Chapter 6
Origins and Consequences of Childhood Gender Segregation: Toward an Integrative Developmental Systems Model

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Abstract Gender segregation refers to the tendency of most children to affiliate primarily with same-gender peers. This chapter reviews the development and consequences of this phenomenon. First, the developmental trajectory of gender segregation from early childhood into adulthood is summarized. Second, possible explanations for the emergence of gender segregation in early childhood are critically examined. These include the possible influences of family, school, popular media, behavioral compatibility, and gender-related cognitions. In the third section, the maintenance and consequences of gender-segregated peer groups during middle childhood, adolescence, and adulthood are considered. In the last section, I present a preliminary integrative developmental model. It takes into account the interacting influences of early-appearing variations in behavioral dispositions (including play interests and temperament), ingroup gender identities, and peer group processes on children's gender development. The model addresses gender development in cisgender children as well as those with transgender or other nonbinary gender identities. Finally, I offer several recommendations for future theorizing and research.

Keywords gender identity · peers · interests · play · temperament · social identity · stereotyping

Gender relations underlie many of the contemporary issues that dominate the news headlines. Some examples include the bullying of gender-nonconforming children and youth (e.g., Levin, 2019), sexual harassment in the workplace (e.g., Carlsen et al., 2018), the underrepresentation of women in high-paying occupations (e.g., Metz, 2019), biased representations of gender in the media (e.g., Harris, 2019), relationship challenges in dating and married couples (e.g., Miller, 2018), and sexism in politics (e.g., Kimmel, 2018). These problems reflect social-structural

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gender inequalities in society that shape gender socialization during childhood (see Leaper, 2000, for a review). In the present chapter, I focus on the peer context in this process. Specifically, I address the phenomenon of gender segregation, whereby children who identify with their birth-assigned gender (*cisgender*) typically spend much of their childhood affiliating with same-gender peers while mostly avoiding other-gender peers. I also consider children who do not conform to cultural expectations for their assigned gender (i.e., *gender-nonconforming* children) and those who do not identify with their assigned gender (i.e., *transgender* or other *nonbinary* children).

In the first section of the chapter, I summarize patterns of gender segregation typically observed from childhood into adulthood. Next, I review possible explanations for the onset of same-gender peer preferences during early childhood. Afterward, I consider the maintenance and consequences of gender segregation at later age periods. Finally, to foster greater theoretical synthesis in psychology (see Leaper, 2011, 2015), I propose a preliminary integrative systems model of gender segregation that bridges complementary theories and research areas.

6.1 Gender-Segregated Peer Affiliations from Childhood into Adulthood

Gender-segregated peer affiliations are prevalent from childhood into adulthood (Leaper, 1994; Maccoby, 1998; Mehta & Strough, 2009). The general patterns seen at different age periods are summarized below.

6.1.1 Early to Middle Childhood

For nearly a century (e.g., Parten, 1933), developmental psychologists have documented that most children begin to favor social interactions with same-gender over other-gender peers starting around 3 years of age (see Maccoby, 1998). Child-initiated preference for same-gender peers has been widely observed around the world when children have opportunities to select among multiple peers close in age. Indeed, researchers have documented childhood gender segregation in countries in North America, South America, the Caribbean, Europe, Africa, South Asia, East Asia, and the Pacific Islands (e.g., Fouts et al., 2013; Harkness & Super, 1985; Lloyd & Duveen, 1992; Maccoby & Jacklin, 1987; Munroe & Romney, 2006; Whiting & Edwards, 1988).

Based on research conducted primarily in Western, industrialized countries, same-gender peer preferences steadily increase from early childhood into middle childhood. For example, in one study in the USA, the average ratio of same-gender to mixed-gender interactions went from 3:1 around 4 years of age to 11:1 around

6 years (Maccoby & Jacklin, 1987). In another US study, partner gender accounted for an estimated 70% of the variance in peer selection during early childhood (Martin & Fabes, 2001). Some research indicates that preference for same-gender peers peaks in middle childhood (see Maccoby, 1998; Martin & Ruble, 2010; Mehta & Strough, 2009; Serbin et al., 1993). However, one US longitudinal study found that affiliation with same-gender peers increased throughout middle childhood and did not peak until early adolescence (Lam et al., 2014).

Girls appear to favor same-gender peers at an earlier average age compared to boys (e.g., LaFreniere et al., 1984). However, by around 5 or 6 years of age and continuing throughout childhood, boys preferred same-gender peers more strongly than did girls in multiple cultures (Benenson et al., 2012; LaFreniere et al., 1984; Munroe & Romney, 2006). Indeed, gender boundaries and gender conformity pressures are generally more rigid for boys than girls throughout childhood and adolescence (see Leaper, 2015). Furthermore, children may be more likely to segregate based on gender than ethnicity or race (e.g., Lee et al., 2007).

Although cross-cultural research indicates a general trend toward same-gender peer preference in early childhood, there are variations across cultures in the average proportions of young children's peer affiliations with only same-gender members (Aydt & Corsaro, 2003; Larson & Verma, 1999; Munroe & Romney, 2006; Whiting & Edwards, 1988). For example, in their study of six diverse cultures, Whiting and Edwards (1988) reported average rates of same-gender, non-sibling peer social interactions among children between 4 and 5 years that ranged across cultures from 42% to 78% for girls and ranged from 22% to 74% for boys. Among children 6–10 years of age, these ranges were 71% to 90% for girls and 67% to 88% for boys. In all of the sampled cultures, gender segregation became more prevalent with age.

In societies where younger children's rates of gender segregation were relatively low, Whiting and Edwards (1988) noted there was limited access to same-age peers (see Harkness & Super, 1985; Lew-Levy et al., 2020, for similar findings). Relatedly, children in some cultures were assigned subsistence or domestic tasks that limited their time with peers. These cultural practices reflected social-structural gender inequalities in the larger society, such as the assignment of girls to childcare (see Whiting & Edwards, 1988, p. 277).

Besides possible cross-national differences, variability in rates of gender segregation within a society appear likely in at least three ways. First, there is a *gradient* among children in their proportions of same-gender play. For example, Martin et al. (2014) observed preschool children generally affiliated with mostly same-gender peers but individuals varied in how strongly they demonstrated these preferences. Second, variations may occur *across time and place* within a given community. For example, Messinger et al. (2019) collected continuous movement data among 5-year-olds in a US classroom across 3 days. They identified variability across the days in the gender composition of children's peer groups. Finally, degrees of gender segregation may differ *across groups within a larger community*. For example, researchers found variations in gender segregation related to youth's ethnicity/race (Kovacs et al., 1996) and economic class (Pfaff, 2010).

Even among children who primarily affiliate with same-gender peers, there are contexts when researchers in the USA have observed relaxed and friendly mixed-gender interactions. First, researchers found cooperative mixed-gender group play or mixed-gender dyadic friendships commonly occurred among children in private settings, such as their homes when companion choices were usually limited (Smith & Inder, 1990; Sroufe et al., 1993; Strough & Covatto, 2002). Second, researchers have noted that positive mixed-gender interactions can transpire during adult-structured activities (Sroufe et al., 1993). For example, this occurs in many coeducational classrooms in the USA (and other countries) when teachers assigned students to collaborate on a project in mixed-gender groups (see Leaper & Brown, 2014, for a review). In both of these situations, researchers noted a low risk of peer teasing. However, children who pursued mixed-gender contact in public or child-structured settings often faced peer rejection (e.g., Sroufe et al., 1993).

6.1.2 Adolescence

During middle and late adolescence, the maintenance of gender-segregated peer groups and friendships may begin to relax in some cultural communities—perhaps especially in many Western industrialized societies (Larson & Verma, 1999; Whiting & Edwards, 1988). In a longitudinal study of youth in Canada (grades 6–10; Poulin & Pedersen, 2007), the average percentage of *other*-gender companions increased over the course of adolescence. Studies conducted primarily in North America suggest mixed-gender friendships often occur when peer groups differentiate into smaller cliques based on shared interests (Ellis & Zarbatany, 2017). These cliques may offer greater flexibility for teens to find a crowd compatible with their interests. In some US communities, a few examples include "the jocks," "the brains," and "the artists" (see Sussman et al., 2007).

The advent of mixed-gender peer groups occurs around the same period when youth are undergoing puberty and sexual-romantic interests are increasing. For many heterosexual adolescents, mixed-gender peer groups may be contexts for exploring heterosocial friendships and then pursuing romantic relationships (Connolly et al., 2004). However, research suggests that adolescents generally do not establish romantic relationships with individuals from their friendship peer groups; instead, these relationships can create bridges to other peer networks leading to dating relationships (Kreager et al., 2016). For LGBTQ youth, friendship groups comprised of mixed-gender and mixed-orientation peers can be helpful social supports during their explorations of sexual and gender identities (e.g., Chong et al., 2019; Diamond & Dubé, 2002).

In some cultures, older children and adolescents do not demonstrate increased affiliations in mixed-gender cliques or other peer groups. First, some youth in non-industrialized and rural societies may have few or no opportunities to participate in different interest-based cliques. For example, this may occur when adults expect children to assist in subsistence activities or infant care (e.g., Rogoff et al., 2010).

Second, research suggests adolescent youth in industrialized Western nations may be more likely to spend time in peer groups than those in other parts of the world (Larson & Verma, 1999; Whiting & Edwards, 1988). By extension, corresponding average cultural differences in time spent in mixed-gender peer groups may ensue (e.g., Basu et al., 2017). However, these are broad generalizations based on a few studies, and a deeper and more extensive analysis of cultural variations is required. Finally, in some cultural communities, strict boundaries are imposed on adolescents' mixed-gender contacts. For example, this is common within some countries such as India and China (Basu et al., 2017) as well as Orthodox Jewish, Muslim, and Amish religious communities (Williams et al., 2017).

6.1.3 Adulthood

Upon entering adulthood, individuals in industrialized countries typically attend college or professional training programs, enlist in the military, or join the workforce (Mehta & Strough, 2009). Among those attending coeducational colleges, women and men regularly interact in mixed-gender group settings in classrooms, dormitories, student organizations, and classrooms (e.g., Wong et al., 2018). Studies suggest mixed-gender platonic friendships may be common among undergraduates in coeducational colleges, but most friendships tend to remain with same-gender peers (e.g., Li & Wong, 2018; Mehta & Strough, 2009). Although coeducational colleges can offer many opportunities for positive mixed-gender interactions, some common institutional barriers in coeducation colleges that perpetuate gender segregation are reviewed later in this chapter (Sect. 6.3.2).

In many (but not all) countries, the military is gender-segregated during basic training, and most combat roles are limited to only men (Mehta & Strough, 2009). In the workforce, many occupations are effectively gender-segregated due to their overrepresentation of one gender (see Guinea-Martin et al., 2018; Mehta & Strough, 2009). Furthermore, men are disproportionally represented among the highest-paying occupations (e.g., computer engineers). Men similarly dominate most positions of power in corporations and government. Notably, the relative representations of women and men in high-paying occupations and powerful positions are among the World Economic Forum's (2020) criteria for ranking countries in their relative degrees of gender equality.

Very little research has addressed gender segregation outside of work settings during the middle and late adulthood years (see Mehta & Strough, 2009, for a review). Based on the available research conducted primarily in the USA and Canada, most individuals' friendships and social networks were primarily with same-gender persons (see Mehta & Strough, 2009). The gender composition of adults' friendship networks may be partly affected by the degree to which their occupations are gender-segregated (Mehta & Strough, 2009).

6.2   Possible Explanations for the Emergence of Gender Segregation in Early Childhood

In this next section, I review the evidence regarding possible explanations for the emergence of gender segregation during early childhood (approximately 2½ to 5 years of age). I consider the evidence for family and school pressures, media influences, same-gender behavioral compatibility, and the acquisition of gender-related cognitions as possible reasons for the emergence of same-gender peer affiliations during early childhood. Later in the chapter (Sects. 6.3.1 and 6.3.2), I review processes associated with gender segregation during middle childhood, adolescence, and adulthood.

6.2.1   Families and Schools

There is no evidence that the *initial emergence* of same-gender peer preferences in young children is due to adult family members' or preschool teachers' pressures on children either to affiliate with same-gender peers or to avoid other-gender peers (see Maccoby, 1998). However, family members and preschool teachers may have an *indirect* influence on the development of childhood gender segregation inasmuch they contribute to the development of gender-based identities, attitudes, and behavioral preferences. For many children, gender-differentiated socialization occurs at birth when infants are assigned their gender. Their first names are commonly gendered ("Michael" versus "Michelle"); moreover, the color and type of clothing readily signals their designated gender (Bigler & Liben, 2007; Wong & Hines, 2015). In addition, by around 1 year of age, most adult relatives provide gender-stereotypical (i.e., gender-typed) toys to children, and they avoid offering counter-stereotypical (i.e., cross-gender-typed) toys to them (Leaper, 2015; Lytton & Romney, 1991). Also, parents may reinforce gender segregation by arranging play dates for their children only with same-gender peers (e.g., Feiring & Lewis, 1987; Hollingsworth & Buysse, 2009).

Preschool teachers may have an indirect influence on the emergence of gender segregation in ways similar to that of parents or other family members. For example, this may occur by using gendered language (e.g., "Good morning, girls and boys") and organizing activities by gender (e.g., Bigler & Liben, 2007; Chen & Rao, 2011; Hilliard & Liben, 2010). It also occurs through tacit acceptance of children's expressions of gender-stereotyped attitudes and behaviors (Hyde et al., 2019). However, there are exceptions. Some teachers and schools deliberately challenge children's gender stereotypes or foster cooperative mixed-gender interactions (e.g., Mulvey et al., 2020; Ryan et al., 2013; Shutts et al., 2017; and see Leaper & Brown, 2014, for a review).

As children get older, parents and other adults may have a more direct influence on children's gender segregation. In middle- and upper-income communities in the

USA and other countries, many parents enroll their children in same-gender extra-curricular activities (e.g., sports). Moreover, some children and adolescents are sent to single-gender schools or schools with single-gender classrooms (Pahlke et al., 2014; also addressed later in Sect. 6.3.2.1). Alternatively, in coeducational schools, teachers may use gender to organize activities in the classroom (e.g., same-gender workgroups). Moreover, in most schools, it is customary to separate girls and boys in athletic activities (Anderson, 2008; also discussed later in Sect. 6.3.2.3). Finally, in some cultures, adults impose gender segregation on children and adolescents. For example, children may be assigned gender-segregated chores, such as cooking and childcare for girls and subsistence tasks for boys (Maccoby, 1998; Rogoff et al., 2010). Finally, as I noted earlier, in some religious communities, girls and boys are separated at adolescence, and any mixed-gender contact must be supervised (Williams et al., 2017).

6.2.2 Popular Media

In books, television, movies, and online media, young children are commonly exposed to characters who are gender-differentiated in prominence, appearance, and behavior (e.g., Walsh & Leaper, 2020; Ward & Aubrey, 2017). Representations of gender in popular media inform young children's emerging schemas of what it means to be "a girl" or "a boy" (and generally without nonbinary representations of gender). For example, mass media provide pervasive images linking masculinity with athleticism and dominance while linking femininity with sexual attractiveness and communion (see Mazzarella, 2015; Ward & Aubrey, 2017). Another way that popular media may contribute to gender segregation is through the color-coding of toys, clothing, and other objects as pink for girls and blue for boys (Bigler & Liben, 2007; Wong & Hines, 2015).

Several studies have documented a link between media consumption and gender stereotyping in early childhood and beyond (Lemish, 2015; Ward & Aubrey, 2017). Furthermore, as they get older, girls and boys increasingly seek out television shows, videogames, and other media that reinforce gender-stereotyped expectations (Cherney & London, 2006)—including preferences for same-gender peers. Thus, exposure to popular media may indirectly reinforce children's emerging preferences for same-gender peers via its impact on children's developing gender stereotypes and interests (Lemish, 2015). However, to my knowledge, there has been no research testing this premise.

6.2.3 Behavioral Compatibility

In general, preschool-age children seek peers with whom they experience positive affect (Snyder et al., 1996). By extension, children may enjoy interactions with

others who have similar interests and behavioral styles. According to the behavioral compatibility hypothesis, gender segregation initially emerges because same-gender peers are likely similar in their interests and behavioral styles (Maccoby, 1998; Martin et al., 2011b; Serbin et al., 1994). Some psychologists have posited sex-linked behavioral dispositions evolved over human history to help prepare males for combat and females for childcare (e.g., Benenson, 2014; Geary, 2021; however, also see Wood & Eagly, 2012, for an alternative biosocial perspective that incorporates both social-structural and biological factors). To evaluate the behavioral compatibility hypothesis, it is first necessary to document the incidence of average behavioral differences already present around 3 years of age when children usually begin to favor same-gender over other-gender peers.

6.2.3.1   Evidence for Early Average Gender Differences in Behavior

As summarized below, researchers have documented reliable gender differences with meaningful effect sizes in several types of behavior among samples of young children. To evaluate the magnitude of difference between two groups, the Cohen's d statistic indicates the standardized difference between the means of two groups. By one convention, small yet meaningful effect sizes are indicated when $d = 0.20$ (equivalent to 92% overlap between two groups). Moderate or medium effect sizes are denoted when $d = 0.50$ (equivalent to 80% overlap). Finally, large effect sizes occur when $d = 0.80$ (equivalent to 67% overlap) or greater (Cohen, 1988; and see Magnusson, 2020, regarding estimates of overlap). Thus, even with significant group differences in behavior, within-gender variability and between-group overlap are seen.

Interests: Average differences between females and males in interests appear early in childhood. Within children's first year, researchers in a few studies have detected average sex differences with moderate effect sizes in children's *interests in people versus inanimate objects* (e.g., pictures of faces vs. mechanical objects, respectively). Girls demonstrated greater average interest in people, whereas boys exhibited greater average interest in objects or "things" (see Alexander & Wilcox, 2012). However, many girls and boys did not show a preference for one type of stimuli over the other.

In addition, average differences with large effect sizes have been noted between girls' and boys' preferences for particular *toys and play activities* during childhood (Cherney, 2018; Davis & Hines, 2020; Todd et al., 2017). Girls were much more likely than boys to choose feminine-stereotyped toys and play activities such as dolls, dress-up, and playing house. Conversely, boys were much more apt to favor masculine-stereotyped toys and play activities such as vehicles, construction toys, balls and sports activities, rough-and-tumble play, and action-adventure fantasy play. These preferences begin to appear around 18 months of age for many children (Serbin et al., 2001).

Preferences for gender-typed toys and play activities generally increase with age (e.g., Davis & Hines, 2020). For some young children, these interests may be

especially strong or "extremely intense" (DeLoache et al., 2007; Halim et al., 2014; Johnson et al., 2004). In a study of 177 (presumably cisgender) children between 1 and 6 years of age, DeLoache et al. (2007) defined an extremely intense interest as "relatively long lasting, shown in several different contexts. . ., and independently noticed by people outside the immediate family" (p. 1579). The researchers found 29% of the children had "extremely intense" interests, 37% had "moderate" interests, and 34% did not indicate any strong interests. Extremely intense interests seen predominantly or only among boys included vehicles, trains, machines, or dinosaurs. In contrast, extreme interests found predominantly or only among girls were dress-up and books/reading. (Overall, intense interests were substantially more likely among boys than girls.) Researchers also noted a few intense interests seen in both girls and boys (e.g., live animals). Intense interests emerged between 1 and 2 years of age, and they tended to persist for an average of 22 months.

A second set of children may express intense interests in toys and activities that are counter-stereotypical for their assigned gender—and simultaneously show disinterest in objects and activities that are stereotypical for their assigned gender (Ahlqvist et al., 2013; Bailey et al., 2002; VanderLaan et al., 2015). These include (but are not limited to) children who self-identified as transgender or were classified by clinicians with gender identity disorder or gender dysphoria. Based on a recent estimate of the incidence of youth self-identifying as transgender, one might tentatively infer that intense cross-gender-typed interests occur among at least 1% of children (Zucker, 2017).

Finally, in the previously reviewed studies, many toddlers and preschool-age children did not initially exhibit different interests in people versus objects (Alexander & Wilcox, 2012) or to masculine- versus feminine-stereotyped toys (DeLoache et al., 2007). Accordingly, this third group of children may be relatively susceptible to greater gender-role flexibility during development. Indeed, research in the USA (Sandberg et al., 1993) and China (Yu & Winter, 2011) suggests that many girls and boys express a combination of gender-typed and cross-gender-typed interests and behaviors. However, this potential flexibility and breadth of interests may partly depend on gender socialization practices (e.g., Brown & Stone, 2018; Endendijk et al., 2018). For example, children infer messages from their environments regarding socially desirable and undesirable behaviors for their gender ingroup (e.g., Bigler & Liben, 2007; Martin et al., 2002), which may affect their subsequent motivations (Bussey & Bandura, 1999).

Physical activity level and related behaviors: Some (but not all) facets of temperament seen between 3 months and 13 years of age have been associated with reliable average gender differences with small-to-moderate effect sizes (Else-Quest et al., 2006). These include physical-activity level and high-intensity pleasure-seeking, which tend to be higher among boys than girls. Consistent with higher average activity levels and high-intensity pleasure-seeking, studies indicated boys tended to engage in more rough-and-tumble play than did girls (Else-Quest et al., 2006).

Socioemotional competencies and related behaviors: During early childhood (approximately 3–5 years of age), several behaviors related to socioemotional

competence have been observed more likely among girls than boys with small-to-moderate effect sizes. These included higher mean levels for girls in interpersonal concern or empathy (e.g., Braza et al., 2009; Rhee et al., 2013), language and communicative competence (e.g., Rhee et al., 2013; Leaper & Smith, 2004), and impulse control (e.g., Else-Quest et al., 2006).

In contrast, researchers have noted higher average levels in physical aggression and other externalizing behaviors among boys than girls with moderate-to-large effect sizes (Card et al., 2008; Chaplin & Aldao, 2013). Also, studies indicated higher average uses of controlling or domineering communication among boys than girls during early childhood with a small effect size (see Leaper & Smith, 2004).

Interrelations among behaviors: Several of the above behaviors are interrelated during early childhood: First, children's differential interest in people versus objects during their first year predicted interests at 4 years of age in feminine-stereotyped versus masculine-stereotyped toys, respectively (Lauer et al., 2018). Second, children with high activity levels may be especially interested in physical play activities (Pellegrini et al., 2007). Third, high-intensity pleasure may lead children toward rough-and-tumble play (Else-Quest et al., 2006). Fourth, language and communicative skills may be related to empathy (Rhee et al., 2013). Fifth, children's preference for feminine-stereotyped toys was associated with socioemotional abilities (Wong & Yeung, 2019). Finally, effortful control negatively predicted the likelihood of physical aggression (Hay, 2007).

6.2.3.2   Evidence Regarding the Behavioral Compatibility Hypothesis

Only a few studies have tested the behavioral compatibility hypothesis in relation to the *onset* of children's preference for same-gender peers during early childhood (from approximately 2½ to 5 years of age). Among the identified studies reviewed below, the evidence is mixed. There is stronger support regarding some forms of behavioral compatibility than others. With few exceptions the available studies cited below were conducted in the USA, Canada, or the UK and with mostly White, middle-class samples. Also, many of them were based on small samples (and thus the total N is indicated for each cited study).

Links to toy and play interests: Four studies conducted in the USA or Canada were identified that tested for associations between play interests and gender segregation (or self-reported preference for same-gender peers) in early childhood. Two studies of toddler and preschool-age children did not find associations between play preferences and early gender segregation (Maccoby & Jacklin, 1987 [$N = 41$]; Powlishta et al., 1993 [$N = 57$]). However, shared play-activity preferences and peer affiliations were related in three studies of preschool children in the USA and Canada. In a study of children in Canada between 3 and 7 years (Serbin & Sprafkin, 1986 [$N = 147$]), self-reported same-gender peer preferences and gender-typed toy preferences were positively correlated. Among preschool children in the USA from diverse ethnic backgrounds (Halim et al., 2013 [$N = 229$]), increases from 4 to 5 years in gender-typed play and gender segregation were modestly correlated with

one another. In another study using stochastic modeling (Martin et al., 2013 [*N* = 292]), children between 4 and 5 years tended to demonstrate ties to same-gender peers with similar gender-typed activity preferences; however, the emergence of gender segregation was more strongly related to peer gender (57% of the variance) than to peer play activity (18% of variance). With the exception of the latter study, the previously cited reports do not provide strong evidence linking gender-typed toy and play interests to the initial emergence of same-gender peer preferences in early childhood.

Other studies have examined older children (4–13 years) with intense *cross*-gender-typed toy and play interests. These youth tended to favor other-gender peers who shared their interests (e.g., Ahlqvist et al., 2013; Bailey et al., 2002; Fridell et al., 2006). The implications of the latter trend will be explored more fully later (see Sect. 6.4.3).

Links to activity level and related behaviors: Six studies of preschool-age children in the USA tested the association between activity level and same-gender peer preferences. In support of the behavioral compatibility hypothesis, three of them found that preschool-age children with high-activity temperaments were more likely to affiliate with peers based on activity level than gender. In one report, the pattern was seen in both girls and boys (Gleason et al., 2005 [*N* = 75]); in a second, it was indicated only among girls (Pellegrini et al., 2007 [*N* = 73]); and, in a third, it was found only among boys (Martin et al., 2011a [*N* = 74]). Finally, four other studies of preschoolers did not detect associations among child gender, activity level, and peer preference (Hoffmann & Powlishta, 2001 [*N* = 39]; Howes & Phillipsen, 1992 [*N* = 40]; Maccoby & Jacklin, 1987 [Sample 1: *N* = 53; Sample 2: *N* = 43]).

As noted earlier, higher average levels of physical activity and high-intensity pleasure-seeking may be related to preferences for rough-and-tumble play (Else-Quest et al., 2006). In support of the behavioral compatibility hypothesis, two studies of preschoolers in the USA found that boys were likely to favor peers who engaged in rough-and-tumble play (Colwell & Lindsey, 2005 [*N* = 60]; Martin et al., 2011b [*N* = 74]). In one of these studies, girls also disfavored boys who engaged in rough play (Colwell & Lindsey, 2005). Two other investigations conducted in the USA did not find associations between rough-and-tumble play and gender segregation (Hoffmann & Powlishta, 2001 [*N* = 39]; Maccoby & Jacklin, 1987 [Sample 2: *N* = 43]). Another study unexpectedly found the association between rough play and gender segregation was positive among girls and nonsignificant among boys (Maccoby & Jacklin, 1987 [Sample 1: *N* = 53]).

Links to socioemotional competencies and related behaviors: A few studies conducted in the USA or Canada tested the association between socioemotional competence and the onset of gender segregation. In one pertinent investigation of 3-year-olds (Moller & Serbin, 1996 [*N* = 57]), preschool teachers rated gender-segregating girls as higher in social skills and lower in disruptive behavior compared to gender-segregating boys. Teachers rated non-segregating girls and boys as more similar in social skills and disruptive behavior. However, a longitudinal study of 1- to 4-year-olds did *not* find gender differences in social skill predicted same-gender friendships; instead, similarity in social skills was related to all friendships regardless

of the child's gender (Howes & Phillipsen, 1992 [$N = 40$]). Also, three studies did not find that gender segregation in preschool samples was related to peer similarities in either impulse control (Gleason et al., 2005 [$N = 75$]) or aggressive behavior (Hoffmann & Powlishta, 2001 [$N = 39$]; Martin et al., 2011b [$N = 74$]).

Perhaps social skills become more important in girls' peer preferences once gender segregation is underway. For example, in a study of 5-year-olds in Spain, socioemotional behaviors (e.g., talking, affection, sharing resources) predicted same-gender peer preferences among girls but not boys (Braza et al., 2012). In general, however, there has been no consistent evidence that behavioral compatibility regarding socioemotional skills or aggression underlies the *initial* emergence of gender segregation around 3 to 4 years of age.

6.2.4   Gender-Related Cognitions

According to gender schema theory, the acquisition of a concept of gender shapes children's perceptions of their worlds and self-concepts. That is, once children self-categorize themselves into a gender category, they tend to pay more attention to information that is relevant to their gender ingroup (Martin et al., 2002). By extension, according to the cognitive consonance hypothesis, children will prefer peers who belong to their self-identified gender ingroup (see Perry et al., 2019; Tobin et al., 2010). This proposition is also consistent with social identity theories of group belonging (Harris, 1995; Tajfel & Turner, 1979) as well as the gender self-socialization model (Perry et al., 2019; Tobin et al., 2010). As reviewed below, the evidence in support of the cognitive consonance hypothesis is mixed.

6.2.4.1   Early Gender-Related Cognitions

The marking of gender via appearance (e.g., hairstyles and length, makeup, clothing colors) and language (e.g., gendered nouns and pronouns) heightens the salience of gender in children's everyday lives (Bigler & Liben, 2007). Children show increasing evidence of category-attribute associations (e.g., linking female and male faces with gender-typed toys) between 1 and 2 years of age—and possibly even younger (see Martin et al., 2002; Serbin et al., 2001). They demonstrate a verbal concept of gender around 2 years of age when they use verbal gender categories to reference others (i.e., gender labeling). Evidence of gender self-categorization (i.e., gender identity) occurs around 2½ years of age (see Martin et al., 2002). During the preschool-age years, most children also begin to form rigid gender-stereotyped beliefs (see Martin et al., 2002). This is the same age period when children typically begin to affiliate more with same-gender peers. With increases in cognitive flexibility during the transition into middle childhood (around 7 years of age), children become somewhat more flexible in their gender beliefs (Katz & Ksansnak, 1994).

6.2.4.2   Evidence Regarding the Cognitive Consonance Hypothesis

According to the cognitive consonance hypothesis, young children (between approximately 2 and 4 years of age) are more likely to prefer same-gender playmates if they acquired the ability to gender label others (gender labeling) or themselves (gender identity or self-categorization). Two studies in the USA lent support to this hypothesis. One employed observations of peer preference (Fagot, 1985 [$N = 54$]) and another study was based on self-reported peer preferences (Martin & Little, 1990 [$N = 61$]). However, five other studies did not detect an association between gender concepts (labeling or identity) and same-gender peer preferences. The latter included research conducted in the USA, Canada, or the UK (Campbell et al., 2004 [$N = 56$]; Moller & Serbin, 1996 [N = 57]; Serbin & Sprafkin, 1986 [N = 147]; Smetana & Letourneau, 1984 [$N = 64$]), as well as across four diverse non-Western cultures (Munroe & Romney, 2006 [$N = 192$]). Perhaps variations across studies in measures or other methods led to the disparate findings (see Martin & Ruble, 2010).

Whereas the capacity for the verbal categorization of gender may not be necessary for the initial emergence of gender segregation, perhaps nonverbal category-attribute associations (e.g., Serbin et al., 2001) are a precursor. To my knowledge, this has not been tested. Also, as I review later in the chapter (see Sect. 6.3.1), the formation of gender schemas (e.g., stereotyped expectations) is implicated in the development and maintenance of gender segregation from early to middle childhood.

6.2.5   Need for Multidimensional and Multi-Domain Approach

With a few exceptions, the research has not lent strong support to either the behavioral compatibility or the cognitive consonance hypotheses for the beginning of gender segregation in early childhood (approximately 2½ to 5 years). Going forward, we must seek a deeper understanding of the possible combined impacts of behavioral compatibility and gender-related cognitions on child-initiated gender segregation (e.g., Martin et al., 2011b). Toward this aim, more studies with larger samples need to consider the interrelations among multiple variables over time (e.g., Barbu et al., 2000; Berenbaum et al., 2018; Martin et al., 2005; Martin et al., 2011b) as well as how they are measured (see Martin & Ruble, 2010). I discuss some possible directions below.

6.2.5.1   Multi-Domain Approach to Behavioral Compatibility

As summarized earlier, there are multiple types of behavior associated with average gender differences in early childhood. These include toy and play interests,

temperament, aggression, and interpersonal styles. However, children may vary in the particular kinds of gender-related behaviors that they find most attractive in peers. For some, having similar temperaments may be key, whereas for others shared play interests may be more important. Therefore, when testing the influence of behavioral compatibility on the emergence of gender segregation, researchers may find it helpful to consider several behavioral domains in which children experience behavioral compatibility.

Within each behavioral domain, further differentiations can be made. For example, even among children with gender-typed interests, there are variations in specific types of preferred play (Tobin et al., 2010). For example, one boy may favor sports while another boy may enjoy action figures, and each boy might not share the other's play interest. Also, there are multiple facets of temperament (e.g., activity level, self-control) and competence-related social behaviors (e.g., aggression, empathy, communication) that each may affect some children's peer preferences more than others.

Thus, children may differ in the relative importance they attach to facets of each of these behavioral domains when seeking out peers. However, if several features are correlated with gender, the ultimate effect may be a probabilistic tendency toward same-gender peer affiliations. This view is reflected in *dynamic systems* models of gender development (e.g., Martin & Ruble, 2010), which emphasizes the interplay of multiple sub-systems (e.g., physiological, cognitive, interpersonal, cultural). Also, the dynamic systems approach acknowledges how different experiences and processes can lead to similar outcomes, known as *equifinality* (von Bertalanffy, 1968; Leaper, 1985; Rosenfeld, 2002). Thus, children may vary in particular processes that lead them to favor same-gender peers. For example, for some children, having compatibility in one set of behaviors may be important; in contrast, for other children, compatibility in another set of behaviors may matter.

6.2.5.2 Multidimensional and Multi-Domain Approach to Gender Identity and Schemas

Applying a multidimensional and multi-domain model of gender-related cognition may reveal if and how young children's gender concepts guide their peer preferences. Developmental scientists have long emphasized the multidimensional nature of gender schemas (e.g., Huston, 1985; Liben & Bigler, 2002; Perry et al., 2019; Ruble et al., 2006; Signorella, 1999; Tobin et al., 2010). For example, children commonly form concepts and beliefs about gender in relation to physical appearance, recreational activities, personal-social traits, relationships, roles, and other domains (Tobin et al., 2010).

Contemporary models of gender identity are also multidimensional (e.g., Tobin et al., 2010). Besides a person's self-labeling into a gender category, gender identity incorporates evaluative components. These include *felt typicality* (perceived similarity to same- or other-gender peers), *centrality* (importance of gender as an identity), and *contentedness* (satisfaction with expectations for gender ingroup), among other components (see Perry et al., 2019). Specific gender identity

dimensions have been implicated in the development and maintenance of gender segregation (and other ingroup affiliations) from early childhood into adolescence (e.g., Martin et al., 2011b; Molano & Jones, 2018; Tobin et al., 2010; Perry et al., 2019). For example, in one study (Martin et al., 2011b), preschool children's proportion of gender-segregated play was moderately associated with their perceived similarity (i.e., typicality) to same-gender peers.

Extending a multidimensional and multi-domain approach to studies of preschool-age children may illuminate if and how gender-related cognitions affect the onset of same-gender peer preferences. Furthermore, to make things even more complicated and ambitious for a given study, researchers might investigate interrelations among multiple forms of behavioral compatibility *and* multiple dimensions of gender-related cognition. To my knowledge, this kind of analysis has not yet been conducted.

6.3   Maintenance and Consequences of Gender Segregation in Childhood and Beyond

As reviewed above, the research evidence is somewhat ambiguous regarding reasons for the initial onset of gender segregation during early childhood. In contrast, there is a clearer understanding of the processes that maintain gender segregation during childhood and adolescence. In this next section, I summarize how group socialization processes function in children's gender-segregated peer groups. Finally, I highlight some of the consequences of institutionalized forms of gender segregation in school and work settings.

6.3.1   Peer Groups in Childhood and Adolescence

Identifying with a group is generally associated with a set of cognitive and social processes (Harris, 1995; Tajfel & Turner, 1979). These include ingroup bias, ingroup assimilation, outgroup stereotyping and prejudice, and (sometimes) outgroup hostility. Developmental scientists have documented how these processes shape children's gender in the context of same-gender peer groups (see Bigler & Liben, 2007; Leaper, 1994, 2000, 2015; Maccoby, 1998; Martin et al., 2017; Powlishta, 1995; Tobin et al., 2010). This work is explained next.

6.3.1.1   Ingroup Bias

Once individuals identify with a group, they routinely develop ingroup bias whereby persons and attributes associated with the ingroup are typically valued over those of

the outgroup. Accordingly, as children get older, they tend to affiliate more with same-gender peers. Also, they commonly evaluate ingroup members and the characteristics (e.g., styles, objects, traits, activities, roles) associated with their gender ingroup more favorably than those associated with the gender outgroup. Indeed, the tendency toward positive ingroup bias was seen during the preschool years as children started to affiliate with same-gender peers (Gasparini et al., 2015; Yee & Brown, 1994). This bias also appears pervasive throughout middle childhood (Castelli et al., 2007; Peragine et al., 2020; Powlishta, 1995; Robnett & Susskind, 2010; Serbin et al., 1993; Zosuls et al., 2011).

Ingroup bias is also emphasized in the gender self-socialization model, which integrates aspects of social identity theory, balanced identity theory, and gender schema theory (Perry et al., 2019; Tobin et al., 2010). According to the model, "the primary role of gender identity is to motivate children to emulate whatever stereotypes they have internalized" regarding their gender ingroup (Tobin et al., 2010, p. 613). As studies guided by gender schema theory have previously documented, children generally pay more attention to information viewed as relevant to their gender ingroup (Liben & Bigler, 2002; Martin et al., 2002). Over time, they usually adopt more gender-typed attitudes and behaviors and they strengthen their gender ingroup identity (described more fully in the next section).

Research suggests that ingroup bias may increasingly motivate children's gender segregation from early to middle childhood. Moreover, this bias may override selecting peers based on behavioral compatibility. In a short-term longitudinal study, Pellegrini et al. (2007) followed children in a preschool from fall to spring. Highly active girls initially preferred playing with similarly active boys at the outset of the year; however, by the end of the year, highly active girls sought peers based on their gender more than their activity level. For the boys, peer preferences during both fall and spring were based primarily on the peer's gender group membership rather than the peer's activity level.

6.3.1.2   Ingroup Assimilation

Positive ingroup biases can become a basis for self-esteem when individuals feel good about belonging to an ingroup (Harris, 1995; Perry et al., 2019; Tajfel & Turner, 1979). These sentiments can strengthen children's motivation to maintain ties with the group. Thus, a second process associated with group socialization is ingroup assimilation. Group members commonly enforce conformity in one another through praise or criticism (Harris, 1995; Miller et al., 2013; Tobin et al., 2010). Ultimately, however, individuals who value their ingroup membership usually internalize the group's behavioral and attitudinal norms. Accordingly, some researchers have characterized children's same-gender peer groups as "gender cultures" in which differing social norms are expressed and maintained (see Maccoby, 1998; Rose et al., 2011; Underwood, 2004). In support of this supposition, Martin and Fabes (2001) observed that the amount of time that preschool or kindergarten children spent with same-gender peers predicted increases over
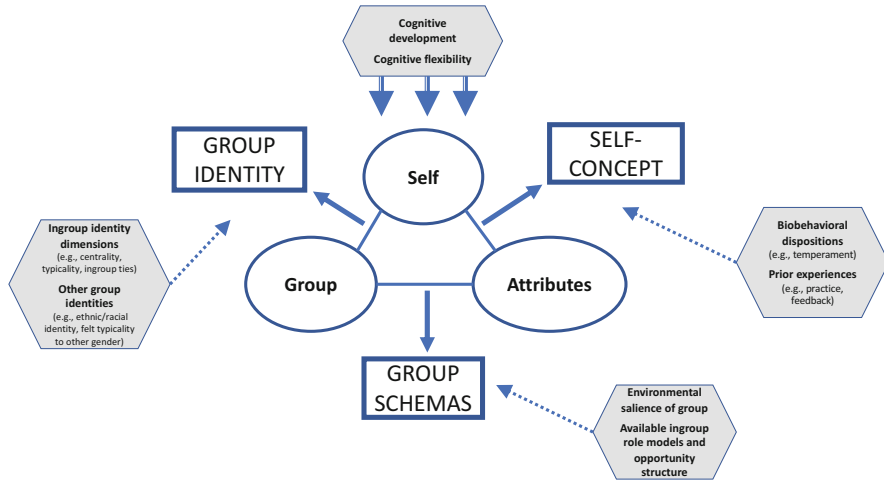
Fig. 6.1 Adaptation of gender self-socialization model (based on Greenwald et al., 2002; Tobin et al., 2010). *Self-concept* is based on associations between self and personal-social attributes (e.g., interests, self-perceived competencies, values). *Group identity* is derived from associations of self and group (e.g., gender ingroup identity). *Group schemas* reflect associations between groups and attributes (e.g., gender knowledge, stereotyped, attitudes). Constructs in shaded hexagrams are hypothesized *moderators* of self-concept, group identity, and group schemas. Also, *cognitive development* and *cognitive flexibility* are hypothesized to moderate several components in the model. These are some of the notable factors that would be expected to moderate the dynamic interaction of the components in the model

6 months in gender-typed behaviors and decreases in cross-gender-typed behaviors. The researchers characterized this process as a gradient or "social dosage effect," whereby the degree of ingroup assimilation was proportional to the amount of time affiliating with ingroup members (also see Bennet et al., 2020; Halim et al., 2013; Neal et al., 2017 for longitudinal studies documenting similar effects during early childhood).

The process of ingroup assimilation is explained in the gender self-socialization model (Tobin et al., 2010), which is based on the balanced identity theory (Greenwald et al., 2002). In the model, children are motivated to seek concordance across their gender group identity (i.e., individual's association between self and group, e.g., "I am a girl"), gender group-based schemas (i.e., individual's associations between groups and personal-social attributes; e.g., "Girls like playing with dolls"), and self-concepts (i.e., individual's associations between self and personal-social attributes; e.g., "I like playing with dolls"). An adapted version of the model is presented in Fig. 6.1.

Three types of processes are postulated in the gender self-socialization model: *Stereotype emulation* occurs when children who strongly identify with their gender ingroup subsequently seek to adopt gender-typical attributes (e.g., "I identify as a girl and therefore I like what other girls like"). *Stereotype construction* transpires when children assume other ingroup members share many of the same interests and

values ("I like being a boy and I like football, and therefore other boys must like football"). In addition, *identity construction* ensues when children observe they and other ingroup members share similar interests ("I like dolls and other girls like dolls, and therefore I identify as a girl"). In the gender self-socialization model, these processes occur in tandem and reciprocally over time (Tobin et al., 2010). (Balanced identity theory and the gender self-socialization model refer to stereotypes and attitudes rather than schemas. I favor the latter term because schemas encompass gender-based knowledge in addition to stereotyped beliefs and attitudes).

Although younger children may not have the cognitive abilities to logically infer consistency across all three components at the same time (Abrams et al., 2014; Patterson & Bigler, 2018), evidence suggests concordance tends to occur between at least two of the components in early childhood—such as between group identity and group-based stereotypes (see Tobin et al., 2010). Also, concordance among all three components may more likely occur at an implicit (i.e., unconscious) than explicit level of cognitive processing among children (Cvencek et al., 2016) and adults (Greenwald et al., 2002).

Stereotype (or schema) construction, identity construction, and stereotype (or schema) emulation have been implicated in studies of early gender segregation. From approximately 3–6 years of age, children begin to formulate expectations about their gender ingroup (i.e., stereotype/schema construction). For example, during this period, researchers observed that children increasingly expected same-gender peers would share similar gender-typed play interests (Barbu et al., 2000; Martin et al., 2011b; Powlishta, 1995). During the same period, children increasingly expressed preference for peers with similar play activity interests (i.e., identity construction [Alexander & Hines, 1994]). Studies also indicated children increasingly anticipated social approval for selecting same-gender peers and disapproval for selecting other-gender peers. Holding these expectations, in turn, was correlated with children's own same-gender peer ties (Martin et al., 1999). As researchers have documented, these expectations often reflect children's reality; that is, children who violate group norms are often subjected to peer disapproval and teasing (e.g., Miller et al., 2013; Reigeluth & Addis, 2016; Sroufe et al., 1993).

The peer group's attitudinal and behavioral norms often become personal standards and interests (i.e., stereotype/schema emulation). As a consequence, children's internalization of the group's norms has a *self-regulatory* function (Bussey & Bandura, 1999; Martin et al., 2002; Tobin et al., 2010); that is, over time, children and adolescents are usually motivated to seek consonance among their gender identities, gender beliefs, and behavioral preferences (Tobin et al., 2010). Furthermore, they are apt to hold negative views toward gender-nonconforming peers (e.g., Kwan et al., 2020; Nabbijohn et al., 2020).

The maintenance of these boundaries and the imposition of conformity pressures are generally more rigid among boys than girls (see Leaper, 2015). This pattern is consistent with intergroup research indicating ingroup boundaries are generally more rigid for high-status than low-status groups (e.g., Bigler et al., 2001)—and males have higher status than do females in patriarchal societies (Glick &

Fiske, 2001). Whereas cross-gender-typed behavior can sometimes enhance a girl's status, it typically diminishes a boy's status (Feinman, 1981).

Another reason that ingroup assimilation ensues is that peer groups provide children with opportunities and incentives to practice particular behaviors (Leaper, 1994, 2000; Leaper & Bigler, 2018; Martin & Fabes, 2001). In same-gender peer groups, children engage in the behaviors that are typical for the ingroup (e.g., girls will likely play together with dolls). Conversely, they are not likely to practice behaviors that are considered more typical of any outgroups (e.g., girls are unlikely to play together with trucks). Children's enactment of gender-typed behaviors thereby increases. In contrast, their expression of cross-gender-typed behaviors diminishes over time as a function of time spent with same-gender peers (Halim et al., 2013; Martin & Fabes, 2001). This process helps to account for how contextual variations in peer norms affect the likelihood that particular behaviors become adopted (e.g., see Chang, 2004; Jewell et al., 2015).

The opportunity structure in peer groups can have long-term consequences (Leaper, 2000). Practiced behaviors are more likely to foster feelings of self-efficacy and lead to greater competence (Bussey & Bandura, 1999; Martin et al., 2013). Hence, gender-differentiated experiences may affect the kinds of academic competencies, recreational interests, and socioemotional skills that are developed (Leaper, 2000, 2015; Leaper & Bigler, 2018). Indeed, many average gender differences in these domains increase during childhood and adolescence (Leaper, 2015; Rose & Rudolph, 2006).

The foregoing review of ingroup assimilation has focused on gender development in the context of peer *groups*. When examining gender segregation, it is pertinent to distinguish between interactions among members of a peer group (or a friendship network) versus individuals in dyadic friendships. Children are usually more sensitive to how others view them within group settings than dyadic relationships (Harris, 1995). Consequently, individuals are more likely to conform to others' expectations during group settings than dyadic interactions. That is, processes of ingroup assimilation generally occur within group contexts. In contrast, individuals are more likely to explore their personal interests in dyadic relationships. Thus, social identities tend to be enacted within group settings, whereas personal identities are expressed in dyadic relationships (Harris, 1995). Accordingly, researchers observed that children and adolescents were more likely to affiliate with other-gender peers in friendships outside of school settings (Sroufe et al., 1993). Also, some studies indicated average gender differences in social behavior (e.g., assertive and affiliative communication, activity choices) were less likely in mixed-gender than same-gender relationships during early and middle childhood (e.g., Fabes et al., 2003; Leaper & Smith, 2004; Underwood, 2004).

Relative differences in amounts of time spent in groups versus dyadic friendships may also affect gender socialization. In research comparing children's average time in groups versus either dyads or triads, boys spent more time in groups and girls spent more time in dyads or triads (Benenson et al., 1997). By spending greater time in groups, many boys therefore may experience more conformity pressures that inhibit facets of their personal identities. Conversely, by participating more in dyadic

friendships, many girls may experience greater flexibility to pursue a wider range of interests associated with their personal identities (see Harris, 1995).

6.3.1.3   Outgroup Stereotyping, Prejudice, and Hostility

A third set of intergroup processes include outgroup stereotyping and prejudice (Bigler & Liben, 2007; Harris, 1995; Leaper, 2000, 2015). More specifically, these intergroup biases include exaggerating differences between members of one's ingroup versus an outgroup (between-group contrast), viewing outgroup members as sharing similar characteristics (outgroup homogeneity [i.e., stereotyping]), and possibly holding hostile attitudes toward an outgroup (outgroup hostility).

From approximately 3–7 years of age, children quickly learn and endorse cultural gender stereotypes (e.g., Liben & Bigler, 2002). During middle childhood, youth better recognize that many forms of gender typing are cultural conventions that can be challenged (e.g., Carter & Patterson, 1982). Nonetheless, many children internalize these conventions as personal standards and values (Bussey & Bandura, 1999; Carter & Patterson, 1982; Kwan et al., 2020), and they endorse traditional gender ideologies regarding expected behaviors for boys and girls (e.g., Farkas & Leaper, 2016; Richmond et al., 2015; Thompson Jr. & Bennett, 2015). Gender-segregated peer groups are potent contexts for establishing and maintaining these biases (Leaper, 1994, 2000, 2015). Furthermore, as discussed next, the internalization of these ideologies can lead to sexist behaviors.

Intergroup researchers have noted that individuals sometimes express hostility or negative bias toward outgroups (i.e., outgroup hostility or intergroup bias [Harris, 1995; Tajfel & Turner, 1979]). With regard to gender-segregated peer groups during childhood, however, developmental researchers have generally found positive ingroup bias more common than outgroup hostility (Powlishta et al., 1994; Robnett & Susskind, 2010; Zosuls et al., 2011). For example, in these studies, children tended to evaluate traits associated with their gender ingroup more positively than those associated with the gender outgroup; however, they did not typically denigrate the traits associated with the gender outgroup. One exception was seen in a US study of 9- and 10-year-olds, wherein boys with many same-gender friends were apt to derogate feminine-stereotyped traits (Robnett & Susskind, 2010).

Intergroup hostility is most likely when there is a competition for resources (Green & Rechis, 2006). Given that most girls and boys tend to play apart from one another during childhood, they may largely act in separate worlds that do not usually elicit outgroup hostility. However, manifestations of gender-outgroup hostility become more apparent during adolescence with the advent of heterosexual dating expectations for many youth (Leaper, 2015).

Simultaneous increases in both heterosexual intimacy and gender-outgroup hostility during adolescence may seem paradoxical. As explicated in ambivalent sexism theory (Glick & Fiske, 2001), traditional heterosexual dating scripts are inherently ambivalent. Even though women and men are interdependent in heterosexual relationships, asymmetries traditionally exist in their relative status and power.

Ambivalence is manifested via the combination of hostile and benevolent types of sexism. *Hostile sexism* refers to a belief in male superiority as well as negative attitudes toward gender-nonconforming individuals. These attitudes help to maintain men's dominance in gender relations (Glick & Fiske, 2001). *Benevolent sexism* includes protective paternalism (i.e., belief that men must protect women) and complementary gender differentiation (i.e., belief that women and men are different and complement one another). Although facets of benevolent sexism are attractive to many heterosexual women and men, they perpetuate traditional gender roles and status imbalances (Glick & Fiske, 2001; Leaper et al., 2020).

Benevolent sexism is typically manifested during adolescence through traditional heterosexual dating scripts. For example, these include the expectations that the boy asks the girl for a date and then pays for any expenses. Many heterosexual youth continue to favor these traditional scripts, as documented in studies with adolescents in the USA (Farkas & Leaper, 2016), adolescents in Spain (Montañés et al., 2013), and undergraduates in the USA (Paynter & Leaper, 2016; Robnett & Leaper, 2013).

Hostile sexism, expressed as sexual harassment, tends to increase over the course of adolescence in the USA and other countries (see Leaper & Brown, 2018 for a review). For example, it includes sexually disparaging comments, anti-LGBTQ insults, unwanted sexual attention, unwanted touching, and sexual coercion. Many cisgender boys and girls instigate sexual harassment toward other-gender (as well as same-gender) peers. However, boys are more likely than girls to be the perpetrators of these acts. Also, transgender and other gender-nonconforming youth are at higher risk as targets for sexual harassment (see Leaper & Brown, 2018; Shiffman et al., 2016).

According to some researchers, gender-based power asymmetries and hostility seen during adolescence partly emanate from the bifurcated gender relations experienced throughout childhood (e.g., see Leaper, 2000; Maccoby, 1998). They further argue that these effects could be mitigated through greater gender integration during childhood and adolescence (e.g., Fabes et al., 2018; Leaper, 1994). For example, this can be achieved through the creation of cooperative mixed-gender workgroups in classrooms and extracurricular programs (see Fabes et al., 2018; Leaper & Brown, 2014).

6.3.2 Institutionalized Gender Segregation in School and Work Settings

As reviewed next, several institutional practices perpetuate and maintain gender segregation in many educational and work settings.

6.3.2.1   Single-Gender Schooling

Many children are sent to single-gender schools or to coeducational schools with single-gender classrooms. Also, some adults elect to attend single-gender colleges. Proponents of single-gender schooling have argued that students fare better in these contexts for a variety of presumed reasons (e.g., putative sex differences in learning). However, a comprehensive meta-analysis concluded there were no meaningful differences in academic outcomes between students at coeducational and single-gender schools when controlling for socioeconomic background, prior performance, and other factors (Pahlke et al., 2014). Moreover, several developmental researchers have criticized single-gender schools and classrooms for perpetuating traditional gender divisions and reinforcing gender-stereotyped attitudes (e.g., Bigler et al., 2014; Fabes et al., 2018; Halpern et al., 2011). Based on recent research of high school and college students enrolled at either single-gender or coeducational schools in Hong Kong, those attending single-gender schools found it more challenging to adapt to mixed-gender interactions, even after controlling for a range of potential confounding factors (Wong et al., 2018). However, as reviewed next, coeducational colleges also can reinforce gender divisions and inequities.

6.3.2.2   Fraternities and Sororities

At many coeducational colleges in the USA, students affiliate with gender-segregated fraternities and sororities. These are potentially influential contexts for the formation of gender-based social identities that exaggerate some aspects of gender typing. In some studies, students who belonged to fraternities or sororities were more likely than other students to endorse traditional gender roles, anti-LGBTQ attitudes, and rape-tolerant attitudes. Furthermore, these affiliations were associated with higher likelihoods of men's sexual objectification of women, women's self-objectification, and men's sexual assaults against women (DeSantis, 2007; Minow & Einolf, 2009; Murnen & Kohlman, 2007; Worthen, 2014).

In a meta-analytic review, researchers tested men's fraternity membership in relation to their attitudes and self-reported behaviors concerning sexual aggression (Murnen & Kohlman, 2007). Small yet meaningful average effect sizes were indicated; however, the size of the college's student body and the men's age moderated the magnitude of the correlations. Larger effects were seen at smaller than larger colleges as well as among older than younger men. The authors speculated that fraternities might have a more pronounced impact on men at smaller colleges because there are fewer alternative opportunities for peer group affiliation. Also, the stronger association among older men may reflect the socializing effect of belonging to the fraternity over time. However, longitudinal research is needed to better understand if and how fraternities shape men's misogynistic attitudes and behaviors.

6.3.2.3   Athletic and Academic Programs

With few exceptions, school athletics remain largely gender-segregated from elementary school into college. Some critics have argued that this segregation reifies traditional gender ideologies and prejudices (e.g., Anderson, 2008; Messner & Bozada-Deas, 2009). Consequently, they have called for greater gender integration in physical education classes and some school sports teams (e.g., Hills & Croston, 2012; Women's Sports Foundation, 2011; see Staurowsky et al., 2007, for a review of issues and debates concerning gender equity in physical education and athletics).

In addition, there is informal gender segregation through college students' selection of particular majors in college. Of particular concern to policymakers and researchers has been the gender gap in engineering, computer science, and the physical sciences (see Cheryan et al., 2017). Men are disproportionally represented in these majors in the USA and many other countries. In contrast, women are disproportionally represented in majors in nursing, teacher education, and the humanities (U.S. Department of Education, 2018). Researchers have highlighted multiple social processes that perpetuate these gender inequities (e.g., Cheryan et al., 2017; Leaper & Starr, 2019).

6.3.2.4   Occupations

Work settings can provide adults with opportunities to interact and form collaborative relations with other-gender peers (Markiewicz et al., 2000). However, several occupations remain largely gender-segregated across the world (Cohen, 2013; Das & Kotikula, 2019). Notably, the fields that remain male-dominated are among the highest-paying occupations (U.S. Department of Education, 2018). Furthermore, women who enter male-dominated college majors or professions, such as computer science or engineering, often encounter a masculine culture that makes it challenging to feel like they belong (Cheryan et al., 2017). Accordingly, increasing greater parity based on gender (as well as other identities) in occupations at all levels is considered key to reducing inequalities in society (World Economic Forum, 2020).

6.4   Toward an Integrative Developmental Systems Model of Gender Segregation

In this section, I present a preliminary integrative systems model of gender segregation that weaves together some of the research programs and theories reviewed in earlier parts of this chapter (also see Leaper, 2018). Systems models of gender development emphasize the dynamic interplay of multiple sub-systems at physiological, cognitive, interpersonal, and cultural levels (e.g., Martin & Ruble, 2010).

I begin by highlighting the relevance of variability during development, which includes the ranges within each gender group as well as the overlap between groups in behaviors. As subsequently explained, some children appear to have strong dispositions (e.g., interests, personalities) appearing at early ages that are either highly gender-typed (e.g., girls interested in dress-up play) or highly cross-gender-typed (e.g., boys interested in dress-up play). Those children with strong gender-typed dispositions may become salient role models that many same-gender peers emulate. However, children with strong cross-gender-typed interests may find it difficult to reconcile their personal interests with traditional gender-role expectations.

6.4.1   Between-Group Overlap and Within-Gender Variability

For reasons subsequently explained, both between-group overlap and within-gender variability need to be considered more systematically when investigating the development of gender segregation. As highlighted in numerous meta-analyses testing for average (cis)gender differences, there is typically much overlap between girls and boys in the distributions of their scores for a given behavior (Hyde, 2005). For example, consider the very large average gender difference of $d = 1.6$ for toy preferences that was documented in a recent meta-analysis (Davis & Hines, 2020). This effect size corresponds to a 42% overlap between groups (Magnusson, 2020)— meaning that many cisgender girls and boys have similar toy interests despite the very large average difference. Relatedly, there is also variability within each gender group. For example, girls vary in the extent that they prefer doll play while boys vary in the degrees that they enjoy construction play.

As previously reviewed, there are average gender differences in interests and behavioral styles. At the same time, there are within-group variations among cisgender girls and among cisgender boys. For any given domain, some children's interests and behavioral styles may be highly concordant with gender-based cultural expectations. Other children's interests and behaviors may be highly incompatible with these cultural expectations. Finally, many children may fall somewhere between these ends of the continuum and exhibit a mixture of gender-typed and cross-gender-typed interests and behaviors (see Carothers & Reis, 2013; Joel & Vikhanski, 2019, for illustrations of this kind of analysis). This variability may help to explain if and when behavioral compatibility affects children's peer preferences (Leaper, 2018).

Earlier it was noted that some children have especially intense interests in particular toys and play activities. For example, researchers observed that boys were more likely than girls to have intense interests in toy vehicles, whereas girls were more likely to have intense interests in dress-up (DeLoache et al., 2007). Also, some children have strong behavioral dispositions. For example, boys were more likely than girls to have high-activity temperaments (Else-Quest et al., 2006). Research additionally indicates that some children have intense interests and

behavioral dispositions that are *counter*-stereotypical for their gender (Bailey et al., 2002; Halim et al., 2014; VanderLaan et al., 2015). For example, some boys intensely like dress-up play, and some girls greatly enjoy physically active play. In between these extremes of intense stereotypical tendencies and intense counter-stereotypical tendencies, many young children do not initially have strong interests or behavioral styles.

For children with intense interests, behavioral compatibility may play a more critical role in choosing peers. For example, boys with intense interests in sports or vehicles may be especially attracted to peers who share this interest (who are most likely cisgender boys). In one study previously described, preschool-age girls with high-activity temperaments initially affiliated more with boys who were compatible in activity level; however, in succeeding years, these girls shifted toward playing with girls as their gender identity possibly became more central (Pellegrini et al., 2007). In a similar manner, researchers observed gender-nonconforming children who strongly preferred cross-gender-typed play activities were more likely to interact with other-gender peers (e.g., Fridell et al., 2006).

In my proposed model, gender-related variations in intense interests and strong behavioral dispositions may be important in the development of gender segregation for many children. Those with strong gender-typed interests and behavioral styles may be especially prone to seeking out peers with similar dispositions. Furthermore, as explained next, children with strong gender-typed behavioral dispositions may become role models for other peers to follow.

6.4.2 Emulating Culturally Meaningful Role Models

Cultures vary in their relative degrees for equal versus inequal opportunities in society for individuals based on their gender (Brandt, 2011; Leaper, 2000; World Economic Forum, 2020). Children generally look to prototypical models in their environments to inform their understanding of desirable behaviors for their gender ingroup (Bussey & Bandura, 1999; Tobin et al., 2010). When individuals have strong interests and behavioral styles that are highly concordant with cultural expectations for their gender ingroup, they may become role models that other children emulate. Hence, individuals who are highly representative of gender archetypes in their culture may be salient and influential exemplars for other peers—perhaps especially among either those who are already somewhat gender-typed in their interests and behavioral styles or those who do not have intense interests or strong behavioral dispositions. In contrast, peers who are highly emblematic of cultural gender prototypes may not be seen as attractive to children with cross-gender-typed interests and styles.

According to the gender self-socialization model (Tobin et al., 2010), individuals seek to attain concordance across their gender group identity, their self-perceived personal-social attributes, and their beliefs about the personal-social attributes associated with their gender ingroup. Hence, if a person's self-perceived personal-social

attributes are concordant with a gender ingroup, they may identify more strongly with that group (i.e., identity construction). By extension, perhaps young children with gender-stereotypical intense interests or strong gender-typed behavioral dispositions are most likely to favor same-gender peers with compatible personal-social attributes.

As additionally posited in the gender self-socialization model, if children identify with a gender ingroup, then they are motivated to adopt the characteristics associated with the gender group (i.e., stereotype/schema emulation). Therefore, children with relatively weak-to-moderate gender-typed interests and behavioral styles may be susceptible to emulating the behavior of their highly gender-typed peers—especially if these peers are high in perceived status (e.g., see Prinstein et al., 2011). That is, if girls or boys do not have strong dispositions pushing them one way or another, they may be more inclined to try new behaviors. Once children practice these behaviors, they may become increasingly internalized as personal preferences (Bussey & Bandura, 1999); in turn, these preferences may strengthen their identification with their gender ingroup (Tobin et al., 2010).

The dual-pathways gender schema model is also pertinent here (Liben & Bigler, 2002, 2008). According to this model, children variously use their gender schemas (gender filter) or personal interests (interest filter) to guide their behavioral choices and attitudes. In *the attitudinal pathway*, individuals initially use their gender schemas to infer whether an object or activity (or other attribute) is concordant with their gender ingroup (Liben & Bigler, 2002; Martin et al., 2002). For example, a toy categorized as "for girls" would likely lead to increased interest for girls but decreased interest for boys. Conversely, in *the personal pathway*, individuals prioritize their personal interests to initially decide whether to pursue an object or an activity. In turn, they may subsequently infer that if they like the object or activity, then it is acceptable for their gender ingroup (i.e., gender stereotype/schema construction).

Although gender-stereotyped expectations generally shape the development of many interests (i.e., the attitudinal pathway), most cisgender children engage in some activities they find pleasurable regardless of whether they are considered typical for their gender (i.e., personal pathway). At the same time, they usually seek to assimilate into their same-gender peer group and avoid straying too far from the norms of their peers in interests and behavioral styles (i.e., attitudinal pathway). For many cisgender children, holding a few cross-gender-typed interests often can be reconciled with their gender identity if they additionally have some gender-typed interests.

Individual differences in gender-schematicity affects the relative likelihood of attitudinal and personal pathways (Liben & Bigler, 2002). That is, children vary in the degrees that they use gender schemas to filter their perceptions and understandings of the world. Some young children who endorse fewer gender stereotypes may be more likely to use their interest filter to approach new objects or activities (Weisgram, 2016). However, at older ages, the likelihood of individuals using one's interest filter to guide choices may become constrained through group socialization pressures (e.g., Miller et al., 2013).

The attitudinal pathway may reflect how many children increasingly assimilate into their same-gender peer groups when exposed to others who are highly emblematic of cultural gender stereotypes. To illustrate, consider boys with highly active temperaments and strong interests in sports-related toys and play. Cultural constructions of masculinity in many cultures emphasize sports and athleticism (Kidd, 2013). Physically active and athletic boys may be seen as protypical role models in many same-gender peer groups (e.g., Farmer & Rodkin, 1996)—as athleticism is one of the strongest predictors of popularity among boys in many cultures (e.g., Caravita et al., 2011; Closson, 2009; Dijkstra et al., 2010; Shakib et al., 2011). Thus, boys with average activity levels may conform to these same-gender role models and thereby increase their activity levels and athletic competence over time (e.g., Martin & Fabes, 2001).

Analogous processes may emerge in girls' same-gender peer groups. In many communities in the USA (and other countries), cultural constructions of femininity stress physical appearance. Concerns with appearance have been observed in girls from preschool-age into adolescence (e.g., Closson, 2009; Halim et al., 2018). Also, physical attractiveness is a predictor of popularity for both girls and boys from early childhood to adolescence (e.g., Caravita et al., 2011; Closson, 2009; Dijkstra et al., 2010)—although in one study appearance concerns were more important for girls in an affluent, predominantly White suburban school than girls in a low-income, mostly non-White urban school in the USA (Becker & Luthar, 2007). When appearance norms are tied to popularity, many girls may emulate same-gender peers who are physically attractive, sociable, and show strong interests in dress-up and appearance.

In sum, I propose that children who do *not* have intense interests in a particular domain (e.g., a play activity) may be susceptible to following the attitudinal pathway in the formation of their activity choices and gender beliefs regarding that domain. That is, they may be prone to same-gender ingroup assimilation and to emulating peers who reflect prototypical gender-role models. At the same time, children without strong behavioral inclinations may be the most amenable to adopting more flexible gender norms when exposed to a broader range of role models (e.g., Katz & Ksansnak, 1994). In contrast, as explained next, children with intense interests and behavioral dispositions that are cross-gender-typed may contest ingroup assimilation.

6.4.3 Gender-Nonconforming Children

My proposed model has implications for understanding how and why gender-nonconforming children are less likely either to identify with their birth-assigned gender group or to assimilate into a same-gender peer group (Leaper, 2018). For example, this might occur when a birth-assigned girl sees that other girls generally like dolls, but she does not personally like dolls. Analogously, it might occur when a birth-assigned boy strongly favors dress-up play, but he recognizes that other boys do not (e.g., Ahlqvist et al., 2013; Gleason et al., 2005; Golombok et al., 2012).

When children hold strong cross-gender-typed interests and behavioral preferences, it may be untenable to accommodate to the prescriptions and proscriptions associated with their birth-assigned gender ingroup. Instead, they may pursue their own interests. By extension, these children may find their self-concept is not congruent with the gender identity expected for them.

In the dual-pathways model mentioned earlier, the attitudinal pathway transpires when individuals' gender schemas drive their behavioral choices and subsequent attitudes (Liben & Bigler, 2002). Children with intense interests and strong behavioral styles that are *highly discordant* with expectations for their gender ingroup, however, may find it difficult to reconcile their interests with social pressures for gender group assimilation. These youth may be more inclined to follow the personal pathway despite backlash from peers and family. That is, their personal interests may override gender-stereotyped expectations (Liben & Bigler, 2008). Furthermore, unlike most of their peers who may hold a combination of cross-gender-typed and gender-typed interests, these children may hold few interests that are consistent with the cultural expectations for their birth-assigned gender.

Children with strong cross-gender-typed (i.e., gender-nonconforming) personal interests are commonly stigmatized by peers and adults if they do not accommodate to gender-conformity pressures (Drescher & Byne, 2012; Perry et al., 2019; Wallien et al., 2010). Given this high cost for pursuing their personal preferences, it is not surprising that high rates of psychological distress have been reported for populations of gender-nonconforming children (e.g., van der Miesen et al., 2018), including those that were labeled by clinicians with gender identity disorder or gender dysphoria (Drescher & Byne, 2012). However, tolerance for gender-nonconforming children has increased in some communities within the USA and other countries; and comparatively lower rates of distress have been indicated when gender-nonconforming children experienced support from family and peers (e.g., Olson et al., 2016; VanderLaan, 2018; Vasey & Bartlett, 2007).

In sum, the proposed model may help to address why some gender-nonconforming children do not identify with the gender category assigned to them at birth. If the norms among peers are rigid, nonconforming children may not consider themselves typical of the gender group to which they are expected to belong. Moreover, rejection from peers and family may lead to a sense they do not belong to a given gender group. As a consequence, some of these children may ultimately identify as transgender (i.e., identify with a different gender category than the one assigned at birth), gender-fluid (i.e., identify with more than one gender category), or agender (i.e., do not identify with any gender category) (Boskey, 2014). Some evidence suggests recent increases in the numbers of youth and young adults embracing transgender or other nonbinary gender identities (e.g., Steensma & Cohen-Kettenis, 2011; Zucker, 2017). This may reflect greater flexibility in gender expression within some segments of society (e.g., Olson et al., 2016).

6.4.4 Summary and Conclusion

In an earlier essay, I advocated for greater efforts aimed at theoretical synthesis in psychology (Leaper, 2011). Toward this goal, in this chapter and elsewhere (Leaper, 2018), I have posited a preliminary integrative developmental systems model of gender development seeking to bridge the interrelated influences of sex-related dispositions, identity, and peer group socialization in a given cultural context (see Fig. 6.1). Weaving together a set of complementary theories and research areas, I propose that sex-related dispositions (such as temperaments and intense interests) affect the process of assimilation within same-gender peer groups. Individuals with behavioral dispositions and competencies that are congruent with culturally valued gender-ingroup prototypes in a particular community (e.g., the athletic boy or the physically attractive girl) may function as prototypical models that establish standards for other group members to emulate. The majority of children who do not have strong temperamental dispositions or intense interests may be most amenable to the social influences of peer groups.

In contrast, children with personal-social attributes that are highly discrepant from the available prototypes for their birth-assigned gender may find themselves disinclined (or possibly unable) to adapt to the group's norms. As a result, they may be rejected and then withdraw from the peer group; in turn, they may de-identify with the gender associated with the group. If gender-nonconforming children have inadequate social supports, they may be more susceptible to adjustment difficulties (e.g., anxiety, depression). However, this trend can be mitigated when they are accepted and their social environments promote a greater range of gender identities and gender expressions.

6.5 Looking Ahead: Building an Integrative Dynamic Systems Model

Although the integrative model of gender development proposed above is based on existing theory and research, some components have not been thoroughly tested. Hence, it should be viewed as a preliminary effort (also see Martin et al., 2014, for a complementary integrative model of gender segregation). Accordingly, I close the chapter with a few recommendations for scientists to consider in future research.

First, it will be necessary to utilize sophisticated methodologies to consider the dynamic interrelations among multiple dimensions of behavior and cognition in the emergence and maintenance of gender segregation. A few examples of promising methods applied in recent studies include longitudinal social network analysis, hierarchical linear modeling, and taxometric methods. In longitudinal social network analysis, patterns of social connections between individual children within a group are charted over time. For example, in a study of US middle school students, researchers used this method to identify patterns over time of peer influence on

particular facets of gender group identity, including intergroup bias and conformity pressure (Kornienko et al., 2016). In hierarchical linear modeling, it is possible to take into account embedded levels in a system, such as how gendered patterns might vary across multiple classrooms. For example, using this method, it was possible to document how different social norms across several classrooms in China predicted the extent of gender differences in social behavior (Chang, 2004). With taxometric methods, researchers can determine whether the latent structure of a construct is best conceptualized as dimensional (i.e., along a continuum) or categorical. An analysis of multiple gender-correlated behaviors and attitudes illustrated how this approach could help advance multidimensional models of gender (Carothers & Reis, 2013; also see Joel & Vikhanski, 2019).

Second, my proposed model builds upon the premise in balanced identity theory, which is incorporated in the gender self-socialization model, that individuals seek concordance among their self-concepts, group identity, and group-related beliefs (Greenwald et al., 2002; Tobin et al., 2010). The authors of the gender self-socialization model were careful to advance their model as a set of hypotheses (e.g., identity construction hypothesis, stereotype emulation hypothesis). More research needs to test the model at different developmental periods (e.g., see Abrams et al., 2014; Patterson & Bigler, 2018) and using both implicit and explicit measures (e.g., Cvencek et al., 2016).

A third proposal is to incorporate several moderators into the model (see Fig. 6.1 for some suggestions). As I explained, children's self-concepts can be affected by their biobehavioral dispositions (e.g., temperament, intense interests) in ways that can be congruent or discrepant with gender-based expectations. Also, ingroup gender identities vary along dimensions such as centrality and felt typicality (e.g., Perry et al., 2019). Furthermore, the formation and activation of gender schemas partly depend on the salience of gender in the environment, available ingroup role models, and socialization (e.g., Bigler & Liben, 2007). Yet another moderator to consider in the model is how children may identify with more than their birth-assigned gender group. That is, children may view themselves as more typical of other-gender peers or typical of both same- and other-gender peers (Martin et al., 2017). Furthermore, children's identifications with other types of group identities (e.g., ethnicity/race) can additionally moderate their gender identity and gender expression (Mays & Ghavami, 2018).

Fourth, only a few studies have been conducted on children's intense interests. We know relatively little about the origins, prevalence, consistency, and developmental course of these interests. Evidence suggests variations in prenatal hormones may contribute to the development of some intense interests. For example, genetic females exposed to high androgen levels during prenatal development later exhibited higher levels of physical activity and interest in some masculine-stereotyped forms of play relative to comparison females (Berenbaum, 2018; Hines, 2018). Prenatal androgens are not necessarily related to variations in all intense interests, and other physiological (and environmental) processes may lead to the development of particular intense interests (e.g., see Hines, 2018; Theisen et al., 2019).

My fifth recommendation is to consider more fully the experiences of gender-nonconforming children in peer-group settings. Outside of clinical studies, few investigations of children's gender development have focused on children with transgender or other nonbinary identities. However, there is an increasing trend away from a disorder and deficit model and toward viewing these children as normal variations in human development (Dunham & Olson, 2016). This is analogous to the earlier shift in perspective toward acceptance of diversity in sexual orientation during development (Drescher, 2015).

Finally, developmental scientists are increasingly recognizing the need for intersectional and cultural approaches that take into account how gender and peer-group relations may be constructed in diverse sociocultural, economic, and power contexts within a society (Mays & Ghavami, 2018) as well as across different cultures (Best & Bush, 2016). Notably, researchers observed the adjustment difficulties often associated with gender nonconformity in many Western cultures were less prevalent in societies more accepting of gender nonconformity (e.g., Vanderlaan, 2018; Vasey & Bartlett, 2007).

As we better understand the origins and consequences of childhood gender segregation, multiple scientific and practical benefits are apt to follow. Many facets of development involve a complex combination of the kinds of physiological, socio-cognitive, interpersonal, and cultural processes implicated in gender segregation. By extension, advancing research and theory on gender segregation may prove useful for thinking about children's development more generally. Furthermore, as suggested at the outset of my chapter, research on gender segregation has practical implications for the improvement of people's lives. In particular, this work can inform practices to reduce the negative impacts of gender segregation (see Fabes et al., 2018; Leaper & Brown, 2014). These effects include the restricted opportunities to develop a broader range of interests and skills, the stigmatization of gender-nonconforming youth, and the perpetuation of sexism in adolescent and adult relationships. By overcoming these barriers, individuals will better actualize their potential. In turn, our society will be enriched.

Spotlight Feature: Education Beyond Academics: Gender-Segregated Schooling and Students' Interpersonal Development

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Gender segregation is pervasive in various social contexts throughout the life span and has wide-ranging consequences in individuals' psychosocial development from attitude and value formation, maintenance of interpersonal relationships, to education and career inclination (for a review, see Mehta & Strough, 2009). In general, same-gender peer preference starts as early as age 2 years (Maccoby & Jacklin, 1987), peaks at school age, and declines from adolescence (Mehta & Strough, 2009) but continues to dominate one's friendships and social interactions even after entering adulthood (Mehta & Wilson, 2020). Prior research suggested that children's experiences in gender-segregated peer groups increase their tendency to engage in gender-typed behaviors and interactions which in turn contribute reciprocally to further gender segregation (Martin & Fabes, 2001).

While individuals have a spontaneous tendency to form themselves into same-gender groups, they are also subject to structured forms of gender segregation (e.g., schools, military, organized sports), of which single-sex schooling is most relevant to children's psychosocial development. Along with the recent revival of single-sex schooling, for example, in the USA (fueled by the 2006 amendment of Title IX) and in Shanghai, China (where all-boy classes are being advocated to restore masculinity in boys), there are increasing research interests and ongoing debates over the globe regarding the effects of institutionalized gender segregation in school contexts (Chiu, 2014; Halpern et al., 2011; Hernández, 2016; Liben, 2015; Pahlke et al., 2014). Many of the existing studies on single-sex schooling focused on academic outcomes (e.g., educational aspirations, performance and attitudes of different subjects), and found trivial to no differences between single-sex and coeducational school students after controlling for potential confounds such as students' initial performance and family socioeconomic status; gender stereotyping was also frequently studied but the findings were mixed and many of the studies were uncontrolled (see Pahlke et al., 2014 for a meta-analysis). The effects in interpersonal outcomes such as friendships and romantic relationships, however, have not been fully tested or understood.

Despite the insufficient support from scientific evidence, some of the major rationales for single-sex schooling draw on the claim that removing other-gender peers from the classroom is necessary because they would otherwise bring adverse influence on students' educational outcomes, and that segregating boys and girls can

protect students from other-gender distractions in the classroom (Bigler et al., 2014). Some educators and policy makers also think that single-sex schooling can prevent students from engaging in dating behaviors and romantic relationships prematurely when they should be focusing on studying (Bigler et al., 2014).

However, after graduating from single-sex schools, students will enter normative contexts that require mixed-gender interactions. For example, at college, they need to cooperate with other-gender classmates for group projects; at work, they need to build good relationships with other-gender colleagues or business partners; in daily life, they need to maintain mixed-gender friendships and intimate relationships with other-gender partners and/or family members. Experience of spontaneous or supervised mixed-gender interactions provides practice to learn the skills to properly and effectively interact with the other gender (Grover et al., 2007). Thus, compared to coeducational school students, the significantly reduced heterosocial experience in single-sex school students at school age, a critical stage of interpersonal development, may lead to challenges in the future, including difficulty fitting into mixed-gender groups, forming mixed-gender friend circles, or initiating and sustaining romantic relationships with other-gender partners; the lack of intergroup exposure may also result in misperceptions and thus stronger biases against the other gender (Grover et al., 2007).

Besides, students' beliefs about gender may be influenced by their observation of gender-based treatments in school policies and teacher behaviors. For example, the gender-segregated school context may implicitly give a hint to the students that boys and girls are inherently different to justify being educated separately (Halpern et al., 2011). The developmental intergroup theory (Bigler & Liben, 2007) proposed that intergroup biases develop from psychological salience of social attributes, which increases when the individual is in the minority group, when the group membership is noticeable, and when there is explicit or implicit use of group identity. Based on this theory, however, both single-sex and coeducational schools have certain characteristics that would increase students' gender salience, such as the gender labels commonly seen in the school names of single-sex schools and opportunities for teachers' different treatment to boys and girls in coeducational schools.

Thus, researchers, education practitioners and parents have concerned about how gender-segregated schooling affects students' gender salience, heterosocial anxiety, friendships, dating experience, and sexual orientation, and to what extent such effects will prolong after graduation. Some prior findings have given clues to these questions indirectly. For example, a study found girls in single-sex classes endorse less and react more slowly to feminine traits (which was taken to reflect lower gender salience) but another found higher gender stereotyping and pressure to conform to gender norms in single-sex school girls; having other-gender siblings was found to predict higher dating efficacy; single-sex school graduates were more likely to report lower marital satisfaction with higher divorce rate; and adults in single-sex environments reported more same-sex sexual behavior (see Li & Wong, 2018; Wong et al., 2018 for reviews). However, these studies either did not directly measure the interested outcomes or did not test the effects of gender-segregated schooling per se.

To fill this knowledge gap, a recent cross-sectional study (Li & Wong, 2018; Wong et al., 2018) compared such outcomes between Hong Kong Chinese students who were studying in or college students who graduated from single-sex and coeducational high schools. Potential confounding factors including parental income and education, school's academic banding, and the numbers of siblings were statistically controlled. Students attending single-sex schools reported higher gender salience (the spontaneous reference of gender when describing oneself) than those attending coeducational schools although no difference was found in the graduates (Wong et al., 2018). Similarly, in an ongoing longitudinal study of high school graduates (funded by Hong Kong Research Grants Council, General Research Fund, Grant No: 17610818), after balancing students' characteristics using a propensity score matching technique, we found that single-sex school students reported higher gender salience than coeducational school students in their final year of high school but not after graduation. Also, it was found in the cross-sectional study that both current and graduated students from single-sex schools reported higher levels of anxiety in mixed-gender interactions and a smaller proportion of other-gender friends than their coeducational counterparts, suggesting a potential long-term effect of school gender segregation on students' heterosocial anxiety and mixed-gender friendships (Wong et al., 2018). Besides, single-sex school graduates also reported having a larger proportion of same-gender close friends, higher levels of past same-gender sexuality, later onset of first date, and smaller number of boyfriends/girl-friends than coeducational school graduates although no significant difference was found in time spent with and preference for same-gender friends and in various dating activities (Li & Wong, 2018).

These findings provided important implications for future investigations of gen-der-segregated schooling. First, the differences in mixed-gender interpersonal out-comes between single-sex and coeducational school students call for a well-rounded consideration, not only of the academic performance but also of the social outcomes, in the evaluations of single-sex and coeducational schooling. Apart from acquiring academic knowledge, developing interpersonal skills and getting prepared for future challenges in life are also major developmental tasks for school-age children and adolescents. Schools likely provide a relatively safe environment for young students to learn the social scripts with higher tolerance for mistakes than the workplace. Second, the finding that students attending single-sex schools were more gender salient than those attending coeducational schools (Wong et al., 2018) implies that the structuralized gender segregation in schools may act as a hidden curriculum to convey subtle messages of gender concepts to students, which may further strengthen their gender stereotyped attitudes.

In sum, beyond academic training, schools should also be a place where students receive whole-person education and learn to work with different people regardless of their gender. The gender-segregated nature of single-sex schooling, however, may limit the opportunity for students to meet and interact with other-gender peers. Recent research has found that the gender-segregated school context is related to students' gender salience, heterosocial anxiety and friendship status. It may be beneficial for single-sex schools to provide more mixed-gender activities for

students to learn to build good relationships with peers of different genders. However, further investigation is required to attest how gender-segregated schooling affects other interpersonal outcomes and how long such effects last or whether the lack of exposure to other-gender peers in earlier years can be compensated by engaging in mixed-gender interactions after graduation.

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