

## The influence of center-based care on young children's gender development

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### ABSTRACT

Many U.S. children spend a significant amount of time in center-based care prior to entering preschool. Previous theory and research would suggest center-based care settings offer important opportunities for gender socialization as children here are surrounded by multiple sources of gender-typing information (e.g. peers, adults, toys and activities). The present longitudinal study examined whether center-based care enrollment status influences level and timing of children's gender-typed behaviors (same-gender friendships, play and appearance), and knowledge (self-categorization and stereotyping) between the ages of 2–5. Participants were children and their mothers of low-income, urban backgrounds ( $N = 232$ ; African American, Mexican American, and Dominican American). Overall, children enrolled in center-based care at ages 2 and 3 showed higher gender-typing patterns than children enrolled later or not at all. Associations were strongest for same-gender friendships and gender-typed play, domains that might affect children's subsequent engagement in and learning of certain tasks, skill-sets, and activities.

### Introduction

A friend's grandson returned from his first day at a childcare center. She asked him if he had learned anything. "Oh, yes!" he responded, "I learned that I am a boy, and I get to play with the boys' group."

Outside the home, a large portion of children's gender socialization might occur in center-based care settings. In fact, in 2016, close to 49% of U.S. children ages 3–5 (nearly 4 million) were enrolled in center-based care, a number that stands in stark contrast to those only receiving parental care (27%) (NCES, 2016). When young children first enter center-based care, they may have little awareness of distinctions between boys and girls. Yet, these settings provide an opportunity to learn about gender as children may be, for the first time, in the presence of large numbers of boys and girls, as well as gender-typed toys and activities. Therefore, center-based care enrollment might speed up or heighten gender-typed behaviors (e.g. same-gender friendships) and knowledge (e.g. gender self-categorization). Moreover, previous research has suggested that early gender-typing can have long-term consequences spanning multiple domains, such as differential academic performance and success in school, discrimination in the workplace, mental health implications in adolescence and adulthood and, on a greater macro-scale, general societal inequality between genders (for a

review, see Leaper, 2015; Mehta & Strough, 2009). Considering the substantial number of young children enrolled in center-based care in the United States, as well as the lasting implications of early childhood gender-typing patterns, there is a need to investigate whether and how this relatively unexplored context may influence the timing and level of children's understanding of gender as well as the trajectory of their subsequent gender attitudes and behaviors.

Early and consistent experience in center-based care has indeed been shown to influence children in areas outside of gender development. Some studies found that children in center-based care were rated as higher in externalizing behaviors and lower in self-control (e.g., Huston, Bobbitt, & Bentley, 2015), whereas other studies reported that children in center-based care demonstrated higher language and cognitive skills relative to peers not in center-based care (e.g., NICHD Early Child Care Research Network, 2002). However, to our knowledge, no study to date has examined whether center-based care enrollment influences gender development patterns, especially in terms of associations between gender-related center-based care experiences and children's subsequent levels of gender-typing and knowledge. The present study thus aims to address this gap.

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## Theories of early gender development and the influence of center-based care

Various theories of gender development imply that center-based care experiences would promote children's expansion and establishment of gender-related knowledge and behavior. Some theories focus on the child's own construction of gender, the idea that children are active processors of social category information (e.g., Martin & Ruble, 2004). Other theories focus on the socialization agents (e.g., teachers and peers) and settings and microsystems (e.g., the structure of a childcare center) that actively promote children's gender-typing (e.g. Leaper, 2002).

### *Cognitive developmental theories*

Many models of gender role development contend that children not only learn, but also construct gender by actively attending to cues in their social environments, such as media representations of gender (Halim, Ruble, & Tamis-LeMonda, 2013). Such cognitive theories of gender development (Martin & Halverson Jr, 1981; Ruble, 1994; Tobin et al., 2010) have grown out of Piaget's (1961) view of children as active learners. These theories propose that gender cognitions promote biased gender attitudes and gender-typed behaviors as children attempt to conform to the stereotypes that they learn (Halim & Ruble, 2010). For example, Kohlberg's (1966) cognitive developmental theory suggests that children's growing understanding of the constancy of one's gender motivates them to search for and learn gender stereotypical information (Ruble, Lurye, & Zosuls, 2007; Slaby & Frey, 1975). Additionally, later-introduced gender schema theories (Bem, 1981; Martin & Halverson Jr, 1981) consider children as actively involved in constructing their own, internal representations of "maleness" and "femaleness" from the social cues they encounter in everyday environments.

More recently, researchers have further theorized about the developmental course of gender stereotyping. Aligning with Kohlberg (1966), Trautner et al. (2005) presented a three-stage progression of children's gender schema. According to this theory, beginning with the initial learning of gender stereotypes during toddler and early preschool years, children subsequently move into gender rigidity between the ages of three and six (with a significant peak around the age of 3–4) (Halim, Ruble, Tamis-LeMonda, & Shrout, 2013). Finally, in the third stage, which typically occurs early in elementary school, children settle into greater gender flexibility and relax their former rigor in their gender-typing. The proposal of a curvilinear pattern in gender development from early to middle childhood has been supported in studies of gender stereotyping and gender-typed behavior (Halim, 2016; Martin & Ruble, 2004; Trautner et al., 2005). Such findings have important implications for examining the impact of center-based care on children's gender development. Specifically, we would expect that during periods of rigidity, typically occurring in early childhood (Halim, 2016) and coinciding with initial center-based care enrollment, children are likely to pay special attention to differences between same-, and other-gender peers, as well as the activities in which they are engaged.

### *Developmental intergroup theory (IT) (Bigler & Liben, 2006, 2007)*

The significance of groups for social categorization is made evident in DIT. This theory incorporates ideas both about gender construction and about socialization processes in examining why certain attributes (e.g. gender) become more salient than others and how such salience, in turn, can lead to stereotyped attitudes and behaviors. According to DIT, children have cognitive systems that promote their categorization of individuals into groups, which ultimately cultivate stereotyping schemas (Bigler & Liben, 2007). By being exposed to contexts with clusters of girls and boys, such as center-based care environments, children's attention to categorization cues are heightened, possibly leading to an earlier and higher use of gender as a classification

criterion relative to children not exposed to center-based care.

In addition to such "self-socialization" processes, DIT also suggests that both peers and childcare personnel could directly socialize children's gender development (Bigler & Liben, 2007; Chapman, 2016; Chick, Heilman-Houser, & Hunter, 2002). In center-based care, children are typically surrounded by more same-aged peers than in the home and are thus susceptible to gaining gender-related knowledge from a larger number of sources. According to DIT, explicit remarks from peers about groups (e.g., "Boys are messy") teaches children both labels as well as information associated with these labels (Bigler & Liben, 2007). Peer pressure and policing among children to guard gender boundaries are also common (Fabes, Pahlke, Martin, & Hanish, 2013; Hughes & Seta, 2003; Martin & Fabes, 2001; Martin & Ruble, 2009; Morrow, 2006) and influence children to adjust their attitudes and behaviors to fit group norms. In many cases, center-based care settings are children's initial group environment that involves regular encounters with peers, which further highlights the significance of investigating gender socialization in this milieu.

Personnel in childcare centers can also be powerful agents of gender socialization. In these settings, adults may inadvertently highlight gender categories in their pedagogy on a daily basis. Many, if not all factors deemed as salient in children's social categorization (e.g. adult verbal labeling ["boys...", "girls..."], implicit and explicit group separation and discrimination) are highly present in classroom-like settings (Bigler & Liben, 2007). These include differential treatment of male and female children by their teachers (Chen & Rao, 2011; Erdena & Wolfgang, 2007), the organization of seating according to gender (Hilliard & Liben, 2010), using gender-typed learning materials (Chick et al., 2002), and encouraging gender-typed toy play (Chapman, 2016; Lynch, 2015).

## Consequences of center-based care settings for gender development

Taken together, the processes described above would lead to predictions that experiences in center-based care would promote increased gender-typing, especially in young children. Despite a body of research documenting the prevalence of various forms of gender socialization in center-based care (Bigler & Liben, 2007; Chick et al., 2002), surprisingly, there are, to our knowledge, no studies directly examining whether enrollment in center-based care, and age of exposure to center-based care, actually influences children's expression of and knowledge about gender. This is the goal of the present study. In this section, we review previous studies relevant to the two major elements of gender development we examine: (1) behaviors (same-gender-friendships, gender-typed play, and gender-typed appearance), and (2) knowledge (self-categorization as a boy or a girl and awareness of gender stereotypes).

### *Gender-typed behaviors*

Are center-based care experiences associated with higher levels of same-gender-friendships and gender-typed play? Although it is well-documented that preschool-aged boys and girls prefer to play with same-gender peers and gender-typed toys (Chick et al., 2002; Fabes et al., 2013; Ruble, Martin, & Berenbaum, 2006), there is little research examining whether enrollment in center-based care is associated with the level of these preferences or when they emerge. Findings from an experimental study based on DIT in a preschool (Hilliard & Liben, 2010) have suggested a causal relation between classroom-based gender categorizing (e.g., seating boys and girls separately) and level of gender-typing (e.g., lower ratings of and decreased play with other-gender peers). Thus, to the extent that center-based care generally makes gender salient, it would be expected to heighten gender-typed behaviors. For example, one outcome of gender-typing in center-based care settings could be that children play more often with same-gender peers

and less often with other-gender peers. Previous research has shown, moreover, that gender segregation in young children can result in more gender-differentiated play (Martin & Fabes, 2001). Somewhat surprisingly, there has been no examination of how center-based care experiences may affect another significant form of gender-typing, namely, appearance rigidity (strong insistence on wearing gender-typed clothing; Halim et al., 2014), an omission we address in the present study.

### Gender-related knowledge

Are children's center-based care experiences associated with their gender self-categorization and awareness of gender stereotypes? According to cognitive developmental perspectives, environments where children can attend to, and acquire information from social groups should enhance children's knowledge of gender, including which gender category they and others belong to and gender stereotypes (Martin, Ruble, & Szkrybalo, 2002). Specifically, center-based care settings offer social group contexts where children can watch and learn from their peers' gender-related attitudes, behaviors, and appearance, and also attend to information relayed via childcare personnel in their interactions with children and each other. As such, we would expect children enrolled in center-based care to have higher gender-related knowledge than children who are not. No prior work has examined whether enrollment in center-based care is associated with children's gender-related knowledge, or the timing of its onset, although one recent study found that children in gender-neutral preschools generally demonstrated lower gender stereotype knowledge than children in regular preschools (Shutts, Kenward, Falk, Ivegran, & Fawcett, 2017).

### Current study

Although previous research has documented the gender-typed nature of center-based care, we do not yet know whether center-based care enrollment actually influences young children's gender-typing. The present study begins this quest with a naturalistic examination of whether children enrolled in center-based care are more gender-typed than those who are not, while also considering longitudinal variations. We proceeded from secondary data consisting of interviews with and observations of ethnically diverse children and their mothers in a 4-year annual longitudinal study, which began at age 2 and collected multiple measures of gender-typed behaviors and knowledge. These measures were developmentally relevant at the time points considered and have previously been used in research on early gender development (Halim, Ruble, Tamis-LeMonda, & Shrout, 2013). In this way, we could follow participants to see if and when they entered center-based care and assess the possible effect of center-based care timing on gender-related outcomes. Typically, as young children first enter center-based care they are only just beginning to learn about gender categories, and may thus be particularly susceptible to the heightened levels of gender-typed information present in these settings. The implications of acquiring gender-related knowledge sooner are, as stated earlier, multiple and wide-reaching. These implications underscore the importance of better understanding gender-typing in structured settings outside the home, such as childcare centers, where many children spend a substantial proportion of their time.

Moreover, the nature of our data allowed us to sample populations of predominantly racial and ethnic minority-, and low socioeconomic status backgrounds. Specifically, we were able to include three of the most common racial and ethnic minority groups in the United States, African Americans, Dominican Americans and Mexican Americans (Vespa, Armstrong, & Medina, 2018). This was an important opportunity for the following reasons: First, it allowed us to consider families of different backgrounds and demographics than are usually studied in developmental science. Second, we could include those racial and

ethnic groups who use center-based care the most (African Americans, 34%), and the least (Latinx, 22%) as their type of primary child care arrangement (NCES, 2019). Finally, all three groups might differ from the typically studied European American, middle-class populations on factors relevant to gender-typing development. Some previous research has found, for example, that African American children hold less rigid, and more gender egalitarian ideas of gender roles and gender-typing behaviors (Albert & Porter, 1988), while Latinx children demonstrate more traditional gender stereotypes (Bailey & Nihlen, 1990; Zosuls, Lurye, & Ruble, 2008). Overall, the inclusion of these racial and ethnic minority populations in our study provided us with the opportunity to examine the association between center-based care experience and gender-typing patterns in populations with a possibly large cultural variation in their gender values. At the same time, we remain cautious about overemphasizing the influence of culture on minority populations (Causadias, Vitriol, & Atkin, 2018).

We hypothesized that children with recent or current experience in center-based care would show higher and earlier levels of gender-typing (same-gender-friendships, gender-typed play, and gender-typed appearance) and higher levels of gender-related knowledge (gender self-categorization and stereotypes), than children with no center-based care experience. We also anticipated that such effects would be more evident at younger ages, as early center-based care experiences may represent a form of gender awakening as suggested in our opening anecdote.

### Method

#### Participants

Data used for the current study were drawn from a longitudinal study focused on the role of culture and context in shaping school readiness among ethnically diverse families living in a large, urban U.S. city in the Northeast. Participants were mothers ( $M_{\text{age}} = 29.06$ ,  $SD = 5.64$ ) and their children ( $N = 232$ ; 112 girls, 120 boys) from Dominican American ( $N = 83$ ; 36 girls, 47 boys), African American ( $N = 77$ ; 35 girls, 42 boys) and Mexican American ( $N = 72$ ; 41 girls, 31 boys) backgrounds. Recruitment of participants occurred at public hospitals where mothers had just given birth to their children. To qualify for the study, mothers were required to be 18 years or older, not live in a shelter and self-identify as Dominican American, Mexican American, or U.S.-born, 3rd + generation African American. Focal children were healthy and full-term upon delivery (birth weight > 2500 g). Around 50% of those asked agreed to participate in the study. All groups were of similar (relatively low) SES; however higher proportions of families of Mexican American backgrounds were undocumented, and thus many of the surveyed mothers were not officially employed. The final sample of participants were predominately of low SES with an average family income of \$20,459/year ( $SD = \$14,632$ ) at baseline. At the time of recruitment 70% of Dominican American, 50% of Mexican American, and 65% of African American mothers had completed high school or a GED, while 8.6% of Dominican American, 2.9% of Mexican American, and 2.6% of African American mothers had completed at least a B.A. Co-residency with the child's father was the most common among Mexican American mothers (87.5%), followed by Dominican American (64%), and African American (47%) mothers.

Although the sample was recruited at infants' birth, data for this study were collected at 4 time points: at age 2 ( $M = 2.06$  years,  $SD = 0.11$ ), 3 ( $M = 3.03$  years,  $SD = 0.14$ ), 4 ( $M = 4.21$  years,  $SD = 0.16$ ), and 5 ( $M = 5.16$  years,  $SD = 0.12$ ). At each time point, children were assessed within a month after their birthday in order to yield a narrow range in age. The sample at baseline was 380 mother-infant dyads, but the number of participants who continued with the study ranged from 181 to 200 at each subsequent time point. Families were lost between baseline and the first home visit (which took place at 14 months) due to relocating to another state, voluntarily dropping out

from the study, or loss of contact (e.g., disconnected phones; inaccurate contact information). At age 2, 200 mother-child dyads had complete data, 1 dropped out of the study, 3 moved out of the city, 26 could not be located, and 2 declined the visit. At age 3, 196 dyads had complete data, 4 moved out of the city, 26 could not be located, 5 declined the visit, and 1 parent was deceased. At age 4, 181 dyads had completed the visit, 1 dropped out of the study, 4 moved out of the city, 37 could not be located, and 9 declined the visit. Finally, at age 5, 198 dyads had completed the visit, 1 dropped out of the study, 3 moved out of the city, 20 could not be located, and 10 declined the visit. Comparisons of families with complete versus incomplete data revealed no significant differences on maternal variables such as education, professional, marital, and immigrant status, dominant language, age, physical health, psychological distress, household living arrangement and household income. Additionally, comparisons between children with complete versus incomplete data showed no significant differences on cognitive and/or language skills at age 2.

*Procedure and measures*

Data collection occurred in children's homes (ages 2 and 3 years, approximately 2 h/session) and at a university lab (ages 4 and 5 years, approximately 3 h/session). The specific measures used in the present study took approximately 10–15 min in total to complete. Parental consent was obtained either in person or through the mail via signed returned consent forms. After each visit mothers were paid \$75.00 for their time. Measures were collected from three sources: parent report, child report, and observations of children's play and appearance (see Table 1 for summary of measures and at what ages measures were administered). Mothers and children were interviewed and assessed in their dominant language (English or Spanish). Some of the measures were administered at multiple time points, while others were only administered once. Decisions to test measures at different ages were made based on the developmental relevance of a given measure at different time points in children's development. In addition, as the main purpose of the larger longitudinal study was to investigate culture and school readiness, and gender was only one of many topics of interest, gender-oriented measures were not consistently included at every wave.

*Predictor: center-based care enrollment*

At each time of data collection, mothers were asked if they had any type of center-based care arrangement for their child. From their reports, we created a categorical variable indicating whether children had never attended center-based care ( $n = 43$ ; 21 boys, 22 girls), or first entered center-based care at age 2 ( $n = 32$ ; 18 boys, 14 girls), age 3 ( $n = 44$ ; 24 boys, 20 girls), age 4 ( $n = 69$ ; 37 boys, 32 girls), or age 5 ( $n = 44$ ; 20 boys, 24 girls). Children were categorized as enrolled in center-based care if the mother stated that her child was attending center-based care. The remainder of the responses indicated informal

**Table 1**  
Summary of measures and child ages when tested.

Measures	Age 2	Age 3	Age 4	Age 5
Gender-typed behaviors				
<i>Same-gender-friendships</i>	*	*	*	*
<i>Gender-typed play</i>				
Mother-reported	–	*	*	*
Observed	*	*	–	–
<i>Gender appearance</i>				
Mother-reported appearance rigidity	–	–	*	–
Observed gender-typed appearance	*	*	*	*
Gender-related knowledge				
<i>Self-categorization</i>				
Mother-reported	*	–	–	–
Child-reported	–	*	–	–
<i>Gender stereotyping</i>	–	*	*	–

arrangements such as babysitters, and family-based care (being in someone's home with other children) and were thus included in the comparison group. By the time children were 4–5, most were enrolled in center-based care. Percentage of center-based care characterized as Early Head Start or Head Start by the mother is as follows: 52% at age 3 and 74% at age 4. At age 5, many children started kindergarten, however 11% of the sample continued to be in Head Start center-based care. The question about Early Head Start was not asked at the age 2 time point.

Moreover, in certain analyses we divided our sample into two groups: whether children were in center-based care, or not in center-based care at the time of measurement. In other analyses we divided our sample into groups based on the year they enrolled in center-based care (at age 2; age 3; age 4; age 5; or never). Chi square tests and ANOVAs revealed that center-based care groups did not significantly differ by gender, ethnicity, or household income. We did, however, find that mothers' education level was related to center-based care enrollment in that mothers with less education were less likely to enroll their children in center-based care than mothers with more education,  $F(2, 220) = 3.94, p = .004$ .

*Outcomes: children's gender-typed behaviors*

*Same-gender-friendships.* Mothers were asked whether their children had the opportunity to spend time with other children. If mothers responded positively, they were asked to list up to nine of their child's peers and report their gender, age, and relationship to the focal child (i.e. whether the peer was a friend or a relative). To remain consistent with earlier work on gender segregation (Halim, Ruble, Tamis-LeMonda, & Shrout, 2013), peers included in the present study were below the age of 10 and overtly labeled as friends by mothers. Additionally, siblings were excluded. According to prior studies, mothers' reports of their children's behaviors have demonstrated good construct validity; for example, they have been correlated with teacher ratings and have been shown to remain stable over time (e.g. Golombok et al., 2008). Additionally, the present measure has sufficient face validity in that mothers were asked to list their child's friends and separately indicate their friend's gender and age. As such, mothers were not primed to think about same-gender-friendships. Finally, the increases in same-gender-friendships with age found in prior research using this measure (Halim, Ruble, Tamis-LeMonda, & Shrout, 2013) are consistent with those found in past studies using observations (e.g. Maccoby & Jacklin, 1987).

At each age, we calculated the proportion of same-gender peers out of the total number of peers listed ( $M = 61.35\%$ ,  $SD = 22.75\%$ ). Despite potentially experiencing a lower quantity to choose from, mothers of children who never attended center-based care still listed the same number of friends, on average, as mothers of children attending center-based care.

*Gender-typed play*

*Mother-reported gender-typed play.* Mothers were asked how often the focal child plays with 3 female-typed items (kitchen/tea/food sets; dolls; soft toys/stuffed animals) and 3 male-typed items (toy guns/swords; vehicles; balls). Data were collected when children were aged 3, 4, and 5. Previous studies on children's toy play informed our choice of toys (Ruble & Martin, 1998) and support the reliability of asking mothers to report their children's type of play (Golombok et al., 2008). Mothers responded on a Likert scale where 0 = Never, 1 = Once or twice, 2 = Once a week, 3 = Several times a week and 4 = Every day. Male-typed items were reverse-coded for girls, and female-typed items were reverse-coded for boys. Female- and male-typed items were averaged together for girls and boys separately, and then combined into one measure ( $\alpha_{age3} = 0.59, \alpha_{age4} = 0.70, \alpha_{age5} = 0.72$ ). Thus, higher scores indicated more gender-typed play.

*Observed gender-typed play.* At 2 and 3 years of age, children were video-recorded playing alone for the duration of 5 min. In order to



minimize mothers' influence on children's play, mothers were asked not to interact with their children while filming was in session. For this task, children were provided 5 toys selected based on their familiarity in everyday life, their ability to lend themselves to pretend play, and their use in prior research (Blakemore & Centers, 2005; Campenni, 1999). The toys ranged from gender neutral (hand puppet, nesting cups, telephone) to female- (baby doll) and male-typed (truck). In accordance with past research (O'Brien & Huston, 1985; Servin, Bohlin, & Berlin, 1999; Weinraub et al., 1984), videos were coded using INTERACT Mangold for onsets and offsets of infants' manual contact with each object (please also refer to Zosuls et al., 2009 for details of these procedures and prior analyses with the present dataset). If a child played with more than one toy at a time, separate times were recorded for each toy that the child touched. For cases in which direct contact was intermittent because of the nature of play, as in certain types of activities involving the doll (for example, "feeding" might entail moving the spoon from the bowl to the doll and back again) and the truck (for example, pushing and letting go of the truck), play time was recorded as long as the child's gaze was fixed on the toy and the child was engaged in an ongoing play activity involving the target toy. Thirteen percent of the tapes were independently coded by four coders. Average Kappa scores for the coders was 0.94 (range = 0.91–0.98) for all possible combinations of pairs of coders. For analysis, durations of manual contact with truck and doll were examined. Two variables were computed for all children: (1) total time spent with same-gender-typed toys (e.g., boys playing with trucks and girls playing with dolls) and (2) total time spent playing with other-gender-typed toys (see Table 2 for means and standard deviations).

**Gender-typed appearance**

**Observed gender-typed appearance.** Researchers independently coded gender-typed appearance at ages 2, 3, 4, and 5 using footage from children's videotaped interviews (based on Halim, Ruble, Tamis-LeMonda, & Shrout, 2013). Specifically, a range of gender-typed elements was coded as either not present (= 0) or present (= 1). For girls, researchers coded for female-typed clothing (e.g. dresses/skirts), female-typed colors (e.g. pink), female-typed hair accessories (e.g. bows, hair bands), female-typed patterns or logos (e.g. hearts), female-typed fabric or fit (e.g. tulle), trend-conscious styles, formal wear (e.g. patent-leather Mary Janes), and jewelry. For boys, researchers coded for male-typed colors (e.g. dark blue), male-typed patterns or logos (e.g. cars), male-typed fabric or fit (e.g. baggy jeans),

**Table 2**  
Summary of MLM means (and standard deviations) over time by timing of center-based care enrollment.

	Age 2	Age 3	Age 4	Age 5
<b>Never entered</b>				
Same-gender-friendships	0.41 (0.34)	0.38 (0.26)	0.65 (0.33)	0.66 (0.29)
Gender-typed play	–	2.82 (0.59)	2.63 (0.72)	2.85 (0.58)
Other-gender-typed Play	–	1.19 (0.92)	1.36 (0.96)	1.12 (1.00)
Gender appearance	2.30 (1.56)	3.03 (1.38)	3.50 (1.55)	2.79 (1.63)
<b>Entered at age 2</b>				
Same-gender-friendships	0.77 (0.26)	0.55 (0.29)	0.76 (0.22)	0.71 (0.26)
Gender-typed Play	–	2.71 (0.45)	2.88 (0.49)	2.88 (0.43)
Other-gender-typed Play	–	1.26 (0.75)	1.04 (0.71)	0.72 (0.61)
Gender appearance	1.94 (1.57)	2.56 (1.00)	3.00 (1.36)	2.58 (1.50)
<b>Entered at age 3</b>				
Same-gender-friendships	0.52 (0.35)	0.48 (0.27)	0.73 (0.27)	0.73 (0.30)
Gender-typed play	–	2.70 (0.61)	3.01 (0.51)	2.98 (0.42)
Other-gender-typed play	–	1.34 (0.77)	0.89(0.82)	0.91(0.76)
Gender appearance	2.18 (1.57)	3.05 (1.28)	3.03 (1.82)	2.51 (1.50)
<b>Entered at age 4</b>				
Same-gender-friendships	0.56 (0.33)	0.44 (0.29)	0.66 (0.29)	0.76 (0.24)
Gender-typed play	–	2.52 (0.50)	2.59 (0.59)	2.74 (0.50)
Other-gender-typed play	–	1.49 (0.92)	1.43 (0.97)	1.01 (0.84)
Gender appearance	1.93 (1.41)	2.96 (1.21)	3.15 (1.76)	2.27 (1.03)

sports-themed styles (e.g. basketball tanks) and formal wear (e.g. ties). Gender-typed appearance scores were summed separately for boys (max score = 5,  $M = 2.29$ ,  $SD = 0.99$ ) and girls (max score = 8,  $M = 3.29$ ,  $SD = 1.66$ ). Girls were given a wider score range as they tended to have a greater variety of gender-typed appearance elements to code for. Z-scores were centered on the grand means across time for boys and girls, respectively, and then combined into one variable. These data were collected at age 2, 3, 4, and 5 (see Table 2 for means and standard deviations) ( $\kappa = 0.80$ – $1.00$ ).

**Mother-reported gender appearance rigidity.** When children were 4 years old, mothers of sons were read two statements: 1) "My son avoids wearing feminine clothing and colors like pink" ( $M = 3.43$ ,  $SD = 1.53$ ); and 2) "My son loves to wear really masculine things like baseball caps, basketball shoes, and/or sports jerseys" ( $M = 4.09$ ,  $SD = 0.98$ ). Mothers of girls were read the following two statements: 1) "My daughter loves to wear pink clothing and accessories" ( $M = 3.90$ ,  $SD = 1.13$ ); and 2) "My daughter loves to wear dresses and skirts" ( $M = 3.87$ ,  $SD = 1.10$ ) (Halim et al., 2014). These items were developed based on qualitative interviews with parents conducted in previous studies (Halim et al., 2014). Mothers' response options were 1 = Not at all true, 2 = A little bit true, 3 = Somewhat true, 4 = Very true, 5 = Extremely true. The two items for each gender were correlated and thus combined into a single score for each gender (for daughter items,  $r = 0.48$ , and for son items,  $r = 0.30$ ). These questions were drawn from a larger questionnaire on general gender rigidity and were selected because they asked about gender appearance specifically.

**Outcomes: Children's gender-related knowledge**

**Mother-report of children's gender self-categorization.** When children were 2 years old, mothers of sons were asked the following question: "Does your child ever refer to himself as a boy?" ( $M = 0.57$ ,  $SD = 0.50$ ). Mothers of daughters were asked about their daughters referring to themselves as girls ( $M = 0.52$ ,  $SD = 0.50$ ). Possible answers were "yes" (coded as 1) or "no" (coded as 0).

**Child interview: gender self-categorization.** At age 3, children's gender self-categorization was assessed by researchers asking, "Are you a boy or a girl?" Children's responses were categorized as "Consistent" (coded as 1) if the answers corresponded to their natal gender as reported by the mother (0 = Inconsistent) (boys,  $M = 0.54$ ,  $SD = 0.50$ ; girls,  $M = 0.62$ ,  $SD = 0.49$ ).

**Gender stereotyping.** At age 3 (boys,  $M = 0.53$ ,  $SD = 0.32$ ; girls,  $M = 0.52$ ,  $SD = 0.33$ ) and 4 (boys,  $M = 0.74$ ,  $SD = 0.82$ ; girls,  $M = 0.75$ ,  $SD = 0.79$ ), children were assessed on their level of stereotype knowledge. Interviewers showed children a drawing of a boy and a girl. Interviewers pointed to each child and said, "This is the boy, and his name is Bobby. This is the girl, and her name is Lisa." Interviewers verified that children could correctly identify the girl and boy before proceeding. Interviewers then asked the following 6 questions: "Which one of these children likes... (dolls/trucks/to dress up like a princess/to dress up like a firefighter)"; "Which one of these children is... (strong/weak)?" "Lisa, Bobby, or both?" If children answered "both," interviewers probed, "If you had to choose one, which would you pick?"

**Results**

In the first section, we report the association between age of center-based care enrollment and children's gender-typed behavior. In the second section, we report the relation between age of center-based care enrollment and children's gender-related knowledge and identity. Measures that were administered at 3 or more time points (mother-reported same-gender-friendships; mother-reported gender-typed play; observed gender-typed appearance) were analyzed using multilevel modeling, which allowed us to include participants with missing data.

For each model, we first calculated Type III sums of squares to indicate overall omnibus fixed effects for center-based care enrollment. Fixed effects included center-based care group, time (linear and quadratic components), gender (female reference group), ethnicity (Dominican American reference group), and interactions among the variables. A random participant intercept effect was also included (for detailed model coefficients and formulas please refer to Halim, Ruble, Tamis-LeMonda, & Shrout (2013), Halim, Ruble, Tamis-LeMonda, Shrout, & Amodio (2017)). We treated gender and ethnicity as factors and time as a covariate, and we assumed that the residuals were uncorrelated and homoscedastic over time. General time effects, as well as gender and ethnicity factors are not reported here, as they were not the main focus of our study and have been reported in previous publications (Halim, Ruble, Tamis-LeMonda, & Shrout, 2013; Halim et al., 2017).

For variables that were administered at only 1 or 2 time points (mother-reported gender appearance rigidity; observation of gender-typed play; gender self-categorization; gender stereotyping), we conducted Bonferroni-adjusted ANOVAS or logistic regressions, depending on the nature of the data.

**Influence of center-based care on children's gender-typed behaviors**

Estimated marginal means and standard errors for multilevel modeling analyses by wave and center-based care group (i.e., age of center-based care enrollment) are reported in Table 2. We expected children with earlier center-based care timing to show higher gender-typed behaviors.

*Same-gender-friendships*

Same-gender-friendships was examined longitudinally across ages 2 through 5. The mixed model revealed a significant center-based care group by time (linear) interaction,  $F(4, 533.5) = 3.00, p = .018$  (see Fig. 1). Follow-up analyses indicated that center-based care groups significantly differed at the first and second waves (when children were ages 2 and 3),  $F_{T1}(4, 633.2) = 6.27, p < .001, F_{T2}(4, 472.6) = 3.26, p = .012$ , but not at the third or fourth waves (when children were ages 4 and 5),  $F_{T3}(4, 467.1) = 1.01, ns, F_{T4}(4, 625.7) = 0.45, ns$ .

At the first wave (when children were age 2), follow-up pairwise

comparisons indicated that, as expected, children who were enrolled in center-based care at age 2 had a higher percentage of same-gender-friendships than children who enrolled later or would never enroll,  $p$ 's  $< 0.01$ . All other comparisons at age 2 were significant ( $p$ 's  $< 0.05$ ), or marginally significant (difference between enrollment at age 3 and 4,  $p = .055$ ). Interestingly, children who never enrolled in center-based care across ages 2 through 5 also exhibited a lower percentage of same-gender-friendships compared to those who enrolled in center-based care as late as age 4 ( $p = .026$ ) or 5 ( $p = .007$ ). No other pairwise comparisons were significant.

At the second wave (when children were age 3), although same-gender-friendships generally declined for most groups, follow-up pairwise comparisons indicated that children who entered center-based care at age 2 continued to have more same-gender-friendships compared to children who entered center-based care at age 4 or later ( $p$ 's  $< 0.05$ ). Children who entered center-based care at age 3 were also reported to have more same-gender-friendships than children who never entered center-based care ( $p = .034$ ). Finally, those who entered center-based care at age 5 had more same-gender-friendships than those who never entered center-based care ( $p = .023$ ) (see Fig. 1). No other pairwise comparisons were significant.

*Gender-typed play*

*Mother-reported gender-typed play*

Mother-reported gender-typed play was examined longitudinally across ages 3 through 5. The mixed model showed a significant main effect of center-based care group,  $F(4, 488.83) = 4.83, p = .001$ . As expected, post-hoc analyses revealed that, across ages 3 through 5, children who entered center-based care at age 2 or 3 engaged in more gender-typed play compared to children who entered center-based care at age 4, 5, and children who never entered center-based care ( $p$ 's = 0.014–0.001). No other pairwise comparisons were significant (see Table 2 and Fig. 2).

Because the gender-typed play variable involved both same-gender, and other-gender-typed items, we conducted exploratory secondary analyses to examine whether the effect of gender-typed play was driven by children privileging same-gender activities or avoiding other-gender-typed activities. This analysis revealed that the overall effect was primarily driven by children avoiding other-gender-typed activities (Fig. 3). There was a significant group effect of center-based care enrollment on other-gender-typed play,  $F(4, 481.73) = 2.81, p = .025$ . Post-hoc analyses revealed that, across ages 3 through 5, children who entered center-based care at age 3 engaged less frequently in other-gender-typed play compared to children who entered center-based care

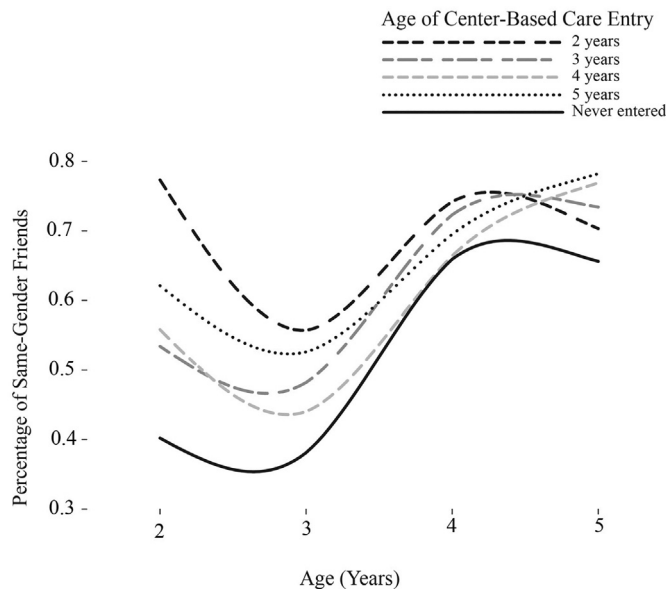


Fig. 1. Means of mother-reported same-gender-friendships over time by age of entry into center-based care.

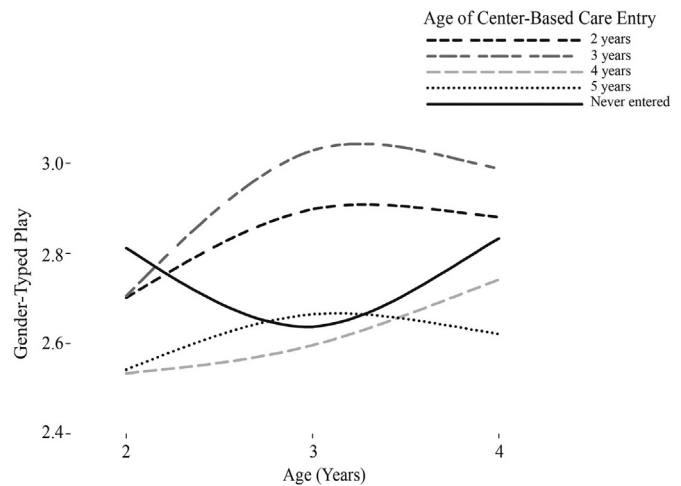


Fig. 2. Means of mother-reported gender-typed play over time by age of entry into center-based care.

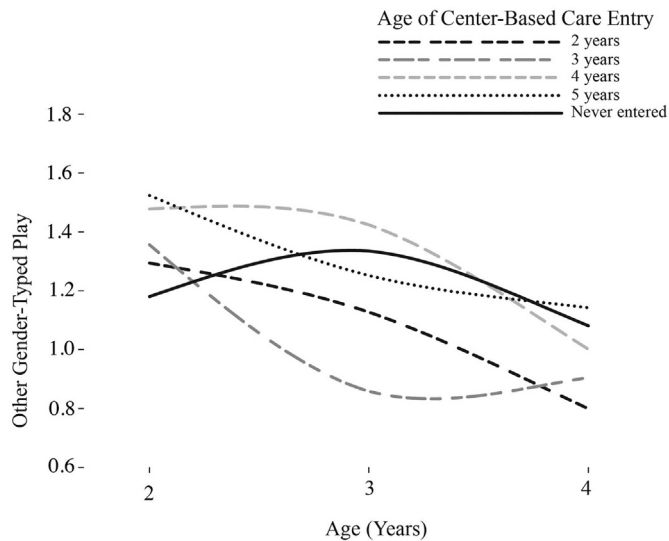


Fig. 3. Means of mother-reported other-gender-typed play over time by age of entry into center-based care.

at age 4 ( $p = .001$ ) or later ( $p$ 's  $< 0.06$ ). Although children who entered center-based care at age 2 also showed low engagement in other-gender-typed play, they did not significantly differ from the other groups.

#### Observed gender-typed play

A second measure of children's gender-typed play was observational. Children's play was observed in a laboratory situation at ages 2 and 3. To examine whether entry into center-based care affected the amount of time children spent playing with same-, and other-gender toys, four univariate ANOVAS were conducted, with children's time spent playing with the two types of toys at each age as two separate dependent variables. Child gender (1 = girl, 0 = boy) and years of center-based care experience at age 2 (0 = not in center-based care, 1 = in center-based care) and at age 3 (0 = not in center-based care, 1 = entered at age 3, 2 = entered at age 2) were the between-subjects variables. For the ANOVAS conducted at age 2, analyses revealed no main effects of center-based care or center-based care by gender interaction for either same-gender or other-gender object play ( $p$ 's  $> 0.05$ ).

For the ANOVAS conducted at age 3, there was a main effect of center-based care on children's play with same-gender toys,  $F(2, 135) = 4.15, p = .018, \eta_p^2 = 0.058$  in the expected direction. Children who entered center-based care at age 2 spent more time playing with same-gender toys ( $M = 114.49, SD = 96.97$ ), than children who entered center-based care at age 3 ( $M = 70.73, SD = 63.76$ ) and children who were not in center-based care ( $M = 65.32, SD = 54.36$ ). There were no other significant effects for either variable.

#### Gender-typed appearance

##### Observed gender-typed appearance

Children's gender-typed appearance was observed longitudinally from ages 2 through 5. Surprisingly, a mixed model revealed no group effect of center-based care enrollment on gender-typed appearance:  $F(4, 614.8) = 0.66, ns$ . Also, no significant center-based care group by time interactions were found,  $F_{\text{center-based care group} \times \text{time linear}}(4, 581.1) = 1.21, ns, F_{\text{center-based care group} \times \text{time quadratic}}(4, 542.4) = 0.43, ns$ .

##### Mother-reported gender appearance rigidity

Mothers reported on children's gender appearance rigidity at age 4.

An ANOVA was conducted with mother's report of children's gender appearance rigidity as the dependent variable, and children's gender and amount of center-based care experience (0 = not in center-based care, 1 = entered at age 4, 2 = entered at age 3, 3 = entered at age 2) as between-subject variables. There was no gender by center-based care group interaction,  $F(3, 166) = 1.07, p = .364, \eta_p^2 = 0.019$ , suggesting that the center-based care effect was robust across genders. There was, however, a main effect of years in center-based care:  $F(3, 166) = 4.84, p = .003, \eta_p^2 = 0.080$  in the predicted direction. Follow up analyses indicated that children who entered center-based care at age 2 ( $M = 3.92, SD = 0.68$ ) had higher gender appearance rigidity than children who entered at age 3 ( $M = 3.49, SD = 0.77$ ) or 4 ( $M = 3.46, SD = 0.74$ ). No other comparisons were significant.

#### Influence of center-based care on children's gender-related knowledge

Our second goal was to examine possible effects of center-based care on children's gender-related knowledge. To do so, we conducted analyses on the link between center-based care enrollment and children's gender self-categorization (gender-related knowledge), as well as their level of gender stereotyping (knowledge about categorical distinctions and attributes). In line with our results on gender-typed behavior, we expected to find that earlier enrollment in center-based care would be associated with earlier gender self-categorization and greater gender stereotyping.

##### Gender self-categorization

##### Mother-report of children's gender self-categorization

Mothers reported on their children's gender self-categorization when children were age 2. A binary logistic regression was conducted with mother-report of children's gender self-categorization as the dependent variable, and children's gender and center-based care status (0 = not in center-based care, 1 = in center-based care) as independent variables. Analyses did not reveal a significant main effect of center-based care  $B = 0.229 (0.539), Wald = 0.18, p = .671, OR = 1.26$ , nor a center-based care by child gender interaction  $B = -0.777 (0.785), Wald = 0.98, p = .322, OR = 0.46$ .

##### Child-reported gender self-categorization

Children were directly asked about their gender self-categorization at age 3. To examine whether children's center-based care experiences and gender predicted their self-categorization, a binary logistic regression was conducted with children's self-categorization as the dependent variable, and children's gender and years spent in center-based care (0 years = no center-based care, 1 year = entered at age 3, 2 years = entered at age 2,) as independent variables. Results revealed a significant child gender by year in center-based care interaction,  $B = -1.000 (0.472), Wald = 4.49, p = .034, OR = 0.37$ . Post hoc analyses showed that the simple main effect of center-based care for boys was significant,  $B = 0.957 (0.355), Wald = 7.25, p = .007, OR = 2.60$ . This indicates that for every extra year in center-based care, boys were 2.6 times more likely to self-categorize by gender consistent with their natal sex. For girls the simple main effect of center-based care was not significant,  $B = -0.043 (0.311), Wald = 0.02, p = .889, OR = 0.96$  (see Fig. 4).

##### Gender stereotyping

To examine whether children's stereotype knowledge at age 3 and 4 differed by when a child entered center-based care, a separate ANOVA was conducted at both ages with children's gender stereotyping as the dependent variable, and children's gender and years spent in center-based care (for age 3: 0 = no center-based care, 1 = entered at age 3, 2 = entered at age 2; for age 4: 0 = no center-based care, 1 = entered at age 4, 2 = entered at age 3, 3 = entered at age 2) as between-subject

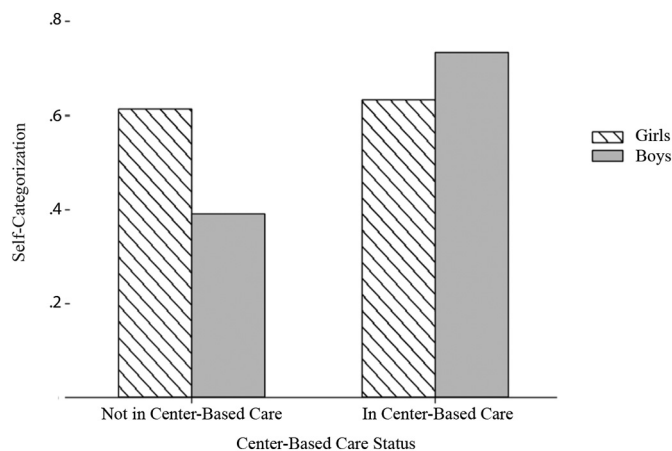


Fig. 4. Means of child-reported gender self-categorization by gender and center-based care status at age 3. A significant simple main effect was found for boys, but not for girls.

variables. At both ages, analyses did not reveal a significant main effect of center-based care ( $p > .1$ ). For age 3, children who were not in center-based care ( $M = 0.51$ ,  $SD = 0.33$ ) were no different from children who entered at age 2 ( $M = 0.59$ ,  $SD = 0.34$ ), or at age 3 ( $M = 0.53$ ,  $SD = 0.32$ ). For age 4, children not in center-based care ( $M = 0.64$ ,  $SD = 0.20$ ) were no different from children who entered at age 4 ( $M = 0.88$ ,  $SD = 1.27$ ), at age 3 ( $M = 0.68$ ,  $SD = 0.17$ ), or at age 2 ( $M = 0.70$ ,  $SD = 0.14$ ).

## Discussion

In a longitudinal study involving multiple gender-related measures we investigated whether or not enrollment in center-based care is associated with the development of gender-typed behavior and knowledge in young children. Overall, results suggest that age of center-based care entry may influence the timing and level of some aspects of gender development, such as same-gender-friendships, but not all aspects, such as gender stereotype knowledge.

### Gender-typed behavior

Findings supported our predictions about the influence of center-based care on children's gender-typed behavior in that all three of the dimensions we examined showed significant variation as a function of center-based care enrollment. First, we found that earlier enrollment in center-based care was associated with more same-gender-friendships at earlier timepoints. Differences in levels of same-gender-friendships as a function of age of center-based care enrollment were seen at ages 2 and 3, but were not seen at ages 4 or 5. Levels of same-gender-friendships have been shown to rise around age three with girls and boys becoming increasingly divided through elementary school (Maccoby, 1998; Mehta & Strough, 2009). Our findings suggest that, although most preschool children favor same-gender peers (Lindsey, 2016), factors in the childcare center environment may usher in this tendency toward same-gender-friendships even prior to formal preschool age levels.

Second, center-based care enrollment was associated with gender-typed play, although results varied depending on the measure and year. Similar to the findings for same-gender-friendships, analyses of mother-reported play indicated that children enrolled in center-based care at younger ages (at 2 or 3 years of age) generally showed higher levels of gender-typed play than children who enrolled later or never. Interestingly, follow-up exploratory analyses revealed that this effect was primarily driven by children avoiding other-gender-typed activities (e.g., boys avoiding playing with dolls and girls avoiding playing with trucks), especially by those who enrolled in center-based care at age 3.

In contrast with mother-reported play, children's observed play during a brief experimental session showed no effect on time spent playing with other-gender-typed toys. Instead, we found that children who had been enrolled longer in center-based care spent more time playing with same-gender-typed toys at age 3 (but not at age 2). Perhaps this discrepancy reflects differences in toys and play activities available and made salient in the home versus in a structured research task. It might also result from differences between verbal report and observational measures. Although both offer valuable and different insights, future research might best be structured to observe children's play with multiple toys in both home and childcare center contexts over a longer period to better assess stable gender-based object preferences.

As for our third behavior, gender appearance, we found partial support for our hypothesis on one of the two measures. At age 4, mother-reported appearance rigidity (i.e. their child's insistence and preference to wear gender-typed clothing) was generally higher in children who entered center-based care at age 2 than in children who entered at age 3 or 4. However, for observed gender-typed appearance across ages 2 through 5, results surprisingly did not show any influence of timing of center-based care enrollment. A potential source of this discrepancy is that mothers' reports were based upon continuous observations of their children's preferences for their dress and general appearance, whereas the investigator-observed measure was essentially a one-time snapshot of children's appearance at the time of assessment. While it is possible that mothers chose children's clothes for the lab appointment and that this accounted for the difference in findings, previous studies suggest parental influence on young children's clothing choices is surprisingly minimal (Halim, Ruble, Tamis-LeMonda, & Shrout, 2013). Specifically, parent preferences for their children's feminine or masculine appearance, and their general gender traditionalism, have not been correlated with children's appearance rigidity or observed gender-typed appearance (Halim et al., 2014; Halim, Gutierrez, Bryant, Arredondo, & Takesako, 2018). Nevertheless, it remains possible that the influence of parents is sufficiently strong at these ages that it outweighs the influence of being in a childcare center. Moreover, parents may not enforce children's gender-typed appearance (or other gender-related behaviors) in the privacy of the home, but instead do so when sending their children into public settings such as childcare centers (for example, a boy may wear his sister's pink, frilly hand-me-downs in the home, but not at his childcare center).

### Gender-related knowledge

We found some tentative support for our expectation that center-based care enrollment would heighten gender-related knowledge, but only for one of the two domains that we examined. For child-reported gender self-categorization, results were in the predicted direction only among boys at age 3. Remarkably, each additional year of center-based care experience increased the likelihood of gender self-categorization by 2.6 times. Unexpectedly, we did not find a connection between center-based care enrollment and gender self-categorization for girls, or for mother-reported gender self-categorization measured at age 2. The noted gender discrepancy might be rooted in girls learning gender earlier than boys (e.g. gender labeling, Zosuls et al., 2008) and thus the effects of center-based care enrollment on girls' gender self-categorization might have been more prominent at age 2. Unfortunately, the gender self-categorization question was not included at age 2 in the measure, and thus it was not possible to explore this possibility. It should be noted that the marked increase in gender self-categorization in boys at age 3 might indicate that the enhancement of gender rigidity reported by Halim, Ruble, Tamis-LeMonda, and Shrout (2013) between ages 3 and 6 is particularly intensified in boys exposed to center-based care experiences.

To our surprise, center-based care enrollment was not related to children's knowledge of gender stereotypes. Prior research has reported findings for gender stereotyping consistent with our hypotheses;



however in some of these studies the outcome measure was stereotype endorsement, rather than stereotype knowledge. Specifically, preschool contexts where gender was made highly salient were associated with higher levels of gender stereotype endorsement than in control conditions (Hilliard & Liben, 2010). On the other hand, a recent study found that children in childcare centers where gender was made less salient showed lower levels of gender stereotype knowledge (Shutts et al., 2017). Importantly, prior work has suggested that gender stereotype knowledge and endorsement follow separate cognitive pathways, where knowledge levels are generally similar among children of the same age and cultural background, but not necessarily associated with their personal endorsement levels, which fluctuate more according to individual factors (Liben & Bigler, 2002; Patterson, 2012; Zelazo, 2013). Our study measured subjects' stereotype knowledge, rather than their stereotype endorsement, which could partially explain our null results in terms of this outcome.

### Implications

The present study is the first, to our knowledge, to examine whether children enrolled in center-based care are more gender-typed than those who are not. As such, it has several important implications, not only for scholars invested in further examining the mechanisms behind gender socialization in young children, but also for teacher practices and policy guidelines concerning early childhood care.

One implication of our findings is that children who enroll early in center-based care, specifically between the ages of 2 and 3, show more pronounced gender-typing than those who enroll later (at age 4 or 5) and thus may be at a turning point in terms of gender-related outcomes. It is important to note that this specific age-span is a critical time point as it coincides with the advent of full-fledged gender identity development (Halim & Ruble, 2010). Our data suggest that once children aged 2–3 enroll in center-based care, they show increased gender-typed preferences for activities and friends and begin to narrow with *whom* and with *what* they play.

In our sample, we found that the number of friends did not differ between children enrolled in center-based care versus those not enrolled. Thus, we speculate that mere exposure to playmates is not the critical variable in the differences we report. Instead, important elements of *group* center-based childcare settings such as the gender-typing cues of available toys, continuous peer monitoring of gender relevant behaviors and choices, childcare center personnel's grouping and categorization of children by gender, and communications of gender-based expectations might accelerate the pace of gender identification in young children. Short-term consequences include separate activity and play preferences, which can lead to a refinement of different skill sets, and increased segregation between gender in-, and outgroups (Mehta & Strough, 2009). Due to the different nature of gender-typical activities for boys versus girls (Martin & Ruble, 2009) and peer and/or caregiver monitoring of these activities, girls with early center-based care experience may, for example, delay or restrict their learning about numbers and spatial relations, while the same is true for their male counterparts in terms of reading and writing, social skills and nurturance (Fabes, Martin, & Hanish, 2004; Maccoby, 1998; Martin et al., 2013). Moreover, studies have reported that early gender-typing and segregation have long-term implications beyond childhood that are not restricted to the enhancement of certain academic skillsets (Maccoby, 1998; Martin & Fabes, 2001; Mehta & Strough, 2009). In fact, persistent separate experiences between the sexes has been associated with negative implications for mental health in adolescence and adulthood (Arndorfer & Stormshak, 2008), the quality of heterosexual romantic (Maccoby, 1998; Underwood & Rosen, 2009) as well as professional relationships (Reskin, 1993), and the perpetuation of sexist attitudes and discrimination between women and men in the culture at large (Leaper, 1994). As children's early gender-typed attitudes and behaviors have been shown to influence many aspects of their development

across the lifespan, it is important to understand the origin and process of such patterns. By targeting the influence of gender-typing in childcare center contexts, young children might gain more inclusive and versatile experiences from an earlier age (Mehta & Strough, 2009). A tangible example of such initiative is the Sanford Harmony Project (SHP), which trains teachers and school personnel to assist children in building positive, mixed-gender peer relationships in the classroom with the goal of improving other-gender attitudes and, more long-term, various adjustment outcomes (e.g. Hanish et al., 2016; Martin et al., 2017).

Another possible implication of early center-based care enrollment can be derived from the curvilinear pattern observed by Trautner et al. (2005). That is, an earlier onset of gender rigidity associated with early entry to center-based care may promote an earlier arrival of gender flexibility. However, our data did not seem to fully support such patterns. Rather, children who enrolled later in center-based care eventually (around ages 4–5) appeared to “catch up” with their earlier enrolled peers on gender-typed behaviors (see Figs. 1–3), although such alignment was not distinct enough to always reveal significant time by center-based care group interactions. Thus, we would recommend a future study collecting data beyond age 5, preferably up to ages 8–10, in order to further examine whether children with different center-based care timing eventually show similar courses of gender development throughout childhood. Moreover, as noted above, discriminating among the several possible dynamic influences of the timing of center-based care exposure upon gender typical behavior and cognitions would require future intensive observational research within childcare center environments. The results of the present study suggest that this kind of investment is warranted.

### Limitations and future research

Certain limitations and questions about the present findings suggest important directions for future study. First, what factors influence a family's decision to enroll their children in center-based care? In the present study, children who never enrolled in center-based care generally showed lower gender-typing, as we predicted. However, since the present study is not experimental, but naturalistic, we did not randomly assign children to either be in center-based care or not. Therefore, it is not clear whether this group of children differed from the other groups of children beyond their center-based care entry status in a way that would affect their gender-typing. Although in our analyses we did not find center-based care entry groups to differ by ethnicity, child gender, or household income, there are likely to be other differences between families of children who enroll in center-based care versus families of children who do not. For example, parental characteristics, such as gender attitudes, may influence the kind of clothes and toys available for the child to select from, especially at younger ages. This is certainly an issue worth considering in future research.

Second, it is important to note that our findings and conclusions are based on a demographically specific sample (low-income, urban African Americans, Mexican Americans, and Dominican Americans). We consider this a strength of our study as such samples have been under-represented in the literature, even though soon the majority of young children in the United States will be of backgrounds other than non-Hispanic, White (Child Trends, 2018). Unfortunately, due to the size of our sample, we were unable to adequately examine variability by ethnicity and immigration status as well as other gender-related demographic factors, such as co-residency with the child's father or other male parental role figure. Moreover, in order to further generalize to the greater U.S. population, we recommend that future studies broaden the demographics scope to include more racial/ethnic and socio-economic categories.

Third, does enrollment in center-based care at a young age inevitably contribute to more traditional gender-typing? Although the present findings suggest this kind of association, it seems reasonable to

expect that some childcare center environments could, depending on their profile (e.g. religious versus progressive) and the characteristics of staff and other children, contribute to socialization of less gender-traditional knowledge. In fact, a recent study of gender-neutral pedagogy in Swedish preschool programs demonstrated that children in such contexts were more open to playing with gender-unidentified peers, and showed less gender stereotyping than children in more traditional contexts (Shutts et al., 2017). Although Swedish law notably requires all schools to promote gender egalitarianism in the classroom, Shutts et al. (2017) findings nevertheless indicate that conscious structuring of childcare center environments in gender-neutral forms can offset the strength of gender socialization evident in center-based care or preschool circumstances. Due to the nature of the original study from which data used for the present analyses were drawn, we had limited access to information on the type or quality of childcare centers children attended, which could possibly moderate the effects found. Importantly, however, the present study investigated a diverse sample of children's participation in the childcare centers to which they naturally had access. Of note is that despite such variations, our analyses still yielded significant findings. We consider the present study to be a stepping stone for future studies on the specific mechanisms that explain the link between early childhood exposure to center-based care and gender-typing among urban minority populations.

Fourth, in the present study the association between center-based care enrollment and gender-typing was stronger for behaviors than knowledge. It is not clear what this finding implies, although it is theoretically important because of its relevance to cognitive perspectives on gender development described earlier. Unfortunately, we cannot draw clear conclusions from the present study as cognitive measures were limited in scope and number of items. Further, an examination of stereotype endorsement and not just knowledge in the future would be interesting. Liben and Bigler (2002) have suggested that knowing labels and stereotypes (e.g. *these children are girls, and girls typically play with dolls*) may not be related to increased gender-typing patterns while, instead, endorsing such stereotype knowledge (*girls should play with dolls*) might (Patterson, 2012). According to this view, while children in center-based care may gain more knowledge of gender labels and categories, unless they endorse such knowledge, it may not affect their subsequent levels of gender-typing.

Fifth, due to the family-, and home-based inquiry nature of the study, we did not have access to information collected in center-based care settings, such as teacher observations of child attitudes and behaviors. Although mother reports generally show high validity in providing such information, and have been correlated with teacher ratings (e.g. Golombok et al., 2008), future studies would benefit from also surveying childcare center staff on children's gender-typing patterns and, overall, from using more observational measures.

Sixth, we recognize that our gender self-categorization measure could benefit from deviating from a forced choice format and include the option for children to respond "neither" to the question "Are you a boy or a girl?". For future studies, especially with older children, we encourage including a broader range of gender category options, or alternatively an open format for responses.

Finally, in order to explore the direction of significant effects for certain findings, there are instances where the present study includes multiple follow-up tests (e.g. for same-gender-friendships and gender-typed play). This introduces Type I error as a potential problem, although such concern is lessened by the fact that the study included close to 200 participants, only 8 measures, and the majority of significant effects were found at *p*-values considerably lower than 0.05.

## Conclusion

As the majority of children between ages 3–5 are enrolled in center-based care (NCES, 2016), the social consequences of such contexts are becoming increasingly relevant to investigate. The present study is the

first to explore whether center-based care enrollment is related to children's gender development using a longitudinal design with an ethnically diverse sample. Our findings suggest that the timing of center-based care enrollment is indeed associated with the development of young children's gender categorization and gender-typed behaviors. Specifically, children enrolling at ages 2 and 3, showed higher gender-typing patterns than children enrolled later (at age 4 or 5). This is worth noting, as most U.S. children are first enrolled in center-based care around the age of 3 (NCES, 2017); however, many children enroll as early as at a few months of age. Moreover, the strongest relations were found between center-based care experience and same-gender-friendships and gender-typed play, domains that might affect children's subsequent engagement in and learning of certain tasks, skillsets, and activities. It is important to note that these findings do not imply that caregivers who wish to de-emphasize gender stereotypes for their children should be discouraged from enrolling their children in center-based care. In fact, there are multiple benefits for children of being in center-based care (see e.g. O'Brien Caughy, DiPietro, & Strobino, 1994). Instead, we hope to raise awareness, both in primary caregivers and childcare center personnel, of the influence center-based care contexts can have on children's early gender development. This, we believe, will allow for informed parental choices and teacher practices, potentially also extending to modified guidelines and policies for pedagogical training.

## Declarations of Competing Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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## References

- Albert, A. A., & Porter, J. R. (1988). Children's gender-role stereotypes: A sociological investigation of psychological models. *Sociological Forum*, 3, 184–210. <https://doi.org/10.1007/BF01115290>.
- Arndorfer, C., & Stormshak, E. (2008). Same-sex versus other-sex best friendship in early adolescence: Longitudinal predictors of antisocial behavior throughout adolescence. *Journal of Youth and Adolescence*, 37, 1059–1070. <https://doi.org/10.1007/s10964-008-9311-x>.
- Bailey, B. A., & Nihlen, A. S. (1990). Effect of experience with nontraditional workers on psychological and social dimensions of occupational sex-role stereotyping by elementary school children. *Psychological Reports*, 66, 1273–1282. <https://doi.org/10.2466/pr0.1990.66.3c.1273>.
- Bem, S. L. (1981). Gender schema theory: A cognitive account of sex typing. *Psychological Review*, 88(4), 354–364. <https://doi.org/10.1037/0033-295X.88.4.354>.
- Bigler, R., & Liben, L. S. (2006). A developmental intergroup theory of social stereotypes and prejudice. In R. Kail (Vol. Ed.), *Advances in child development and behavior*. Vol. 34. *Advances in child development and behavior* (pp. 39–89). [https://doi.org/10.1016/S0065-2407\(06\)80004-2](https://doi.org/10.1016/S0065-2407(06)80004-2).
- Bigler, R. S., & Liben, L. S. (2007). Developmental intergroup theory: Explaining and reducing children's social stereotyping and prejudice. *Current Directions in Psychological Science*, 16, 162–166. <https://doi.org/10.1111/j.1467-8721.2007.00496.x>.
- Blakemore, J. E. O., & Centers, R. E. (2005). Characteristics of boys' and girls' toys. *Sex Roles*, 53, 619–633. <https://doi.org/10.1007/s11199-005-7729-0>.
- Campenni, C. E. (1999). Gender stereotyping of children's toys: A comparison of parents and nonparents. *Sex Roles*, 40, 121–138. <https://doi.org/10.1023/A:1018886518834>.
- Causadias, J. M., Vitriol, J. A., & Atkin, A. L. (2018). Do we overemphasize the role of culture in the behavior of racial/ethnic minorities? Evidence of a cultural(mis)

- attribution bias in American psychology. *American Psychologist*, 73, 243–255. <https://doi.org/10.1037/amp0000099>.
- Chapman, R. (2016). A case study of gendered play in preschools: How early childhood educators' perceptions influence children's play. *Early Child Development and Care*, 186, 1271–1284. <https://doi.org/10.1080/03004430.2015.1089435>.
- Chen, E. S. L., & Rao, N. (2011). Gender socialization in Chinese kindergartens: Teachers' contributions. *Sex Roles*, 64, 103–116. <https://doi.org/10.1007/s11199-010-9873-4>.
- Chick, K. A., Heilman-Houser, R. A., & Hunter, M. W. (2002). The impact of child care on gender role development and gender stereotypes. *Early Childhood Education Journal*, 29, 149–154. <https://doi.org/10.1023/A:1014528424032>.
- Child Trends (2018). Racial and ethnic composition of the child population. <https://www.childtrends.org/indicators/racial-and-ethnic-composition-of-the-child-population>.
- Erdena, F., & Wolfgang, C. H. (2007). An exploration of the differences in pre-kindergarten, kindergarten, and first grade teachers' beliefs related to discipline when dealing with male and female students. *Early Child Development and Care*, 174, 3–11. <https://doi.org/10.1080/0300443032000103098>.
- Fabes, R., Pahlke, E., Martin, C., & Hanish, L. (2013). Gender-segregated schooling and gender stereotyping. *Educational Studies*, 39, 315–319. <https://doi.org/10.1080/03055698.2012.760442>.
- Fabes, R. A., Martin, C. L., & Hanish, L. D. (2004). The next 50 years: Considering gender as a context for understanding young children's peer relationships. *Merrill-Palmer Quarterly*, 50, 260–273. <https://doi.org/10.1353/mpq.2004.0017>.
- Golombok, S., Rust, J., Zervoulis, K., Croudace, T., Golding, J., & Hines, M. (2008). Developmental trajectories of sex-typed behavior in boys and girls: A longitudinal general population study of children aged 2.5–8 years. *Child Development*, 79, 1583–1593. <https://doi.org/10.1111/j.1467-8624.2008.01207.x>.
- Halim, May Ling, Ruble, Diane, N., Tamis-LeMonda, Catherine, S., Shrout, Patrick, E., & Amodio, David, M. (2017). Gender Attitudes in Early Childhood: Behavioral Consequences and Cognitive Antecedents. *Child Development*, 88, 882–899. <https://doi.org/10.1111/cdev.12642>.
- Halim, M. D. (2016). Pink princesses and strong superheroes: Gender rigidity in early childhood. *Child Development Perspectives*, 10, 155–160. <https://doi.org/10.1111/cdep.12176>.
- Halim, M. D., Gutierrez, B. C., Bryant, D. N., Arredondo, M., & Takesako, K. (2018). Gender is what you look like: Emerging gender identities in young children and preoccupation with appearance. *Self and Identity*, 17, 455–466. <https://doi.org/10.1080/15298868.2017.1412344>.
- Halim, M. L., & Ruble, D. (2010). Gender identity and stereotyping in early and middle childhood. In J. C. Chrisler, & D. R. McCreary (Vol. Eds.), *Handbook of gender research in psychology*. Vol. 1. *Handbook of gender research in psychology* (pp. 495–525). New York, NY: Springer Science + Business Media. [https://doi.org/10.1007/978-1-4419-1465-1\\_24](https://doi.org/10.1007/978-1-4419-1465-1_24) Gender research in general and experimental psychology.
- Halim, M. L., Ruble, D., Tamis-LeMonda, C., & Shrout, P. E. (2013). Rigidity in gender-typed behaviors in early childhood: A longitudinal study of ethnic minority children. *Child Development*, 84, 1269–1284. <https://doi.org/10.1111/cdev.12057>.
- Halim, M. L., Ruble, D. N., & Tamis-LeMonda, C. (2013). Four-year-olds' beliefs of how others regard males and females. *British Journal of Developmental Psychology*, 31, 128–135. <https://doi.org/10.1111/j.2044-835X.2012.02084.x>.
- Halim, M. L., Ruble, D. N., Tamis-LeMonda, C., Zosuls, K. M., Lurye, L. E., & Greulich, F. K. (2014). Pink frilly dresses and the avoidance of all things “girly”: Children's appearance rigidity and cognitive theories of gender development. *Developmental Psychology*, 50, 1091–1101. <https://doi.org/10.1037/a0034906>.
- Hanish, L. D., Martin, C. L., Miller, C. F., Fabes, R. A., DeLay, D., & Updegraff, K. A. (2016). Social harmony in schools: A framework for understanding peer experiences and their effects. In K. Wentzel, & G. Ramani (Eds.), *Handbook on social-emotional, motivation, and cognitive outcomes in school contexts* (pp. 48–62). New York, NY: Routledge.
- Hilliard, L. J., & Liben, L. S. (2010). Differing levels of gender salience in preschool classrooms: Effects on children's gender attitudes and intergroup bias. *Child Development*, 81, 1787–1798. <https://doi.org/10.1111/j.1467-8624.2010.01510.x>.
- Hughes, F. M., & Seta, C. E. (2003). Gender stereotypes: Children's perceptions of future compensatory behavior following violations of gender roles. *Sex Roles*, 49, 685–691. <https://doi.org/10.1023/B:SERS.0000003341.73966.61>.
- Huston, A. C., Bobbitt, K. C., & Bentley, A. (2015). Time spent in child care: How and why does it affect social development. *Developmental Psychology*, 51, 621–634. <https://doi.org/10.1037/a0038951>.
- Kohlberg, L. (1966). A cognitive-developmental analysis of children's sex-role concepts and attitudes. In E. E. Maccoby (Ed.), *The development of sex differences* (pp. 82–173). Stanford, CA: Stanford University Press.
- Leaper, C. (1994). Exploring the consequences of gender segregation on social relationships. In C. Leaper (Ed.), *Childhood gender segregation: Causes and consequences* (pp. 67–86). San Francisco, CA: Jossey-Bass.
- Leaper, C. (2002). Parenting girls and boys. In M. H. Bornstein (Ed.), *Handbook of parenting: Children and parenting* (pp. 189–225). Mahwah, NJ: Erlbaum.
- Leaper, C. (2015). Gender and social-cognitive development. Series Ed.. Vol. Eds. In R. M. Lerner, L. S. Liben, & U. Muller (Eds.), *Handbook of child psychology and developmental science (7th ed.)*, Vol. 2: *Cognitive processes* (pp. 806–853). New York, NY: Wiley.
- Liben, L. S., & Bigler, R. S. (2002). The developmental course of gender differentiation: Conceptualizing, measuring, and evaluating constructs and pathways. *Monographs of the Society for Research in Child Development*, 67(2), <https://doi.org/10.1111/1540-5834.t01-1-00187> Serial No. 269).
- Lindsey, E. W. (2016). Same-gender peer interaction and preschoolers' gender-typed emotional expressiveness. *Sex Roles*, 75, 231–242. <https://doi.org/10.1111/sode.12201>.
- Lynch, M. (2015). Guys and dolls: A qualitative study of teachers' views of gendered play in kindergarten. *Early Child Development and Care*, 185, 679–693. <https://doi.org/10.1080/03004430.2014.950260>.
- Maccoby, E. E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA: Harvard University Press.
- Maccoby, E. E., & Jacklin, C. N. (1987). Gender segregation in childhood. In H. W. Reese (Vol. Ed.), *Advances in child development and behavior*. Vol. 20. *Advances in child development and behavior* (pp. 239–287). San Diego, CA: Academic Press.
- Martin, C., & Ruble, D. N. (2009). Patterns of gender development. *Annual Review of Psychology*, 61, 353–381. <https://doi.org/10.1146/annurev.psych.093008.100511>.
- Martin, C. L., & Fabes, R. A. (2001). The stability and consequences of young children's same-sex peer interactions. *Developmental Psychology*, 37, 431–446. <https://doi.org/10.1037/0012-1649.37.3.431>.
- Martin, C. L., Fabes, R. A., Hanish, L. D., Gaertner, B., Faith Miller, C., Foster, S., & Updegraff, K. A. (2017). Using an intergroup contact approach to improve gender relationships: A case study of a classroom-based intervention. In A. Rutland, D. Nesdaale, & C. S. Brown (Eds.), *The Wiley handbook of group processes in children and adolescents* (pp. 437–454). New York, NY: Wiley-Blackwell.
- Martin, C. L., & Halverson, C. F., Jr. (1981). A schematic processing model of sex typing and stereotyping in children. *Child Development*, 52, 1119–1134. <https://doi.org/10.2307/1129498>.
- Martin, C. L., Kornienko, O., Schaefer, D. R., Hanish, L., Fabes, R., & Goble, P. (2013). The role of sex of peers and gender-typed activities in young children's peer affiliative networks: A longitudinal analysis of selection and influence. *Child Development*, 84, 921–937. <https://doi.org/10.1111/cdev.12032>.
- Martin, C. L., & Ruble, D. (2004). Children's search for gender cues: Cognitive perspectives on gender development. *Current Directions in Psychological Science*, 13, 67–70. <https://doi.org/10.1111/j.0963-7214.2004.00276.x>.
- Martin, C. L., Ruble, D. N., & Szkrybalo, J. (2002). Cognitive theories of early gender development. *Psychological Bulletin*, 128, 903–933. <https://doi.org/10.1037/0033-2909.128.6.903>.
- Mehta, C. M., & Strough, J. (2009). Sex segregation in friendships and normative contexts across the life span. *Developmental Review*, 29, 201–220. <https://doi.org/10.1016/j.dr.2009.06.001>.
- Morrow, V. (2006). Understanding gender differences in context: Implications for young children's everyday lives. *Children & Society*, 20, 92–104. <https://doi.org/10.1111/j.1099-0860.2006.00017.x>.
- National Center for Education Statistics (2016). Digest of education statistics. [https://nces.ed.gov/programs/digest/d17/tables/dt17\\_202.30.asp](https://nces.ed.gov/programs/digest/d17/tables/dt17_202.30.asp).
- National Center for Education Statistics (2017). Primary early care and education arrangements and achievement at Kindergarten entry. <https://nces.ed.gov/pubs2016/2016070.pdf>.
- National Center for Education Statistics (2019). Preschool and Kindergarten enrollment. [https://nces.ed.gov/programs/coe/indicator\\_cfa.asp](https://nces.ed.gov/programs/coe/indicator_cfa.asp).
- NICHD Early Child Care Research Network (2002). Early child care and children's development prior to school entry: Results from the NICHD study of early child care. *American Educational Research Journal*, 39, 133–164. <https://www.jstor.org/stable/3202474>.
- O'Brien Caughy, M., DiPietro, J. A., & Strobino, D. M. (1994). Day-care participation as a protective factor in the cognitive development of low-income children. *Child Development*, 65, 457–471. <https://doi.org/10.1111/j.1467-8624.1994.tb00763.x>.
- O'Brien, M., & Huston, A. C. (1985). Development of sex-typed play behavior in toddlers. *Developmental Psychology*, 21, 866–871. <https://doi.org/10.1037/0012-1649.21.5.866>.
- Patterson, M. M. (2012). Self-perceived gender typicality, gender-typed attributes, and gender stereotype endorsement in elementary-school-aged children. *Sex Roles*, 67, 422–434. <https://doi.org/10.1007/s11199-012-0184-9>.
- Piaget, J. (1961). The genetic approach to the psychology of thought. *Journal of Educational Psychology*, 52, 275–281. <https://doi.org/10.1037/h0042963>.
- Reskin, B. (1993). Sex segregation in the workplace. *Annual Review of Sociology*, 19, 241–270. <https://doi.org/10.1146/annurev.so.19.080193.001325>.
- Ruble, D. N. (1994). A phase model of transitions: Cognitive and motivational consequences. *Advances in Experimental Social Psychology*, 26, 163–214. [https://doi.org/10.1016/S0065-2601\(08\)60154-9](https://doi.org/10.1016/S0065-2601(08)60154-9).
- Ruble, D. N., Lurye, L. E., & Zosuls, K. M. (2007). *Pink frilly dresses (PFD) and early gender identity*. Princeton Report on Knowledge (P-ROK). 2.
- Ruble, D. N., & Martin, C. (1998). Gender development. Series Ed.. Vol. Ed. In W. Damon, & N. Eisenberg (Eds.), *Handbook of child psychology: Vol. 3: Social, emotional, and personality development* (pp. 933–1016). (5th ed.). New York, NY: Wiley.
- Ruble, D. N., Martin, C., & Berenbaum, S. (2006). Gender development. Series Ed.. Vol. Ed. In W. Damon, R. M. Lerner, & N. Eisenberg (Eds.), *Handbook of Child Psychology: Vol. 3, Social, emotional, and personality development* (pp. 858–932). (6th ed.). New York, NY: Wiley.
- Servin, A., Bohlin, G., & Berlin, L. (1999). Sex differences in 1-, 3-, and 5-year-olds' toy-choice in a structured play-session. *Scandinavian Journal of Psychology*, 40, 43–48. <https://doi.org/10.1111/1467-9450.00096>.
- Shutts, K., Kenward, B., Falk, H., Ivegran, A., & Fawcett, C. (2017). Early preschool environments and gender: Effects of gender pedagogy in Sweden. *Journal of Experimental Child Psychology*, 162, 1–17. <https://doi.org/10.1016/j.jecp.2017.04.014>.
- Slaby, R. G., & Frey, K. S. (1975). Development of gender constancy and selective attention to same-sex models. *Child Development*, 46, 849–856. <https://doi.org/10.2307/1128389>.
- Tobin, D. D., Menon, M., Menon, M., Spatta, B. C., Hodges, E. V. E., & Perry, D. G. (2010). The intrapsychics of gender: A model of self-socialization. *Psychological Review*, 117, 601–622. <https://doi.org/10.1037/a0018936>.
- Trautner, H. M., Ruble, D. N., Cyphers, L., Kirsten, B., Behrendt, R., & Hartmann, P.

- (2005). Rigidity and flexibility of gender stereotypes in childhood: Developmental or differential. *Infant and Child Development*, 14, 365–380. <https://doi.org/10.1002/icd.399>.
- Underwood, M., & Rosen, L. (2009). Gender, peer relations, and challenges for girlfriends and boyfriends coming together in romantic relationships. *Merrill-Palmer Quarterly*, 53, 520–526. <https://doi.org/10.1111/j.1471-6402.2008.01468.x>.
- Vespa, J., Armstrong, D. A., & Medina, L. (2018). *Demographic turning points for the United States: Population projections for 2020 to 2060*. United States Census Bureau 2018. March [https://www.census.gov/content/dam/Census/library/publications/2018/demo/P25\\_1144.pdf](https://www.census.gov/content/dam/Census/library/publications/2018/demo/P25_1144.pdf) (Accessed 17 May 2019) .
- Weinraub, M., Clemens, L. P., Sockloff, A., Etheridge, R., Gracely, E., & Myers, B. (1984). The development of sex role stereotypes in the third year: Relationships to gender labeling, gender identity, sex-typed toy preferences, and family characteristics. *Child Development*, 55, 1493–1503.
- Zelazo, P. D. (2013). In P. D. Zelazo (Ed.), *Oxford handbook of developmental psychology, Vol 1: Body and mind*. New York, NY: Oxford University Press.
- Zosuls, K. M., Lurye, L. E., & Ruble, D. N. (2008). Gender: Awareness, identity, and stereotyping. In M. M. Haith, & J. B. Benson (Vol. Eds.), *Encyclopedia of infant and early childhood development. Vol. 2. Encyclopedia of infant and early childhood development* (pp. 1–12). San Diego, CA: Academic Press.
- Zosuls, K. M., Ruble, D. N., Tamis-LeMonda, C. S., Shrout, P. E., Bornstein, M. H., & Greulich, F. K. (2009). The acquisition of gender labels in infancy: Implications for gender-typed play. *Developmental Psychology*, 45, 688–701. <https://doi.org/10.1037/a0014053>.