



The relationship between child care subsidies and children's cognitive development[☆]

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ABSTRACT

Child care subsidies help low-income families pay for child care while parents work or study. Few studies have examined the effects of child care subsidy use on child development, and no studies have done so controlling for prior cognitive skills. We use rich, longitudinal data from the ECLS-B data set to estimate the relationship between child care subsidy use and school readiness, using value-added regression models as well as parametric and non-parametric models with propensity score matching. Compared to a diverse group of subsidy non-recipients in various types of non-parental care as well as parental care only, we find that child care subsidy use during preschool is negatively associated with children's math skills at kindergarten entry. However, sensitivity analysis suggests that these findings could be easily overturned if unobserved factors affect selection into subsidy receipt.

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1. Introduction

Child care subsidies defray the costs of family-selected early care and education for low-income, employed parents. Each year, over 1.1 million children under age six use child care subsidies provided through the Child Care Development Fund (CCDF) program, at a cost of several billion dollars (Committee on Ways and Means, 2008). With so many children participating and so much public investment at stake, it is important to understand how child care subsidies affect recipients.

Child care subsidies offset all or part of the cost of child care and, thereby, increase the short-run returns to employment for parents in families with low socio-economic status (SES). In the long run, increased levels of employment among low-SES parents with subsidies are expected to result in higher family SES. The primary goal of child care subsidy programs is to increase parent workforce participation, and most of the research on child care subsidies has

focused on employment-related outcomes (Herbst & Tekin, 2010a; Zaslow et al., 2002). A sizeable body of research suggests that use of child care subsidies has positive effects on parent workforce participation and family economic outcomes (Blau, 2000; Brooks, Risler, Hamilton, & Nackerud, 2002; Ficano, Gennetian, & Morris, 2006; Joo, 2008; Lemke, Witte, Queral, & Witt, 2000; Schaefer, Kreader, & Collins, 2006; Tekin, 2007).

However, parents are not the only family members affected by the child care subsidy. The decisions parents make about child care after receiving a subsidy also have the potential to affect children's development, positively or negatively. Subsidies can affect parent decisions about whether to use any non-parental care, and can also affect parents' choice of child care arrangements. These choices may have positive or negative implications for children's cognitive development, to the extent that they affect children's early learning experiences in both parental and non-parental care. The purpose of this study is to estimate the relationship between child care subsidy use during preschool and children's cognitive development by the time they enter kindergarten.

Child care subsidies are payments, usually delivered as a voucher, that help cover the cost of child care for the recipients. Child care subsidy programs are operated by states using a combination of federal and state funds, and states set income eligibility limits, provider reimbursement rates, family co-payment rates, and other regulations in accordance with flexible federal guidelines. A notable feature of child care subsidies is that, in contrast to highly regulated publicly funded early childhood programs such as

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Head Start or state pre-kindergarten, the quality and operational standards for participating providers are quite minimal. Although standards for provider participation vary by state, federal CCDF law prohibits states from imposing standards that would significantly restrict family choices, because the goal of the program is to maximize flexibility in order to meet the needs of low-income working parents (Government Accountability Office [GAO], 2005).

Child care subsidies are available to families who are employed or in training and who meet the state's income requirements. However, subsidies are not an entitlement and eligible families may be denied access to child care subsidies altogether or placed on wait lists. Although child care subsidies serve over one million children under age 5 each year, access rates among eligible families are fairly low, with an estimated 16–20% of eligible children using child care subsidies at a given time (Burstein & Layzar, 2007; Committee on Ways and Means, 2008). Low utilization among eligible families is due partly to state funding levels that limit the supply of child care subsidies (Adams, Snyder, & Sandfort, 2002; Crosby, Gennetian, & Huston, 2005; Herbst, 2008; Witte & Queralt, 2003). However, parents' employment decisions also affect use. As a result, eligible families that use child care subsidies may differ from eligible families that do not in ways that matter for studies focused on estimating the impacts of the subsidies on child outcomes.

Child care subsidies are predominantly used by very poor families. In 2005, the median family income among subsidy recipients was just over \$15,000 per year, and just 13% of participating families earned over 150% of the federal poverty level (Child Care Bureau, 2005). A number of family characteristics are predictive of subsidy use among low-income families, including being a single parent, being African American, speaking English at home or being native born, having low income, and being a current or prior recipient of welfare and other means-tested benefits (Adams et al., 2002; Blau & Tekin, 2007; Burstein & Layzar, 2007; Committee on Ways and Means, 2008; Danziger, Ananat, & Browning, 2004; Durfee & Meyers, 2006; Herbst, 2008; Johnson, Martin, & Brooks-Gunn, 2011; Schaefer et al., 2006; Shlay, Weinraub, Harmon, & Tran, 2004; Tekin, 2005, 2007; Weinraub, Shlay, Harmon, & Tran, 2005). There is some evidence of regional differences in subsidy utilization, and urbanicity is also related to subsidy use (Burstein & Layzar, 2007; Johnson et al., 2011; Tekin, 2005, 2007). Evidence is mixed on whether parent education level, parent age, and the number and ages of young children in the home are positively or negatively related to subsidy receipt (Blau & Tekin, 2007; Burstein & Layzar, 2007; Danziger et al., 2004; Herbst, 2008; Shlay et al., 2004; Tekin, 2005, 2007; Weinraub et al., 2005).

In estimating the relationship between child care subsidies and child outcomes, the analyses should control for these known predictors of subsidy receipt in order to reduce bias in the estimates. Welfare receipt is a particularly important control variable because states that cannot serve all eligible applicants for child care subsidies usually give first priority for child care subsidies to TANF recipients (Cohen & Lord, 2005; GAO, 2005). Of course, there may be other, less easily measured differences in families that do and do not receive subsidies, such as differences in the extent to which parents value gainful employment or are able to obtain it, or differences in educational values. Differences of this sort are a particular challenge when studying the effects of child care subsidies on child cognitive development, requiring careful consideration of the study design and the use of analysis methods that can reduce the threat of selection bias.

1.1. The present study

This study estimates the net relationship between child care subsidy use during preschool and children's cognitive skills at kindergarten entry, using the Early Childhood Longitudinal Study

– Birth cohort (ECLS-B) data set. We compare child care subsidy recipients to a diverse counterfactual group of subsidy non-recipients that includes children in any type of non-parental care that is not paid for with a child care subsidy, as well as children who do not receive any regularly occurring non-parental care. This counterfactual includes all conditions that child care subsidy recipients might experience in absence of the subsidy. Child care subsidies were initially designed to increase access to child care among families that could not otherwise afford it, so it is important to include children who do not attend child care in the counterfactual in order to estimate the true effect of child care subsidies on children. It is also important to include children in all types of child care in the counterfactual, including public preschool programs such as Head Start or public pre-kindergarten in addition to private child care, since all of these types of care are likely alternatives for children who are similar to child care subsidy recipients but do not receive a subsidy. We use several alternative estimation strategies to account for selection into subsidy use, using an extensive set of control variables that includes prior measures of child development and socio-demographic characteristics of children and families. The study addresses two questions:

1. What is the relationship between child care subsidy use in preschool and children's early literacy skills at kindergarten entry?
2. What is the relationship between child care subsidy use in preschool and children's early math skills at kindergarten entry?

Child care subsidies effectively make child care less costly to parents, so policymakers expect the subsidy to increase family economic resources, and possibly also induce parents to purchase child care that is more expensive, and presumably of better quality, than they otherwise would. As a result, one might expect positive effects on child developmental outcomes, either through better quality care or family resources used in other ways to benefit children. In fact, any expected benefits to child development are dependent upon the assumption that the children will receive better quality care than they otherwise would without the subsidy. However, it is not clear that use of child care subsidies leads to improvements in the quality of care children receive.

Several correlational studies on the quality of subsidized care find that child care subsidy recipients tend to receive relatively poor quality care, and the percentage of children using subsidies in a child care program is negatively related to measures of program quality (Adams, Roach, Riley, & Edie, 2001; Antle et al., 2008; Jones-Branch, Torquati, Raikes, & Edwards, 2004; Mocan, 2007; Raikes, Raikes, & Wilcox, 2005). One recent study (Ryan, Johnson, Rigby, & Brooks-Gunn, 2011) tested the relationship between child care subsidy receipt and the quality of care received by individual children, and found that subsidy recipients choose higher quality child care than similar children who did not receive a subsidy when both home-based care and center-based care are included in the same model. However, the authors also found that subsidy recipients are more likely to use center-based care than non-recipients, and that the overall positive association of subsidy use with care quality is driven by more use of center-based care among subsidy recipients. This may be because center-based care tends to be of higher quality than home-based care in preschool, so that quality is higher overall for subsidy recipients because they use more center-based care. In subgroup analyses, Ryan and colleagues found that subsidy recipients in home-based care have higher quality child care than non-recipients in home based care, whereas subsidy recipients who use center based care actually have worse quality child care compared to non-recipients in center-based care.

It seems counterintuitive that parents would choose poorer quality care for their children when using a subsidy than otherwise,

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