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IZA DP No. 10702

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ABSTRACT

The Demand for Teacher Characteristics in the Market for Child Care: Evidence from a Field Experiment[1]

Many preschool-age children in the U.S. attend center-based child care programs that are of low quality. This paper examines the extent to which teacher qualifications – widely considered important inputs to classroom quality – are valued by providers during the hiring process. To do so, we administered a resume audit study in which job-seeker characteristics were randomly assigned to a large number of resumes that were submitted in response to real child care job postings in 14 cities. Our results indicate that center-based providers may not hire the most qualified applicants. For example, we find that although providers have a strong preference for individuals with previous work experience in early childhood education (ECE), those with more ECE experience are less likely to receive an interview than those with less experience. We also find that individuals with bachelor's degrees in ECE are no more likely to receive an interview than their counterparts at the associate's level, even in the market for lead preschool-age teachers. Furthermore, those revealing high levels of academic performance, as measured by grade point average, are generally not preferred by child care providers. Finally, it appears that some non-quality attributes do not influence hiring decisions (e.g., signaling car ownership), while others have large effects on teacher hiring (e.g., applicant race/ethnicity). Together, our findings shed light on the complex trade-offs made by center-based providers attempting to offer high-quality programs while earning sufficient revenue to stay in business.

JEL Classification: I20, J23, J24, J71

Keywords: child care quality, teacher qualifications, resume audit study, field experiment

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I. Introduction

In this paper, we present results from a field experiment that examines teacher hiring practices in the market for center-based child care. Specifically, we administer a resume audit study, which randomly assigns a number of job-seeker characteristics to resumes submitted on behalf of fictitious individuals in response to real child care job advertisements. Between May 2016 and January 2017, approximately 11,000 resumes were submitted to over 2,700 on-line assistant and lead teacher advertisements in 14 U.S. cities. We then recorded whether a given resume was invited for an interview. Given that we randomly vary the characteristics on each resume, our goal is to elicit child care provider preferences for applicants' employment history, educational preparation, and professional credentials. Our experiment should therefore provide causal estimates on the set of attributes that are valued by center-based providers in the initial stage of the hiring process.

Our interest in studying teacher hiring practices is rooted in the extensive literature showing that center-based classroom quality may be causally related to children's cognitive and social-emotional development, with teacher qualifications—including the amount of relevant experience, level and type of academic preparation, and professional certifications—frequently cited as important inputs to the production of quality (e.g., Auger et al., 2014; Pianta et al., 2009). Indeed, the presumed connection between teacher qualifications and classroom quality is a key justification for government regulation of child care settings, and it underlies the growing interest in raising teacher standards throughout the spectrum of center-based programs.

However, despite the importance of classroom quality and teacher credentials, the quality of center-based care in the U.S. is frequently at sub-optimal levels. For example, the NICHD ECCRN (2005) estimates that 41 percent of child care settings are of "poor" or "fair" quality, and a review by the National Research Council finds that 10 to 20 percent of child care settings are "inadequate" and may pose serious risks to child development (National Research Council & Institute of Medicine, 2000). Furthermore, the center-based workforce is characterized by low skills and low compensation. Our

analysis in Section II shows that approximately 60 percent of lead teachers have less than a bachelor's degree, and Herbst (2015) finds that median wages—currently at $9.77 per hour—have been largely stagnant for the past three decades.

To date most research seeks to explain the low levels of center-based quality by identifying constraints on the parent-side of the market. One issue receiving considerable attention is the influence of information asymmetries in which parents may not fully understand the benefits of high-quality care, or they do not have sufficient information to distinguish between low- and high-quality programs. Indeed, the evidence suggests that although most parents claim to value high-quality, education-focused child care programs (Mamedova & Redford, 2013), actual decisions are instead driven by such considerations as program costs, location, and hours-of-operation (NSECE, 2014). Furthermore, several studies find that parents tend to rate the quality of their child's arrangement more favorably than do trained observers (e.g., Mocan, 2007), while other work shows that the degree of parents' satisfaction with their child's program is unrelated to most structural and process features of the classroom environment (Bassok et al., 2017).

Although these parental constraints are likely to be important, this paper focuses instead on the behavior of child care providers, specifically whether teacher hiring practices have implications for the quality of center-based programs. The primary issue is that providers may face limitations on the ability to simultaneously offer high-quality programs and earn sufficient revenue to stay in business (Blau, 2001). The labor-intensiveness of child care provision means that classroom quality is largely determined by the number of teachers utilized at various skill levels. As a result, the price that a provider can charge depends on the cost of these labor-related quality inputs—as measured by teacher compensation—as well as parents' willingness to pay for quality. In Section II, we present estimates from hourly wage equations showing that compensation levels in center-based programs are strongly linked to teacher credentials. In addition, Blau and Hagy (1998) find that parents' child care choices are moderately sensitive to the market price of care. This discussion implies that although hiring high-skilled teachers

may generate developmental benefits for children, doing so will increase program operating costs and, in turn, the price of child care. Therefore, providers may face constraints on producing the socially optimal level of quality, especially in markets where the reward to high-quality care is low. Thus a key goal of our study is to understand the ways in which child care providers negotiate the trade-offs between program costs and quality when making hiring decisions.

In addition, child care providers may experience a variety of other challenges that prevent them from hiring the most qualified applicants. First, program directors may lack the information and financial resources needed to hire and retain high-skilled teachers. Indeed, quality improvements in the child care industry generally require expensive workforce adjustments such as lowering child-staff ratios or hiring teachers with more training and education. Second, when making hiring decisions program directors may inefficiently screen job applicants, or they may value characteristics that do not translate into the production of high-quality care. For example, in an effort to comply with states' ratio requirements or to ensure that teachers meet the job's physical demands, directors may value characteristics like dependability and health status over experience and academic training. Finally, it is possible that highly-credentialed applicants are valued, but directors are nevertheless reluctant to hire them because of concerns that they would be difficult to retain in the long-run. Such concerns seem particularly relevant in markets where child care providers compete with Head Start and pre-kindergarten programs for high-skilled teachers. Together, these considerations suggest that it is important to examine whether there is a mismatch between the hiring preferences of center-based directors and the characteristics of job-seekers that likely contribute to the development of high-quality programs.

Our results suggest that child care providers respond to a variety of job-seeker characteristics. However, a consistent theme emerges in which there are decreasing returns to teacher qualifications. For example, although providers have a strong preference for applicants with previous work experience in early childhood education (ECE), those with more ECE experience (two years) are actually less likely to receive an interview request than those with less experience (six months). This finding persists across job

advertisements for assistant and lead teacher positions. Furthermore, once prior ECE experience is taken into account, providers do not further screen on the type or quality of the setting in which that experience was obtained. For example, we show that providers are indifferent between applicants with work experience at a local YMCA—where staff care for children while parents use the gym—and those who obtained their ECE experience in formal center-based environments. A similar pattern unfolds for educational attainment: providers strongly prefer applicants with post-secondary education credentials, favoring individuals with an associate's or bachelor's degree over those with a high school diploma. Yet resumes with a bachelor's degree are no more likely to receive an interview than those with an associate's degree. This finding holds when comparing job-seekers with ECE degrees at the associate's and bachelor's level, and it applies to lead teacher positions in both infant/toddler and preschool-aged classrooms. We also find that the Child Development Associate (CDA) credential is helpful to applicants who do not have formal academic training in ECE—including those with only a high school diploma—but it is not nearly as attractive as having an ECE degree. Finally, we find that although some non-quality-related attributes are not important to hiring decisions (e.g., car ownership), others have large effects on interview requests (e.g., race/ethnicity of the applicant).

Our study contributes to the growing literature using resume audit studies (or "correspondence studies") to examine the ways in which employers respond to job-seeker characteristics. The audit study design was originally deployed in the U.S. to test for racial discrimination in the housing market (e.g., Wienk et al., 1979; Hakken, 1979). Over the past decade, it has been used by economists to study labor market discrimination based on race and ethnicity (Bertrand & Mullainathan, 2004; Oreopoulos, 2011), gender and age (Lahey, 2008), and obesity (Rooth, 2009). More recently, correspondence-type methodologies have been used to examine racial and gender discrimination in Airbnb (Edelman et al., forthcoming), Uber and Lyft (Ge et al., 2016), and access to local public services (Giulietti et al., 2015).

Furthermore, resume audit studies are increasingly used to study a variety of education policy issues (e.g., Darolia et al., 2015; Deming et al., 2016). Perhaps the most relevant paper to our work is

Hinrichs' (2014) examination of the demand for teacher characteristics in U.S. elementary and secondary schools. His experimental design assigns a range of characteristics—including gender, grade point average (GPA), college selectivity, and work experience—to resumes that were submitted to approximately 3,000 schools. His key finding is that applicants from more selective, in-state universities are considerably more likely to receive interview requests from public schools. He also shows that many of the resume characteristics have little influence on the odds of success at private schools.

The remainder of the paper is organized as follows. Section II establishes the context for our study, focusing on defining child care quality, summarizing the policies that regulate quality, and providing a descriptive portrait of the center-based workforce. Section III summarizes the relevant literature on the effect of teacher credentials on program quality and child outcomes. In Section IV, we provide an overview of issues surrounding the design of resume audit studies and the appropriate interpretation of the experimental estimates. Section V describes the details of our field experiment, while Section VI summarizes the results. Finally, we conclude the paper in Section VII with a discussion of policy implications.

II. Background

II.A. What is Child Care Quality?

Definitions of child care program quality typically describe two sets of characteristics: process and structural features. Process quality refers to children's contact and experiences with the people and objects in the child care environment. It involves not just the types of activities in which children participate, but also the way those activities are organized and administered, the quantity and quality of interactions between children and the teacher, and the responsiveness—intellectual and emotional—that teachers provide. As such, process quality is highly dynamic: it likely varies across teachers and classrooms, and it may depend as much on the needs of a given child as it does the skill-level of the teacher (Pianta et al., 2009). Nevertheless, some evidence shows that the dynamic exchanges between

children and the child care setting are the primary mechanisms through which such programs ultimately influence child development (NICHD ECCRN, 2002).

Structural quality focuses on characteristics related to teacher credentials (e.g., amount of relevant work experience, level of education, and type of degree), curriculum, group size, and child-staff ratios. In contrast to process quality, structural features are, in principle, static: once the level of a given characteristic is established by a program, exposure is not expected to vary across teachers, classrooms, and children. Given that these characteristics are easier and less costly to observe, they are typically used by states to regulate the safety and quality of child care settings. Although structural quality may be important in itself for influencing child development, it is more commonly viewed as a vehicle for creating an environment in which process quality can thrive.

II.B. Regulating Structural Quality in ECE Program Settings

This field experiment examines child care provider preferences for indicators of structural quality. Specifically, our resumes signal a number of teacher credentials, including the length of previous employment in child care settings, level of educational attainment, and the type of degree attained for resumes listing a two- or four-year post-secondary degree. In addition, some of our resumes list either a CDA credential or enrollment in professional development coursework.[2] Together, these characteristics comprise the primary teacher credentials targeted by states' center-based regulations, and they are frequently cited in program standards recommended by professional organizations as being critical to the development of high-quality programs.

Table 1 summarizes the regulatory landscape regarding teacher qualifications in center-based child care and Head Start settings and, for comparison purposes, publicly-funded pre-kindergarten programs. The table lists only the states included in our field experiment. There is substantial variation in the experience and education requirements for child care teachers. Four states do not explicitly require

[2] The CDA credential is a nationally recognized professional credential for caregivers working in center- and family-based settings as well as individuals serving as home visitors. Individuals must meet six core competency standards (ranging from maintaining a safe, healthy environment to establishing productive relationships with parents), which are further sub-divided into 13 "functional areas." Individuals must have a high school diploma (or GED) prior to beginning the CDA training, and they must have 120 hours of formal early childhood education training as well as 480 hours of work experience with three to five year-olds.

lead teachers to have previous ECE work experience, and for those that do the mandate ranges from four to 36 months. The education requirements are similarly diverse, ranging from a high school diploma (six states) to an associate's or bachelor's degree (two states). In contrast to center-based child care programs, Early Head Start and Head Start have national teacher standards, which were significantly revised through the 2007 Improving Head Start for School Readiness Act. The legislation required 50 percent of Head Start teachers to have a bachelor's degree in ECE by 2013. Although the educational attainment of Head Start teachers has risen sharply in recent years (NIEER, 2016a), Table 1 shows that considerable variation remains in the proportion of teachers with a bachelor's degree. Public pre-kindergarten programs offer an interesting contrast with child care because teacher standards are more uniform and substantially higher even though they are state-administered programs. Indeed, of the 17 states included in our field experiment, 12 require pre-kindergarten teachers to have a bachelor's degree in ECE and another two require an associate's degree.

II.C. The Center-Based Child Care Workforce

Perhaps the best source of information on the characteristics of center-based teachers comes from the National Survey of Early Care and Education (NSECE), which in 2012 surveyed approximately 5,600 classroom staff members, most of whom were employed as assistant or lead teachers. Table 2 provides a descriptive portrait of center-based teachers based on the NSECE's workforce survey. Virtually all teachers are female, at least a third are non-white, and a non-trivial minority are bilingual. Despite high staff turnover rates in child care settings, teachers have extensive work history profiles: 45 percent of assistant teachers and 60 percent of lead teachers have 10 or more years of ECE work experience. Nearly 60 percent of lead teachers have an associate's degree or more; among those with post-secondary degrees 46 percent majored in ECE. It is more common for lead teachers to have the CDA credential (19 percent) or state teaching certifications (26 percent) than assistant teachers (18 and 36 percent, respectively), and they are more likely to participate in a range of professional development

activities. Finally, the average hourly wage for assistant teachers is approximately $11, while that for lead teachers is $14.

We use these characteristics to estimate an hourly wage equation for assistant and lead teachers, as shown in Table 3. Such an exercise is important because it provides insight into providers' willingness to pay for several of the teacher credentials listed on our resumes. Female and black lead teachers earn less than their male and white counterparts, while Hispanic assistant teachers earn more. Interestingly, there are no returns to being bilingual. As expected, wages rise steeply as a function of work experience and educational attainment for assistant and lead teachers. It also appears that child care providers value degrees in ECE and education-related fields, and they are willing to pay more for a CDA credential (assistants) and state teaching certifications (both). Finally, attendance at professional development workshops is positively correlated with wages (assistants), as is participation in mentoring (leads).

III. Relevant Literature

The inclusion of teacher qualifications in ECE program requirements is typically justified on the presumption that (i) classroom quality has a causal effect on children's developmental outcomes, *and* that (ii) teachers' education, experience, and credentials are important determinants of classroom quality *or* directly influence child outcomes. Given that the evidence on these individual strands has been extensively reviewed elsewhere (e.g., Bueno et al., 2010; Pianta et al., 2016; Pianta et al., 2009), we briefly summarize some key findings here.

III.A. Classroom Quality and Child Outcomes

There is a large literature examining the relationship between center-based classroom quality and children's cognitive and social-emotional outcomes. Classroom quality is typically measured using the Early Childhood Environment Rating Scale (ECERS)—an observational tool used to examine multiple dimensions of the classroom environment—or the Classroom Assessment Scoring System (CLASS)—an observational measure of the social and instructional aspects of teacher-child interactions. An early paper by NICHD ECCRN and Duncan (2003) finds that a one-standard deviation (SD) increase in classroom

quality (between ages 24 and 54 months) is associated with an increase in cognitive ability test scores of 0.04 to 0.09 SDs (at 54 months). Positive associations are also found in more recent studies by Howes et al. (2008) and Mashburn et al. (2008), both of which examine children attending pre-kindergarten programs, and by McCartney et al. (2007) and Keys et al. (2013), who study a combination of community-based child care centers, Early Head Start programs, and pre-kindergarten programs. These studies generally find effect sizes of a magnitude similar to that reported in NICHD ECCRN and Duncan (2003). Perhaps the best evidence for a causal effect of quality comes from Auger et al. (2014), who exploit experimentally-induced changes in center-based classroom quality to provide instrumental variables estimates of the impact of quality on children's language and mathematics ability. Their estimates show improvements of 0.03 to 0.14 SDs for each one-SD increase in classroom quality.

III.B. Teacher Credentials and Classroom Quality

Previous work in this domain typically focuses on four dimensions of teacher credentials: level of education and field of study, on-going professional development and training (e.g., in-service training and workshops), professional credentials (e.g., CDA and state teaching certifications), and previous ECE work experience. Overall, the evidence suggests that teacher credentials have mixed effects on classroom quality. For example, although early individual studies as well as a meta-analysis conclude that teachers' education and field of study (i.e., having an ECE degree) are positively associated with quality (Burchinal et al., 2000; Burchinal et al., 2002; Kelley & Camilli, 2007; NICHD ECCRN, 2000; 2002; Pianta et al., 2005), more recent work generally finds null associations (Early et al., 2006; Early et al., 2007). Similarly, the limited evidence on work experience consistently finds no association with classroom quality (Blau, 2000; Burchinal et al., 2002). The teacher credentials that appear to have the strongest relationship with quality are attendance at professional development workshops (Blau, 2000; Burchinal et al., 2002), obtaining specialized training in ECE (including the CDA) (Early et al., 2006; Howes, 1997; Phillips et al., 2000), and obtaining a state-issued teaching certification (Early et al., 2006).

III.C. Teacher Credentials and Child Outcomes

With a few exceptions (e.g., Burchinal et al., 2002; Felfe & Lalive, 2014), the evidence suggests that teachers' education—including the highest level and degree attained—is generally not associated with children's cognitive and social-emotional outcomes (Early et al., 2006; Early et al., 2007; Howes et al., 2008; Mashburn et al., 2008). Likewise, the limited evidence on teachers' participation in in-service training and professional workshops reveals null associations with child outcomes (Burchinal et al., 2002), as does the attainment of a state teaching certification (Early et al., 2006). There appears to be mixed evidence on whether a CDA improves child outcomes, with Early et al. (2006) finding consistent positive effects and Mashburn et al. (2008) finding no relationship. Finally, a related study by NICHD ECCRN (1999) shows that children attending centers meeting more of the recommended APHA/AAP standards (which includes teacher training) perform better on measures of cognition and behavior.

IV. The Use of Audit Studies in Empirical Research

The current paper sheds light on teacher hiring practices in the center-based child care market. Our methodology allows us to examine provider preferences for a variety of quality- and non-quality-related job-seeker characteristics. The most common practice in resume audit studies is to randomly assign a single resume attribute, for example, the race or gender of the applicant. However, our study experimentally varies several characteristics, which allows us to test the attractiveness of multiple traits and credentials, both individually and in policy-relevant combinations. In this way our design most closely mirrors that in Eriksson and Rooth (2014) and Hinrichs (2014).

As with all resume audit studies, our design asks whether information revealed on a resume has a causal effect on employer responses to fictitious job-seekers. Such an approach has important advantages but also some noteworthy caveats. The primary benefit of such studies is that they provide researchers with perfect control over the characteristics revealed to employers. In practice this is achieved by either randomly assigning attributes to resumes or standardizing across resumes all information that is not randomly assigned. In addition, the use of national, on-line job boards means that researchers can apply

for a large number of jobs in diverse geographical areas at a relatively low cost, all while minimizing idiosyncrasies in application procedures across job advertisements. On the other hand, the typical measure of labor market "success" in audit studies—whether a resume receives an interview request—is rather coarse in that it does not indicate whether certain applicant characteristics lead to more job offers and higher wages. Nevertheless, eliciting positive employer responses early in the application process is a necessary condition for achieving these outcomes, and there is some empirical evidence showing that between-group differences in interview rates translate into non-trivial differences in wages.[3]

A second caveat focuses on the interpretation of the experimental estimates in resume audit studies. As noted by Darolia et al. (2015), this methodology yields estimates of the overall effect of job-seeker characteristics on employer responses. It does not, however, generally permit an understanding of the causal mechanisms through which an effect operates. For example, although our design allows us to determine the relative value of having a bachelor's degree in ECE (as opposed to having an associate's degree), we cannot determine whether this effect is driven by employer beliefs about differences in educational rigor and preparedness or differences in pre-existing applicant characteristics (e.g., aptitude). Nevertheless, estimates of the overall effect of attributes such as education and work experience are important within a child care policy environment that regulates the observable characteristics of teachers under the assumption that such characteristics are important to the production of quality. Thus this study seeks to understand whether these policy-relevant attributes are valued by child care providers.

V. Experimental Design

To design our field experiment, we follow the general approach taken in Bertrand and Mullainathan (2004), Lahey (2008), and Hinrichs (2014) in terms of how the fictitious resumes are created, the processes established for applying to jobs, and the way in which we code correspondence

[3] Indeed, empirical support for using audit-based interview requests as an indicator of labor market success comes from Lanning (2013), who calibrates a job search model with discrimination using survey data from the National Longitudinal Survey of Youth and resume audit study estimates. He finds that discrimination-driven differences in employer interview rates produce meaningful differences in hourly wages between black and white job-seekers.

from child care providers. The following discussion summarizes the experimental design; full details are provided in the on-line Technical Appendix.[4]

V.A. Study Setting and Application Procedures

The setting for our field experiment is a single, major on-line job board in the U.S. We used this website to search for child care job advertisements in 14 large cities: Atlanta, Boston, Chicago, Dallas, District of Columbia, Houston, Los Angeles, Minneapolis, New York City, Philadelphia, Phoenix, San Diego, San Francisco, and Seattle. These cities represent a geographically and demographically diverse set of urban areas, and they reside in states with diverse ECE regulatory environments, as shown in Table 1. In addition, we selected these cities because they contained a large number of child care job postings.

We submitted resumes in response to a broad set of job advertisements, while maintaining an explicit focus on pedagogical positions. We responded to postings seeking ECE, child care or daycare lead teachers, assistant teachers and aides, co-teachers, and floating-classroom teachers. These positions could be located in infant, toddler, or preschool-aged classrooms as well as before- and after-school settings. In addition, we applied for full- and part-time, seasonal and temporary, and contractual positions. We limited the job search to child care taking place in for- and non-profit centers, places of worship, community-based organizations, and school-based before- and after-school programs.[5] Although most jobs for which we applied were in the child care sector, whenever possible we applied for Early Head Start and Head Start teacher positions. Excluded from our job search were teacher positions in pre-kindergarten classrooms as well as elementary and secondary schools; non-pedagogical or administrative positions (e.g., center directors, accountants, cooks, and bus drivers); child care taking place in the child's home or that of a friend or relative; and home-based child care businesses.[6]

[4] The Technical Appendix is available at: http://www.chrisherbst.net/files/Download/C._Herbst_RAS_TA.pdf.
[5] We applied for a small number of positions in fitness clubs (e.g., Planet Fitness), country clubs, and movie theatres.
[6] We also disregarded job advertisements posted by ECE staffing firms and other human services recruiting agencies. Finally, we did not submit resumes to several specific child care and ECE providers: YMCA, KinderCare Learning Center, Childtime Learning Center, The Goddard School, and Primrose School. These organizations were excluded because we listed them among our work experience treatments on the resumes.

Our fieldwork began in May 2016 and ended in January 2017.[7] A group of Research Assistants—each of whom was assigned to one or more cities—regularly searched for advertisements that had been posted within the last 24 hours by providers located within a 25-mile radius of a given city. The 24-hour criterion maximized the odds that our resumes were evaluated by the provider. The 25-mile radius ensured that we amassed a sufficient number of jobs. Our goal was to submit four resumes in response to each job advertisement. This practice has two advantages: it is an efficient way of increasing the sample size, and it allows for controls for job advertisement fixed effects. Resumes were forwarded to providers via the job board's on-line submission portal; in no case was a cover letter required. To minimize the suspicion that the resumes were linked to a single "applicant," each resume in a batch of four was randomly assigned to a different visual scheme.[8] Furthermore, the resumes were submitted between two and four hours apart from one another. The Research Assistants recorded a variety of information about each job advertisement, including the position title; position type (e.g., full-time, floater, etc.); provider name, location, and web address; and the minimum experience and education requirements (if any) for the position. In total, our database includes 10,986 resumes submitted in response to 2,772 child care job advertisements, of which 2,720 (98.1 percent) received all four resumes.[9]

V.B. Resume Characteristics

Using software created by Lahey and Beasley (2009), we generated a large bank of fictitious resumes, each one containing up to six sections: (i) name and contact information, (ii) a one-sentence personal statement, (iii) work history, (iv) educational attainment, (v) professional credentials and awards, and (vi) a brief statement about access to transportation. We took a number of steps to increase the authenticity and realism of the resumes so that our design (and results) mirror as closely as possible the

[7] For two reasons no resumes were submitted in November and December of 2016. First, discussions with child care center directors as well as our own analysis of the market led us to conclude that, following an early-autumn spike in child care hiring to coincide with the start of the new school year, hiring would slow considerably during the holiday season. Thus we expected a substantially smaller number of job advertisements during this period. Hiring spiked once again in January, as predicted by the center directors with whom we spoke, and we were able to achieve our target sample size at the end of this month. Second, after six months of continuous data collection, our research team required a well-deserved break for the holidays.

[8] This included variation in fonts, location of applicant names and contact information, location and formatting of section headings, use of horizontal lines separating resume sections, and other visual distinctions.

[9] For 17 job advertisements, we submitted three resumes. Another 20 job advertisements received two resumes, while 15 received only one resume. In most cases, the reason for failing to submit all four resumes was that the provider had closed the search.

experiences of real job-seekers. Specifically, we crafted the fictitious resumes from those of actual child care job-seekers residing in or near states in which our study cities are located. We began by using a web scraper to construct a large dataset of actual child care teacher resumes, drawn from an on-line job board in the U.S. These publicly available resumes provided the foundation for the personal statements as well as the work history and education content in our fictitious resumes. Next, we manually downloaded resumes in order to gain insight into the way child care teachers format their resumes. Although our fictitious resumes were constructed with these aesthetic features in mind, we altered some aspects of the formatting in order to generate batches of four sufficiently distinct-looking resume.

Following the convention in other audit studies (e.g., Bertrand & Mullainathan, 2004), each resume was randomly assigned a predominately white-, black-, or Hispanic-sounding name.[10] Given that about 95 percent of child care teachers are women (as shown in Table 2), we examine the effect of explicitly female-sounding names. Names within each racial/ethnic category were randomly assigned with equal probability (0.33), and the individual names were drawn without replacement, ensuring that no duplicates appear in a batch of four resumes. Our bank of names was generated primarily from lists and rankings maintained by the U.S. Census Bureau and other sources.[11] In addition, each resume was randomly assigned a local mailing address. To minimize the likelihood that child care providers may select applicants on the basis of perceived socioeconomic status, all mailing addresses within a city reside in a zip code that is at or close to the median household income for the city as a whole. We purchased actual addresses from a commercial vendor that maintains an extensive, up-to-date database of residential mailing addresses used primarily for targeted advertising campaigns. Each address was assigned with equal probability without replacement.

Next, each resume was randomly assigned one of four one-sentence personal statements. Embedded in each statement were two adjectives that are marker items for four of the Big Five

[10] Here we provide a brief description of each resume component; the on-line Technical Appendix includes a detailed discussion of the experimental treatments.

[11] Most of the white and black first names are consistent with those used in Bertrand and Mullainathan (2004), while the surnames were drawn mostly from the U.S. Census Bureau, which disaggregates the most common surnames by race and ethnicity.

personality domains: openness to experience, conscientiousness, extraversion, and agreeableness.[12] Widely considered the predominant personality inventory, the Big Five should be interpreted as representing personality at the broadest level of abstraction; indeed each domain summarizes six lower-level personality "facets" (for a total of 30 facets). The Big Five taxonomy has its origins in the lexical hypothesis—the notion that people's everyday language provides a scientifically valid basis for cataloguing personality characteristics (John & Srivastava, 1999). Lists of domain-specific adjectives were developed in studies by McCrae and Costa (1985), Goldberg (1990; 1992), and Saucier and Goldberg (1996), and a formal list of adjectives is used in the Revised NEO Personality Inventory (NEO-PR-R), a widely adopted Big Five questionnaire (Costa & McCrae, 1992). We used the NEO-PR-R along with the studies mentioned above to select two trait adjectives in each Big Five domain. Specifically, "creative" and "perceptive" were chosen for openness to experience; "responsible" and organized" for conscientiousness; "enthusiastic" and "energetic" for extraversion; and "friendly" and "cooperative" for agreeableness. Resumes assigned to a given personality domain included both trait adjectives in an otherwise neutral-sounding statement. For example, job-seekers randomly assigned to the agreeableness domain contained the statement "A friendly and cooperative individual searching for a job to work with children" at the top of the resume.[13]

To our knowledge, this is the first resume audit study to examine the labor market consequences of signaling the Big Five personality traits. We embedded these attributes in our resumes for two reasons. First, the economics and psychology literatures provide ample evidence of a strong relationship between Big Five-type personality traits and a range of schooling and socioeconomic outcomes, including academic achievement, health, crime, wages, and job performance (Borghans et al., 2008). Furthermore, the predictive power of these traits is shown to be comparable to IQ in some of these socioeconomic domains (Borghans et al., 2008). Second, our exploratory text analysis of real child care resumes and job

[12] "Neuroticism" is the one marker item that we omitted from the study.
[13] All four personal statements indicated that the applicant was seeking a job to work with children, although we slightly varied the specific language used in each statement.

advertisements revealed that teachers' own personal statements frequently contain one or more of the Big Five trait adjectives, and that child care providers often state explicitly that such characteristics are important requirements for the job (see the on-line Technical Appendix). Thus our goal was to examine whether signaling these personality traits meaningfully explains variation in interview requests.

To examine the effect of work experience, we constructed three main work history profiles: no previous ECE experience, six months of ECE experience, and two years of ECE experience. The six-month treatment was chosen because it meets or falls below the minimum lead teacher work experience requirement established in many of the states in which the providers are located (see Table 1). The two-year treatment was selected because it generally exceeds (sometimes considerably) the minimum requirement established by most states. To increase its prominence in the work history profile, resumes with previous ECE employment list it as being the most recently held job (i.e., shown at the top of the work history section). In addition, such resumes list the job title as "Assistant Teacher" or "Teacher's Assistant" to signal that the employment was entry-level, which is often a requirement for lead teacher positions.

Our resumes include another dimension of variation in work experience. For the resumes assigned to six months of ECE experience, that experience could be obtained at a KinderCare Learning Center or The Goddard School. Conditional on being assigned two years of experience, that experience could be received at a YMCA, Childtime Learning Center, or Primrose School. Two considerations guided our choices. First, these are large, national chains—with locations in or near our study cities—thus increasing the realism of the resume content and maximizing the odds that prospective employers were familiar with the providers. Second, the assignments allow us to examine whether reputational differences in the type or quality of applicants' prior ECE work experience has impacts on employer responses. Specifically, we use the YMCA as a proxy for obtaining low-quality ECE work experience; KinderCare and Childtime are considered average-quality providers; and Primrose and Goddard are

considered high-quality providers.[14] Such quality distinctions allow us to assess, for example, whether two years of experience at a YMCA, which entails looking after children for brief periods while parents use the gym, is as attractive to employers as ECE experience gained in formal center-based environments, such as Childtime or Primrose School.

Following the work history section, we summarized applicants' academic preparation by listing a high school diploma, an associate's degree, or a bachelor's degree as the highest level of educational attainment.[15] Each level was assigned with likelihood equal to 0.33. Resumes with an associate's or a bachelor's degree were assigned one of three majors: early childhood education (ECE), nursing, or business administration. Each major was assigned with equal probability (0.33). ECE was chosen because, as shown in Table 2, it is the predominant academic major among assistant and lead teachers. Nursing and business administration were selected because a sizable fraction of child care teachers pursue degrees in non-education fields (Table 2). Indeed, our analysis of over 300 real resumes for individuals seeking ECE employment (or with previous ECE work experience) revealed that a nursing degree was the most common non-education major, followed by business-related degrees.[16] Following Hinrichs (2014), resumes listing a bachelor's degree were assigned a degree-granting institution located either in the same state as that noted on the resume's mailing address or in a different state (each with probability 0.50). Resumes listing an associate's degree were assigned a community college located in or near the city of the applicant's mailing address. Finally, to signal job-seekers' academic performance, we

[14] We categorize the YMCA as providing low-quality work experience because the child care is provided at no cost—and for brief periods—to parents while they exercise; no educational content is prepared or delivered by caregivers; and there are no requirements to engage in professional development activities. To illustrate the quality and reputational differences between KinderCare/Childtime and Primrose/Goddard, we attempted to collect monthly (full-time) price data for one of each of the four centers located in every study city, across three age groups; see the Technical Appendix for tuition data. It is clear that in most cities Primrose (average preschool-age cost: $1,454/month) and Goddard ($1,590) are considerably more expensive than KinderCare ($1,209) and Childtime ($905). Therefore, to the extent that price and quality are correlated, we used these market price data as the basis for making distinctions between different kinds of ECE work experience (i.e, provider quality and reputation) that were signaled on the resumes.

[15] Our bank of high schools was developed using the National Center for Education Statistics' (NCES) Elementary and Secondary Information System (ElSi). For each city, we created a list of five high schools selected from the universe of public schools containing large student bodies that are relatively racially diverse, and whose zip code locations are at or near the city-wide median household income. To construct the bank of city-specific community colleges, we relied on lists maintained by the American Association of Community Colleges (AACC) as well as targeted web searches within each city. Finally, we constructed the list of colleges and universities by consulting the *Barron's Profiles of American Colleges for 2015*. To signal that our fictitious job-seekers are approximately the same age, all resumes list a high school completion year of 2012.

[16] According to the Princeton Review, business-related majors are the most commonly selected major among undergraduates, while nursing ranks number three.

assigned to each resume one of three GPAs for the highest degree attained: 2.8, 3.3, or 3.8 (each with probability 0.33).

The penultimate section of the resume examines the effect of various bundles of professional credentials, ECE-related coursework, and indicators of job performance. Specifically, each resume was randomly assigned one of four sets of characteristics: (i) fingerprint clearance card as well as CPR and First Aid certifications, (ii) CDA credential, (iii) fluency in English and Spanish (speaking, reading, and writing) along with a six-hour course in Cultural Diversity in Early Childhood Programs, or (iv) receipt of an award for Employee of the Month (EoM) as well as a bonus for outstanding job performance in the most recent position held. Conditions (ii) through (iv) also contain the same information in listed (i). We did this because most child care providers require these certifications as a condition of employment, as indicated in the job advertisements. Each set of attributes was assigned without replacement with probability equal to 0.25.

In the final section, we assigned to some resumes a statement signaling that the applicant has access to a reliable form of transportation. We examine this characteristic because our review of child care job advertisements revealed that providers often require applicants to have a car or access to another form of transportation. We crafted two similar statements ("I have access to reliable transportation" and "Have dependable transportation for work") so that resumes within a batch do not contain identical statements. Each is assigned with a probability of 0.25 (without replacement), thereby ensuring that half of the resumes contain a transportation statement and half do not.

V.C. Measuring Provider Responses

To facilitate communication between child care providers and our fictitious job-seekers, we established an email account for each name used in the study. Research Assistants monitored these accounts and recorded whether resumes received an email message from a provider. Specifically, following Bertrand and Mullainathan (2004) and Lahey (2008), the Research Assistants were trained to code two categories of responses: interview requests and other "positive" responses. An interview

request is defined as having received an explicit interview request or an invitation to discuss the resume and/or position in more detail. A positive response was coded if the job-seeker was asked to fill out an application, answer one or more pre-screening questions, provide additional information, or interview for a different position. A Research Assistant was assigned to double-check the coding accuracy of the email messages, and disputes were reviewed and adjudicated by one or both of the authors. Although we did not implement a time limit for coding employer responses, in practice 50 percent of interview requests were received either the day of or the day after the resume was submitted, and 90 percent were received within seven days of submission.

V.D. Empirical Model

Using interview requests as the primary outcome variable, we analyzed the experimental data with regression models of the following form:

[1] $$interview_{ijcm} = \beta_o + \mathbf{X}'\beta_1 + \mathbf{Y}'\beta_2 + \alpha_c + \delta_m + \lambda_j + \gamma_j + \varepsilon_{ijcm},$$

where *interview* is a binary indicator equal to one if resume *i* submitted in response to job advertisement *j* in city *c* and month *m* received an explicit interview request and zero otherwise; and $\mathbf{X}'$ is a set of randomly assigned resume characteristics. Our baseline model includes a set of city fixed effects (α), month fixed effects (δ), and dummy variables for the order in which the i^{th} resume was submitted (λ). Given the random variation in $\mathbf{X}'$, the coefficient vector represented by β_1 provides estimates of the causal effect of a given resume attribute on the likelihood of receiving an interview. Nevertheless, we conduct a number of specification tests to ensure robustness. First, we estimate auxiliary models that control for resumes' formatting choices as well as characteristics of the job advertisements ($\mathbf{Y}'$). The job advertisement characteristics include teacher-type (i.e., assistant or lead teacher), target age group (i.e., infant/toddler or preschool-aged), full-time status, and providers' minimum experience and education requirements. As a further specification check, we include a set of job advertisement fixed effects (γ), which allows for the possibility that the resume characteristics are correlated with provider-specific hiring preferences. Thus the fixed effects model uses only within-job-advertisement variation to generate the

coefficients. Given that the resume characteristics were randomly assigned, we expect estimates from the fixed effects and non-fixed effects models to be very similar. Following Farber et al. (2015), our preferred specification is a random effects model, which will yield consistent estimates of β_1 as long as provider-specific hiring preferences are uncorrelated with the resume characteristics. Again, given the random variation in $\mathbf{X}'$, we expect this assumption to hold. Since the random effects model uses between- and within-job-advertisement variation, a key advantage relative to the fixed effects estimator is the increased precision of the estimates. All standard errors are clustered at the job advertisement level.

VI. Results

VI.A. Summary Statistics

Tables 4 through 6 provide various summary statistics for the 10,986 resumes in our sample. Each table displays information on the full analysis sample as well as for each city in which resumes were submitted. We begin by presenting descriptive statistics on the resume characteristics (Table 4). Specifically, we show the proportion of resumes randomly assigned to each attribute. The proportions—both overall and within each city—conform to the assignment probabilities discussed in the previous section. Such patterns provide some evidence that the random assignment was undertaken successfully. Furthermore, in results not reported in the paper, we conducted a series of "balance" tests by performing cross-tabulations of the resume characteristics. In no case do we find statistically significant associations between the characteristics.[17]

Table 5 examines the characteristics of the job advertisements to which resumes were submitted. Fully 21 percent of resumes were submitted to child care providers advertising assistant teacher positions, while 75 percent were submitted in response to lead teacher advertisements.[18] A small share of resumes (four percent) was submitted to providers seeking both types of teachers. We also coded whether the job advertisement specified the age group of the children with which the teacher would be

[17] Results from these balance tests can be made available by the authors upon request.
[18] The category Teacher Assistant includes teacher's aides in addition to assistant teachers. The category Lead Teachers commingles advertisements seeking teachers and head teachers in addition to lead teachers.

working. Approximately 40 percent of the advertisements were for infant/toddler teacher positions, and 50 percent were for preschool-aged teachers. The former age category is defined as children less than three years of age, while the latter category includes children ages three to five.[19] Another 10 percent of job advertisements sought teachers to work with children in both age groups. Table 5 also shows that approximately two-thirds of the advertisements were seeking full-time child care teachers, while 23 percent were for part-time teachers.

The final set of figures in Table 5 displays the minimum ECE work experience and education requirements specified in the job advertisements.[20] Specifically, we coded whether a position required no more than one year, two years, or three or more years of previous ECE experience, as well as whether the position required a high school degree (including a GED), an associate's degree, or a bachelor's degree (irrespective of the field of study). Overall, 68 percent of child care job advertisements required no more than one year of previous ECE experience. Another 25 percent required two years of experience, while seven percent required three or more years. However, there was substantial variation across the cities. For example, the fraction of teacher positions requiring one year (or less) of experience ranged from 38 percent in Philadelphia to 90 percent in Phoenix. Regarding education, about half of all child care positions required no more than a high school degree, while 32 percent required an associate's degree and 17 percent required a bachelor's degree. Similar cross-city variation exists: approximately 90 percent of positions in Dallas, Houston, and Phoenix required a high school degree, compared to just 13 percent in Chicago.[21]

The final set of descriptive results, presented in Table 6, shows the positive response and interview rates for the full study sample and by city. Overall, 6.7 percent of resumes received a positive

[19] Most job advertisements included the words "infant", "toddler", or "preschool" in the position description. When this occurred, we used this language to code the age categories. However, in several instances, numerical versions of the age groups were indicated in the position description (e.g., "2's" or "twos classroom"). When this occurred, we relied on the age ranges described in the text.

[20] A non-trivial fraction of resumes were submitted in response to job advertisements that did not specify a work experience requirement (31 percent) or an education requirement (28 percent). The percentages reported in the table are based on the advertisements reporting this information.

[21] Not surprisingly, there is substantial variation in the experience and education requirements according to the type of child care position advertised. For example, whereas 73 percent of assistant teacher positions required a high school degree and only five percent required a bachelor's degree, the comparable figures for lead teachers are 44 percent and 21 percent.

response, and 23.7 percent received an explicit request for an interview (Panel A). The city-specific interview rate varies from a low of 9.1 percent in New York City to a high of 38.7 percent in Minneapolis. Panels B and C show that the interview rate is lower, on average, for resumes submitted in response to lead teacher positions than to assistant teacher positions (22.8 percent versus 26.7 percent). In addition, as shown in Panels D and E, the average interview rate for lead preschool teacher positions is lower than that for lead infant/toddler positions (19.3 percent versus 24.7 percent). In results not reported in the table, we also find that the interview rates are a decreasing function of the experience and education requirements specified in the advertisements. The interview rate is 24.4 percent for jobs that require no more than one year of ECE experience, compared to 16.0 percent for jobs requiring three or more years of experience. Among jobs requiring no more than a high school degree, the interview rate is 25.4 percent, declining to 14.0 percent among those requiring a bachelor's degree. Thus it appears that child care hiring managers screen resumes more rigorously when the job's minimum qualifications are more demanding.

VI.B. Baseline Regression Results for the Determinants of Receiving an Interview Request

Table 7 presents the main regression results establishing the causal effect of each resume characteristic on the likelihood of receiving an interview request. The results are based on the full sample of 10,986 resumes; subsequent tables will display disaggregated results by teacher type and age-group served. Each column provides estimates from an increasingly rich specification. Column (1) includes only the resume characteristics; column (2) adds the city and month fixed effects; column (3) adds the resume order fixed effects; column (4) estimates a job advertisement fixed effects model; and column (5) estimates a random effects model, which is our preferred specification. It appears that successively adding controls does little to change the estimated coefficients, providing another indication that random assignment was undertaken successfully. Appendix Table 1 provides several additional specification checks, whose results are very similar to our baseline estimates. In addition, Appendix Table 2 estimates the determinants of a positive response (rather than an interview request) using the same set of models

as in Table 7. Given that these results are qualitatively similar to (but less precisely estimated than) those in the baseline model, we focus the discussion on the interview rate.

The first set of results focus on the race and ethnicity of child care job-seekers. Applicants with African American- or Hispanic-sounding names are considerably less likely to receive an interview request than otherwise identical applicants with white-sounding names. Specifically, column (5) shows that African American applicants are 7.5 percentage points less likely to receive an interview, while Hispanic applicants are three percentage points less likely. The coefficients imply that, relative to white job-seekers, the interview rate for African Americans is approximately 32 percent lower, and the interview rate for Hispanics is 13 percent lower. Although this study's black-white interview gap is not as large as that reported in Bertrand and Mullainathan (2004) (50 percent), it is substantially larger than the estimated gap in Nunley et al. (2015) (14 percent) and is similar to the English/non-English name gap in Oreopoulos (2011) (39 percent).

The next set of results focus on the impact of the Big Five personality characteristics. Although the coefficients on the trait adjectives are positively signed—indicating that child care providers prefer traits related to agreeableness, conscientiousness, and openness to experience over extraversion (the omitted category)—the coefficients are small in magnitude and never statistically significant.

Regarding applicants' work history, it appears that child care providers have a strong preference for resumes showing previous ECE work experience. Indeed, relative to resumes without prior ECE experience, those with either six months or two years of experience are substantially more likely to receive an interview request. However, there appears to be decreasing returns to ECE experience: resumes with two years are actually less likely to receive an interview request than those with six months (11.5 versus 14.0 percentage points, respectively). As shown at the bottom of Table 7, the interview gap between those with six months and two years of ECE experience (2.5 percentage points) is statistically significantly different. Such results indicate that if providers are given a choice between an applicant whose work experience qualifications are close to the state-regulated minimum and another whose

qualifications exceed the regulations, the provider generally prefers the former. This provides initial evidence that teacher hiring decisions may be strongly influenced by states' child care regulations.

A similar pattern unfolds for educational attainment. Child care providers strongly favor applicants with post-secondary education credentials: those with associate's and bachelor's degrees are more likely to receive an interview than comparable applicants with a high school diploma. However, resumes with a bachelor's degree are no more likely to receive an interview request than those with an associate's degree. Indeed, a test of the equality of the education coefficients cannot be rejected, as shown at the bottom of Table 7. Nevertheless, it is important to recall that the minimum education requirement was a high school diploma in about 50 percent of the jobs to which we applied. Thus it appears that at least some child care providers are willing to pursue applicants whose educational attainment far exceeds the advertised minimum. Recall that both post-secondary education categories commingle three degrees: business, nursing, and ECE. A forthcoming analysis will estimate separate effects for each degree-type at the associate's and bachelor's levels.

Table 7 also reveals that earning a higher GPA helps child care job-seekers, up to a point. Relative to resumes listing a 2.8 GPA, those with a 3.3 are 2.5 percentage points more likely to receive an interview, while those with a 3.8 are no more likely to receive an interview. In fact, the coefficient on the 3.8 GPA (0.5 percentage points) implies that a child care applicant with that GPA is actually less likely to receive an interview than one listing a 3.3 GPA. These results are somewhat consistent with those reported in Hinrichs (2014), who finds that higher GPAs (of 3.1, 3.5, and 3.9) do not influence odds of receiving an interview in the market for elementary and secondary school teachers.

Next, we examine the effect of various professional credentials as well as indicators of job performance. Recall that each resume was assigned one of four characteristics: a fingerprint clearance card as well as CPR and First Aid certifications (omitted category), a CDA credential, fluency in English and Spanish along with a six-hour course in Cultural Diversity in Early Childhood Programs, or an award for EoM and a bonus for outstanding job performance. It appears that obtaining the CDA is about

equally attractive to child care providers as completing one ECE course (in addition to being bilingual): both credentials increase the likelihood of receiving an interview request by approximately three percentage points. Given that the CDA-effect is averaged over all (three) levels of formal education, subsequent analyses will examine whether those with high school or non-ECE associate's and bachelor's degrees are particularly helped by having a CDA. In addition, the coefficient on the proxy for positive job performance is small but positive and statistically significant (1.4 percentage points).

The final piece of our analysis focuses on whether having access to reliable transportation is attractive to child care providers. We find that signaling this on the resumes does not influence the odds of receiving an interview. This is somewhat surprising, given that many of the job advertisements we reviewed included explicit language that employees must have access to a car or another form of transportation.

VI.C. Expanded Set of Education Treatments

Table 8 examines the full set of post-secondary education treatments, again using resumes with a high school diploma as the omitted category. The same set of models is estimated here as in the previous table, and the models include the identical resume characteristics. Estimates from our preferred specification, shown in column (5), highlight a few noteworthy patterns. First, it appears that child care providers are willing to seek interviews with applicants from a variety of non-ECE educational backgrounds. We also find that job-seekers with an associate's degree in nursing are favored over their counterparts with a bachelor's degree, while the opposite holds for those with a business degree. Such results are consistent with the ECE workforce portrait presented in Table 2, showing that non-trivial fractions of assistant teachers (34 percent) and lead teachers (23 percent) possess degrees outside of the education field.

Second, it is clear that applicants with a degree in ECE are strongly favored over those with business and nursing degrees, irrespective of the level of education. Again, this finding is consistent with the characteristics of real center-based teachers, a plurality of whom hold post-secondary degrees in ECE

(45 percent) (Table 2). In addition, this result is perhaps not surprising given the growing policy push to articulate child care program standards that include specialized training in ECE, particularly for lead teachers. For example, all states with a Quality Rating and Improvement System (QRIS) incorporate teacher education and training benchmarks into the quality rating, and many stipulate that some portion of the teaching staff (within center-based settings) must be working towards an ECE degree as a condition of entering the QRIS (Austin et al., 2011).

Finally, our results show that, conditional on having an ECE degree, it appears that child care providers are indifferent as to whether that degree is at the associate's or bachelor's level. Indeed, the magnitudes of the ECE coefficients are virtually identical—implying that applicants at both levels of education are equally likely to receive an interview—and a formal test of the equality of the coefficients cannot be rejected, as shown at the bottom of Table 8. This result is important because it provides another example of the way in which providers evaluate the skill-level of child care job-seekers. Specifically, it appears that providers value increasingly qualified applicants up to a point, beyond which there may be decreasing returns to skill. This pattern was uncovered for ECE work experience and academic performance (i.e., GPA), and it may be germane as well to the way child care providers perceive the relative productivity of those with associate's and bachelor's degrees in ECE.

VI.D. Teacher Level and Age Group Served

Table 9 examines heterogeneity in child care providers' evaluation of job-seeker characteristics across job advertisements for assistant and lead teachers as well as infant/toddler and preschool-age teachers. Estimates from only the random effects models are presented to conserve space, and we continue to show results for the expanded set of education treatments. In addition, given the relatively small number of assistant teacher positions to which we applied, the analysis of infant/toddler and preschool-age teachers is restricted to lead teachers.

Looking first at the results for assistant and lead teachers [columns (1) and (2)], we find that African American and Hispanic applicants in both teacher categories are less likely to receive an

interview, although the negative effects are larger for assistant teacher positions. Applicants with previous ECE work experience are favored (over those with no experience) for both teacher positions. However, it remains the case—even for lead teachers—that those with six months of experience are favored over those with two years of experience. It also appears that having previous ECE experience is more important for assistant teachers than lead teachers. For example, six months of work experience increases the likelihood of receiving an interview by nearly 18 percentage points for assistant teacher positions; the comparable effect for lead teachers is 13 percentage points. Regarding educational attainment, child care providers seeking assistant teachers have a clear preference for applicants with an ECE degree at the associate's level over that at the bachelor's level. For lead teacher positions, providers are indifferent as to whether the ECE degree should be at the associate's or bachelor's level. Finally, having the CDA credential increases the interview rate for lead teacher positions (by 2.7 percentage points), but it does not influence provider perceptions in the market for assistant teachers.

Turning to the infant/toddler and preschool lead teacher positions [columns (3) and (4)], we find that the negative effect of African American- and Hispanic-sounding names is larger for preschool positions than for infant/toddler positions. The ECE work experience gap (in favor of those with six months) applies once again to applicants for both positions, although the gap is no longer statistically significant for preschool teachers. Also noteworthy is that the interview rates are not statistically different for job-seekers with an ECE degree at the associate's and bachelor's level—a finding that applies to infant/toddler *and* preschool teacher positions. That preschool job-seekers with a bachelor's in ECE are not more attractive may be a concern, given that such teachers are increasingly tasked with implementing school-readiness curricula which may require advanced training to administer. Nevertheless, our results also point to the possibility that providers seeking preschool teachers are attracted to a broader set of characteristics. In particular, preschool job-seekers with a CDA are more likely to receive an interview request, whereas this credential does not influence hiring decisions in the

market for infant/toddler teachers. We examine more extensively the importance of the CDA in the next set of analyses.

VI.E. The Influence of the CDA Credential

Table 10 explores heterogeneity in the effect of the CDA credential across various levels of education. We pay close attention to whether the CDA is valuable for applicants who do not have formal academic training in ECE. We do so by interacting the CDA dummy variable with separate dummies for high school diploma, non-ECE associate's degrees (i.e., business and nursing), and non-ECE bachelor's degrees (i.e., business and nursing). The omitted category is a high school diploma without a CDA.

For assistant teacher positions, the CDA does not appear to be helpful—and may actually be detrimental—to applicants' job search [column (1)]. The CDA coefficients at the high school and associate's levels are both negatively signed, although neither is statistically significant. The CDA coefficient at the bachelor's level is positive and of a meaningful magnitude (3.2 percentage points), but it too is statistically insignificant, and it is not significantly different from its bachelor's counterpart without a CDA. Applicants for lead teacher positions, on the other hand, are generally more attractive when they have a CDA [column (2)]. Those with a high school diploma and a CDA are 3.7 percentage points more likely to receive an interview than their high school counterparts without the credential. Furthermore, those pairing a (non-ECE) bachelor's degree with the CDA are 2.4 percentage points more likely to receive an interview than their counterparts without the credential (0.0485-0.0243=0.0242; p-value: 0.143). It is also clear, however, that providers continue to strongly prefer applicants with an ECE degree over their non-ECE associate's and bachelor's counterparts, even if those individuals have a CDA.

A comparison of the estimates in columns (3) and (4) reveals that the effect of the CDA is quite different across infant/toddler and preschool teacher positions. For infant/toddler positions, having a CDA is particularly advantageous for those with a high school diploma (5.4 percentage points); it is not helpful to those with a bachelor's degree (relative to their counterparts without a CDA). On the other hand, although applicants for preschool positions are not more attractive when the CDA is paired with a

high school diploma (-0.009 percentage points), they are considerably more desirable when the credential is paired with a (non-ECE) bachelor's degree. The estimates imply a statistically significant interview rate difference of 4.8 percentage points between bachelor's-level applicants with and without a CDA (0.0598-0.0119=0.0479; p-value: 0.063). Such results imply that for lead preschool teachers—who likely administer educational curricula—a high diploma is not sufficient, even if the individual has a CDA. The labor market value of the CDA accrues to highly educated individuals who do not have formal training in ECE. The opposite appears to hold for infant/toddler teachers.

VI.E. Auxiliary Analyses

Tables 11 and 12 provide a set of supplementary results. We begin by examining whether child care providers value applicants who reveal positive signals of job and academic performance. Specifically, Panel A of Table 11 tests the extent to which applicants with six months and two years of ECE experience are more attractive if they received an EoM award along with a performance-based pay increase for that work. We do so by interacting separate dummy variables for six months and two years of ECE experience with the EoM dummy variable. The omitted category includes resumes with no ECE work experience and no receipt of an EoM award. Panel B examines whether job-seekers are rewarded for higher levels of academic performance. Specifically, we test the extent to which those with associate's and bachelor's degrees in ECE are more attractive as the GPA listed on the resume increases from a 2.8 to a 3.8. The omitted category includes resumes without an ECE degree and a GPA of 2.8.

The estimates in Panel A reveal that applicants to lead preschool teacher positions are more attractive if their resume lists an EoM award [column (4)]. Interestingly, the benefits accrue to those with and without previous ECE work experience. For example, those without ECE experience but who received an EoM award are 7.9 percentage points more likely to receive an interview than their counterparts who do not list an EoM award on the resume. Similarly, applicants with six months of ECE work experience are two percentage points more likely to receive an interview if the resume lists an EoM

award (0.1698-0.1497=0.0201). An even larger interview gap (3.5 percentage points) holds for those with two years of ECE experience (0.1579-0.1233=0.0346).

Panel B reveals a complex set of relationships between educational attainment and GPA. For those without an ECE degree, child care providers generally value increasingly strong academic performance, up to a point. That is, applicants with a 3.3 are more likely to receive an interview request than those revealing lower levels of performance (i.e., with a 2.8) *and* higher levels of performance (i.e., with a 3.8). Among those with an associate's in ECE, it is clear that child care providers value evidence of strong academic performance, particularly in the market for lead infant/toddler teachers. Applicants for infant/toddler positions with a 3.3 are more attractive than those with a 2.8, while applicants with a 3.8 are in turn more attractive than those with a 3.3. At the bachelor's (in ECE) level, on the other hand, it appears that the most qualified applicants (i.e., those with a 3.8) are actually less attractive than their counterparts with a 3.3 and are only slightly more attractive than their counterparts with a 2.8. The estimates for lead preschool teachers provide a striking example [column (4)]. Moving from a GPA of 2.8 to 3.3 increases by about nine percentage points (or 50 percent) the likelihood that an applicant with an ECE degree receives an interview. However, moving from a GPA of 3.3 to 3.8 decreases the odds of an interview by nearly six percentage points (or 32 percent).

The final set of analyses, whose results are shown in Table 12, exploits the additional dimension of experimental variation in applicants' work history: the reputation of the child care provider at which the applicant received her prior ECE work experience. We allow for separate effects of six months of experience to be accrued at a KinderCare Learning Center or the Goddard School; we similarly allow for separate effects of two years of experience to be obtained at a local YMCA, a Childtime Learning Center, or the Primrose School. We find no evidence that providers use the reputation of the previous child care employer (or the potential quality of the work experience gained there) in making hiring decisions. Among those with six months of ECE experience, providers are indifferent as to whether that experience was gained at a KinderCare or Goddard School. It is also intriguing that applicants with two

years of experience at a YMCA—essentially looking after children for brief periods while parents use the gym—are as attractive to child care providers as those who obtained their ECE experience in formal center-based environments such as a Childtime or Primrose School. Again, such results imply that states' regulatory requirements loom large in providers' hiring decisions.

VII. Conclusion

Very little is known about the process of hiring teachers in the child care market. Our goal in this paper is to understand how providers perceive various demographic, personality, and human capital characteristics when making hiring decisions for assistant and lead teacher positions. To examine the forces at work, we conducted a field experiment in which job-seeker characteristics were experimentally varied on realistic-looking resumes that were then used to apply for child care teacher positions in several U.S. cities. Altogether we submitted approximately 11,000 resumes to over 2,700 on-line assistant and lead teacher advertisements, and recorded responses from providers.

Our analysis is motivated by several considerations. First, child care providers must balance two competing goals: offering high-quality programs and earning enough revenue to stay in business. If high-quality care is more expensive to provide, and consumers do not reward quality, then providers face constraints that may prevent them from offering the socially optimal amount of quality. These constraints are complicated by the fact that states regulate several of the most costly but important inputs to the production of high-quality care, namely teacher work experience and education. In addition, the rise of states' QRIS places additional pressure on child care providers to increase workforce quality in order to achieve a higher overall quality rating. Thus our estimates of the effect of ECE experience and education are particularly important because they are in part the product of a child care policy environment that regulates (and encourages improvements in) the observable characteristics of teachers under the assumption that such characteristics are important to the production of quality. In other words, our study seeks to understand whether these policy-relevant attributes are valued by child care providers. A second motivation for our study is that the average quality of center-based care in the

U.S. is poor or mediocre. A potential explanation for the low-quality care is that program directors lack the information and financial resources needed to hire highly-qualified teachers, they inefficiently screen job applicants, or they value characteristics that do not translate into high-quality care. Thus our study—by assigning quality- *and* non-quality-related job-seeker attributes—aims to identify whether there is a mismatch between the hiring preferences of program directors and the characteristics thought to be correlated with teachers' skill level.

Our results point to a consistent pattern regarding the hiring behavior of center-based program directors: that of decreasing returns to job-seeker qualifications. Although providers prefer applicants with previous ECE experience, those with more experience are less likely to receive an interview than those with less. This applies to the education domain: providers prefer individuals with post-secondary degrees, but resumes with a bachelor's degree are no more likely to receive an interview than those with an associate's degree. This finding holds for advertisements seeking lead teachers in preschool-aged classrooms—settings in which school readiness curricula are being delivered—even when ECE degrees at the associate's and bachelor's level are compared. Finally, this pattern persists when comparing GPAs. That is, providers value evidence of stronger academic performance, up to a point: applicants with a 3.3 are more likely to receive an interview request than those revealing lower levels of performance (i.e., with a 2.8) *and* higher levels of performance (i.e., with a 3.8).

Together, these results highlight the possibility that child care providers are "middling it" with regard to job-seeker credentials. On the one hand, it appears that providers value the characteristics of job-seekers that are likely to contribute to high-quality programs. Indeed, providers are attracted to applicants with previous ECE experience and post-secondary degrees in ECE, and they are willing to reward those showing evidence of strong job performance (i.e., winning an EoM award). Such behavior is consistent with a model of firm behavior in which child care providers derive satisfaction from offering high-quality care. On the other hand, that providers show a relative reluctance to interview the most qualified individuals in our resume pool is suggestive of a number of possibilities. One

possibility—which is also consistent with the model of firm behavior—is that child care providers view extremely qualified applicants as being cost prohibitive: the demand for child care is such that it will not tolerate the prices needed to support a high-skilled workforce. Suggestive evidence of this comes in multiple forms, most obviously through the preferential treatment given to those with less ECE work experience and the lack of preferential treatment given to those with a bachelor's degree in ECE. Such cost concerns, however, may also manifest in subtler forms: for example, through the relative reward given to those with the highest GPA earned at the associate's level, coupled with the relative penalty of earning the highest GPA at the bachelor's level.

Another possibility is that providers inefficiently screen applicants, or they under-value teacher credentials like ECE experience and education relative to other job-seeker characteristics or relative to the credentials' "true" impact on classroom quality and child development. Two insights, however, argue against this interpretation. First, our results show that noisy job-seeker characteristics—including personality traits and having reliable transportation—do not influence hiring decisions. Second, our review of the literature reveals that the "objective" teacher credentials listed on our resumes—including ECE experience, education level, and degree-type—are not strongly correlated with classroom quality.

This leads to a final possibility: that child care providers do in fact screen resumes efficiently, and they simply believe that the most credentialed applicants do not produce higher-quality care than their less credentialed counterparts. To the extent that providers make this judgement, it appears to be aligned with the evidence showing a weak association between teacher credentials and classroom quality. Results in Blau's (2000) analysis seem particularly congruent with teacher hiring practices: he finds that the largest increases in classroom quality occur when teachers either receive a high school diploma or are enrolled in college courses; he finds no additional bump in classroom quality among teachers at higher levels of education, such as those with a bachelor's degree.

Whatever the explanation, our results have important implications for the recent policy push to increase child care teachers' salaries. Proposals to increase compensation are often motivated by the

promise that higher wages will increase the supply of high-quality teachers. To the extent that child care providers are screening applicants inefficiently or prefer non-quality-related job-seeker characteristics, our results suggest that there may be limitations on the ability to offer higher wages as a policy mechanism for improving the workforce. As noted by Hinrichs (2014), it may be more important to increase the quality of the applicant pool if the policy goal is to raise child care teachers' compensation.

Our results also hint at the importance of states' child care regulations in shaping the hiring decisions of center-based providers. Our study provides two pieces of indirect evidence to support this claim. First, child care providers operating in "strict" regulatory environments set substantially higher teacher requirements in the job advertisements than their counterparts operating in "lenient" environments. For example, 24 percent of teacher positions in strictly regulated states require at least a bachelor's degree, while only 12 percent of positions in lightly regulated states require such a degree.[22] Second, our regression results show that applicants with six months of prior ECE work experience—an amount that either just meets or falls below states' mandated minimum amount of experience—are more likely to receive an interview request than those with two years of ECE experience. These findings are suggestive of two important policy outcomes: that child care providers comply with states' regulations, and that the regulations may be an effective policy instrument for improving the structural dimensions of child care quality. In future work we plan to comprehensively study the role of states' child care regulations in the hiring decisions of center-based providers.

To the extent that the hiring practices identified in this study are related to providers' inability to afford the most qualified teachers, a reasonable policy response would seek to mitigate the information problems on the parent-side of the market. Given that parents are either unwilling to pay for high-quality child care or do not fully recognize the external benefits of such care, providers may have little incentive to make costly quality investments, including hiring teachers with more experience and educational

[22] States characterized an "lenient" require teachers to have either a high school diploma or less than 9 post-secondary credit hours, while those characterized as "strict" require teachers to have either a CDA or 9 or more credit hours (including completed associate's or bachelor's degrees). The states characterized a "lenient" include Arizona, California, Connecticut, District of Columbia, Massachusetts, Texas, Virginia, Washington, and Wisconsin. The states characterized as "strict" include Delaware, Georgia, Illinois, Maryland, Minnesota, Pennsylvania, New Jersey, and New York.

credentials. Such information problems may also prevent providers who have strong preferences for offering high-quality programs from entering the market in the first place, if they believe there will be little market reward for doing so. One policy response would be to engage in aggressive consumer education campaigns aimed at informing parents of the benefits of high-quality care, and how to identify it, so that the willingness to pay for such care might increase as a result. For example, most states now operate a QRIS in which child care programs volunteer to be evaluated in relation to a range of quality indicators—including teacher qualifications—that are used to produce a publicly available overall quality rating. At least one study finds that states' QRIS can alter parental preferences for child care and may increase teacher compensation (Herbst, 2016). Therefore, it appears that mitigating these parent-side information problems would in turn allow child care providers to hire more qualified teachers.

The final noteworthy finding is the large negative effect of having an African American- or Hispanic-sounding name on the likelihood of receiving an interview. Recall that our baseline estimates imply that, relative to white job-seekers, the interview rate for African Americans is approximately 32 percent lower, while the interview rate for Hispanics is 13 percent lower. One way to evaluate the magnitude of this effect is to compare it with the impact of other resume characteristics. For example, our results indicate that having an associate's or a bachelor's degree in ECE increases the odds of receiving an interview by approximately 50 percent (compared to having a high school diploma). Although this effect is substantially larger than that for Hispanic-sounding names, it is somewhat comparable to that for African American-sounding names. Such results are concerning given the growing racial/ethnic diversity of the preschool-age population and the ECE workforce. Children of immigrants and refugees now comprise one-quarter of all U.S. children under age six, and the immigrant share of the ECE workforce increased from eight percent in 1990 to 18 percent in 2013 (Park et al., 2015). Non-whites comprise about 40 percent of ECE teachers, and more than one-quarter are bilingual (Table 2). These demographic developments may warrant outreach efforts in order to better understand providers' racial hiring preferences.

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Table 1: Summary of the Regulatory Landscape for ECE Programs

	Center-Based Child Care Minimum Experience & Education Requirements		Proportion of Early Head Start and Head Start Teachers with a BA+		Public Pre-Kindergarten Education Requirements	
	Lead Teacher	Assistant Teacher	Early Head Start	Head Start	Lead Teacher	Assistant Teacher
Arizona	6 mos; HSD	12 mos	0.40	0.45	12 ECE credits or CDA	HSD
California	6 credits or CDA	HSD & 6 credits	0.36	0.65	California CDA	HSD
Connecticut	9 mos; HSD	540 hrs; HSD	0.35	0.65	CDA & 12 ECE credits	Other
Delaware	12 mos; 9 cred/CDA	6 mos; 3 credits	0.37	0.87	AA	HSD
Wash DC	36 mos; cert or CDA	12 mos; HSD	0.64	0.99	BA	AA or 48 credits
Georgia	No exp; CDA/TCC	None	0.30	0.78	BA	CDA
Illinois	12 mos; 10 credits	No exp; HSD	0.31	0.84	BA	Other
Maryland	12 mos; CDA	400-800 hrs; HSD	0.32	0.81	BA	Varies by locale
Massachusetts	36 mos; 12 credits	No exp; HSD	0.32	0.62	BA	Other
Minnesota	4,160 hrs; HSD	2,080 hrs; HSD	0.23	0.66	BA	CDA
New Jersey	24 mos; BA	12 mos; CDA	0.16	0.88	BA	HSD
New York	24 mos; 9 credits	12 mos or HSD	0.33	0.89	BA	HSD & 9 ECE credits
Pennsylvania	12 mos; AA	24 mos; HSD	0.41	0.84	BA	AA or 60 credits
Texas	No exp; HSD	No exp; HSD	0.17	0.74	BA	HSD
Virginia	6 mos; HSD	None	0.22	0.78	BA	HSD
Washington	No exp; HSD	None	0.30	0.53	AA	CDA or12 ECE credits
Wisconsin	4 mos; 6 credits	None	0.29	0.74	BA	AA or 60 credits

Sources: NIEER (2016a; b) and the National Database of Child Care Licensing Regulations (https://childcareta.acf.hhs.gov/licensing)

Notes: The Early Head Start and Head figures are for the 2014-2015 school year. The pre-kindergarten requirements are for the 2014-2015 school year. Mos: months. HSD: high school diploma. ECE: early childhood education. CDA: Child Development Associate credential. AA: associate's degree. BA: bachelor's degree. cert: child care certification course. TCC: Technical Certificate of Credit. No exp: no ECE work experience is required.

Table 2: Characteristics of ECE Teachers

Characteristic	Assistant	Lead
Female	0.947	0.971
	(0.223)	(0.168)
White	0.604	0.652
	(0.489)	(0.477)
Black	0.174	0.182
	(0.380)	(0.386)
Hispanic	0.166	0.123
	(0.372)	(0.328)
Other race/ethnicity	0.056	0.043
	(0.229)	(0.204)
Married/cohabitating	0.536	0.616
	(0.499)	(0.486)
U.S. born	0.878	0.895
	(0.327)	(0.306)
Bilingual	0.302	0.244
	(0.459)	(0.429)
ECE experience: 0-3 years	0.189	0.109
	(0.392)	(0.312)
ECE experience: 4-6 years	0.213	0.154
	(0.409)	(0.361)
ECE experience: 7-9 years	0.149	0.132
	(0.356)	(0.338)
ECE experience: 10+ years	0.450	0.605
	(0.498)	(0.489)
High school or less	0.251	0.164
	(0.434)	(0.370)
College credits, no degree	0.348	0.242
	(0.476)	(0.428)
Associate's degree	0.171	0.172
	(0.376)	(0.378)
Bachelor's degree or more	0.231	0.422
	(0.422)	(0.494)
ECE major	0.452	0.460
	(0.498)	(0.498)
ECE/education related major	0.209	0.309
	(0.406)	(0.462)
No ECE/education major	0.339	0.231
	(0.474)	(0.421)
CDA	0.190	0.259
	(0.393)	(0.438)
State teaching certification	0.184	0.364
	(0.388)	(0.481)
Attend prof development workshop	0.780	0.877
	(0.414)	(0.329)
Enroll in ECE college courses	0.316	0.324
	(0.465)	(0.468)
Receive coaching/mentoring	0.270	0.320
	(0.444)	(0.466)
Weekly hours of work	32.23	35.19
	(9.67)	(8.61)
Hourly wage	11.03	13.84
	(5.79)	(8.10)

Source: Authors' analysis of the National Survey of Early Care and Education (NSECE).

Table 3: Determinants of Hourly Wages for ECE Teachers

Characteristic	Assistant	Lead
Female	-0.036	-0.086**
	(0.034)	(0.037)
Black	0.036	-0.032*
	(0.029)	(0.019)
Hispanic	0.043*	0.037
	(0.022)	(0.023)
Other race/ethnicity	0.033	-0.050
	(0.030)	(0.032)
Married	0.070***	0.053***
	(0.017)	(0.014)
U.S. born	-0.019	0.039*
	(0.025)	(0.023)
Bilingual	0.026	-0.001
	(0.020)	(0.020)
ECE experience: 4-6 years	0.098***	0.087***
	(0.025)	(0.023)
ECE experience: 7-9 years	0.109***	0.127***
	(0.027)	(0.025)
ECE experience: 10+ years	0.214***	0.211***
	(0.024)	(0.021)
College credits, no degree	0.070	0.127*
	(0.075)	(0.067)
Associate's degree	0.112	0.225***
	(0.075)	(0.069)
Bachelor's degree or more	0.200**	0.517***
	(0.082)	(0.068)
ECE major	0.032	0.116***
	(0.023)	(0.019)
ECE/education related major	0.043	0.053**
	(0.027)	(0.024)
CDA	0.040**	-0.017
	(0.020)	(0.017)
State teaching certification	0.064***	0.135***
	(0.020)	(0.016)
Attend prof development workshop	0.054**	0.034
	(0.021)	(0.021)
Enroll in ECE college courses	-0.027	-0.007
	(0.018)	(0.015)
Receive coaching/mentoring	0.013	0.079***
	(0.019)	(0.015)
Observations	1,700	3,304

Source: Authors' analysis of the National Survey of Early Care and Education (NSECE)
Notes: Robust standard errors are in parentheses. Both models include dummy variables for region and for missing values on the teacher characteristics.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Resume Characteristics for the Full Sample and by City

	Full	Atl.	Bos.	Chi.	Dallas	DC	Hou.	LA	Minn.	NYC	Phil.	Phx.	SD	SF	Seattle
White name	0.34	0.37	0.33	0.32	0.36	0.35	0.30	0.36	0.34	0.34	0.32	0.30	0.34	0.33	0.33
African American name	0.33	0.29	0.33	0.36	0.32	0.32	0.37	0.29	0.36	0.33	0.37	0.36	0.32	0.33	0.34
Hispanic name	0.33	0.34	0.34	0.32	0.32	0.33	0.33	0.35	0.30	0.34	0.30	0.34	0.34	0.34	0.33
"Enthusiastic and energetic"	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
"Friendly and cooperative"	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
"Responsible and organized"	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
"Creative and perceptive"	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
No ECE experience	0.16	0.16	0.16	0.16	0.17	0.16	0.14	0.17	0.16	0.17	0.15	0.18	0.14	0.16	0.17
6 months of ECE experience	0.33	0.32	0.34	0.32	0.34	0.35	0.34	0.33	0.33	0.33	0.33	0.32	0.37	0.33	0.34
2 years of ECE experience	0.50	0.52	0.50	0.52	0.50	0.49	0.52	0.50	0.51	0.50	0.51	0.50	0.49	0.51	0.50
High school degree	0.33	0.37	0.32	0.35	0.33	0.35	0.36	0.32	0.34	0.32	0.33	0.32	0.31	0.30	0.34
Associate's degree	0.33	0.32	0.35	0.32	0.34	0.32	0.30	0.32	0.32	0.35	0.32	0.35	0.35	0.33	0.31
Bachelor's degree	0.34	0.31	0.33	0.33	0.33	0.34	0.35	0.36	0.33	0.33	0.35	0.33	0.34	0.37	0.35
GPA: 2.8	0.34	0.34	0.34	0.33	0.33	0.33	0.34	0.34	0.33	0.35	0.34	0.33	0.35	0.33	0.35
GPA: 3.3	0.33	0.33	0.31	0.34	0.34	0.33	0.32	0.33	0.32	0.32	0.32	0.33	0.34	0.33	0.33
GPA: 3.8	0.33	0.32	0.34	0.33	0.33	0.34	0.35	0.32	0.35	0.33	0.33	0.35	0.32	0.34	0.33
CPR/First Aid/Fingerprint	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
CDA credential	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Bilingual/diversity course	0.25	0.25	0.25	0.25	0.25	0.25	0.26	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
EoM award/bonus pay	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Reliable transportation	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Job Advertisements	2,772	226	219	205	169	221	141	237	229	221	226	163	76	238	201
Resumes	10,986	882	874	815	664	877	549	943	911	879	902	646	301	945	798

Notes: Each cell reports the fraction of resumes (overall and by city) with a given characteristic. EoM: employee of the month award.

Table 5: Job Advertisement Characteristics for the Full Sample and by City

	Full	Atl.	Bos.	Chi.	Dallas	DC	Hou.	LA	Minn.	NYC	Phil.	Phx.	SD	SF	Seattle
Assistant teacher	0.21	0.19	0.06	0.23	0.19	0.17	0.21	0.10	0.28	0.23	0.13	0.30	0.23	0.13	0.27
Lead teacher	0.75	0.76	0.92	0.75	0.81	0.76	0.76	0.88	0.67	0.76	0.83	0.66	0.72	0.87	0.71
Multiple positions	0.04	0.05	0.02	0.02	0.00	0.08	0.03	0.01	0.05	0.01	0.04	0.04	0.05	0.00	0.01
Infant/toddler teacher	0.40	0.61	0.51	0.55	0.48	0.37	0.58	0.16	0.40	0.38	0.52	0.37	0.09	0.15	0.31
Preschool teacher	0.50	0.31	0.38	0.41	0.42	0.53	0.32	0.69	0.50	0.57	0.34	0.46	0.86	0.78	0.55
Multiple positions	0.10	0.08	0.11	0.05	0.10	0.09	0.10	0.15	0.10	0.05	0.14	0.17	0.05	0.07	0.14
Full-time	0.67	0.77	0.75	0.83	0.58	0.79	0.75	0.67	0.77	0.77	0.84	0.62	0.59	0.65	0.63
Part-time	0.23	0.17	0.17	0.11	0.31	0.15	0.20	0.22	0.22	0.18	0.12	0.18	0.28	0.21	0.27
Flexible	0.10	0.05	0.08	0.06	0.12	0.06	0.05	0.11	0.02	0.04	0.04	0.20	0.14	0.15	0.09
Min ECE exp: <= 1 year	0.68	0.61	0.72	0.76	0.79	0.65	0.72	0.64	0.67	0.58	0.38	0.90	0.68	0.65	0.70
Min ECE exp: 2 years	0.25	0.25	0.20	0.21	0.15	0.26	0.24	0.32	0.25	0.32	0.57	0.08	0.23	0.22	0.20
Min ECE exp: 3+ years	0.07	0.14	0.08	0.02	0.06	0.09	0.04	0.04	0.08	0.11	0.05	0.01	0.09	0.13	0.10
Min education: HS	0.51	0.46	0.32	0.13	0.91	0.42	0.91	0.39	0.10	0.18	0.40	0.89	0.46	0.35	0.61
Min education: AA	0.32	0.41	0.43	0.58	0.06	0.37	0.06	0.39	0.70	0.30	0.41	0.10	0.51	0.43	0.31
Min education: BA+	0.17	0.13	0.25	0.29	0.03	0.21	0.03	0.22	0.20	0.52	0.18	0.01	0.03	0.22	0.08

Notes: Each cell reports the fraction of resumes (overall and by city) with a given characteristic. Min: minimum. Exp: experience. HS: high school. AA: associate's degree. BA+: bachelor's degree or more.

Table 6: Response and Interview Rates for the Full Sample and by City

	Full	Atl.	Bos.	Chi.	Dallas	DC	Hou.	LA	Minn.	NYC	Phil.	Phx.	SD	SF	Seattle
Panel A: All Positions															
Response	0.067	0.035	0.101	0.045	0.065	0.055	0.036	0.090	0.077	0.016	0.048	0.062	0.146	0.103	0.102
Interview	0.237	0.224	0.213	0.222	0.247	0.149	0.193	0.168	0.387	0.091	0.226	0.276	0.316	0.308	0.345
Panel B: Assistant Teachers															
Response	0.064	0.060	0.024	0.034	0.039	0.032	0.041	0.162	0.050	0.021	0.071	0.041	0.141	0.104	0.138
Interview	0.267	0.333	0.214	0.244	0.248	0.173	0.265	0.169	0.453	0.073	0.212	0.295	0.375	0.312	0.397
Panel C: Lead Teachers															
Response	0.068	0.030	0.112	0.050	0.061	0.057	0.027	0.081	0.095	0.014	0.045	0.069	0.148	0.099	0.093
Interview	0.228	0.199	0.214	0.210	0.258	0.142	0.174	0.177	0.343	0.097	0.233	0.261	0.305	0.299	0.334
Panel D: Lead Infant/Toddler Teachers															
Response	0.061	0.042	0.105	0.055	0.071	0.038	0.017	0.069	0.088	0.026	0.029	0.056	0.083	0.148	0.119
Interview	0.247	0.186	0.218	0.275	0.222	0.180	0.172	0.201	0.426	0.138	0.268	0.264	0.528	0.364	0.410
Panel E: Lead Preschool Teachers															
Response	0.068	0.010	0.122	0.049	0.067	0.030	0.052	0.078	0.074	0.007	0.049	0.104	0.133	0.096	0.068
Interview	0.193	0.171	0.139	0.163	0.220	0.126	0.188	0.175	0.286	0.075	0.170	0.228	0.301	0.250	0.244

Notes: Each cell reports the fraction of child care teachers who received a positive response or an interview request

Table 7: Regression Results for the Determinants of Receiving an Interview—Full Sample

	(1)	(2)	(3)	(4)	(5)
African American name	-0.0738***	-0.0769***	-0.0767***	-0.0739***	-0.0750***
	(0.0093)	(0.0091)	(0.0091)	(0.0084)	(0.0081)
Hispanic name	-0.0337***	-0.0330***	-0.0333***	-0.0273***	-0.0296***
	(0.0096)	(0.0094)	(0.0094)	(0.0085)	(0.0083)
"Friendly and cooperative"	0.0066	0.0070	0.0067	0.0066	0.0066
	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)
"Responsible and organized"	0.0032	0.0040	0.0038	0.0040	0.0039
	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)
"Creative and perceptive"	0.0084	0.0088	0.0086	0.0086	0.0086
	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)
6 months of ECE experience	0.1408***	0.1401***	0.1402***	0.1400***	0.1400***
	(0.0101)	(0.0100)	(0.0100)	(0.0100)	(0.0096)
2 years of ECE experience	0.1155***	0.1145***	0.1145***	0.1160***	0.1154***
	(0.0089)	(0.0089)	(0.0089)	(0.0089)	(0.0085)
Associate's degree	0.0560***	0.0560***	0.0558***	0.0519***	0.0533***
	(0.0099)	(0.0097)	(0.0097)	(0.0088)	(0.0084)
Bachelor's degree	0.0545***	0.0536***	0.0536***	0.0531***	0.0532***
	(0.0097)	(0.0096)	(0.0096)	(0.0089)	(0.0084)
GPA: 3.3	0.0210**	0.0202**	0.0201**	0.0267***	0.0247***
	(0.0085)	(0.0084)	(0.0084)	(0.0079)	(0.0078)
GPA: 3.8	0.0047	0.0032	0.0032	0.0054	0.0048
	(0.0083)	(0.0083)	(0.0083)	(0.0078)	(0.0077)
CDA credential	0.0244***	0.0242***	0.0243***	0.0256***	0.0250***
	(0.0085)	(0.0086)	(0.0086)	(0.0086)	(0.0086)
Bilingual/diversity course	0.0310***	0.0310***	0.0309***	0.0316***	0.0313***
	(0.0088)	(0.0088)	(0.0088)	(0.0088)	(0.0088)
EoM award/Bonus pay	0.0137	0.0139	0.0139	0.0148*	0.0144*
	(0.0085)	(0.0085)	(0.0085)	(0.0085)	(0.0085)
Reliable transportation	-0.0041	-0.0045	-0.0044	-0.0043	-0.0043
	(0.0061)	(0.0061)	(0.0061)	(0.0061)	(0.0061)
Observations	10,986	10,986	10,986	10,986	10,986
City/month indicators	No	Yes	Yes	No	Yes
Resume order indicators	No	No	Yes	Yes	Yes
Job ad fixed effects	No	No	No	Yes	No
Random effects	No	No	No	No	Yes
P-value: 6 months=2 years	0.001	0.001	0.001	0.001	0.001
P-value: AA=BA	0.876	0.804	0.815	0.892	0.993

Notes: Standard errors (in parentheses) are clustered at job advertisement level. EoM: employee of the month award. *, **, and *** indicate that a given coefficient is statistically significant at the 0.10, 0.05, and 0.01 level, respectively.

Table 8: Regression Results for the Determinants of Receiving an Interview—Expanded Set of Education Treatments

	(1)	(2)	(3)	(4)	(5)
Associate's in business	0.0116	0.0083	0.0081	0.0127	0.0110
	(0.0132)	(0.0129)	(0.0129)	(0.0117)	(0.0112)
Associate's in nursing	0.0340**	0.0338**	0.0336**	0.0213*	0.0258**
	(0.0141)	(0.0137)	(0.0137)	(0.0122)	(0.0117)
Associate's in ECE	0.1239***	0.1275***	0.1273***	0.1217***	0.1235***
	(0.0151)	(0.0146)	(0.0146)	(0.0132)	(0.0128)
Bachelor's in business	0.0223*	0.0184	0.0185	0.0286**	0.0250**
	(0.0131)	(0.0129)	(0.0129)	(0.0118)	(0.0111)
Bachelor's in nursing	0.0146	0.0164	0.0164	0.0156	0.0159
	(0.0131)	(0.0128)	(0.0128)	(0.0119)	(0.0113)
Bachelor's in ECE	0.1303***	0.1297***	0.1296***	0.1168***	0.1211***
	(0.0153)	(0.0152)	(0.0152)	(0.0138)	(0.0133)
Observations	10,986	10,986	10,986	10,986	10,986
City/month indicators	No	Yes	Yes	No	Yes
Resume order indicators	No	No	Yes	Yes	Yes
Job ad fixed effects	No	No	No	Yes	No
Random effects	No	No	No	No	Yes
P-value: AA ECE=BA ECE	0.737	0.905	0.904	0.763	0.878

Notes: Standard errors (in parentheses) are clustered at job advertisement level. *, **, and *** indicate that a given coefficient is statistically significant at the 0.10, 0.05, and 0.01 level, respectively.

Table 9: Regression Results for the Determinants of Receiving an Interview—by Teacher Type

	(1) Assistant Teacher	(2) Lead Teacher	(3) Lead Teacher Infant/Toddler	(4) Lead Teacher Preschool
African American name	-0.1047***	-0.0721***	-0.0655***	-0.0911***
	(0.0169)	(0.0090)	(0.0143)	(0.0126)
Hispanic name	-0.0340*	-0.0304***	-0.0080	-0.0355***
	(0.0177)	(0.0092)	(0.0142)	(0.0128)
"Friendly and cooperative"	0.0079	0.0035	-0.0076	0.0143
	(0.0174)	(0.0096)	(0.0157)	(0.0133)
"Responsible and organized"	0.0055	0.0036	-0.0044	0.0045
	(0.0178)	(0.0096)	(0.0156)	(0.0129)
"Creative and perceptive"	0.0156	0.0032	0.0093	-0.0084
	(0.0180)	(0.0096)	(0.0153)	(0.0130)
6 months of ECE experience	0.1766***	0.1269***	0.1493***	0.1094***
	(0.0194)	(0.0108)	(0.0175)	(0.0147)
2 years of ECE experience	0.1474***	0.1049***	0.1178***	0.0966***
	(0.0182)	(0.0094)	(0.0151)	(0.0129)
Associate's in business	0.0018	0.0124	-0.0028	0.0148
	(0.0233)	(0.0125)	(0.0200)	(0.0173)
Associate's in nursing	0.0232	0.0263**	0.0286	0.0054
	(0.0234)	(0.0133)	(0.0218)	(0.0171)
Associate's in ECE	0.1235***	0.1231***	0.1232***	0.1286***
	(0.0258)	(0.0143)	(0.0230)	(0.0197)
Bachelor's in business	0.0391	0.0277**	0.0012	0.0387**
	(0.0240)	(0.0125)	(0.0195)	(0.0171)
Bachelor's in nursing	0.0124	0.0150	0.0290	0.0030
	(0.0220)	(0.0128)	(0.0210)	(0.0163)
Bachelor's in ECE	0.0625**	0.1353***	0.1334***	0.1443***
	(0.0273)	(0.0150)	(0.0239)	(0.0209)
GPA: 3.3	0.0488***	0.0189**	0.0330**	0.0244**
	(0.0158)	(0.0087)	(0.0137)	(0.0119)
GPA: 3.8	0.0034	0.0023	0.0255*	-0.0047
	(0.0158)	(0.0085)	(0.0132)	(0.0118)
CDA credential	0.0075	0.0273***	0.0170	0.0261**
	(0.0182)	(0.0094)	(0.0150)	(0.0129)
Bilingual/diversity course	0.0563***	0.0218**	0.0067	0.0197
	(0.0188)	(0.0097)	(0.0160)	(0.0129)
EoM award/Bonus pay	0.0099	0.0157*	-0.0009	0.0329***
	(0.0175)	(0.0094)	(0.0158)	(0.0127)
Reliable transportation	-0.0167	-0.0026	-0.0119	0.0071
	(0.0127)	(0.0067)	(0.0106)	(0.0094)
Observations	2,712	8,591	3,653	4,324
P-value: 6 months=2 years	0.051	0.006	0.013	0.242
P-value: AA ECE=BA ECE	0.059	0.498	0.724	0.523

Notes: Standard errors (in parentheses) are clustered at job advertisement level. All models are estimated using random effects regression. EoM: employee of the month award. *, **, and *** indicate that a given coefficient is statistically significant at the 0.10, 0.05, and 0.01 level, respectively.

Table 10: Regression Results for the Determinants of Receiving an Interview—The Influence of the CDA Credential

	(1) Assistant Teacher	(2) Lead Teacher	(3) Lead Teacher Infant/Toddler	(4) Lead Teacher Preschool
High school with a CDA	-0.0029	0.0365***	0.0539**	-0.0085
	(0.0275)	(0.0141)	(0.0227)	(0.0193)
Associate's without a CDA	0.0228	0.0283**	0.0247	0.0201
	(0.0219)	(0.0119)	(0.0188)	(0.0174)
Associate's with a CDA	-0.0211	0.0264	0.0289	-0.0002
	(0.0286)	(0.0165)	(0.0265)	(0.0233)
Associate's in ECE	0.1221***	0.1325***	0.1367***	0.1331***
	(0.0267)	(0.0146)	(0.0235)	(0.0224)
Bachelor's without a CDA	0.0208	0.0243**	0.0271	0.0119
	(0.0207)	(0.0114)	(0.0185)	(0.0159)
Bachelor's with a CDA	0.0317	0.0485***	0.0311	0.0598**
	(0.0293)	(0.0159)	(0.0239)	(0.0250)
Bachelor's in ECE	0.0631**	0.1442***	0.1465***	0.1454***
	(0.0277)	(0.0153)	(0.0239)	(0.0238)
Observations	2,712	8,591	3,653	4,324
P-value: AA w/o CDA=AA w/ CDA	0.144	0.916	0.884	0.403
P-value: AA w/ CDA=AA ECE	0.000	0.000	0.000	0.000
P-value: BA w/o CDA=BA w/ CDA	0.729	0.143	0.872	0.063
P-value: BA w/ CDA=BA ECE	0.401	0.000	0.000	0.006
P-value: AA ECE=BA ECE	0.068	0.515	0.732	0.654

Notes: Standard errors (in parentheses) are clustered at job advertisement level. All models are estimated using random effects regression. *, **, and *** indicate that a given coefficient is statistically significant at the 0.10, 0.05, and 0.01 level, respectively.

Table 11: Do Child Care Providers Value Positive Signals of Job and Academic Performance?

	(1) Assistant Teacher	(2) Lead Teacher	(3) Lead Teacher Infant/Toddler	(4) Lead Teacher Preschool
Panel A: Work Experience Interacted With a Measure of Job Performance				
No ECE experience & EoM	-0.0417	0.0259	-0.0185	0.0791**
	(0.0417)	(0.0232)	(0.0364)	(0.0328)
6 months of ECE experience & no EoM	0.1706***	0.1413***	0.1609***	0.1497***
	(0.0405)	(0.0200)	(0.0333)	(0.0286)
6 months of ECE experience & EoM	0.1677***	0.1521***	0.1621***	0.1698***
	(0.0371)	(0.0197)	(0.0335)	(0.0271)
2 years of ECE experience & no EoM	0.1237***	0.1081***	0.1177***	0.1233***
	(0.0364)	(0.0184)	(0.0306)	(0.0258)
2 years of ECE experience & EoM	0.1532***	0.1277***	0.1224***	0.1579***
	(0.0356)	(0.0176)	(0.0287)	(0.0256)
Panel B: Educational Attainment Interacted With a Measure of Academic Performance				
No ECE degree & 3.3 GPA	0.0339*	0.0108	0.0273*	0.0141
	(0.0181)	(0.0094)	(0.0151)	(0.0128)
No ECE degree & 3.8 GPA	-0.0095	-0.0065	0.0098	-0.0136
	(0.0182)	(0.0093)	(0.0147)	(0.0127)
Associate's in ECE & 2.8 GPA	0.0306	0.0841***	0.0707*	0.0922***
	(0.0378)	(0.0225)	(0.0364)	(0.0309)
Associate's in ECE & 3.3 GPA	0.1982***	0.1196***	0.1276***	0.1348***
	(0.0438)	(0.0218)	(0.0333)	(0.0289)
Associate's in ECE & 3.8 GPA	0.1386***	0.1364***	0.1850***	0.1344***
	(0.0431)	(0.0233)	(0.0365)	(0.0337)
Bachelor's in ECE & 2.8 GPA	0.0469	0.0972***	0.1041***	0.0986***
	(0.0430)	(0.0245)	(0.0375)	(0.0343)
Bachelor's in ECE & 3.3 GPA	0.0898**	0.1579***	0.1539***	0.1812***
	(0.0432)	(0.0229)	(0.0358)	(0.0315)
Bachelor's in ECE & 3.8 GPA	0.0404	0.1199***	0.1577***	0.1234***
	(0.0401)	(0.0233)	(0.0372)	(0.0323)
Observations	2,712	8,591	3,653	4,324

Notes: Standard errors (in parentheses) are clustered at job advertisement level. All models are estimated using random effects regression. EoM: employee of the month award. *, **, and *** indicate that a given coefficient is statistically significant at the 0.10, 0.05, and 0.01 level, respectively.

Table 12: Do Child Care Providers Find Some Sources of ECE Work Experience More Attractive Than Others?

	(1) Assistant Teacher	(2) Lead Teacher	(3) Lead Teacher Infant/Toddler	(4) Lead Teacher Preschool
6 months: KinderCare	0.1733***	0.1263***	0.1514***	0.0995***
	(0.0235)	(0.0125)	(0.0205)	(0.0171)
6 months: Goddard School	0.1804***	0.1275***	0.1472***	0.1190***
	(0.0217)	(0.0124)	(0.0202)	(0.0168)
2 years: YMCA	0.1349***	0.1037***	0.1161***	0.0911***
	(0.0221)	(0.0116)	(0.0188)	(0.0157)
2 years: Childtime	0.1417***	0.1067***	0.1156***	0.0970***
	(0.0220)	(0.0118)	(0.0188)	(0.0160)
2 years: Primrose School	0.1653***	0.1044***	0.1218***	0.1016***
	(0.0229)	(0.0119)	(0.0189)	(0.0165)
Observations	2,712	8,591	3,653	4,324
P-value: KC=GS	0.760	0.923	0.837	0.245
P-value: YMCA=CT	0.753	0.804	0.978	0.717
P-value: YMCA=PS	0.183	0.955	0.765	0.525
P-value: CT=PS	0.295	0.848	0.748	0.784

Notes: Standard errors (in parentheses) are clustered at the job advertisement level. All models are estimated using random effects regression. KC: KinderCare. GS: Goddard School. CT: Childtime. PS: Primrose School. *, **, and *** indicate that a given coefficient is statistically significant at the 0.10, 0.05, and 0.01 level, respectively.

Appendix Table 1: Alternative Specifications for the Determinants of Receiving an Interview

	(1) Resume	(2) State FE	(3) Resume Format	(4) Job Ad	(5) DoW	(6) Submitter
African American name	-0.0738***	-0.0756***	-0.0737***	-0.0720***	-0.0736***	-0.0732***
	(0.0093)	(0.0091)	(0.0093)	(0.0093)	(0.0093)	(0.0092)
Hispanic name	-0.0337***	-0.0326***	-0.0335***	-0.0326***	-0.0336***	-0.0348***
	(0.0096)	(0.0095)	(0.0096)	(0.0096)	(0.0096)	(0.0096)
"Friendly and cooperative"	0.0066	0.0067	0.0067	0.0066	0.0064	0.0067
	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)
"Responsible and organized"	0.0032	0.0035	0.0032	0.0033	0.0033	0.0034
	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)
"Creative and perceptive"	0.0084	0.0085	0.0087	0.0084	0.0087	0.0086
	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0086)
6 months of ECE experience	0.1408***	0.1407***	0.1403***	0.1408***	0.1405***	0.1410***
	(0.0101)	(0.0100)	(0.0101)	(0.0100)	(0.0101)	(0.0101)
2 years of ECE experience	0.1155***	0.1152***	0.1148***	0.1164***	0.1152***	0.1161***
	(0.0089)	(0.0089)	(0.0089)	(0.0089)	(0.0090)	(0.0089)
Associate's degree	0.0560***	0.0571***	0.0565***	0.0580***	0.0559***	0.0558***
	(0.0099)	(0.0097)	(0.0099)	(0.0098)	(0.0099)	(0.0099)
Bachelor's degree	0.0545***	0.0545***	0.0547***	0.0554***	0.0543***	0.0534***
	(0.0097)	(0.0096)	(0.0098)	(0.0097)	(0.0097)	(0.0097)
GPA: 3.3	0.0210**	0.0204**	0.0217**	0.0208**	0.0207**	0.0203**
	(0.0085)	(0.0084)	(0.0085)	(0.0085)	(0.0085)	(0.0085)
GPA: 3.8	0.0047	0.0036	0.0051	0.0039	0.0045	0.0048
	(0.0083)	(0.0083)	(0.0084)	(0.0083)	(0.0084)	(0.0083)
CDA credential	0.0244***	0.0242***	0.0244***	0.0243***	0.0241***	0.0244***
	(0.0085)	(0.0086)	(0.0086)	(0.0086)	(0.0086)	(0.0085)
Bilingual/diversity course	0.0310***	0.0308***	0.0305***	0.0310***	0.0311***	0.0309***
	(0.0088)	(0.0088)	(0.0088)	(0.0088)	(0.0088)	(0.0088)
EoM award/Bonus pay	0.0137	0.0137	0.0130	0.0137	0.0135	0.0138
	(0.0085)	(0.0085)	(0.0085)	(0.0085)	(0.0085)	(0.0085)
Reliable transportation	-0.0041	-0.0042	-0.0044	-0.0042	-0.0041	-0.0042
	(0.0061)	(0.0061)	(0.0061)	(0.0061)	(0.0061)	(0.0061)
Observations	10,986	10,986	10,986	10,986	10,986	10,986
P-value: 6 months=2 years	0.001	0.001	0.001	0.002	0.001	0.002
P-value: AA=BA	0.876	0.789	0.858	0.788	0.877	0.810

Notes: Standard errors (in parentheses) are clustered at job advertisement level. Column (1) includes the basic resume characteristics; column (2) includes state fixed effects; column (3) controls for resume format; column (4) controls for the characteristics of the job advertisement; column (5) controls for the day of the week the resume was submitted; and column (6) controls for the individual who submitted a given resume. EoM: employee of the month award. *, **, and *** indicate that a given coefficient is statistically significant at the 0.10, 0.05, and 0.01 level, respectively.

Appendix Table 2: Regression Results for the Determinants of Receiving a Positive Response

	(1)	(2)	(3)	(4)	(5)
African American name	-0.0145***	-0.0140**	-0.0139**	-0.0165***	-0.0158***
	(0.0055)	(0.0054)	(0.0054)	(0.0050)	(0.0049)
Hispanic name	-0.0107*	-0.0107*	-0.0108**	-0.0097**	-0.0099**
	(0.0055)	(0.0055)	(0.0055)	(0.0049)	(0.0048)
"Friendly and cooperative"	-0.0015	-0.0014	-0.0016	-0.0006	-0.0010
	(0.0053)	(0.0053)	(0.0054)	(0.0053)	(0.0053)
"Responsible and organized"	-0.0035	-0.0034	-0.0034	-0.0029	-0.0032
	(0.0051)	(0.0051)	(0.0051)	(0.0051)	(0.0051)
"Creative and perceptive"	-0.0059	-0.0058	-0.0060	-0.0055	-0.0058
	(0.0051)	(0.0051)	(0.0051)	(0.0051)	(0.0051)
6 months of ECE experience	0.0273***	0.0268***	0.0268***	0.0324***	0.0310***
	(0.0062)	(0.0062)	(0.0062)	(0.0061)	(0.0058)
2 years of ECE experience	0.0211***	0.0213***	0.0212***	0.0208***	0.0210***
	(0.0056)	(0.0055)	(0.0056)	(0.0055)	(0.0053)
Associate's degree	0.0086	0.0076	0.0075	0.0093*	0.0087*
	(0.0057)	(0.0057)	(0.0057)	(0.0051)	(0.0048)
Bachelor's degree	0.0096*	0.0081	0.0081	0.0049	0.0059
	(0.0058)	(0.0057)	(0.0057)	(0.0050)	(0.0047)
GPA: 3.3	0.0047	0.0046	0.0046	0.0042	0.0044
	(0.0049)	(0.0049)	(0.0049)	(0.0045)	(0.0045)
GPA: 3.8	0.0021	0.0020	0.0020	0.0005	0.0008
	(0.0049)	(0.0049)	(0.0049)	(0.0045)	(0.0044)
CDA credential	0.0013	0.0013	0.0014	0.0014	0.0013
	(0.0050)	(0.0050)	(0.0050)	(0.0050)	(0.0050)
Bilingual/diversity course	0.0080	0.0080	0.0080	0.0082*	0.0080
	(0.0049)	(0.0049)	(0.0049)	(0.0049)	(0.0049)
EoM award/Bonus pay	0.0091*	0.0091*	0.0091*	0.0094*	0.0093*
	(0.0050)	(0.0050)	(0.0050)	(0.0050)	(0.0050)
Reliable transportation	0.0055	0.0054	0.0054	0.0055	0.0055
	(0.0034)	(0.0034)	(0.0034)	(0.0034)	(0.0034)
Observations	10,986	10,986	10,986	10,986	10,986
City/month indicators	No	Yes	Yes	No	Yes
Resume order indicators	No	No	Yes	Yes	Yes
Job ad fixed effects	No	No	No	Yes	No
Random effects	No	No	No	No	Yes
P-value: 6 months=2 years	0.189	0.240	0.232	0.005	0.016
P-value: AA=BA	0.865	0.933	0.922	0.398	0.570

Notes: Standard errors (in parentheses) are clustered at job advertisement level. EoM: employee of the month award. *, **, and *** indicate that a given coefficient is statistically significant at the 0.10, 0.05, and 0.01 level, respectively.