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Gender Atypical Behavior in Chinese School-Aged Children: Its Prevalence and Relation to Sex, Age, and Only Child Status

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This study had three purposes: (a) to compare the prevalence of boys' and girls' gender-atypical behaviors (GABs) in a sample of Chinese school-aged children, (b) to examine the developmental pattern of GABs in Chinese boys and girls over the age range in question (6–12 years), and (c) to test the effects of being an only child on children's GAB expression. Parents of 486 boys and 417 girls completed a Child Play Behavior and Activity Questionnaire (CPBAQ) in regard to their own children, and a demographic information sheet. The frequency distribution for each gender-related behavior was calculated. The associations between sex, age, and only-child status, and CPBAQ scale scores were examined. Although most GABs (by their very nature) were exhibited infrequently in Chinese children, it was found that girls displayed GABs more frequently than boys did. The prevalence of GABs rose for girls as they grew older, but fell slightly for boys. The expressions of GABs in only children did not differ from that in children with siblings. Possible effects of Chinese culture (including the current only-child policy) on children's GABs are discussed.

From an early age, children gradually understand the gender stereotypes prescribed in their specific cultures and learn to conform to the given male and female gender roles (e.g., Huston, 1985). By middle childhood, although children's personality traits are not yet consolidated, boys and girls have established relatively stable gender-related behavior patterns (Beere, 1990; Stern & Karraker, 1989). Although most children display behaviors that are perceived as appropriate for their biological sex, some children, to varying degrees, exhibit behaviors considered to be more common for the other sex—namely, gender-atypical behaviors (GABs; Bailey & Zucker, 1995; Bates, Bentler, & Thompson, 1973; Golombok & Fivush, 1994). Researchers have found that childhood GAB carries important developmental implications in terms of childhood and adulthood atypical gender roles (Miller, 1987; Robert & Héroux, 2004), homosexual orientation (Bailey & Zucker, 1995; Strong, Singh, & Randall, 2000), and low levels of psychological adjustment (Aubé & Koestner, 1992; Harry, 1983; Rosenberg, 2002; Wallien, van Goozen, & Cohen-Kettenis, 2007; Zucker & Bradley, 1995). These findings indicate the importance of GAB in children's

development and the need to understand its characteristics and correlations with other psychological processes.

Despite widespread interest and a number of studies that have investigated children's gender-related behavior development in Western countries, especially in the United States (e.g., Maccoby, 1988; Signorella, Bigler, & Liben, 1993), there is a paucity of research concerning the characteristics of childhood GAB in Chinese populations. Therefore, the overall purposes of this study were to directly assess the prevalence of GAB in a sample of Chinese elementary school students and explore the associations between children's sex, age, only child status, and their expressions of GAB.

Prevalence and Sex Differences of GAB

By their very nature, most GABs—in particular, the extreme form thereof—are rarely exhibited by children across childhood (Achenbach, 1991; Henderson & Berenbaum, 1997; Serbin, Poulin-Dubois, Colburne, Sen, & Eichstedt, 2001). Although GABs are generally uncommon, researchers have also found that there is substantial variation in the amount and types of GABs that are exhibited by children both between and within the two sexes (Huston, 1985; Knafo, Iervolino, & Plomin, 2005; Sandberg & Meyer-Bahlburg, 1994). Several studies directly examined the prevalence of GAB with parent-reported questionnaires in population-based school-aged

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children (e.g., Meyer-Bahlburg, Sandberg, Dolezal, & Yager, 1994; Meyer-Bahlburg, Sandberg, Yager, Dolezal, & Ehrhardt, 1994; Van Beijsterveldt, Hudziak, & Boomsma, 2006). Consistently, it was reported that, although the majority of GABs occurred infrequently in children, both boys and girls displayed multiple GABs, and girls were more likely to display GAB than boys. For example, based on a sample of 687 children (6–10 years) in the United States, Sandberg, Meyer-Bahlburg, Ehrhardt, and Yager (1993) found that, although children of either sex overall displayed GAB at low frequencies and the number of coexistent GAB in each individual was small, there were still 22.8% of boys and 38.6% of girls who reported having ever exhibited ten or more different GABs. In Sandberg et al.'s (1993) study, GAB was operationally defined as the behaviors that were atypical for the participant's own sex but typical for a child of the opposite sex, as measured by the Child Behavior and Attitude Questionnaire (CBAQ; Meyer-Bahlburg, Sandberg, Yager, et al., 1994).

A number of theories have provided explanations of children's general tendency to adopt gender-congruent behaviors, as well as within-sex variations in children's GABs. From a cognitive–developmental perspective (Kohlberg, 1966), children's adoption of GAB is deemed a by-product of children's developed gender constancy—the ability to consistently categorize and identify with one gender. Once children successfully obtain this gender constancy, they actively participate in gender-related activities and adopt gender-typed behaviors to strengthen their gender identity. Therefore, the adoption of GABs in young children may be due to their immature gender conceptions. According to gender-schema theory (Bem, 1981, 1993), children's adoption of gender-related behaviors is guided by their developed gender schema—an organized cognitive structure of knowledge about gender-related characteristics. Because children are schematized at different levels, those who are highly schematized would tend to display gender-typical behaviors, whereas those less schematized would be more likely to adopt GABs. Social-cognitive theory (Bussey & Bandura, 1999) emphasizes that children's gender concept and schema are obtained through the process of socialization by modelling the same-sex models and being reinforced for gender-congruent behaviors. In this view, children who have gender-atypical models, or whose gender-typical behaviors are less reinforced, tend to form a less schematized gender concept and exhibit more GABs. Because GABs in girls are more likely to be accepted than in boys, girls thereby exhibit more GABs than boys.

Developmental Pattern of GAB

Children's gender-related behavior develops stably from early through middle childhood (Bussey &

Bandura, 1999), and the expressions of GABs also reflect developmental trends. Cognitive–developmental theorists have suggested that, with accumulated knowledge about the world, children during middle childhood come to form more flexible gender-related beliefs than young children (Serbin, Powlishta, & Gulko, 1993). Following these increasingly flexible beliefs, older children tend to make judgments and decisions more on the basis of personal interests and social desirability rather than simply on gender stereotypes and, therefore, are likely to adopt more GABs than when younger (Huston, 1985; Turner, Gervai, & Hinde, 1993). Meanwhile, social-cognitive theorists (e.g., Bussey & Bandura, 1999) propose that the adoption of GABs depends on not only cognitive maturity, but also on a variety of social–cultural factors. Children acquire gender-related behaviors through observing and modelling others of the same sex. Positive or negative reactions of socialization agents, such as parents and peers, further modify children's gender-role development. Thus, even children with similar cognitive maturity may develop different levels of GABs due to their different social environments. Because attributes associated with males are more valued than those related to females (Fagot, Leinbach, & O'Boyle, 1992; Martin, 1995; Sandnabba & Ahlberg, 1999), a growing awareness of this social inequality between males and females in older children may lead to the reduction of girl-typical behaviors and an increase in boy-typical behaviors for both boys and girls (Bem, 1993).

However, empirical studies that investigated the developmental pattern of GAB in middle childhood have shown inconsistent findings. Whereas some researchers found older children displayed more GABs than young children (e.g., Katz & Walsh, 1991), others reported that both older boys and girls decreased their engagement in girl-typical activities and increased their participation in boy-typical games (Bates & Bentler, 1973; Lockheed & Klein, 1985; Sandberg & Meyer-Bahlburg, 1994). Moreover, the developmental patterns of GABs appear to be different for boys and girls. Researchers have found that, with age, girls have more flexible gender-related knowledge and exhibit more GABs than boys (Cherney & London, 2006; Sandberg et al., 1993). In other words, the discrepancy in the expression of GAB between boys and girls becomes wider with age, as suggested by social-cognitive theorists. These inconsistent findings suggest the need for further large-sampled investigations into the sex and age differences in children's GAB during middle childhood.

Only Child Status and GAB

In children's gender development, family undoubtedly plays an important role. Although the influences of parents and siblings on children's GAB have long been documented by both social learning–cognitive theories and supported by copious empirical studies (e.g., Bugental & Goodnow, 1998; Collins, Maccoby, Steinberg,

Hetherington, & Bornstein, 2002; Lytton & Romney, 1991), less attention has been paid to the role of only child status in children's adoption of GAB. To date, there has been no published research that directly examined the relationship between only child status and gender-role development.

The possible influence of only child status on children's GAB can be inferred from the role of siblings in children's gender-related behavior development. In children's daily lives, siblings serve as models, partners, and advisors for each other, and thereby exert influences on the social development of one another. They also provide each other with different opportunities for gender-typical or atypical activities (Dunn, 1988; McHale, Updegraff, Helms-Erikson, & Crouter, 2001). From a social-cognitive perspective, children have the tendency to imitate behaviors of high status models, especially same-sex models; therefore, younger children are likely to learn gender-related behaviors from their older, same-sex siblings. Research findings have indicated that children with older siblings of the same sex tend to display less GABs and hold more stereotyped gender-related beliefs than children with opposite-sex older siblings (Rheingold & Cook, 1975; Rust et al., 2000). It may be that only children, not having same-sex sibling models, exhibit more GABs than non-only children, particularly those with same-sex siblings.

Moreover, siblings affect the interaction system of the whole family and parental differentiated treatment to sons and daughters (McHale, Crouter, & Whiteman, 2003). Several studies have reported that parents with both sons and daughters tend to treat children in gender-stereotyped ways because they have the opportunity to accentuate the difference between boys and girls (Crouter, Helms-Erikson, Updegraff, & McHale, 1999). This seems to suggest that only children would be less likely to receive pressure from parents to conform to gender stereotypes, and thereby might exhibit more GAB than children with siblings.

Chinese Cultural Influences on Childhood GAB

Theories of children's gender development have long emphasized its inseparability from children's social and cultural background (Best & Williams, 2001; Gibbons, 2000). In different cultures, there are variations in the psychological characteristics and behaviors considered as appropriate for males and females (e.g., Best & Williams, 2001; Gough & Heilbrun, 1980; Lii & Wong, 1982), people hold different attitudes and expectations toward each gender (Gibbons, Stiles, & Shkodriani, 1991; Nelson, 1988), and parents socialize their children in different ways (Lytton & Romney, 1991). Despite these understandings and findings, the majority of studies that have investigated children's gender-related behaviors have hitherto been based on Western

populations (Best & Thomas, 2004). It is likely that the research literature does not take into account the full range of cultural variation in gender development. Studies of gender development within the contexts of other cultures that were largely overlooked in previous studies will go a long way to address this problem.

China has a very distinct culture as compared to cultures in Western countries where most current gender theories were developed. China also has the largest population in the world, with over 200 million children under 12 years of age (National Bureau of Statistics of China [NBSC], 2006). Several aspects of Chinese culture may have systematic influences on children's adoption of gender-related behavior. First, Chinese people's lives have been deeply influenced by a set of cultural values that mainly derive from Confucianism philosophy (Bond, 1983; The Chinese Culture Connection, 1987). Based on a series of multicultural studies, Bond (1996) summarized that Chinese people commonly place a high value on identification with their ingroups and conformity to group norms. Consequently, behaviors that are incongruent with social norms are more likely to be discouraged in China than in Western countries (Bond, 1996; Chang, 1999; Pek & Leong, 2003). The implication is that Chinese culture might place a high emphasis on gender conformity and that Chinese children might generally display less GAB than Western children.

Second, Chinese culture is typically collectivistic in nature, whereas most Western cultures are individualistic (Leung & Bond, 1989; Schwartz, 1994). Snyder (1974, 1987) further suggested that people in collectivist cultures tend to be more concerned about the situational appropriateness of one's behaviors (self-monitoring) than people in individualistic culture. For example, Hamid (1994) found that Hong Kong Chinese were higher in self-monitoring than New Zealanders. According to social-cognitive theory, children constantly regulate their behaviors based on the comparison of their behaviors to their inner standards. Therefore, a high level of self-monitoring may further lead Chinese children to display less GAB. Moreover, as children's age increases, and as Chinese children become more aware of and sensitive to social pressures, both boys' and girls' expressions of GABs may further decrease.

Third, filial piety, another deep-rooted Chinese cultural value, serves as an important contextual factor influencing many aspects of Chinese people's lives (Ho, 1996; Yeh & Bedford, 2003). Closely related to this value, Chinese people believe that to carry on the family line is one of the most important duties one has toward one's a family. These beliefs have been found to be directly associated with Chinese parents' negative attitudes toward children's gender nonconformity (Yu, 2008b) and the high level of antipathy toward homosexuals and transpeople in China (King, 2008; Neilands, Steward, & Choi, 2008; Winter, Webster, & Cheung, 2008). Seen in this light, one may speculate that

children's GABs would incur more negative reactions from parents in the context of Chinese culture than in Western cultures, and that this would lead to a low prevalence of GAB among Chinese boys and girls in comparison with their Western peers.

Fourth, due to the Chinese government's implementation of "one-child-per-family policy," only child families are the norm in Chinese cities (Tsui, 1989). Some researchers argue that this policy has introduced a Western "child-centered" attitude into contemporary Chinese child-rearing (Chang, Schwartz, Dodge, & McBride-Chang, 2003; Tsui & Rich, 2002). In one study conducted in Shanghai, Wu (1996) reported that both fathers and mothers of only children expressed the belief that boys and girls should enjoy equal levels of education—an idea dramatically different from the traditional Chinese parents' gender-differentiated expectations. In view of these findings, it is possible that contemporary Chinese parents' expectations about children's gender-related behaviors may be less stereotyped than before, and only children may experience less pressure from parents to adhere to typical gender-role behaviors and display more GABs than children with siblings.

Taken together, it is very likely that these features of Chinese culture would contribute to Chinese children's GAB development. However, no Chinese study has yet systematically examined prevalence, development, or sex differences in GAB during middle childhood. Reliable data on the effect of sibling status on GAB are also lacking. An investigation of childhood GAB in Chinese culture, therefore, would offer a more rounded understanding about this aspect of child development and the effect of culture thereupon. Thus, the main purposes of this study were to investigate prevalence and development of GAB, as well as effects of sex and only child status upon GAB, in a sample of Chinese elementary school students (aged 6–12). Specifically, we tried to answer the following research questions (RQ1, RQ2, & RQ3) and, based on literature review, put forward the corresponding hypotheses (H1, H2a, H2b, & H3):

RQ1: How common are GABs in Chinese elementary school-aged boys and girls?

H1: Both Chinese boys and girls would exhibit GABs at low rates consistent with their status as atypical.

RQ2: How much does the amount of GABs that children exhibit vary with age and sex?

H2a: Chinese children's GABs would decrease with age during elementary school years.

H2b: Chinese girls would generally exhibit more GABs than Chinese boys.

RQ3: Does being an only child influence Chinese children's expression of GAB?

H3: Only children would be less gender stereotyped and exhibit more GABs than non-only children.

Method

Participants

The participants were elementary school students from China who lived in urban areas, and ranged between six and 12 years of age. Participants were selected from three elementary schools in Hefei, the capital city of an eastern Chinese province, through a two-stage cluster-sampling method. In the first stage, with the assistance of a local education bureau, three standard elementary schools were selected. All children studying in the first through sixth grade were deemed eligible for inclusion in this study. In the second stage, 40 boys and 40 girls (aged 6–12) were randomly selected from each grade in each school, with their parents being asked to serve as informants.¹ A total number of 1,440 questionnaires were distributed. Parents of 246 children refused to participate, and 291 questionnaires were incomplete and, therefore, were not included in the analyses. Complete data were obtained from parents of 903 children (62.71%), including 486 boys (age = 9.43 ± 1.62 years) and 417 girls (9.50 ± 1.71 years)—407 boys and 314 girls were only children.² Within the group of children who had siblings, 12 (15%) out of 79 boys and 77 (75%) out of 103 girls were found to be the first-born child.³

¹Given the sensitive nature of gender-atypical behavior, parents' and guardians' reports are considered as more valid than children's self-reports because children are likely to present themselves favorably. One possible problem with parent-reported information might be that parental responses reflect their perceptions of children's gender-related behaviors rather than children's actual behaviors. This possibility was unlikely to be a serious problem in this study because in our pilot study on 53 children, parental ratings on the gender-related behavior items strongly correlated with children's self-ratings, with *r*s ranging from .35 to .71. Previous studies using similar instruments have also provided evidence for the validity of such parent-reported questionnaires (e.g., Meyer-Bahlburg, Sandberg, Yager, Dolezal, & Ehrhardt, 1994).

²According to Chinese only child policy, urban couples are only allowed to give birth to one child. In this study, some of the sampled children were born in rural areas and later moved into cities with their parents, and thereby have siblings. This may contribute to the lower percentage of only children in this study (721 out of 903 = 79.84%) than the officially reported data (about 90%) of only children in urban areas. In addition, some parents gave birth to their second or third child in other cities to avoid being punished for violating the only child policy. Therefore, these non-only children may not be registered at the local police station, and were probably missed by the national census.

³The imbalanced sex ratio of only child versus non-only child and of the first born versus non-first born in this sample are noticeable and worthy of explanations. This may be due to some particular rules of the only child policy, which prescribed that, for rural families, only when their first-born child is female are they permitted to give birth to a second child. Another possibility may be that parents still hold traditional views that boys, rather than girls, carry on the ancestral line and, thus, by all means tried to have a boy in their families even with the risk of being punished by the government. Therefore, parents who had a daughter were more likely to give birth to one more child than parents who had a son.

Procedure

This study was part of a larger project investigating children's gender-role and identity development. Specifics of the procedure have been reported elsewhere (Yu, Winter, & Xie, 2008). In brief, a detailed cover letter from the researcher explaining the research purpose and procedure, a consent form, and a set of questionnaires (with a return envelope) were sent to the parents or guardians of the selected children. Parents were invited to complete the questionnaires and sign the consent form if they were willing to participate. When parents finished the questionnaires, they were required to seal the completed questionnaires, as well as the consent form, in envelopes and send them to the researcher's temporary mailbox in their children's schools on the following day. The researchers collected all envelopes in the following week. The parents were assured that the survey information was confidential, and only the aggregate data would be made available to the schools. Parents took approximately 30 min to complete the questionnaires.

Measures

To measure children's GAB, a newly constructed instrument, the Child Play Behavior and Activity Questionnaire (CPBAQ; Yu et al., 2008), was employed. This measurement tool was developed on the basis of two widely used Western questionnaires, the CBAQ (Bates et al., 1973; Meyer-Bahlburg, Sandberg, Yager, et al., 1994) and the Child Game Participation Questionnaire (Bates & Bentler, 1973; Meyer-Bahlburg, Sandberg, Dolezal, & Yager, 1994), for the assessment of Chinese elementary school-aged children's gender-related behaviors.

The CPBAQ comprises 32 items covering a list of Chinese children's gender-dimorphic play preferences, behaviors, attitudes, and relations to people of different sexes. These items constitute four scales: a bipolar 24-item Gender Scale, measuring how stereotypically feminine a child is; a 14-item Girl-Typicality Scale (GTS) and a 12-item Boy-Typicality Scale (BTS), assessing behaviors and attitudes typically exhibited by girls (girl-typical behaviors) and by boys (boy-typical behaviors), respectively; and a six-item Cross-Gender Scale (CGS), measuring children's cross-gender behaviors for both boys and girls (e.g., whether the child has stated the wish to be the opposite sex). An example of a GTS item is, "He/She plays with stuffed animals." An example of a BTS item is, "He/She imitates male characters seen on TV or in the movies." For each item, parents rated the frequency of occurrence in their children on a five-point Likert scale, ranging from 1 (*never*), 2 (*seldom*), 3 (*sometimes*), 4 (*often*), to 5 (*always*).⁴

⁴It should be noted that in the actual administration of the Child Play Behavior and Activity Questionnaire, scales for boys and for girls were printed in different versions to avoid respondents' misunderstanding. Only one personal pronoun was used for each item. For example, a Cross-Gender Scale item in the girl's version, "She has stated the wish to be a boy or a man," would be, "He has stated the wish to be a girl or a woman," in the boy's version.

In this study, GAB was operationally defined as the typical behavior for children of the participant's opposite sex, as measured by GTS (for boys), BTS (for girls), and CGS (for both). Boys' GABs were measured by items of GTS and CGS, whereas girls' GABs were measured by items of BTS and CGS. The internal consistencies for these scales in this study were 0.92 for BTS, 0.93 for GTS, and 0.84 for CGS.

Data Analysis

To examine RQ1 (how common GABs are in Chinese boys and girls), two sets of analyses were carried out. First, the frequency distributions for each of the CPBAQ items by sex were calculated to provide the prevalence data. Second, the co-occurrence of different GAB items for each child was computed to examine the prevalence of multiple GABs in individual children.

To answer RQ2 (how much the number of GABs that children display varies with age and sex), a 2×6 between-subject multivariate analysis of variance (MANOVA) was performed on three dependent variables: BTS score, GTS score, and CGS score. Independent variables were the child's sex (boy and girl) and age. Because only 10 boys and eight girls were six years of age, we combined these children with their seven-year-old peers into one age group comprising 74 boys and 66 girls. The age variable, therefore, comprised six subgroups (6–7, 8, 9, 10, 11, and 12 years). To control the inflated Type 1 error caused by conducting a number of comparisons, the Bonferroni procedure was employed (dividing the alpha value by the number of tests). Therefore, as there were three dependent variables in this analysis, a criterion of $\alpha < .017$ (.05 out of 3) was adopted to determine the statistical significance.

To examine RQ3 (whether being an only child would influence Chinese children's expression of GABs), we conducted a 2×2 between-subject MANOVA on three dependent variables: BTS score, GTS score, and CGS score. Independent variables were only child status (only child and non-only child) and the child's sex (boy or girl). The effect of the interaction between the child's sex and only child status on children's GAB would reflect whether the association between the only child status and GAB was different for boys and girls. As with the previous analysis, a criterion of $\alpha < .017$ was adopted to minimize the possibility of Type 1 error.

Results

Prevalence of GAB in School-Aged Boys and Girls

As described earlier, GTS and CGS items were used to measure boys' GABs, and BTS and CGS items were used to assess girls' GABs. We first calculated the frequency distribution of GAB items for boys and girls

PREVALENCE OF GENDER ATYPICAL BEHAVIOR

Table 1. *Frequency of Gender Atypical Behaviors in Boys*

Variable	1 Never	2 Seldom	3 Sometimes	4 Often	5 Always
Girl-Typicality Scale items					
He plays with stuffed animals	43.3	35.0	12.8	6.4	2.5
He plays teacher or nurse games	51.2	31.0	15.3	2.0	0.5
He plays with girlish dolls, such as Barbie dolls	84.7	11.3	4.0	0.0	0.0
He plays house	57.1	26.6	13.8	1.5	1.0
He likes fairy tales like Snow White	28.6	36.0	25.1	7.4	3.0
He plays games like "Put a Handkerchief Behind You" ^a	62.1	29.6	7.4	0.5	0.5
He wears things like towels around his waist as a skirt	85.2	9.9	3.0	2.0	0.0
He likes knitting or sewing	84.2	12.3	2.0	0.5	1.0
He likes dressing up and makeup	75.9	19.2	4.4	0.5	0.0
He uses feminine gestures with hands when talking	83.3	11.3	2.5	1.5	1.5
He plays with girls at school	25.6	36	34.5	3.9	0.0
He imitates female characters seen on TV	86.2	11.3	2.5	0.0	0.0
He prefers staying with female relatives	21.8	20.8	35.1	18.8	3.5
He is popular among girls	32.0	25.6	31.0	9.9	1.5
Cross-Gender Scale items					
He has stated the wish to be a girl or a woman	95.6	3.4	0.5	0.0	0.5
In dress-up games, he likes to dress up in women's clothing	97.5	1.5	0.5	0.0	0.0
In playing "mother/father," "house," or "school" games, he takes the role of a girl or a woman	89.6	7.9	1.5	0.5	0.5
He dresses in female clothing	94.1	3.4	1.5	0.0	1.0
He is called a "sissy" or similar names by other people	98.0	1.5	0.5	0.0	0.0
He is good at imitating females	91.6	5.9	2.0	0.0	0.5

Note. N = 486. Values in the table are percentages.

^aThis is a Chinese group game.

separately. Tables 1 and 2 present the percentage of boys and girls involved in the listed GAB at each specific frequency.

From Table 1, we can see that most GTS behaviors and all CGS behaviors were uncommonly exhibited in

boys. For example, it was reported that none of the boys often or always "plays with girlish dolls, such as Barbie dolls," "imitates female characters seen on TV or in the movies," "is called a 'sissy' or similar names by other people," and "in dress-up games, likes

Table 2. *Frequency of Gender Atypical Behaviors in Girls*

Variable	1 Never	2 Seldom	3 Sometimes	4 Often	5 Always
Boy-Typicality Scale items					
She plays with toy guns	54.3	26.9	14.9	3.4	0.6
She plays as spacemen or soldiers	62.9	22.9	6.9	3.4	4.0
She plays football or basketball	49.7	30.3	18.3	1.1	0.6
She plays with boy-type dolls, like robots	49.7	25.1	18.3	3.4	3.4
She plays rough-and-tumble games	32.0	34.9	18.9	9.1	5.1
She is popular among boys	28.2	23.0	38.5	9.2	1.1
She likes to use tools	20.6	40.0	23.4	12.6	3.4
She likes real automobiles	26.9	21.7	26.3	15.4	9.7
She is interested in sports competitions	11.5	20.1	31.6	20.1	16.7
She plays with boys at school	33.1	33.7	24.6	5.7	2.9
She imitates male characters seen on TV	77.7	18.3	4.0	0.0	0.0
She likes building forts in games	34.3	34.3	18.9	9.7	2.9
Cross-Gender Scale items					
She has stated the wish to be a boy or a man	77.1	9.7	12.6	0.6	0.0
In dress-up games, she likes to dress up in men's clothing	85.1	12.6	1.1	1.1	0.0
In playing "mother/father," "house," or "school" games, she takes the role of a boy or a man	71.3	21.8	5.7	0.6	0.6
She dresses in male clothing	72.6	14.3	8.0	3.4	1.7
She is called a "tomboy" or similar names by other people	75.4	13.7	8.6	1.1	1.1
She is good at imitating males	73.4	20.2	4.6	0.6	1.2

Note. N = 417. Values in the table are percentages.

Table 3. Frequency of Positive Rating for Gender Atypical Behavior Items in Boys and Girls

Boys (n = 486)				Girls (n = 417)			
Number of Items Scored Positively	Frequency	%	Cumulative %	Number of Items Scored Positively	Frequency	%	Cumulative %
0	2	0.4	0.4	0	0	0.0	0.0
1	25	5.1	5.5	1	9	2.0	2.0
2	46	9.5	14.9	2	11	2.6	4.6
3	46	9.5	24.4	3	22	5.3	9.9
4	49	10.0	34.3	4	23	5.6	15.5
5	53	10.9	45.3	5	22	5.3	20.8
6	60	12.4	57.7	6	38	9.1	29.9
7	58	11.9	69.7	7	53	12.6	42.5
8	46	9.5	79.1	8	33	8.0	50.6
9	19	4.0	83.1	9	36	8.6	59.2
10	27	5.5	88.6	10	29	6.9	66.1
11	19	4.0	92.5	11	41	9.8	75.9
12	10	2.0	94.5	12	31	7.5	83.3
13	7	1.5	96.0	13	17	4.0	87.4
14	7	1.5	97.5	14	26	6.3	93.7
15	7	1.5	99.0	15	10	2.4	96.1
16	5	1.0	100.0	16	2	0.5	96.6
17	0	0.0	—	17	7	1.7	98.3
18	0	0.0	—	18	7	1.7	100.0
19	0	0.0	—	—	—	—	—
20	0	0.0	—	—	—	—	—

Note. Gender atypical behaviors for boys include the 14 girl typical behavior items and 6 cross gender behavior items. Gender atypical behaviors for girls were the 12 boy typical behavior items and 6 cross gender behavior items. Item counted as positive when rating was scored “2” or higher (“seldom”, “sometimes”, “often” or “always”).

to dress up in women’s clothing.” Notably, however, there were three girl-typical activities that more than 10% of boys frequently exhibited (often or always): “prefers staying with female relatives” (22.3%), “popular among girls” (11.4%), and “likes fairy tales like Snow White” (10.4%).

In contrast, girls showed larger variability in frequency ratings for boy-typical behaviors (BTS items) and cross-gender behaviors (CGS items; see Table 2). Six out of 12 BTS items were rated as frequently (often or always) exhibited in more than 10% of girls. For example, 36.8% of the girls were reported as “often” or “always” “interested in sports competitions.” The two most frequently exhibited behaviors in the CGS were, “she has stated the wish to be a boy,” and “she dresses in male clothing,” in which 13.2% and 13.1% of girls reportedly engaged in at least sometimes. Leaving aside such outliers, the percentage of girls who often or always participated in other boy-typical activities and cross-gender behaviors was relatively low. For instance, none of the girls frequently (often or always) “imitates male characters seen on TV or in the movies,” and only 1.1% of the girls often or always “in dress-up games, likes to dress up in men’s clothing.”

A direct comparison of boys’ and girls’ participation in CGS activities (these items are equivalent in content for children of either sex) revealed that girls’ participation in most CGS were more common than boys’. For example, 10.8% of the girls were called “tomboy”

or similar names at least sometimes, and only 4.1% boys were called “sissy”⁵ or similar names at parallel frequency, $\chi^2(1, N = 903) = 13.99, p < .001$; the percentage of girls who had ever expressed the wish to be the opposite sex (i.e., scored “2” or higher) was almost five times as much as the percentage of boys with this wish (22.9% vs. 4.4%), $\chi^2(1, N = 903) = 67.54, p < .001$.

Coexistence of Different GABs

To investigate how frequently individual children displayed multiple GABs, we counted the frequency distributions for each child who scored positive to any degree, which means scored “2” (seldom) or higher on the GAB items—a calculation method used by Sandberg et al. (1993). Table 3 shows the frequency of positive ratings for GABs in boys and girls. To facilitate a closer look at the frequency distribution of multiple GABs in boys and girls, these data are presented graphically in Figure 1.

⁵The Chinese translation for sissy is *niang niang qiang* (娘娘腔), and that for tomboy is *jia xiao zi* (假小子). It should be noted that, in Chinese societies, although *jia xiao zi* still has some commendatory indications, such as extrovert or active, *niang niang qiang* was used almost exclusively in a derogatory sense. Therefore, parents may be more reluctant to report their sons being called *niang niang qiang* than to report their daughters being called *jia xiao zi*, which may, to some extent, account for the imbalance in the occurrence of this item in boys and girls.

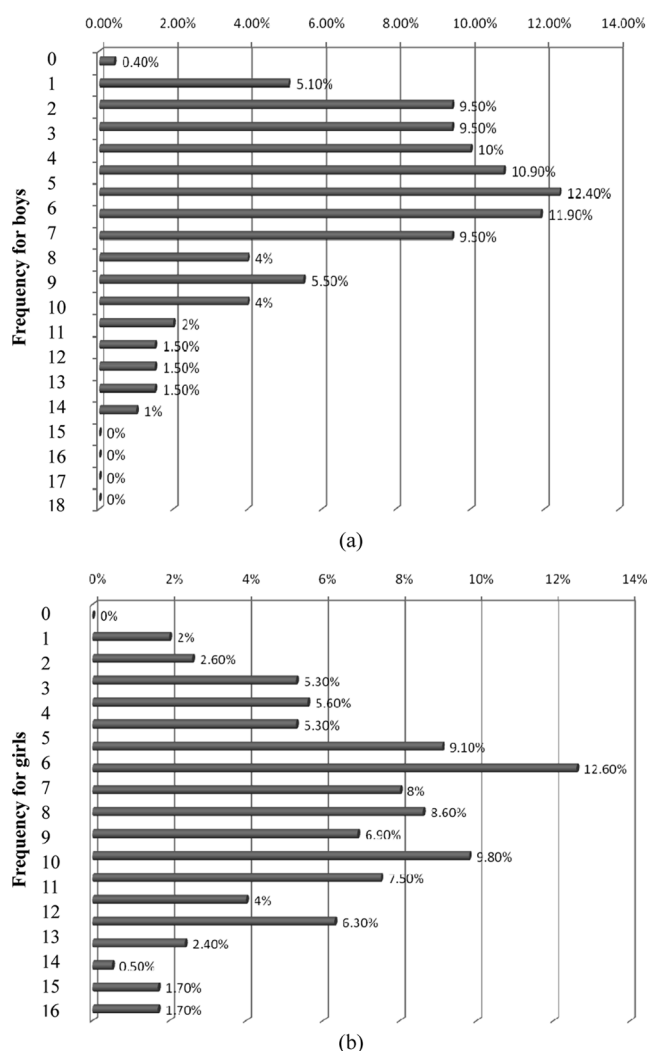


Figure 1. Frequency of positive ratings for gender-atypical behaviors in boys and girls. *Note.* Item counted as positive when rating was scored “2” or higher on a scale ranging from 1 (*never*), 2 (*seldom*), 3 (*sometimes*), 4 (*often*), to 5 (*always*).

As can be seen in Table 3 and Figure 1, the frequency distribution for boys and girls appears different. This difference is evident in measures of central tendency. First, the frequency distribution for GABs was more positively skewed for boys (skewness = 0.662) than for girls (skewness = 0.196), indicating that boys tended to display fewer GABs than girls, in general. Second, the median number of GABs for boys was six (or 30% of a total of 20 GAB items for boys), whereas the median number for girls was eight (or 44.44% of a total of 18 GAB items defined for girls). Moreover, a sex difference in the display of multiple GABs can also be seen in figures for participants scoring at the extremes of the range. Whereas 0.4% of the boys reportedly never exhibited any GABs, for girls, the figure was 0.0%. Similarly, whereas 17.9% of the boys reportedly exhibited more than 10 different GABs, for girls, the figure was 40.8%, $\chi^2(1, N = 903) = 57.07, p < .001$.

Sex and Age Differences in GAB

To discern the sex and age differences in GAB, a 2×6 MANOVA was carried out. Preliminary testing was first conducted to evaluate the assumption of normality, homogeneity of variance-covariance matrices, and linearity and multicollinearity; and the results showed no serious violations.

The combined dependent variables were significantly affected by the child’s sex, $F(3, 899) = 461.69, p < .001$ (Wilks’s $\Lambda = 0.37$; partial $\eta^2 = .63$); by the child’s age, $F(15, 2,697) = 12.82, p < .001$ (Wilks’s $\Lambda = 0.82$; partial $\eta^2 = .07$); and by the interaction between the child’s sex and age, $F(15, 2,697) = 2.83, p = .01$ (Wilks’s $\Lambda = 0.90$; partial $\eta^2 = .05$). According to Cohen’s (1988) criterion of evaluating partial η^2 (0.01, 0.06, and 0.14 representing small, medium, and large effect sizes, respectively), these results reflect a strong main effect of sex, a moderate main effect of age, and a small Sex \times Age interaction effect upon the combined dependent variables.

Further analyses were performed to evaluate the impact of each main effect on the individual dependent variables, and the results are presented in Table 4. As can be seen, first, the effects of sex on BTS and GTS scores were significant and yielded large effect sizes (partial η^2 was .34 for BTS and .51 for GTS); boys and girls scored differently on the two scales, providing evidence for the construct validity of the CPBAQ scales. Second, the effects of participants’ age were significant on BTS and GTS, yielding moderate effect sizes (partial η^2 was .06 for BTS and .11 for GTS), meaning that boys’ and girls’ scores on BTS and GTS decreased with age. Both the child’s age and sex failed to account for any statistically significant variance in CGS scores. Third, the interaction between sex and age was significantly correlated with CGS (partial $\eta^2 = .05$), yielding a relatively small effect size, and failing to significantly account for variance in BTS and GTS scores. This indicates that for CGS scores, boys and girls displayed different

Table 4. *Multivariate Analysis of Variance of the Child’s Sex, Age, and Their Interaction on Child Play Behavior and Activity Questionnaire Scores*

Independent Variable	Dependent Variable	df	F	Significance	Partial η^2
Sex	GTS	1	833.59	.00	.51
	BTS	1	540.95	.00	.34
	CGS	1	5.01	.03	.08
Age	GTS	5	19.83	.00	.11
	BTS	5	10.11	.00	.06
	CGS	5	1.92	.09	.01
Sex \times Age	GTS	1	0.63	.67	.00
	BTS	1	1.92	.09	.01
	CGS	1	8.23	.01	.05

Note. $N = 903$. GTS = Girl-Typicality Scale; BTS = Boy-Typicality Scale; CGS = Cross-Gender Scale.

developmental trends, whereas for BTS and GTS scores, the effects of age were unaffected by the child's sex. *Post hoc* comparisons of significant MANOVA differences were further conducted using Tukey's honestly significant difference test.

As can be seen in Table 5, results of post hoc comparison of mean differences indicated that (a) BTS scores for boys were higher than for girls, and scores decreased for both sexes as age increased (especially after age 10); (b) mirroring the BTS scores, GTS scores for girls were higher than for boys, and scores decreased for both sexes as age increased (again, especially after age 10); (c) for CGS scores, boys and girls did not differ significantly before the age of nine, although the difference became significant when they grew older, with girls' CGS scores increasing and boys' CGS scores slightly decreasing. To provide a more direct picture about

the developmental trend of children's gender-related behaviors, the estimated marginal means of GTS, BTS, and CGS were plotted in Figure 2(a-c).

The Effects of Being an Only Child on GAB

The possible impact of being an only child on children's GABs was examined through a 2×2 MANOVA on children's BTS, GTS, and CGS scores, with independent variables being only child status and the child's sex.

The combined dependent variables were significantly related to the child's sex, $F(3, 899) = 538.95, p < .001$ (Wilks's $\Lambda = 0.34$; partial $\eta^2 = .66$); but not to only child status, $F(3, 899) = 0.54, p > .05$ (Wilks's $\Lambda = 0.99$; partial $\eta^2 = .00$); and not to the interaction between only child status and the child's sex, $F(3, 899) = 0.57, p > .05$

Table 5. Estimated Marginal Means of Child Play Behavior and Activity Questionnaire Scores for Children in Different Age Groups

Measures	Age	Sex	n	M	SE	95% Confidence Interval	
						Lower Bound	Upper Bound
BTS	6-7	Boy	74	4.04 ^a	.09	3.90	4.28
		Girl	61	2.37 ^d	.11	2.18	2.61
	8	Boy	80	3.81 ^b	.08	3.66	3.98
		Girl	78	2.24 ^d	.09	2.06	2.40
	9	Boy	80	3.85 ^b	.08	3.69	3.96
		Girl	66	2.21 ^d	.08	2.05	2.36
	10	Boy	84	3.77 ^b	.06	3.64	3.89
		Girl	82	2.22 ^d	.08	2.09	2.38
	11	Boy	82	3.23 ^c	.07	3.10	3.38
		Girl	70	1.94 ^e	.08	1.79	2.05
	12	Boy	86	3.24 ^c	.07	3.13	3.40
		Girl	60	1.88 ^e	.06	1.72	1.91
GTS	6-7	Boy	74	2.03 ^a	.09	1.88	2.22
		Girl	61	3.52 ^d	.10	3.35	3.72
	8	Boy	80	1.95 ^{ab}	.08	1.75	2.07
		Girl	78	3.47 ^d	.09	3.29	3.67
	9	Boy	80	1.83 ^b	.08	1.67	1.97
		Girl	66	3.35 ^d	.08	3.20	3.49
	10	Boy	84	1.86 ^b	.07	1.74	1.98
		Girl	82	3.33 ^d	.10	3.11	3.56
	11	Boy	82	1.69 ^c	.06	1.56	1.76
		Girl	70	2.84 ^e	.07	2.69	2.96
	12	Boy	86	1.56 ^c	.05	1.46	1.67
		Girl	60	2.91 ^e	.06	2.80	3.08
CGS	6-7	Boy	74	1.42 ^a	.07	1.29	1.54
		Girl	61	1.41 ^a	.09	1.23	1.56
	8	Boy	80	1.29 ^b	.08	1.10	1.35
		Girl	78	1.21 ^{bc}	.09	1.07	1.36
	9	Boy	80	1.39 ^{ab}	.06	1.27	1.51
		Girl	66	1.45 ^a	.07	1.31	1.59
	10	Boy	84	1.35 ^{ab}	.08	1.18	1.49
		Girl	82	1.64 ^d	.10	1.16	1.54
	11	Boy	82	1.36 ^{ab}	.06	1.27	1.69
		Girl	70	1.71 ^d	.07	1.60	1.86
	12	Boy	86	1.22 ^c	.06	1.13	1.35
		Girl	60	1.86 ^e	.06	1.74	1.99

Note. Scale scores range from 1 to 5. For boys, $n = 486$; for girls, $n = 417$. Means that do not share superscripts differed at the $p < .017$ level in Tukey's honestly significant difference comparison. BTS = Boy-Typicality Scale; GTS = Girl-Typicality Scale; CGS = Cross-Gender Scale.

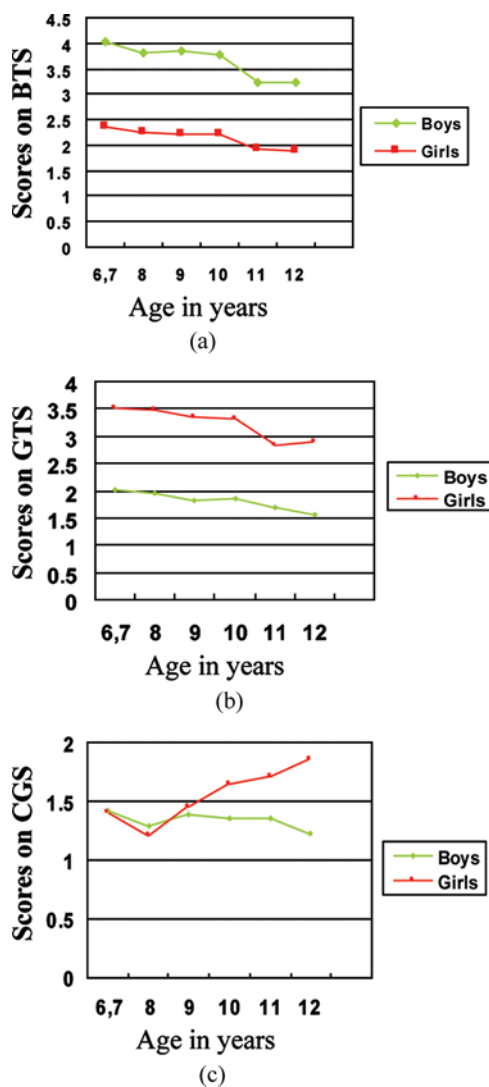


Figure 2. Estimated marginal means by age and gender for the Boy-Typicality Scale (BTS), the Girl-Typicality Scale (GTS), and the Cross-Gender Scale (CGS) (color figure available online).

(Wilks's $\Lambda = 1.00$; partial $\eta^2 = .00$). This means that there was no significant association between only child status and the combined dependent variables for a child of either sex. In other words, for both boys and girls, only children did not differ from children with siblings in terms of their gender-related behaviors.

Discussion

This study examined the prevalence of boys' and girls' GAB in a sample of Chinese elementary school students with a new instrument, the CPBAQ (Yu et al., 2008), and preliminarily investigated the effect of age, sex, and only child status on GABs. A comparison of results with findings from Western countries suggests both cross-cultural similarities and differences regarding children's GAB during middle childhood.

Prevalence of GAB in Chinese Boys and Girls

Previous U.S. studies have found that, during middle childhood, both boys and girls exhibit GABs at low rates, and girls tend to display GABs more often than do boys (e.g., Cherney & London, 2006; Sandberg et al., 1993). This study, using an instrument specifically developed for the assessment of Chinese children's GAB, indicates that Chinese school-aged boys and girls also exhibited GAB uncommonly. Consistent with U.S. research, sex plays a role in determining the frequency of children's participation in GAB, with the prevalence of GAB for girls being higher than that for boys. These results thus replicated the earlier findings and expanded their scope by relating this phenomenon with a relatively large Chinese community-based sample.

Echoing Sandberg et al.'s (1993) finding, this study revealed that, although a number of GABs were rarely displayed by participants, almost all children had a history of displaying at least one GAB at some time in their lives. Specifically, only 0.4% of the boys and none of the girls were reported as having never participated in any form of GAB; and 17.9% of the boys and 40.8% of the girls exhibited more than 10 different GABs. Furthermore, although the majority of GABs were quite uncommonly shown, some were more frequently displayed by children, especially girls. For instance, none of the boys and only 1.1% of the girls often or always liked to dress up in clothing of the opposite sex in dress-up games. Meanwhile, 22.3% of the boys often or always preferred staying with female relatives, and 36.8% of the girls were regularly interested in sports competitions, both stereotypically associated with the other gender, although obviously not to the extent that other gender-typical behaviors were. These results, in conjunction with those of Sandberg et al., suggest that large variations exist in the occurrence of particular GABs. This may be explained by the different degrees of atypicality of different GABs. Some forms of GABs, particularly CGS behaviors, may be perceived by people as more atypical and, thus, are more likely to be discouraged than other forms of GABs (e.g., for boys, "likes dressing up and makeup" is often considered more gender atypical than "plays with girls at school"). On the other hand, there might be differences in the genesis of various GABs and, therefore, the natural occurrences of these behaviors in children are different. For example, some GABs, such as "stating the wish to become the opposite sex," may be due to biological factors (e.g., see studies focusing on children with unusual physical conditions, like girls with Congenital Adrenal Hyperplasia or children with Gender Identity Disorder; Hines, 2004; Zucker & Bradley, 1995). Other GABs, such as "prefer staying with female relatives," for boys, may arise out of sociological factors (perhaps the consequence of female relatives' nurturing roles and their availability in the boys' families). These differences in the origin of GABs may, to some extent, account for the variability

of the occurrence of different GABs in children. All in all, the findings suggest the subtlety of children's GABs and the importance of further investigating different forms of GABs.

In addition, consistent with earlier reports on Western children (Sandberg & Meyer-Bahlburg, 1994; Seegmiller, 1980), Chinese girls apparently showed more types of GABs than boys, and there were more girls than boys who exhibited multiple GABs. This finding may indicate that, in different cultures, people usually tend to hold more acceptable attitudes toward the expression of GAB in girls than in boys. It is also possible that parents may be more reluctant to report their sons' GABs than to report their daughters' because behaviors and personalities associated with boys are more valued than those associated with girls. However, it should be noted that, for both boys and girls, according to parental reports, their participations in boy-typical behavior and girl-typical behavior declined with age. Given the highly valued masculine characteristics in Chinese society, it seems that parent-reported children's participation in boy-typical behaviors should not decrease if parental responses were biased by these cultural values. Moreover, our earlier study found strong correlations between parents' ratings on CPBAQ items and children's self-ratings (r s ranged from .35 to .71; Yu, 2009). All these findings provide support for the validity of parent-reported data. Despite this, there is still a need to assess children's GAB by different methods. For example, the inclusion of observational data in real-life settings based on other informants (e.g., teachers) may give a more complete picture of the characteristics of children's GABs.

Developmental Trend of GAB

Previous findings with respect to the developmental trend of children's GAB have been inconsistent, with some studies indicating that age was unrelated to the expression of most GABs for both boys and girls (Bates et al., 1973; Sandberg et al., 1993), and others showing that girls (but not boys) tended to display more cross-gender preferences and behaviors as they grew older (Cherney & London, 2006). The results of this study may provide support for Cherney and London's observation. The fact that the interaction between sex and age, but not age alone, predicted children's CGS score suggests that, although cross-gender behaviors are generally displayed consistently by children of each sex during middle childhood, boys and girls tend to have different developmental patterns. After nine years of age, girls tend to exhibit an increasing number of cross-gender behaviors, whereas boys' expression of such behaviors seems somewhat reduced. On the one hand, this result failed to provide support for the idea that (due to the great emphasis placed on normative conformity in Chinese culture and a high

self-monitoring tendency in the Chinese), both boys' and girls' gender-atypical expressions decrease as they grow older. On the other hand, the finding was in line with our previous study in which Chinese boys reported more pressure to conform to gender stereotypes than girls did (Yu, 2008a). This phenomenon may not be limited to China. Western studies have consistently found that boys who participate in feminine activities are usually viewed more negatively by parents and peers than are girls who engage in masculine activities (Blakemore, 2003; Lytton & Romney, 1991; Sandnabba & Ahlberg, 1999). In Hong Kong, Winter et al. (2008) also reported that levels of prejudice against gender-variant males is higher than against females. Therefore, a tendency to allow girls more latitude to exhibit GABs than boys may well explain these findings, including the age effects. Researchers have found that, although Chinese people still hold deeply imbedded gender stereotypes, the status of women in modern China has gone through great changes (Tao, Zheng, & Mow, 2004). Therefore, the traditional gender-related limits on girls' development may have diminished. In addition, as Smiler and Gelman (2008) suggested, from a Western perspective, masculinity has always been more narrowly defined than femininity, and gender-stereotyped restrictions on boys' development appeared to remain strong in current Western society. This may also apply in China.

This study found that, regardless of the child's sex, children's scores on the BTS and GTS decreased with age, and this pattern became increasingly evident after the age of 10, as shown in Figure 2. It may be that boys and girls, overall, move toward more gender-neutral (neither typical nor atypical) activities as they grow older, developing increased stereotype flexibility and a wider range of interests. Because no gender-neutral item was included in the CPBAQ, this possibility could not be examined in this study. Alternatively, the finding may be accounted for by the age appropriateness of the measurement. A further inspection of the content of the questionnaire revealed that the behaviors and activities listed in the GTS and BTS seemed more suitable for young children. Thus, developmental advances alone might predict a decline in participation in these activities for children of both sexes. Nationwide norms of the CPBAQ need to be established in future studies, and researchers are reminded to be cautious about applying this instrument to older children.

Only Child Status and GAB

Our findings showed that the prevalence of GABs in children with siblings did not differ from only children—a finding that applied to both boys and girls. This appears in line with findings of a number of studies indicating that only children are indistinguishable from those with siblings in various developmental areas (Falbo & Poston, 1993; Poston & Falbo, 1990).

Therefore, the hypothesis that only children would be less gender stereotyped and exhibit more GABs than non-only children was not supported by this study. It seems that the implementation of the only child policy in China has not changed Chinese parenting patterns and children's gender socialization toward lower levels of gender stereotyping.

One reason why GAB levels for only children did not differ from children with siblings may be that parents' gender-specific expectations toward their children may be uninfluenced by their children's only child status. Although research suggests that parents who have both boys and girls are likely to differentially socialize their children according to gender stereotypes (McHale et al., 2003), Chinese parents' gender-related expectations for their only children, especially for preferred males, may be strengthened by the policy because they have only one chance to be parents (regardless of whether that child is a boy or a girl). Supporting this latter possibility, studies suggest that Chinese parents' gender-specific expectations toward only children (compared to non-only children) may not have dramatically decreased over time. For example, Liu (2006) interviewed 20 Chinese parents of only children and found that, although these parents wanted their children to have the highest level of education possible, they also expected both boys and girls to develop according to gender stereotypes. Therefore, parents of only children may demand conformity to gender stereotypes as much as those of non-only children. In view of the developmental trends of girls' cross-gender behaviors observed in this study, it is also possible that parents of both only and non-only girls actually encourage their daughters to become more like boys.

It may also be that a child's gender socialization is less influenced by the presence or absence of siblings than by how many siblings there are, and whether they are younger or older. As noted earlier, Western studies examining the associations among birth order, sex composition of the siblings, and children's gender socialization have frequently indicated that differential family experiences of sisters versus brothers, and of younger versus older siblings, have distinct effects on a child's gender-role development (Bigner, 1972; Seegmiller, 1980; Weis & Worobey, 1991). For example, Stoneman, Brody, and MacKinnon (1986) found that children who had an older sibling of the opposite sex had less gender-stereotypical concepts; Bigner (1972) also reported that the presence of an older opposite-sex sibling helps children to develop androgynous gender roles. Other evidence shows that only children are somewhat similar to those of earlier birth rank and smaller families in terms of social development and achievement, possibly because these children enjoy a monopoly over parents' resources and attention and do not have to experience as much conflict and competition in sibling relationships as children with several siblings (Blake,

1989; Herrera, Zajonc, Wieczorkowska, & Cichomski, 2003; Mancillas, 2006). Unfortunately, due to the limited number and the diverse sex composition of siblings of non-only-children in this sample, we could only preliminarily compare GAB in children with and without siblings, and were unable to take all the aforementioned factors into consideration. Therefore, although our results show that only children's expressions of GAB do not differ from children with siblings, these findings should be regarded with caution.

In conclusion, we explored the prevalence and developmental patterns of GABs, and explored the effects of sex and being an only child on the expression of GABs in a sample of Chinese children. This is the first study focusing on these issues in China. It was found that, although GABs were generally exhibited by both Chinese boys and girls infrequently, most participants exhibited multiple GABs. Mirroring Western findings, Chinese girls tended to express GABs more frequently than boys, and girls' GABs increased with age, whereas boys' declined, which suggests that girls may enjoy greater permissiveness to engage in cross-gender behaviors as compared with boys, and that (as apparently is the case in Western culture) girls are more likely to be raised in a gender-neutral way than boys. The fact that only children did not differ from children with siblings in terms of their engagement in GABs may indicate that the only child policy has not greatly changed Chinese parents' gender-socialization practices, although we suggest in-depth studies are needed that further examine the relationship between children's gender typing and their family structure.

Several limitations in this study should be acknowledged. First, the study was based on a sample from one Chinese city, Hefei. Hefei is a typical middle-sized city in China, and shares many common features with other Chinese cities. However, a large number of Chinese people still live in rural areas (56% of the total population; NBSC, 2006); therefore, our sample is unlikely to be representative of the Chinese population overall; this limits the scope of generalization of our findings. GAB prevalence, as well as possible effects of demographic factors upon GAB in children living in rural settings, may be quite different from that in urban children. Therefore, more nationally representative samples of Chinese children are needed to further establish nationwide prevalence data of GABs in Chinese boys and girls. At the same time, given the well-designed sampling procedure, we believe our results probably constitute a reasonable approximation for the occurrences of GABs among Chinese urban children. Second, only parent-reported data were collected in this study. It remains unclear whether and to what extent the parents' ratings reflected their children's actual gender-role behaviors, rather than parents' own gender stereotypes. Future studies might profitably involve the use of questionnaires with teachers (or other informants)

acting as respondents, allowing comparison with parents' ratings. Finally, due to the limited sample of non-only children, we were not able to examine the possible roles of birth order and family size in determining children's gender-role adoption. We believe these complex effects on children's expression of GABs should be further examined in future research—for example, studies conducted in rural communities in which the only child policy is less strictly enforced than in urban districts.

Despite the aforementioned limitations, we believe that our findings have provided valuable information for understanding Chinese children's gender-role development, and have accumulated useful data for the purpose of cross-cultural comparison.

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