1 Introduction

Walking through a toy store with aisles awash in pink or blue toys, watching a playground where the girls play in all-girl dyads and the boys play in all-boy groups, and listening to an elementary school teacher's greeting of "Good morning, girls and boys!" only begin to highlight how important gender is in children's lives. For most children, gender is arguably the single most salient and important social category in their lives. Gender is one of the first labels they learn about themselves. By the time they are in preschool, children have attitudes and stereotypes about how girls and boys should look, think, and behave. Gender shapes how parents, teachers, and peers interact with individual children. Yet much of the most meta-analytic research and research in neuroscience suggests that there are few actual differences between girls and boys. Furthermore, research shows that gender and gender identity are more complex and fluid than previously thought. Although researchers have examined gender development for more than sixty years – with one of the first books specifically about gender roles edited by Eleanor Maccoby in 1966 called *The Development of Sex Differences* (Maccoby, 1966) – research, with advances in neuroimaging, advanced statistical designs, and international samples, has revealed how complex gender development truly is.

In this Element, we offer an overview and review of the research on gender development in childhood from a developmental science perspective. We first define gender and contrast gender with the related concepts of sex and gender identity. Second, we discuss how variations in cultural context shape gender development around the world and how variations within gender groups add to the complexity of gender identity development. Third, we discuss major theoretical perspectives in developmental science for studying child gender. Fourth, we examine, using the latest meta-analytic evidence, differences and similarities between girls and boys in their emotions and aggression, play and toys, and cognitive skills. Fifth, we discuss the development of gender, gender identity, and gender socialization throughout infancy, early childhood, and middle childhood. We will focus on what children know and how children think about gender, how children learn about gender and gender stereotypes, and how gender impacts the emotional, social, and academic development of children. Last, we discuss future directions for the study of gender in childhood.

2 Defining Gender

Before describing the field of gender development, it is important to define what we mean when we say gender and how gender and sex overlap and how they are distinct. Throughout the developmental literature, gender and sex are

often used interchangeably to refer to children's own gender identity, their sex assigned at birth, others' perceptions of children's gender identity, as well as behaviors and dress associated with gender (Muehlenhard & Peterson, 2011). Although these terms are sometimes used interchangeably, they are distinct constructs.

Biological *sex* refers to the categories of female and male determined by chromosomes, hormones, and genitalia. Specifically, depending on the chromosome contributed by the father, a developing fetus typically (but not always) has either two X chromosomes or an X and a Y chromosome. A gene on the short arm of the Y chromosome triggers the development of the testes, which in turn start secreting testosterone six weeks after conception. The testosterone (along with anti-Müllerian hormone) leads the fetus to develop as a male. If the Y chromosome is not present, it cannot override an important gene on the X chromosome (called DAX1) that signals the body to create ovaries. Without that override and the testes to produce testosterone, the fetus develops into a female, with ovaries that produce estrogen. These genetic and hormonal differences *in utero* lead to the development of sex-differentiated genitalia. Observation of external genitalia is how doctors typically identify the sex of the newborn infant, which is then recorded on the birth certificate. Although sex has traditionally been viewed as a binary (either female *or* male), this binary categorization is problematic and incomplete, as approximately 1 out of 100 infants are intersex, with some biological characteristics of males and some biological characteristics of females. Furthermore, there are a host of genetic and hormonal variations in which chromosomes do not always directly relate to hormones, genitalia, or secondary sex characteristics.

In contrast to sex, *gender* refers to the "meanings that societies and individuals ascribe to male and female categories" (Wood & Eagly, 2002, p. 699). An examination of gender development requires attention to the culturally ascribed meaning associated with gender and how individual children feel about that meaning. *Gender roles* are the behaviors, attitudes, and personality traits that are designated as either feminine or masculine in a given culture. Gender roles often reflect *gender stereotypes*, or the beliefs and expectations people hold about the typical characteristics, preferences, and behaviors of women/girls and men/boys. In terms of gender, "feminine" and "masculine" are recognized as independent and orthogonal continua, such that everyone has certain degrees of feminine and masculine traits and qualities. Gender is often marked by perceptually salient and differentiated sociocultural cues, such as differences in hair length, makeup, jewelry, or clothing. How individuals choose to communicate their gender to others through clothing, hairstyles, and mannerisms is referred to as their *gender expression.*

The concept of *gender identity* is more complex as it has been applied to slightly different concepts over time. Early research in gender development focused on how children learn their own gender and the gender labels of others, a concept referred to as gender identity (e.g., Slaby & Frey, 1975). For example, young children might be asked, when shown a girl doll or a boy doll, "Is this a girl or a boy?" They can also be asked, "Are you a girl or a boy?" This ability to identify one's own gender (i.e., having an "accurate" gender identity) was seen as the first step toward developing *gender constancy*, or the recognition that one's gender (as a function of one's sex) is a stable, unchanging characteristic of an individual (Kohlberg, 1966). Children first learn to identify their gender (e.g., "She is a girl" or "I am a boy"), followed by the more complicated tasks of recognizing that gender is stable across time (e.g., "I am a boy and will also be a boy when I grow up") and gender consistency across situations (e.g., "I am a boy and will still be a boy if I wear a dress"; Slaby & Frey, 1975).

More work has focused on the psychological meaning associated with gender, a concept also termed gender identity. Egan and Perry (2001) proposed a five-component model of gender identity, defined as individuals' feelings about their gender group, which consisted of (1) *membership knowledge* (i.e., knowledge of membership in a gender category); (2) *gender typicality* or compatibility (i.e., how typical individuals feel for their gender); (3) *felt pressure to conform* (i.e., how much individuals feel pressure to conform to traditional gender norms stemming from parents and peers); (4) *gender contentedness* (i.e., how happy or content individuals are to be their gender); and (5) *intergroup bias* (i.e., how much individuals believe that their gender is superior to the other gender). This model of gender identity has been highly influential in the field of gender development and helped highlight the ways in which children may feel *internal* contentment with their gender and *external* pressures to conform to gender norms. Martin and colleagues (2017) convincingly argued that the concept of gender compatibility needed to be expanded to recognize that an individual child could feel similar to their own gender but also (orthogonally) feel similar to the other gender. The distinction between own and other-gender similarity is important because, based on Egan and Perry's model of gender identity, it was unclear whether a child who felt low in gender typicality simply felt low in similarity to their own gender, felt a greater connection to the other gender (e.g., a girl who feels like a "tomboy"), or felt no connection to gender at all. Thus, Martin and colleagues (2017) revised the conception of gender identity to include an independent assessment of same-gender similarity as well as other-gender similarity.

Last, the term gender identity has been used to describe an individual's psychological sense of being female or male (or both or neither). If an

individual's gender identity is consistent with their sex labeled at birth (usually based on external genitalia), they are referred to as *cisgender*; if their gender identity is not consistent with their sex labeled at birth, they are referred to as *transgender*. When equality and civil rights are discussed (e.g., when bills are passed, or not, to ban discrimination on the basis of gender identity), or when the acronym SOGIE (Sexual Orientation, Gender Identity, and Expression) is used, this form of gender identity is being referenced.

Some work has argued that sex and gender are so intertwined with one another and with cultural and social norms that it is difficult to parse them (for a review, see Hyde et al., 2019). Hyde and colleagues (2019) asserted that the term *gender/sex* is more appropriate to account for this complexity. For example, sex differences in neural development (typically seen as innate) may be influenced by differential media exposure based on gender (a social phenomenon). The term gender/sex also aids in challenging the traditional gender binary (Jordan-Young & Rumiati, 2012; van Anders, 2015). Current research in the fields of neuroscience and behavioral endocrinology has refuted the assertion of gender dimorphic brain and hormonal systems based on sex (Joel et al., 2015; van Anders, Goldey, & Bell, 2014). Additionally, psychological research has shown that children's tendency to view gender as a sex-based binary is not innate but instead a learned behavior that can be changed and possibly eliminated (Bigler & Liben, 2007).

3 The Variation of Gender across Individuals, Families, and Cultures

3.1 Diversity of Girls and Boys

Gender is a multidimensional construct that includes psychological, social, and behavioral components (WHO, 2018). As such, it is unsurprising that there is considerable individual diversity within gender categories. For example, there is variation in gender identity (Temkin et al., 2017), and gender identity may or may not fall within a female or male binary category. Unfortunately, even the term transgender assumes a gender binary (Ocha, 2012). Children who do not fit neatly within the binary distinctions of girl or boy may be described as non-binary, gender-nonconforming, gender-expansive, genderqueer, or gender-diverse. Evidence suggests that not conforming to rigid gender norms is relatively common. Research from the 1990s indicated that 39 percent of girls and 23 percent of boys exhibited ten or more behaviors that are considered non-conforming for their gender (Sandberg et al., 1993). A 2017 Harris Poll found that almost one in eight young people identify as gender-nonconforming or transgender.

Although research on gender development in transgender children has been rare, this area of work is rapidly expanding. Exact percentages are difficult to determine, but estimations suggest that, by middle school, approximately 1.3 percent of youth identify as transgender (Shields et al., 2013) and, by adulthood, approximately 2.4 percent of individuals identify as transgender (Tate, Ledbetter, & Youssef, 2013). In a 2016 survey completed by almost 81,000 adolescents in Minnesota, researchers asked, "Do you consider yourself transgender, genderqueer, genderfluid, or unsure about your gender identity?" They found that 3 percent of ninth and eleventh graders in Minnesota do not identify as a girl or boy, instead selecting one of the other, nonbinary options (Rider et al., 2018).

Particularly promising is research coming from the Trans Youth Project, which was launched in 2013 as a longitudinal research project examining gender development in socially transitioned, transgender children from three to twelve years old in North America (e.g., Fast & Olson, 2018; Olson et al., 2016; Olson & Gülgöz, 2018). This project is focused on a national, community-based sample contacted through support groups, conferences on gender identity, websites, and word of mouth. This sampling technique differs from much previous research, which primarily recruited samples through mental health clinics and thus confounded being transgender with having mental health concerns. This sample of prepubertal children both (1) explicitly identify as a different gender than labeled at birth (instead of merely "wishing" to be a different gender) and (2) have "socially transitioned," meaning they present themselves to others consistent with their gender identity rather than their sex labeled at birth. This transgender sample of children is compared to a matched sample of their gender-typical siblings (thus controlling for family characteristics) and to unrelated gender-matched children. Early findings indicate that transgender children (1) have similar gender development, (2) have similar gendered preferences (e.g., in toys and clothes), and (3) have fewer gender stereotypes than non-transgender (i.e., cisgender) children (Olson & Gülgöz, 2018). Although in its early stages, this work will help illuminate how gender development is both similar and unique across cisgender and transgender children.

There is also biological variability within cisgender girls and boys. For example, girls with congenital adrenal hyperplasia (CAH) are exposed to heightened levels of androgen *in utero*; thus, girls with CAH have hormone exposure more similar to males *in utero* than females. Studies of these children offer an important lens for investigating the role of gonadal hormones and socialization on behaviors and gender differences (Berenbaum & Hines, 1992). For example, research regarding early toy preferences found that girls

with CAH preferred male stereotyped toys (such as cars and blocks) more than female stereotyped toys (such as dolls and kitchenware) and preferred male toys more than female controls who did not have CAH (Berenbaum & Hines, 1992). The difference in toy preference between girls with CAH and girls without CAH seems to be driven by the role of hormones, particularly androgens, in shaping early gender differences in play and toy preferences, more so than socialization. In their research, girls with CAH were socialized similarly to girls without CAH; indeed, parents of girls with CAH encouraged them to play with female-typical toys *more* than they encouraged girls without CAH. Yet their play more closely resembled that of boys than that of other girls (Pasterski et al., 2005). Thus, regardless of parental encouragement to play with girl-typical toys, girls with CAH still preferred male-typical toys. Furthermore, this difference does not seem to be unique to CAH per se, as boys with CAH did not differ from boys without CAH (Pasterski et al., 2005). This research illustrates how incorporating diverse samples offers important insights into mechanisms that may influence gender development.

3.2 Diversity of Family Gender Composition

In addition to individual diversity of gender for children, there is diversity of the gender composition of families. For example, parents may consist of mothers and fathers in the same household or in separate households (separated because of divorce, dissolution of the relationship, or because they never lived in the same household). After divorce, 81 percent of custodial parents are mothers and 18 percent are fathers (Cancian et al., 2014). Families also differ in the gender composition of the siblings in the families and the extent to which sisters and brothers are treated differently (McHale, Crouter, & Tucker, 1999). For example, they found that having both daughters and sons in the same family can actually exacerbate gender stereotypes by modeling and reinforcing gender-stereotypical behaviors and by serving as sources of social comparison. This happens when parents have both the opportunity to treat girls and boys differently and choose to do so because they endorse traditional gender roles.

Families may also consist of two mothers or two fathers. The number of households in which there is at least one sexual minority parent has been growing, and between 2 million and 3.7 million children under the age of eighteen in the United States have lesbian, gay, bisexual, and transgender parents (LGBT; Gates, 2015). However, based on cross-sectional and longitudinal studies with more than 100 families headed by either lesbian, gay, or heterosexual couples, children seem to develop in typical ways regardless of parental sexual orientation (Farr, 2016; Farr, Forssell, & Patterson, 2010). For

example, in a study with eight-to-twelve-year-old children in the Netherlands from either lesbian-headed families or heterosexual families, researchers found that children in lesbian families showed less in-group bias favoring their own gender and felt less parental pressure to conform to gender stereotypes than children in heterosexual families (Bos & Sandfort, 2010). Children in lesbian families were also more open to and less certain about future heterosexual romantic relationships. There were no differences, however, in children's global self-worth and social competence. Similarly, longitudinal research with children with gay, lesbian, or heterosexual parents examined their gender-conforming and gender-nonconforming behaviors, assessed via parents' reports and observation of children's toy play, in preschool and then five years later (Farr et al., 2018). Researchers found that, although children's gender-typed behaviors varied across age and gender, there were no differences in gender conformity or nonconformity based on their parents' sexual orientation (Farr et al., 2018).

3.3 Diversity of Gender across Cultures

Most work focusing on gender development has been conducted in Western cultures. Yet, because gender is culturally constructed, it is important to look at gender across cultures.

At the country level, and across cultures within the same country, we see varying degrees of discrepancies between girls and boys (e.g., Bornstein et al., 2016). For example, in many parts of the world, parents exhibit strong preferences for sons over daughters (The Economist, 2010), often reflecting the sons' roles as future financial providers for the family. Relatedly, there are differences in the educational attainment of girls and boys across the world. In some low-income countries in which compulsory education is not required of all children, parents often send only their sons to school (UNESCO, 2010). The United Nations Educational, Scientific, and Cultural Organization (UNESCO) has focused much of their work on documenting gender parity for girls' and boys' education throughout the world. In their 2015 report, in which they documented girls' and boys' school lives, they note remarkable progress in gender equality between 2000 and 2015. For example, in 2000 only thirty-two countries reached gender parity in both primary and secondary education; by 2015 that number was sixty-two. In Southern Asia, in 1990, girls could be expected to receive only six years of education; they now receive about twelve years of education. Despite this progress, more than half of the countries who are included in the United Nations have not yet reached gender parity in primary and secondary education, and no countries in sub-Saharan Africa have. Girls remain out of

school more than boys do, with 15 million girls worldwide never attending school at all (UNESCO, 2016). This lack of education leads to different developmental outcomes for girls and boys. Although gender gaps in literacy are shrinking, they are still apparent. In Bangladesh, for example, literacy is twice as high in boys than girls (48 percent versus 24 percent, respectively; see Stewart, Bond, Abdullah, & Ma, 2000). These gaps are reflected in adulthood as well, as women account for two-thirds of the 750 million adults worldwide without basic literacy skills. It is also important to recognize that gender gaps in educational attainment worldwide are more pronounced for ethnic minority girls, girls with disabilities, and girls from the poorest quintiles (UNESCO, 2016). For example, only 37.2 percent of the children with disabilities who attend school are female.

There are also cultural differences in expectations for girls and boys. For example, in Islamic cultures there is closer monitoring of girls than boys, and boys are given more unrestricted access to peers than girls (Stewart, Bond, Abdullah, & Ma, 2000). In low- and middle-income countries around the world, although there is variation between countries, boys are slightly more likely to be expected to work outside the home and girls are slightly more likely than boys to be assigned caregiving and excessive amounts of household chores (Bornstein et al., 2016). Girls and boys may also interpret these behaviors differently. In a study with Bangladeshi youth, girls who reported their parents' close supervision of them perceived their parents to be warmer, whereas boys who reported parents' close supervision perceived their parents as more dominating (Stewart, Bond, Abdullah, & Ma, 2000). These different perceptions have different implications for psychological outcomes. For example, in Pakistan, parental autonomy granting was important and positive for boys' outcomes but unrelated to girls' outcomes (Stewart, Bond, Ho et al., 2000). In other words, there is cultural diversity in how parents treat girls and boys and cultural diversity in the impact of that differential parenting on children.

On the other end of the spectrum, there are cultures with high levels of gender equality and egalitarianism. Sweden, for example, is ranked by the European Union (EU) as the most gender-equal society in the EU (European Union for Gender Equality, 2019). This distinction is reflected in their preschool practices. The Swedish government established a national curriculum for preschools specifically designed to counteract traditional gender stereotypes, gender roles, and gender patterns (Swedish National Agency for Education, 2011). Although not consistently implemented, the Swedish government has developed "gender-neutral" preschools called *Egalia*, the Swedish word for equality. In these preschools, teachers do not use gendered language (such as him and her), instead referring to individual children by their first names or as "hen,"

a gender-neutral pronoun. Shutts and colleagues (2017) found that young children who attended these gender-neutral schools, although they encoded others' gender to the same degree, were more interested in playing with unfamiliar other-gender children and scored lower on a gender-stereotyping measure compared to children in typical preschools.

Even within Western samples of families, culture, ethnicity, and social class moderate gender development. For example, previous research has shown that Latinx families are typically more traditional in socializing gender roles than European American families (Azmitia & Brown, 2002; Baca Zinn & Wells, 2000; Hondagneu-Sotelo, 1994; Valenzuela, 1999), with women being more likely to maintain relational ties with families and preserve the ethnic traditions and integrity of the culture than men (Gil & Vazquez, 1996; Phinney, 1990). As such, girls are often trained to carry on that tradition and are often expected to remain close to the home and family. Boys are expected to gain independence and autonomy (Raffaelli & Ontai, 2004; Suárez-Orozco & Qin, 2006) and thus are given more freedom, mobility, and privileges than are girls (Domenech Rodríguez, Donovick, & Crowley, 2009; Love & Buriel, 2007; Suárez-Orozco & Qin, 2006); girls, however, often have more restrictions and are more closely monitored than are their brothers (Raffaelli & Ontai, 2004; Suárez-Orozco & Qin, 2006). Furthermore, girls, on average, are assigned more chores and responsibilities than their brothers (Raffaelli & Ontai, 2004). One example is that Mexican American parents are more likely to choose their daughters than their sons to translate for them (i.e., language brokering); the increased demand for language brokering for daughters, however, typically involves tasks that can be completed within the home, such as filling out paperwork (Love & Buriel, 2007; Valenzuela, 1999). Not surprisingly, although both girls and boys respect and value their families (Valenzuela & Dornbusch, 1994), girls are socialized to be even more connected to their families than boys (Raffaelli & Ontai, 2004).

Beyond different expectations and experiences for girls and boys across countries and cultures, there are also cultural differences in the basic conceptions of gender and accepted gender identities. For thousands of years, a nonbinary category of individuals, called *hijras*, has been documented in India. In 2014, after years of extreme discrimination, the Supreme Court in India officially recognized *hijras*, as well as transgender people, as a "third gender." In Independent Samoa, some males identify as *fa'afafine*, which literally translated means "in the manner of a woman." They are males who are sexually attracted to men, often have a feminine gender expression, but do not identify as men or women (Vasey & Bartlett, 2007). Retrospective studies that compared the childhoods of *fa'afafine* individuals, men, and women found that *fa'afafine* individuals reported playing with girls' toys and games more

often as children than did the women. They also reported believing they were girls as children and not feeling distressed by their identity (Condon & Stern, 1993).

3.4 Conclusion

Taken together, we see that discussions about gender cannot simply rely on discussion about differences between girls and boys. There is considerable diversity within gender groups, such that individual girls and individual boys differ from one another more than the average girl and average boy differ. There is variation among children with male genitalia and female genitalia, in that they may identify as either boys, girls, both, neither, or some gender-expansive or gender-creative combination. Our growing understanding of gender identity, still in its somewhat nascent stages, will continue to inform how gender and gender similarities and differences are determined. There is also considerable diversity in families regarding how gender is represented in both the parents and siblings. Finally, there is enormous diversity across cultures, both in terms of how girls and boys are treated and, at times, in how gender is even defined.

4 Theoretical Approaches to Gender Development

There are many different theoretical perspectives through which researchers have studied gender in childhood. Some theories focus on the ways in which gender is largely reflective of biological sex and focus their research questions on how biological markers such as secondary sex hormones and chromosomes might influence differential behaviors for females and males (e.g., Berenbaum & Hines, 1992). Many of these differences are attributed to differentiated neurological development that occurs *in utero*. Boys experience a four-month surge of testosterone ending in the second trimester that is critical to developing their genitalia. After birth, for about one to two months, boys get a second surge of testosterone and girls get a surge of estrogen (referred to as *mini-puberty*). Most biological differences in girls and boys are attributed to the differences that occur during these critical periods. Some evidence suggests, for example, that testosterone levels are related to play preferences (e.g., Berenbaum & Hines, 1992). Auyeung and colleagues (2009) found that *in utero* testosterone exposure was linked to gender differentiated play patterns, such that exposure to more testosterone was related to parent reports of more frequent male-typed play (such as rough-and-tumble play) for both girls and boys. Additionally, Kung and colleagues (2016) found that higher levels of testosterone during mini-puberty were related to a larger vocabulary size at eighteen to thirty months. Some researchers, however, have found no relation between