0.230	0.193***	0.200	0.395***
Net HH income (grouped)	8.984	9.031	8.731***	9.197	7.507***
SDQ sum score	7.837	7.889	7.553**	7.666	9.021
KINDL sum score	77.271	77.176	77.785**	77.335	76.830
Migrant	0.126	0.118	0.170**	0.000	1.000
Child care	0.844	1.000	0.000	0.851	0.790***
Observations	10,814	9,358	1,456	9,650	1,164

Notes: Parental age grouped in 5 year brackets starting below 25 to above 55. Household income groups are measured as increasing brackets ranging from 250 to 1000 €. Differences in means between the two subgroups are indicated by \*  $p < .1$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

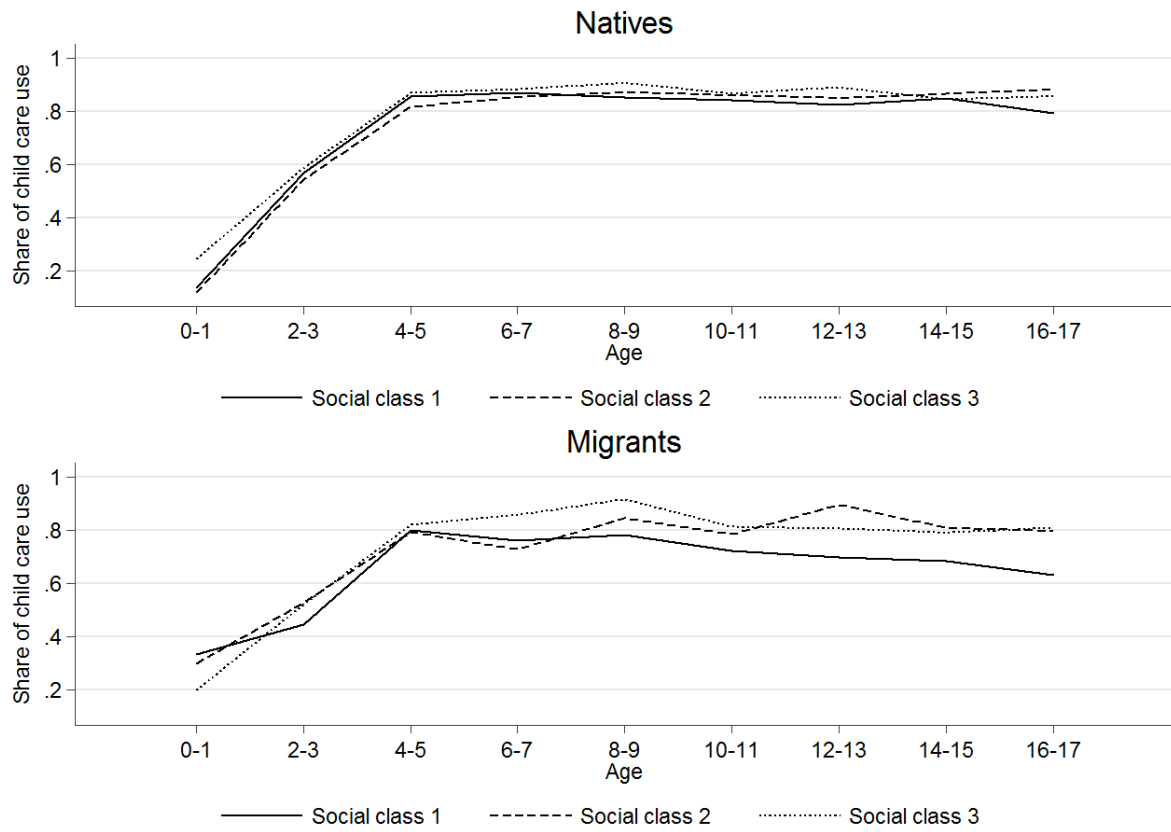


FIGURE 1 PRESCHOOL CHILD CARE PARTICIPATION OF NATIVES AND MIGRANTS BY SOCIAL STATUS

Table 2. OLS estimates for the KINDL child well-being measure for children 3–17

	OLS estimates for child well-being measured by the KINDL sum score					
	Sample I			Sample II		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Child stayed at home as reference</i>					
Child care	-0.5198 (0.338)	-0.9855*** (0.368)				
Kindergarten			-0.4296 (0.344)	-0.8760** (0.375)		
Kita			-0.8723** (0.398)	-1.2689*** (0.425)		
Starting age of care					0.2361* (0.125)	0.2042 (0.130)
Child care*Migrant		2.8998*** (0.806)				
Kindergarten*Migrant				2.8614*** (0.834)		
Kita*Migrant				2.5951** (1.093)		
Starting age*Migrant						0.2729 (0.380)
Migrant	0.5592 (0.364)	-1.7922** (0.760)	0.6389* (0.369)	-1.5954** (0.770)	1.3471*** (0.398)	0.5022 (1.206)
Age	-1.3119*** (0.058)	-1.3101*** (0.058)	-1.3133*** (0.058)	-1.3104*** (0.058)	-1.3535*** (0.070)	-1.3549*** (0.071)
Male	-0.3056 (0.201)	-0.2926 (0.201)	-0.3229 (0.203)	-0.3119 (0.203)	-0.3676 (0.226)	-0.3688 (0.226)
Sibling in HH	-0.0859 (0.735)	-0.0912 (0.744)	-0.1920 (0.761)	-0.2005 (0.771)	0.8027 (0.719)	0.8027 (0.719)
Net income HH	0.2791*** (0.054)	0.2760*** (0.054)	0.2880*** (0.055)	0.2836*** (0.055)	0.2905*** (0.062)	0.2899*** (0.062)
Parental situation	<i>Parents married and living together as a reference</i>					
Mother with partner	-1.7939*** (0.520)	-1.8062*** (0.521)	-1.7512*** (0.518)	-1.7708*** (0.519)	-1.7074*** (0.541)	-1.7106*** (0.541)
Father with partner	-5.2867*** (1.796)	-5.2579*** (1.794)	-5.4407*** (1.807)	-5.4115*** (1.806)	-5.4071*** (1.966)	-5.4002*** (1.966)
Single mother	-1.3797* (0.827)	-1.4382* (0.828)	-1.4544* (0.854)	-1.5144* (0.856)	-2.3650** (0.936)	-2.3613** (0.936)
Single father	-0.2611 (1.381)	-0.3108 (1.390)	-0.0664 (1.419)	-0.1087 (1.427)	-0.7054 (1.682)	-0.6974 (1.682)
Other	-3.8431*** (1.251)	-3.8903*** (1.255)	-4.2007*** (1.276)	-4.2504*** (1.282)	-3.9998*** (1.356)	-4.0173*** (1.357)
Type of region	<i>Rural area as a reference</i>					
Small city	-0.4288 (0.322)	-0.4214 (0.319)	-0.3771 (0.320)	-0.3704 (0.317)	-0.2096 (0.393)	-0.2115 (0.394)
Medium city	-0.0762 (0.342)	-0.0542 (0.339)	-0.0722 (0.339)	-0.0538 (0.335)	-0.0657 (0.399)	-0.0718 (0.400)
Large city	-0.1450 (0.355)	-0.1526 (0.351)	-0.1221 (0.363)	-0.1315 (0.359)	-0.2564 (0.408)	-0.2638 (0.408)
East Germany	1.5645*** (0.300)	1.6266*** (0.300)	1.8035*** (0.327)	1.8419*** (0.328)	1.8930*** (0.350)	1.8674*** (0.353)
Constant	81.5713*** (1.271)	82.1541*** (1.299)	81.4647*** (1.343)	82.0426*** (1.375)	80.5753*** (1.565)	80.6338*** (1.567)
N	10835	10835	10536	10536	9088	9088
Adj. R <sup>2</sup>	0.083	0.085	0.084	0.085	0.086	0.086

Notes: All reported estimates are weighted nonstandardized regression coefficients. Sample I includes all children; Sample II includes only children reported to have experienced some preschool child care. All models include controls for number of individuals in the household, parental age, parental education, parental employment, and parental occupation. Robust standard errors clustered on the sampling point level are in parentheses. \*  $p < .1$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

Table 3. *Child well-being split by age group*

OLS estimates for child well-being measured by the KINDL sum score												
Children aged 6 to 9 (elementary school)						Children aged 10 to 17 (secondary school)						
Sample I			Sample II			Sample I			Sample II			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
<i>Child stayed at home as reference</i>						<i>Child stayed at home as reference</i>						
Child care	-0.0845 (0.497)	-0.8359 (0.544)					-0.7251 (0.486)	-1.0096** (0.487)				
Kindergarten			0.0653 (0.504)	-0.6941 (0.550)					-0.8395* (0.500)	-1.1237** (0.503)		
Kita			-0.4220 (0.633)	-1.0649 (0.648)					-0.0725 (0.567)	-0.3014 (0.582)		
Starting age of care					0.1776 (0.210)	0.1654 (0.207)					-0.0719 (0.164)	-0.1143 (0.175)
Child care*Migrant		5.4195*** (1.662)						1.6836 (1.220)				
Kindergarten*Migrant				5.5800*** (1.704)						1.7416 (1.303)		
Kita*Migrant				4.8656** (2.318)						1.3897 (1.607)		
Starting age*Migrant						0.1327 (0.624)						0.3671 (0.546)
Migrant	-0.2154 (0.682)	-4.8099*** (1.837)	-0.1294 (0.719)	-4.6907** (1.878)	0.8122 (0.624)	0.4120 (2.006)	0.4996 (0.479)	-0.8665 (1.135)	0.7792 (0.486)	-0.5524 (1.147)	1.2208** (0.534)	0.0263 (1.743)
<i>N</i>	3084	3084	3009	3009	2655	2655	5583	5583	5422	5422	4679	4679
<i>Adj. R</i> <sup>2</sup>	0.021	0.026	0.021	0.026	0.024	0.024	0.032	0.032	0.033	0.034	0.030	0.030

*Notes:* All reported estimates are weighted nonstandardized regression coefficients. Sample I includes all children; Sample II includes only children reported to have experienced some preschool child care. All models include controls for child age, gender, a dummy for having at least one sibling, number of individuals in the household, household net income, parental situation (married, single, living with new partners), parental age, parental education, parental employment, parental occupation, and type of region (rural area, small/medium/large city), East Germany. Robust standard errors clustered on the sampling point level are in parentheses. \*  $p < .1$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

Table 4. *Separate subscales for the KINDL sum score*

	OLS estimates for the child well-being subscales of the KINDL sum score					
	Physical well-being	Psychological well-being	Self-esteem	Family	Friends	School
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: Full sample</b>						
Child care	-0.3352 (0.580)	-1.3324*** (0.457)	-0.9580* (0.525)	-0.9832** (0.468)	-1.3587*** (0.405)	-0.7504 (0.565)
Child care*Migrant	1.9367 (1.313)	3.4113*** (1.156)	3.9725*** (1.381)	2.3283* (1.281)	4.1206*** (1.016)	1.5678 (1.400)
Migrant	-1.5275 (1.197)	-2.6815*** (1.028)	-3.1415** (1.411)	1.6208 (1.167)	-2.3533*** (0.892)	-5.1189*** (1.282)
<i>N</i>	10745	10795	10796	10847	10833	10125
Adj. <i>R</i> <sup>2</sup>	0.044	0.030	0.039	0.034	0.020	0.175
<b>Panel B: Children aged 6 to 9 (elementary school)</b>						
Child care	-0.5597 (0.926)	-0.5650 (0.694)	-1.5455* (0.914)	-0.7003 (0.813)	-1.7262** (0.775)	-0.6551 (0.866)
Child care*Migrant	7.6915*** (2.559)	5.4490** (2.561)	3.0743 (2.813)	4.3561** (2.036)	8.4081*** (2.202)	2.7381 (2.969)
Migrant	-5.1396** (2.412)	-5.4637** (2.689)	-3.3488 (3.020)	-0.7443 (2.263)	-7.2887*** (2.189)	-6.8709** (2.945)
<i>N</i>	3058	3077	3079	3090	3089	2712
Adj. <i>R</i> <sup>2</sup>	0.010	0.013	0.019	0.028	0.024	0.070
<b>Panel C: Children aged 10 to 17 (secondary school)</b>						
Child care	0.0473 (0.789)	-1.8325*** (0.634)	-0.9440 (0.683)	-0.7485 (0.669)	-1.4952** (0.595)	-1.0125 (0.695)
Child care*Migrant	-1.1754 (1.866)	2.8044* (1.626)	4.3556** (1.962)	0.5868 (1.947)	3.5110** (1.522)	1.5607 (1.973)
Migrant	0.9371 (1.742)	-1.8416 (1.413)	-2.8318 (1.839)	3.4605* (1.825)	-1.0807 (1.403)	-6.2270*** (1.813)
<i>N</i>	5535	5558	5559	5583	5577	5461
Adj. <i>R</i> <sup>2</sup>	0.040	0.020	0.015	0.021	0.020	0.093

*Notes:* All reported estimates are weighted nonstandardized regression coefficients. All models include controls for child age, gender, a dummy for having at least one sibling, number of individuals in the household, household net income, parental situation (married, single, living with new partners), parental age, parental education, parental employment, parental occupation, type of region (rural area, small/medium/large city), and East Germany. Robust standard errors clustered on the sampling point level are in parentheses. \*  $p < .1$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

Table 5. Relation between child care and self-assessed KINDL sum score, SDQ sum score, and math/ language test scores

	OLS estimates for different child outcomes									
	Children aged 10 to 17		Children aged 2 to 17				Children aged (6) 8 to 17			
	KINDL sum score (self-assessed)		SDQ subscale Pro-social Behavior		SDQ sum score		Math score		German score	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<i>Child stayed at home as reference</i>									
Child care	0.0788 (0.556)		-0.1031 (0.062)		0.6000*** (0.159)		0.0097 (0.044)		-0.0199 (0.035)	
Kindergarten		0.0102 (0.563)		-0.0857 (0.064)		0.6049*** (0.163)		0.0427 (0.044)		0.0078 (0.036)
Kita		0.6322 (0.636)		-0.1516** (0.072)		0.5033** (0.195)		-0.1081** (0.051)		-0.1321*** (0.044)
Child care*Migrant	1.4433 (1.474)		0.1191 (0.160)		-0.6326* (0.368)		0.1871** (0.086)		0.0535 (0.090)	
Kindergarten*Migrant		1.5878 (1.392)		0.1268 (0.164)		-0.5381 (0.376)		0.2209** (0.090)		0.0315 (0.094)
Kita*Migrant		-0.3862 (2.162)		-0.0005 (0.244)		-0.2695 (0.588)		0.0785 (0.152)		0.0878 (0.141)
Migrant	-2.5367* (1.307)	-2.2870* (1.316)	-0.0722 (0.153)	-0.0457 (0.151)	0.8411** (0.363)	0.7540** (0.360)	-0.2519*** (0.085)	-0.2697*** (0.088)	0.0949 (0.086)	0.0835 (0.087)
<i>N</i>	4771	4628	10897	10596	10885	10586	6477	6297	6468	6286
Adj. <i>R</i> <sup>2</sup>	0.051	0.054	0.032	0.033	0.092	0.092	0.120	0.125	0.170	0.176

Notes: All models include controls for child age, gender, dummy for having at least one sibling, number of individuals in the household, household net income, parental situation (married, single, living with new partners), parental age, parental education, parental employment, parental occupation, type of region (rural area, small/medium/large city), and East Germany. Robust standard errors clustered on the sampling point level are in parentheses. \*  $p < .1$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .



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