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Patterns of Gender Development

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Abstract

A comprehensive theory of gender development must describe and explain long-term developmental patterning and changes and how gender is experienced in the short term. This review considers multiple views on gender patterning, illustrated with contemporary research. First, because developmental research involves understanding normative patterns of change with age, several theoretically important topics illustrate gender development: how children come to recognize gender distinctions and understand stereotypes, and the emergence of prejudice and sexism. Second, developmental researchers study the stability of individual differences over time, which elucidates developmental processes. We review stability in two domains—sex segregation and activities/interests. Finally, a new approach advances understanding of developmental patterns, based on dynamic systems theory. Dynamic systems theory is a metatheoretical framework for studying stability and change, which developed from the study of complex and nonlinear systems in physics and mathematics. Some major features and examples show how dynamic approaches have been and could be applied in studying gender development.

Keywords

gender typing; stereotypes; dynamic systems; sex segregation; timescales

INTRODUCTION

Understanding the changes that correspond with the passage of time is a hallmark of developmental studies, including the study of gender development. Gender developmental scientists are concerned with age-related changes in gender typing, and more broadly, with many issues about the emergence and patterning of gendered behaviors and thinking. Description of these changes is vitally important as it informs theoretical approaches to gender development. Using a broad lens on age-related changes provides important information describing how development occurs, but shorter time frames are also useful for identifying processes that may underlie developmental patterns. Gender developmental scientists are beginning to conceptualize temporal change and measurement of relevant variables over time in more nuanced ways and with new methods and analytic strategies.

Our goal in this article is not to provide an extensive review of changes in gender over childhood, but instead to focus on the perspective of developmental patterning. In selecting

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issues to review, we attempted to find a set of issues that would provide insights into processes underlying gender development while also being representative of contemporary issues and future directions in the field. First, to highlight developmentalists' interest in average or normative changes across age, we review the timeline of gender development for the emergence of gender understanding and stereotyping and how discrimination and prejudice develop in childhood. Second, we examine continuities within individuals over time as an important theoretical complement to the first focus on mean-level, normative patterns over time. Longitudinal studies are reviewed to examine whether individual differences are stable over time in two areas of gender typing: sex segregation and activities and interests. Finally, we discuss how dynamic systems theory may be applied in gender development and describe its potential for understanding patterns over different time frames.

HOW EARLY DO CHILDREN ACQUIRE GENDER CONCEPTS AND EXHIBIT PREJUDICE AND DISCRIMINATION?

The first few years of life and into adolescence have been the focus of much theorizing and empirical research on gender development. Major questions have arisen about the timeline of gender development, and resolving these issues is central to understanding processes underlying gender development. In this section, we discuss two key aspects of gender development. First, the earliest emergence of gender understanding and behaviors provides insights about the origins of sex differences and the prominence of gender as a social category, and so it is not surprising that these topics have been highlighted in contemporary research on gender development. Second, because of the far-ranging implications on human social interactions, we review research evidence concerning the emergence of gender prejudice and discrimination.

Do Infants Understand and Use Gender?

A major issue that has driven research is whether children's basic understanding of gender identity motivates and organizes the development of gender-typed behaviors, an idea proposed by “self-socialization” theories of gender development. Self-socialization perspectives posit that children actively seek information about what gender means and how it applies to them and that an understanding of gender categories motivates behavior such that, in essence, they socialize themselves (see Martin et al. 2002). In contrast, others (Bussey & Bandura 1999, Campbell et al. 2002) have argued that gender understanding must not play an important role in the emergence of gendered behaviors because some gender-typed behaviors emerge prior to age two, presumably earlier than children's understanding or identification with gender. The evidence needed to resolve this controversy concerns whether behavior becomes increasingly gender typed with the onset of basic gender understanding, and recent findings have extended our knowledge of these fundamental issues. Much has been written about these topics and about the surrounding controversies (Bandura & Bussey 2004; Martin et al. 2002, 2004); here, we provide an overview and update of the evidence.

When do children begin to recognize that there are two types of people—males and females—and when are they able to link this information to other qualities to form basic stereotypes? A related question is, when do children recognize their own sex? Infants as young as three to four months of age distinguish between categories of female and male faces, as demonstrated in habituation and preferential looking paradigms (Quinn et al. 2002). By about six months, infants can discriminate faces and voices by sex, habituate to faces of both sexes, and make intermodal associations between faces and voices (e.g., Fagan & Singer 1979, Miller 1983, Younger & Fearing 1999). By 10 months, infants are able to form stereotypic associations between faces of women and men and gender-typed objects (e.g., a

scarf, a hammer), suggesting that they have the capacity to form primitive stereotypes (Levy & Haaf 1994). Infants' early associative networks about the sexes may not carry the same conceptual or affective associations that characterize those of older children or adults, although the nature of these associations has yet to be examined in any depth (see Martin et al. 2002).

Because of the difficulties associated with testing infants, it has been challenging to determine when children first recognize their own or others' sex. Early studies suggested that labeling and understanding of gender may not emerge until about 30 months of age, but more recent studies have moved the age of understanding gender identity and labeling downward. In a study using a preferential looking paradigm, about 50% of 18-month-old girls showed knowledge of gender labels ("lady," "man"), but boys did not, and 50% of 18- and 24-month-old boys and girls showed above-chance understanding of the label "boy" (Poulin-Dubois et al. 1998). In another non-verbal testing situation, 24- and 30-month old children knew the gender groups to which they and others belonged (Stennes et al. 2005). Similarly, most 24- and 28-month-old children select the correct picture in response to gender labels provided by an experimenter (Campbell et al. 2002, Levy 1999).

A recent study examined the naturally occurring instances of gender labels (e.g., girl, boy, woman, man, lady, guy) as indicators of knowledge of gender categories and assessed whether the onset of use of these terms related to children's observed free play with toys (Zosuls et al. 2009). Information about gender labels was obtained from examining biweekly parent diaries of children's speech from 10 months of age onward. Zosuls and colleagues (2009) also analyzed videotapes of the children at 17 months and 21 months playing with a set of toys varying from high to neutral in gender typing. The results showed that 25% of children used gender labels by 17 months and 68% by 21 months. On average, girls produced labels at 18 months, one month earlier than did boys. These labeling results were used to predict changes in gender-typed behavior with the two most strongly gender-typed toys (trucks and dolls). Children who knew and used gender labels were more likely than other children to show increases in gender-typed play with toys.

Taken together, these studies suggest that most children develop the ability to label gender groups and to use gender labels in their speech between 18 and 24 months. As proposed by self-socialization theorists, the results from the Zosuls et al. study (2009) suggest that developing this ability has consequences: Knowing basic gender information was related to increased play with strongly stereotyped toys. These findings are consistent with research suggesting that children develop awareness of their own "self " at roughly 18 months and then begin to actively engage in information seeking about what things mean and how they should behave (Baldwin & Moses 1996).

When Do Children Develop Stereotypes?

Developmental researchers have identified that rudimentary stereotypes develop by about two years of age (Kuhn et al. 1978), and many children develop basic stereotypes by age three (Signorella et al. 1993). Children first show an understanding of sex differences associated with adult possessions (e.g., shirt and tie), physical appearance, roles, toys, and activities, and recognize some abstract associations with gender (e.g., hardness as male; softness as female) (Leinbach et al. 1997, Weinraub et al. 1984). Children develop stereotypes about physical aggression at an early age, and by age 41½, children believe that girls show more relational aggression than boys (Giles & Heyman 2005). Interestingly, even when researchers examine children's spontaneous associations about boys and girls, a consistent pattern is found from preschool through fourth/fifth grade: girls are seen as nice, wearing dresses, and liking dolls, and boys are seen as having short hair, playing active games, and being rough (Miller et al. 2009).

As children grow older, the range of stereotypes about sports, occupations, school tasks, and adult roles expands, and the nature of the associations becomes more sophisticated (e.g., Sinno & Killen 2009). Specifically, early in childhood, children make vertical associations between the category label ("girls," "boys") and qualities (e.g., "boys like trucks"). They appear slower to make horizontal inferences (e.g., recognizing that trucks and airplanes are associated with being "masculine"), which tend to appear around age eight. For instance, when told about an unfamiliar sex-unspecified child who likes trucks, older children but not younger ones predict that the child also likes playing with airplanes (Martin et al. 1990). Concreteness of gendered items influences the ability of younger children to make these property-to-property inferences (Bauer et al. 1998). In contrast, adults often rely on individuating information rather than the person's sex to make similar types of judgments (Deaux & Lewis 1984). The difficulty that children have with these judgments suggests that they may not understand within-sex individual differences.

Meta-analytic studies find that stereotypes become more flexible with age (Signorella et al. 1993). A longitudinal study of children from 5 to 10 years of age showed a peak in the rigidity of stereotypes at either 5 or 6 years of age and then an increase in flexibility two years later. Neither the timing nor the level of peak rigidity affected the developmental trajectory, suggesting that children generally follow the same normative path across development despite variations in when rigidity starts and how extreme it becomes (Trautner et al. 2005).

Many questions remain to be answered about the developmental progression in learning the content of stereotypes and in exploring individual differences in patterns of development. For instance, when do children first begin to assume that there are similarities within one sex and dissimilarities between the sexes? Theorists are interested in examining the roles that personal interests and idiosyncratic knowledge play in the development or hindrance in stereotype formation (Liben & Bigler 2002, Martin & Ruble 2004). Furthermore, how children apply stereotypes once they have learned them is an issue of continuing interest in the field.

When Do Children Exhibit Prejudice and Discrimination?

Recent conceptual analyses suggest a range of factors that likely contribute to the development of stereotypes and prejudice, such as highly salient categorizing dimensions (e.g., sex) (Martin & Ruble 2004) and labeling of these dimensions by others (Bigler et al. 1997). Because recent reviews of Developmental Intergroup Theory have covered the influence of these factors and discussed studies of children's responses to novel stereotyping situations (Arthur et al. 2008, Bigler & Liben 2007), the focus here is on the age-related changes in cognitive and behavioral expressions of gender prejudice and discrimination, not with their origins.

Attitudes about the two sexes—How do children's evaluations of the two sexes change with age? This question involves a number of different kinds of attitudes and beliefs; we focus on two: (*a*) ingroup/outgroup biases, and (*b*) perceptions of status differences and discrimination. There has been relatively little research on these topics, but interest has increased recently.

Ingroup/outgroup biases: Children's growing awareness of membership in a social group (i.e., male or female) becomes an evaluative process through self-identification and thus affects how positively children regard the ingroup relative to the outgroup (Ruble et al. 2004). Some research suggests that as early as preschool, children report feeling more positively about their own sex (Yee & Brown 1994), and differential liking is also seen

among older children (e.g., Heyman 2001, Verkuyten & Thijs 2001). Studies are mixed regarding age trends, depending on the measure. Those examining negative versus positive trait ratings suggest that intergroup biases decline in elementary school (e.g., Egan & Perry 2001, Powlishta et al. 1994), consistent with increasing stereotype flexibility described above; but studies tapping more affective reactions (e.g., liking the ingroup better) do not show this decline (e.g., Yee & Brown 1994), at least not until early adolescence (Verkuyten & Thijs 2001).

We do not yet know whether and when ingroup favoritism is associated with outgroup derogation. That is, do children actually dislike or have hostile attitudes toward the other sex, or is it simply that children like their own sex better? Because many studies use difference scores, ingroup positivity and outgroup negativity are often confounded (Brewer 2001, Cameron et al. 2001). Moreover, Kowalski (2007) reports that studies of young children's interactions do involve evaluative comments between boys and girls but rarely involve animosity, suggesting that some researchers may have misinterpreted children's positive ingroup feelings in structured interviews as overt rejection of the other group. Recent research suggests that when they are decoupled, ingroup positivity effects are stronger than outgroup negativity among elementary school children (Susskind & Hodges 2007). It is also not clear whether young girls' willingness to judge boys as “bad,” for example, indicates outright hostility (Rudman & Glick 2008) or if, instead, such judgments reflect stereotypes about boys getting into trouble (e.g., Heyman 2001). On the other hand, studies showing that the other sex is disliked (e.g., Yee & Brown 1994) are consistent with a conclusion of negative outgroup evaluation. An important issue for future research concerns this distinction between cognitive and affective aspects of intergroup bias and its connection to the development of gender prejudice (Halim & Ruble 2009).

A distinction in the adult literature between hostile and benevolent sexism (Glick & Fiske 2001) represents a potentially very useful conceptualization for future developmental research. The idea is that, unlike most forms of prejudice toward outgroups, negative intergroup attitudes between males and females are likely to be complicated by intimate interdependence and thus are likely to be ambivalent, involving benevolent as well as hostile aspects. For example, women may be viewed as competitors seeking to gain power over men, but they may also be viewed as angelic (put on a pedestal) and vulnerable, in need of protection. Men may be resented for their dominance over women but also admired as providers and heroes. Applying this distinction to the developmental course of intergroup attitudes, Rudman & Glick (2008) argued that ambivalence does not characterize gender prejudice in young children, but rather that it moves from a simple form of childhood hostility toward competing groups to ambivalent sexism.

This is an interesting proposal with important implications, but questions remain. First, outgroup negativity in young children can be interpreted differently, as suggested above; their perceptions may be simple and competitive, but not extreme enough to be characterized as hostile. Perhaps, instead, children's need to master important categorical distinctions coupled with relatively limited cognitive skills make it threatening when peers cross gender boundaries (Kowalski 2007). Second, young children's attitudes may involve some complexity and ambivalence, but of a different sort than for adults. For example, young children may dislike members of the other sex because they are boring (about girls) or rough (about boys) while still holding positive views about other characteristics of other-sex peers, such as girls are nice and boys play exciting games. Moreover, children begin to anticipate adult roles at an early age, and benevolent feelings could arise from a “princess” anticipating her “prince” or the expectation by two young opposite-sex friends that they will one day be husband and wife. Further examination of different interpretations of

preschoolers' ingroup bias is important because knowing what it represents is critical to knowing when to intervene to minimize sexism.

Awareness of status differences and discrimination: When do children become aware of the status difference applied to males and masculine activities relative to females and feminine activities in most cultures? Although studies of gender stereotypes in young children show that they attribute greater power to males and helplessness to females (Ruble et al. 2006), only a few studies have examined perceptions of inequality directly. First, research has found awareness of status differences in occupations typically held by men and women (Liben et al. 2001, Teig & Susskind 2008). Children as young as 6 years understood that jobs more likely to be held by men (e.g., business executive) are higher in status than female-typical jobs, but only older children (11-year-olds) associated fictitious "male" jobs as being higher in status (Liben et al. 2001). A study of perceptions of a high-status job—the U.S. presidency—found that 87% of children aged 5–10 years knew that only men had been presidents, though knowledge increased significantly with age (Bigler et al. 2008).

Second, research has examined the development of children's general perceptions of gender inequalities (Neff et al. 2007). The findings showed a notable increase between 7 and 15 years of age in beliefs that males are granted more power and respect than females.

Finally, a few recent studies examined children's perceptions of gender discrimination. First, in the study of the presidency, only approximately 30% of the 5- to 10-year-old children attributed the lack of women presidents to discrimination, although this percentage increased with age. Instead, the most frequent explanation was ingroup bias: that men would not vote for women. These findings suggest that even young children are aware of how ingroup biases shape behavior and that they perceive such reasons as more important than institutional discrimination in determining the selection of the president (Bigler et al. 2008). In a second study, children in two age groups (5–7 and 8–10 years) responded to a set of hypothetical stories about teachers deciding whether a boy or a girl did better on an activity (Brown & Bigler 2005). The findings showed that the younger children were somewhat aware of gender discrimination, but such perceptions were higher in the older group. Children perceived discrimination, however, only when explicitly told that the teacher may be biased, not when the context was ambiguous.

Taken together, these studies suggest that children's awareness of the differential status of the sexes and gender discrimination are relatively late-developing phenomena. Young children show limited awareness, but only when contextual cues (e.g., explicit mention of biases) or social experiences (knowledge of status of real occupations) make inequities obvious. More subtle awareness of inequities may not emerge until later in elementary school. The slow development of this more "public" evaluation, such as recognizing status and power differences and institutional discrimination, is in stark contrast to the early developing "personal" regard shown by ingroup biases, suggesting different developmental underpinnings of the two types.

Gender prejudice and discrimination—In what ways might developmental changes in stereotypic beliefs and intergroup attitudes play out in actual choices and behavior? What little research there is on gender prejudice development has primarily focused on two types: (*a*) negative reactions to peers' violations of gender norms and (*b*) preferential treatment.

Reactions to gender norm violations: Because preschoolers have strong beliefs that boys and girls do different things, they would be expected to respond negatively to gender norm violations. Several early studies found support for this prediction (Huston 1983). For example, when 3- to 5-year-olds were videotaped while playing with either a male- or

female-typed toy (e.g., soldiers; dollhouse) in the presence of a same-sex peer, children were punished (e.g., ridiculed) by the peer when playing with cross-sex toys (Langlois & Downs 1980).

Recent research has supported and expanded these findings. For example, teachers report that kindergarten children tend to respond in one of three ways to gender norm violations: correction ("give that girl puppet to a girl"), ridicule, and "identity negation" (e.g., "Jeff is a girl") (Kowalski 2007). Interestingly, one recent study found that preschool children are able to identify children who are more likely to enforce the gender rules and gender-segregated boundaries (McGuire et al. 2007). Preschoolers were asked, "Who in your classroom says you shouldn't play because you are a boy/girl?" The findings showed that children who had greater exposure to "gender enforcer" peers were more likely to limit their play to same-sex peers. These findings suggest that there may be individual differences in overt "sexist" behavior as early as preschool, and that the actions of these gender "police" contribute more broadly to the maintenance of gender distinctions in the classroom.

Because children show age-related increases in the flexibility of stereotypes and other aspects of gender category knowledge, such as gender constancy and the ability to make multiple classifications, their negative reactions to gender norm violations should decline after preschool. Unfortunately, age trends in older children have received little attention, though examples of such behavior abound. Based on extensive qualitative ethnographic observations in middle-elementary school, Thorne (1993) found that boys who violated norms for masculinity were teased, shunned, or referred to as "girls." For example, one girl excluded a boy from jump rope because "…you don't know how to do it, to swing it. You gotta be a girl" (p. 45). Other research documented the various "rules" that children have about maintaining gender boundaries and found that children who maintain boundaries are more popular with peers (Sroufe et al. 1993). Finally, research with children exhibiting extreme gender-nonnormative behaviors suggests that girls and especially boys are teased and rejected by peers (Zucker & Bradley 1995).

Studies using hypothetical stories also indicate that children make negative judgments of, and consider unpopular, peers who engage in gender-atypical behavior, especially boys. In contrast to the implications from the more behavioral studies described above, however, many of these studies fail to find negative evaluations of gender-atypical behaviors before middle-elementary school (e.g., Berndt & Heller 1986), and children often show increased negativity with age, although findings are mixed (Ruble et al. 2006). The findings in the judgment studies may be influenced by the qualities and salience of the stimuli as well as by children's cognitive abilities and gender knowledge (Arthur et al. 2008, Lutz & Ruble 1995). For example, one recent study showed a dramatic decrease in negative judgments between 5 and 7 years of age, which was mediated by increasing gender knowledge—specifically, gender constancy (Ruble et al. 2007b).

Thus, conclusions about evidence of sexism in young children drawn from judgment studies can be different from conclusions drawn from studies of actual behaviors. This observation raises interesting questions for future about what exactly children are reacting to when they demonstrate seemingly sexist behaviors or attitudes toward peers engaging in atypical behavior. First, children's liking or popularity judgments in hypothetical situations may reflect egocentric considerations, such as preferring targets engaged in activities typical of their own sex (e.g., girls preferring male targets with feminine interests) (Alexander & Hines 1994, Zucker et al. 1995). Thus, young children's liking for gender nonconforming targets may not reflect their tolerance for gender nonconformity but instead their personal interest in masculine or feminine activities.

Second, it is not clear if the sexist behaviors found in preschool children (e.g., hitting a boy who wears fingernail polish) are based on global negative evaluations of such children as being gender atypical or if they reflect a more limited evaluation of a specific instance of a child breaking a rule (such as stealing cookies). Children's judgments of gender atypicality are likely influenced by additional factors such as their perceptions of the targets' dissimilarity to same-sex others (e.g., Egan & Perry 2001) and/or awareness of within-sex variability. Moreover, it may be only when children begin to recognize and understand the stability of behavior that individual atypical behaviors coalesce into a broader and more negative view of the person as being deviant (Ruble & Dweck 1995). Unfortunately, developmental changes in children's perceptions of others' gender typicality have received little attention. This is surprising because perceptions of gender typicality are key to understanding reactions to gender norm violations and what they mean. Whether preschoolers' negative judgments and reactions reflect sexism and, if so, what form of sexism are interesting questions for future research.

Preferential treatment: Given that the in-group liking bias occurs at a young age, one might expect that children would show favoritism toward their own sex. When affiliative behavior is measured, children begin to show preferential selection of same-sex peers starting at age 3 (La Freniere et al. 1984). Children also preferentially allocate resources to their own-sex group, beginning in preschool (Yee & Brown 1994).

Other research has examined ingroup favoritism in terms of children's responses to hypothetical stories about excluding peers from gender stereotypic activities, such as a ballet or baseball "club" (Killen et al. 2008). In these studies, there has been little evidence that children were more likely to choose same-sex members. Instead, children's exclusion and inclusion decisions were found to vary across age depending on exactly what they were told about the situation. When children were asked about a single child who wanted to join the club, most children responded that exclusion was wrong (e.g., to exclude a boy from a ballet club), even though they knew the stereotypes. Consistent with findings of increasing flexibility of stereotypes with age, however, this was true for only about 60% of preschoolers (Theimer et al. 2001) versus 90% of older children (Killen & Stangor 2001). When children were asked to select between a boy and a girl of equal competence, age differences in the influence of gender stereotypes on inclusion decisions appeared to be even stronger. Children in the study of preschoolers selected the stereotyped choice (e.g., the girl for the ballet class) (Theimer et al. 2001). Older children, however, preferred the counterstereotypic choice (Killen & Stangor, 2001) and offered justifications based on equal access (e.g., boys don't get a chance to take ballet). Such "fairness" considerations in inclusion decisions coupled with relatively low levels of exclusion are surprising in that they seem inconsistent with the observations of behavioral exclusion described above. Perhaps only a few children engage in exclusion (e.g., the "gender police"), or hypothetical situations might allow children to think instead of answering impulsively and thus may not invoke ingroup favoritism as much as more personal, immediate situations might.

In short, it appears that gender prejudice and discrimination begin as early as preschool; this finding is particularly evident in research examining actual behavior, whether naturalistic or experimental. That is, preschoolers respond negatively to violations of gender norms and favor ingroup members in actual choices of play partners (sex segregation) and allocation of resources. Findings of studies examining responses in hypothetical situations appear to be more mixed, however. From these studies, it appears that the form and bases of gender prejudice and discrimination vary across age and context. For example, in young children, prejudice may reflect simple same-sex liking biases or relatively straightforward applications of gender norms, whereas at older ages, prejudice may involve differential evaluation of capabilities and past history and thus be more closely linked to knowledge of

status differences and discrimination. The few studies examining these issues have involved very different paradigms. Thus, findings that apparently conflict across studies cannot be evaluated without future research.

HOW STABLE ARE INDIVIDUAL DIFFERENCES IN GENDER TYPING?

It seems intuitively obvious that individuals vary greatly in how gender typed they are. Some girls are extremely "girly" and refuse to go anywhere without wearing a dress, often pink and frilly, whereas other girls have no such interest and instead prefer playing ball with the boys. Some men can handle any kind of tool (except kitchen tools!), whereas others lack such mechanical facility. It is commonly assumed that attributes associated with being a typical male or female are seen early on, show at least some continuity across time, and influence personal preferences and behaviors throughout life.

How much empirical support is there for these assumptions? Maccoby (2002) has argued that there is not much. According to her analysis, this is because different manifestations of gender typing in childhood do not cohere and because there is considerable situational variation in how gender typed a given child seems. Instead, she suggests that gender typing at this age may be more of a group phenomenon rather than something that reflects the dispositions of relatively more or less gender-typed children. Thus, she advocates a shift in research focus away from individual differences in gender-related outcomes and toward the study of how gender is manifested in groups of males and females.

Although we agree wholeheartedly about the importance of studying group-based elements of gender, we suggest that it may be premature to dismiss the importance of examining gender typing as an individual difference variable. Variation across contexts and domains of gender typing does not preclude the possibility that some aspects show stability across time within individuals. For example, some boys may show an interest in moving parts or vehicles that persists in different forms into adulthood, even if that interest shows no connection to rough-and-tumble play or to other male-typical interests and behaviors. Surprisingly, researchers have rarely directly examined the stability of gender-typed interests and behaviors, and the existing database is piecemeal and sketchy (Huston 1983, Powlishta et al. 1993). This is unfortunate, because knowing more about which aspects of gender typing are stable is critical to a full understanding of the nature and processes involved in gender development.

In the sections below, we provide a detailed analysis of longitudinal studies of gender typing in children and what the studies show about stability. We then reevaluate the evidence that led to Maccoby's (2002) conclusions that examining individual differences in gender typing is not productive.

Evidence of the Stability of Gender Typing from Longitudinal Studies

What do longitudinal studies of gender development tell us about stability? Although gender typing can involve a number of different features, we limit the present review to behavioral-type variables (e.g., play with same-sex peers; interests and activities) rather than cognitive-type variables such as stereotyping or gender identity. We do this because much research on gender typing has concerned young children's peer and activity preferences. It is also partly because cognitive variables show considerable variation during childhood (Ruble et al. 2006) and may not be conducive to demonstrating stability, at least in young children.

Surprisingly, the few longitudinal studies of gender typing that exist have paid relatively little attention to this issue of stability. This may be partly because it has not been a primary component of major theories of gender development. Because most theories emphasize the

factors that lead to gender typing, longitudinal studies have often focused on such issues as how contextual, socialization, or social-cognitive factors at one point in time affect gender-typing at a later point in time (e.g., McHale et al. 2004) rather than on the stability of gender typing across time. Other longitudinal studies have focused on normative changes in gender-typed behaviors or cognitions, such as attitudes or stereotyping (e.g., Bartini 2006).

In interpreting the theoretical significance of such studies, however, it is essential to determine whether gender typing represents some continuing characteristic of individuals that influences future beliefs and behaviors or whether it is better viewed as linked to a particular developmental time point or context, with little future implications (Serbin et al. 1993). Moreover, identifying the factors that lead children to be more or less gender typed should help distinguish among alternative theories of gender typing (Powlishta et al. 1993). Thus, information about which elements of gender typing are stable, over what period of time, and during which developmental periods seems essential to the study of gender development.

Longitudinal studies examining the stability of sex segregation—Some studies have used observational methods to examine the stability of preferences for spending time with same-sex versus other-sex others. Different types of assessments have been used: (*a*) split-half correlations (e.g., across odd versus even weeks), (*b*) cross-situational stability (e.g., across indoor and outdoor play); and (*c*) test-retest (temporal) stability (whether sex segregation scores are correlated over some period of time).

The findings have been mixed, both across studies and across measures, and most studies have involved small samples and relatively short time periods (six months or less). To illustrate, Maccoby & Jacklin (1987) reported nonsignificant test-retest reliability over a one-week period among 4½-year-olds (0.39) and among 6½-year-olds (0.17). They did find cross-situational (indoor-outdoor) stability in preschoolers, but for girls only (0.44). Powlishta et al. (1993) used a split-half reliability procedure across odd and even days over a four- to six-month period and found that sex segregation showed significant stability for preschool boys (0.73) but not for girls (0.20). Lloyd & Duveen (1992) found significant temporal stability (0.40) in children ranging in age from about 4 to 7 years when they correlated the proportion of same-sex play from one term to the next. Turner et al. (1993) also examined temporal stability in a large sample (n = 161) of 4- to 4½-year-old children from two countries across eight sessions. Sex segregation scores in sessions one to four were correlated with sessions five to eight at significant or marginal levels (0.3 to 0.7).

As a final example of studies examining relatively short-term stability, Martin & Fabes (2001) assessed sex segregation over two consecutive academic terms for preschool and kindergarten children. Observations took place inside and outside every weekday for six months. This study is unusual because of the large number of observations (about 300 per child) and because of the use of multiple forms of stability assessment. First, split-half procedures (odd and even weeks) showed high and significant correlations for both sexes and for younger and older children (0.69–0.84). Second, as suggested by Epstein (1980), they calculated stability coefficients with data aggregated over differing lengths of time, a procedure that reduces error of measurement. The one-week coefficients were low (below 0.3), but as the number of weeks of aggregated data increased, the stability coefficients showed large increases, such that when data were aggregated over eight-week periods, stability coefficients rose to the 0.5 to 0.6 range and continued to rise across larger units of time. Finally, they found considerable temporal stability (>0.7) across the two academic terms. These findings suggest that a relatively large number of observations, spread over time, may be needed to observe stability in sex segregation. Thus, prior conclusions about a lack of individual stability in same-sex peer preferences may be misleading.

In short, some longitudinal studies show reasonably impressive stability of individual differences in sex segregation. One problem with these studies, however, is that stability is examined within a group context that does not change. That is, stability may be found not because of individual differences in same-sex preferences, but rather because groups are formed early in the class year, and these structures are maintained (Maccoby & Jacklin 1987). Thus, the results of longitudinal studies involving longer periods of time are of considerable interest.

Unfortunately, few studies have examined temporal stability for longer than six months, and, as with short-duration research, the findings are mixed. For example, Maccoby & Jacklin (1987) examined stability in sex segregation in children across a two-year period (4½ to 6½ years). Given the low level of short-term stability found in this study, as described above, the authors did not expect to find, and did not find, much evidence of temporal stability, except for a significant correlation (0.31) over time for boys, but only for outdoor play. In contrast, Serbin et al. (1993) did find long-term temporal stability from one year to the next using a peer-nomination procedure (e.g., participants selecting photos of the children with whom they most like to play) in 5- to 12-year-olds. It is not clear exactly why this paper-and-pencil measure might yield more stable estimates, but it may be that the situational variation in observations was eliminated and that only the strongest relationships were assessed this way. Regardless, it is impressive that temporal stability was found across a time period when classrooms had changed.

Taken together, despite some nonsignificant findings, it seems fair to conclude that individual differences in sex segregation do show both internal consistency (split-half reliability) and temporal stability, given sufficient power and numbers of observations. Although observational data suggest that a child may vary in same-sex play from week to week, when observations are aggregated across multiple weeks, stability is seen. It would be helpful in future research to use data-aggregation procedures to see how many weeks of observations are needed to show temporal stability across one year or more. It would also be worthwhile to examine how long individual differences in segregation are maintained. For example, do preschool preferences predict preferences in middle-elementary school?

Longitudinal studies of the stability of interests and activity preferences— Studies of other indices of gender typing have been somewhat more consistent in finding temporal stability. Some observational studies of preschoolers and/or kindergartners have shown short-term, test-retest temporal stability in stereotyped toy and activity choices during free play (e.g., Maccoby & Jacklin, 1987, Martin & Fabes 2001). Other observational studies have shown significant stability in terms of split-half consistency (e.g., Connor & Serbin 1977, Powlishta et al. 1993). In addition, gender-stereotyped activity preferences have shown moderate to high stability over varying periods of time, as assessed with test-retest reliability involving pencil-and-paper measures completed either by the children themselves (e.g., Edelbrock & Sugawara 1978, Golombok & Rust 1993) or by parents about their children (e.g., Golombok & Rust 1993).

One recent, impressive study examined the stability of gender typing using pencil-and-paper measures (Golombok et al. 2008). This study warrants a more detailed look because it involved a much longer time period (from age 2½ to 8 years) and a much larger sample (more than 2700 girls and 2700 boys) than has been typical. When the children were ages 2½, 3½, and 5 years old, parents completed a toy and activity questionnaire (Pre-School Activities Inventory, or PSAI; Golombok & Rust 1993) about their child's preferences; at age 8, the children completed an age-appropriate modified version, the Children's Activities Inventory (CAI). To examine temporal stability during the preschool years (test-retest reliability), intercorrelations in PSAI scores were examined among all three time points

(ages 2½, 3½, and 5 years). Stability coefficients for the PSAI were high: 0.6–0.7 for adjacent time points and 0.5 from 2½ to 5 years. These levels are comparable to or even higher than those reported in earlier studies and thus demonstrate moderate to high stability in gender-typed interests and activities over time periods ranging from 1 to 2½ years.

Golombok et al. (2008) also examined stability between the preschool years and age 8, though not with test-retest correlations. Instead, at age 3½, boys and girls separately were divided into nine categories of gender typing based on PSAI scores; children who varied in their categories were compared on CAI scores. For both sexes, the children who were most gender typed at age 3½ continued to be so at age 8. A similar analysis compared CAI scores at age 8 with scores indicating the trajectory (acceleration in gender-typed interests) from ages 2½ to 5 years. As predicted, children showing the greatest increase in gender typing at a young age were those with higher levels of gender-typical behavior at age 8.

These findings are interesting in part because the trends run counter to what would be expected from regression to the mean, in that the children who were most gender typed to start with became relatively more so over time. Moreover, the findings suggested the possibility that individual differences in gender typing may be more stable in children who are relatively high or low in gender typing when young, a pattern that was particularly marked for the least gender-typed girls. It would be of great interest in future research to examine the stability and trajectory of gender typing among children at the extremes, such as tomboys or girly girls.

Taken together, longitudinal studies of gender-typed interests and activities show fairly compelling evidence of stability of individual differences. Future research needs to examine stability across one year or more using observations rather than paper-and-pencil measures to be certain that the apparent stability of gender typing reflects actual behaviors rather than stability in self- or parent perceptions.

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