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Are Parents' Gender Schemas Related to Their Children's Gender-Related Cognitions? A Meta-Analysis

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Meta-analyses were conducted of 43 articles (with 48 different samples) investigating the relationship between parents' gender schemas and their offspring's gender-related cognitions. The parents' offspring ranged in age from infancy to early adulthood. Offspring measures included gender self-concept, gender attitudes toward others, gender-related interests, and occupational attitudes. Overall, a small but meaningful effect size ($r = .16$) indicated a significant and positive correlation between parent gender schemas and offspring measures. Specifically, parents with more traditional gender schemas were more likely than parents with more nontraditional schemas to have offspring with gender-typed cognitions about themselves or others. In addition, the magnitudes of observed effect sizes were influenced by particular moderator variables, including type of parent gender schema (gender self-concept vs. gender attitudes toward others), type of offspring gender-related cognitions, parent gender, offspring gender, offspring age, and publication characteristics. The results are cautiously interpreted as suggesting a possible influence of parents on the development of their children's gender-related thinking.

One of the challenges for a developmental psychology of gender is to identify ways in which gender inequities operating at the macrosystem level are transmitted in particular microsystems during children's development (Leaper, 2000b, 2002). Gender-related variations in child outcomes may be partly due to corresponding variations in children's experiences in particular microsystems. A potentially important context for the construction and the socialization of gender is the family (see Leaper, 2002).

Most of the focus among studies looking at parental gender typing has been on the parents' *behavior*. The related questions have been whether or not parents treat daughters and sons differently (see Leaper, Anderson, & Sanders, 1998; Lytton & Romney, 1991) and whether mothers and fathers act differently with their children (see Gleason, 1987; Leaper et al., 1998). Many gender-typed behavior differences, however, may result more from the demand characteristics of the observed activity settings than from individual characteristics (see Leaper, 2000b; Leaper et al., 1998). Relatively fewer studies have been concerned with whether or not parents' gender schemas matter in children's gender development. Yet there is a large body of research that argues for the importance of gender schemas in guiding behavior (e.g., see Martin, 2000).

Gender self-concepts, stereotypes, and attitudes are potentially useful proxies of cultural members' internalization of the larger society's values, beliefs, and practices. However, there is no single way that individuals view gender—especially since the advent of the modern women's movement during the 1970s. There has been a major transformation in women's and men's roles and relative status in American society. It is now normative for women to work outside of the home, and although significant imbalances still exist, it has become more common to find women in positions of power in business and government. Changes in men's roles have been comparatively less dramatic, but it has become somewhat more likely during the last quarter century for men to help out in the home. Presumably these social changes have led to changes in women's and men's gender schemas—that is, in how they think about themselves and each other in terms of gender. Moreover, with greater variation among women and men in gender self-concepts and attitudes, we may wonder if there is a corresponding variation in their children's own thinking about gender. Parents who are less gender stereotyped in their views may be less likely to model and encourage gender-typed behaviors themselves (Barry, 1980).

An alternative possibility is that parents' gender schemas have no detectable influence on their children. During the last few years, there has been a lively debate in the field over the amount of impact that parents may have in the socialization of their children in general (cf. Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Harris, 1998, 2000; Vandell, 2000) as well as in the gender-typing process in particular (cf. Leaper, 2002; Lytton & Romney, 1991; Maccoby, 1998). Although our study addresses the possible influence of parents' gender-schematic thinking on their children, the findings that are reviewed are correlations, and therefore the causal connection between parents and their offspring cannot be tested. Finding a possible association between parents'

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and children's thinking is a first step, however, toward revealing patterns of influence. Therefore, with the present meta-analysis we sought to test if there was a detectable relation between parents' and their children's gender-related cognitions.

Beyond testing for an overall correlation between parents' and their children's gender-related thinking, the meta-analysis also tested for the possible moderating influence of other factors on this association. As described below, the moderators that we examined included the type of gender schema that was measured, the parent's gender, the offspring's gender, the offspring's age level, and various publication characteristics.

Gender-Related Cognitions

There has been some debate in the area of gender schema theory as to whether people's gender self-concepts and their gender attitudes about others form a coherent gender schema. Bem (1993) proposed a direct connection between how people view themselves and how they view others. Although there has been some supporting research (Frable, 1989), most researchers now argue that people do not necessarily have a single, coherent gender schema that encompasses their beliefs about gender for themselves and for others (Bigler, 1997; Bigler, Liben, Lobliner, & Yekel, 2002; Cross & Markus, 1993; Katz & Ksansnak, 1994; Martin, 1993; Spence & Buckner, 1995). From the latter perspective, gender schemas are multidimensional. In support of this thesis, Bigler et al. (2002) found that children's and adults' views of gender roles for others did not correlate with the attributes and preferences that they endorsed for themselves. For this reason, the present meta-analysis investigated whether there were differences in the relations between (a) parents' gender schemas about themselves and others and (b) measures of offsprings' gender-related cognitions. In other words, we distinguished between how people perceived themselves in terms of gender (i.e., gender self-concept) and people's attitudes about others (i.e., gender stereotypes and beliefs).

We sought to include in the meta-analysis the largest number of studies possible that considered parents' gender schemas as predictors of their children's gender-related thinking. Besides offspring's gender self-concepts and gender attitudes about others, other measures that we investigated were offsprings' gender-related interests and work-related beliefs. These are different aspects of the network of cognitive associations that guide children's (and later adults') perceptions and understandings of the world in terms of gender. We hypothesized a positive correlation between parents' and their offsprings' gender schemas. In other words, children with gender-typed cognitions were expected to be more likely to have parents with traditional gender schemas than parents with nontraditional gender schemas.

Other Potential Moderators

In addition to examining the types of parent and offspring gender schemas as possible moderators, we identified six other factors for consideration on the basis of our review of the literature. They included three participant characteristics (parent gender, offspring gender, and offspring age) and three publication characteristics (the first author's gender, year of publication, and publication source). The potential significance of each of these factors is reviewed below.

Parent Gender

Prior studies indicate that mothers and fathers can have different influences on their children. Fathers are generally more concerned with gender-typing in their children than are mothers (Siegal, 1987). Consequently, whether or not fathers have traditional gender schemas may account for more variation among children. In contrast, there are some offspring outcomes for which better prediction may come from mothers' than from fathers' gender schemas. For example, gender-related variations in children's own academic expectancies may be more strongly associated with mothers' beliefs than with fathers' beliefs regarding the child's achievement (Frome & Eccles, 1998; Parsons, Adler, & Kaczala, 1982). Part of the explanation may be that fathers usually spend less time with children than do mothers (Bailey, 1994). Moreover, only modest increases in fathers' help with child care have occurred in recent years (Coltrane, 2000). Thus, although fathers may demonstrate more concern with gender typing, mothers may have more ongoing involvement with their children. In lieu of the possible difference in mothers' and fathers' impact, we compared mother–child and father–child correlations.

Offspring Gender

We also examined differences based on offspring gender. Prior meta-analyses (Leaper et al., 1998; Lytton & Romney, 1991) and narrative reviews (Huston, 1983; Leaper, 2002; Ruble & Martin, 1998) suggested that parents may treat girls and boy differently. Thus, child gender was examined as a moderator. Additionally, in their review, Russell and Saebel (1997) suggested that mother–daughter, mother–son, father–daughter, and father–son dyads may function differently. Therefore, when possible, we contrasted mother–daughter pairings with father–daughter pairings as well as mother–son pairings with father–son pairings.

Offspring Age

Parents' influence on their offspring may differ depending on the age of the child. First, parents' influence may not be detected until around 5–7 years of age, when children have developed sufficient cognitive capacity to form complex notions of gender (Bigler & Liben, 1990, 1992; Martin, 2000). Parents' influence on their offspring may subsequently decrease during middle childhood and early adolescence as children increasingly become embedded within the peer culture and concerned with social norms (Stoddart & Turiel, 1985). However, late adolescence and early adulthood may be a time when greater flexibility in gender self-concepts and attitudes is possible (Eccles, 1987; Leaper et al., 1989).

The final set of moderators in the meta-analysis included different publication characteristics. As described next, they included the first author's gender, the publication source, and the year of the study.

The First Author's Gender

Author gender has sometimes appeared to moderate the size of observed gender differences in previous meta-analyses (e.g., Eagly

& Carli, 1981; Leaper et al., 1998). It may be that author bias may influence either how a study is carried out or how findings are analyzed in ways that either increase or decrease the likelihood of identifying gender effects. Given that the present meta-analysis was concerned with gender-related phenomena, the first author's gender was tested as a possible moderator of effect size.

Publication Source

The publication source was used as a proxy of study quality. A distinction was made between studies published in top-tier journals and other sources. In addition, to address the file-drawer problem, we also compared published research with unpublished research. The file-drawer problem refers to the suspicion that studies with contradictory or null results are less likely to be published than studies with significant results in the expected direction. Lipsey and Wilson (1993) found that unpublished studies had effect sizes one third the size of those in published studies. However, Rosenthal (1991) reported that many unpublished studies have significant results in the expected direction. Nevertheless, to examine the possibility of a publication bias, we compared published and nonpublished reports.

Year of Publication

With increases in gender equality in American society over the years, there may be more variation across families in parents' gender schemas. If there is more variation, then identifying a link between parent gender schemas and child outcomes may be more likely in recent years. However, another trend is that children are spending less time with their mothers and more time in day care or extracurricular activities as women have increasingly become part of the paid workforce. Thus, to the extent that nonfamily members may be having more influence on children, the strength of association between parent gender schemas and child outcomes may be decreasing over time.

Method

Studies

The majority of the articles were identified through a PsycINFO computerized literature search. In addition, *Dissertation Abstracts*, ERIC, and the programs from the two most recent Society for Research in Child Development meetings (1999 and 2001) were searched for relevant studies. The selection criterion was that studies had to test directly for relations between parents' gender schemas and some type of child outcome measure. In all selected studies, parents' gender schemas were measured through self-report measures.

Some potentially relevant studies were not included in the analyses. First, studies were excluded if they used clinically atypical populations. Second, studies were not used if the parents' gender schemas were inferred indirectly through interviews or behavioral observations (e.g., Updegraff, McHale, & Crouter, 1996). Third, articles in which parents did not themselves report their attitudes were not used. Similarly, we did not include studies in which child measures were taken from parent observations or reports. However, before discarding any articles, we contacted authors for information that could be included in the meta-analysis. Thirteen authors were contacted about 15 studies. Eight of the 13 responded with information about 10 studies (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Fulcher, Sutfin, & Patterson, 2001; Gutman & Eccles, 1999; Perry & Morgan, 1993; Rainey & Borders, 1997; A. E. Smith, Jussim, & Eccles, 1999; Sokal & Seifert, 2001; Trautner, 1996; Turner & Gervai, 1995).

As noted later, we compared top-ranked journals with studies from other sources. Top-ranked journals included any American Psychological Association (APA) journals (e.g., *Developmental Psychology*) or Society for Research in Child Development (SRCD) journals (e.g., *Child Development*). Although excellent articles are published elsewhere, articles in these journals are consistently considered to be of high quality.

Participants

A total of 10,193 participants and their parents were included in the meta-analysis. With only one exception (Sagara & Kang, 1998), all of the studies were conducted in North America, Israel, or Europe. Sagara and Kang's (1998) investigation was conducted in Japan and Korea. Most of the participants were of European or European American descent. Children's ages ranged from 2 years 3 months to 37 years, with an unweighted mean of 10 years 4 months ($SD = 5.56$). For the studies that reported it, parents' ages ranged from 32 to 46 years, with an unweighted mean of 38.5 years ($SD = 4.31$).

Children's mean age was used when a study provided this information. If only an age range was listed, the midpoint of the range was used. When results from two or more different age groups were reported (e.g., Meyer, 1980), the different age groups were treated as independent samples.

Parent Gender Schemas and Child Outcome Measures

Measures of Parent Gender Schemas

Measures of parents' gender schemas about the self or about others were tested as predictor variables. Parents' gender schemas about the self typically were based on either the Spence and Helmreich Personal Attributes Scale (PAQ) or the Bem Sex Role Inventory (BSRI). These paper-and-pencil measures ask participants to endorse the gender-stereotyped adjectives that describe themselves. Measures of parents' gender schemas about others generally referred to attitudes toward women's and men's relative rights, roles, and responsibilities. Many were based on the Spence and Helmreich Attitudes Toward Women Scale (AWS). Measures also included an Attitudes Toward Feminism scale (Bliss, 1988), a Physical Stereotyping Index (Repetti, 1984), beliefs about girls' and boys' abilities in math (Gutman & Eccles, 1999), and other attitude measures.

Child Outcome Measures

Four categories of child outcome measures were assessed. They included (a) children's gender schemas for self (e.g., child versions of the PAQ or the BSRI; gender identity measures), (b) children's gender schemas for others (e.g., Sex Role Learning Inventory; gender labeling; Physical Stereotyping Index), (c) gender-related interests and preferences, and (d) work-related attitudes and interests.[1]

We initially sought to include measures of children's social behavior (e.g., enactment of gender-typed behaviors) as a type of offspring outcome measure. However, there were only three studies (Baumrind, 1982; Brooks-Gunn, 1986; Turner & Gervai, 1995) that looked at the relations between parent gender schema measures and child behavior. Because of

[1] Signorella, Bigler, and Liben (1993) found a difference between measures testing developmental knowledge (i.e., forced-choice items) and those testing flexibility (i.e., non-forced-choice items). However, many of the studies in the present meta-analysis did not include enough information about the measures to accurately divide them into those testing endorsement and those testing knowledge. Thus, these two groups were collapsed in the present study.

the small number of studies and the variety of measures used, social behavior was dropped as a child outcome measure in the analyses.

Variables Coded From Studies as Possible Moderators

Eight study variables were examined as possible moderators of the strength of relation between parent gender schemas and child outcomes: (a) type of parent gender schema measure, (b) type of child gender cognition measure, (c) parent gender, (d) offspring gender, (e) offspring age, (f) first author's gender, (g) publication source (top-tier journal, other journals, dissertations, or other unpublished sources [e.g., conference papers]), and (h) publication year. The two of us compared our levels of agreement for coding the studies into these categories. Excellent reliability was achieved, with kappas ranging from .93 to 1.00. Disagreements were resolved through discussion.

Table 1 summarizes the characteristics of each of the samples. Information is provided on measurements for parent and offspring variables, moderator variables, sample sizes, and statistical values. Table 2 displays

Table 1
Independent Samples Included in the Meta-Analyses

Authors	*N*	Effect size (*r*)	Publication source[a]	Author gender[b]	Parent type[c]	Parent predictor[d]	Offspring age (months)	Offspring type[e]	Offspring outcome[f]
Atkinson (1983)	334	.12	3	M	MF	S	231	DS	S
Barak et al. (1991)	99	−.08	2	W	MF	A	72	DS	W
Barry (1980)	96	−.05	2	M	MF	A	48	DS	I
Bennett (1979)	105	−.08	3	M	MF	S	51	DS	S
Blee & Tickamyer (1986)	730	.15	2	W	M	A	330	D	A, W
Bliss (1988)	24	.12	2	W	MF	A	60	DS	A, S
Bollman et al. (1988)	181	.17	2	M	MF	A	156	DS	A
Dambrot et al. (1984)	43	.34	1	W	M	A	228	D	A
Eccles et al. (1993)	494	−.01	1	W	MF	A	96	DS	A
Ex & Janssens (1998)	165	.33	2	W	M	A	228	D	A
Fagot & Leinbach (1989)	48	.40	1	W	MF	S, A	27	DS	A
Fagot et al. (1992)	60	.30	1	W	M	S, A	30	DS	A
Fulcher et al. (2001)	61	.07	4	W	M	S, A	63	DS	A
Gendler (1985)	100	−.02	3	W	MF	A	81	DS	W, A
Gendler (1985)	100	.19	3	W	MF	A	115	DS	W, A
Gutman & Eccles (1999)	1372	.15	1	W	MF	A	144	DS	A
Hoffman & Kloska (1995)	289	.19	2	W	MF	A	102	DS	A
Katz (1980)	175	.02	4	W	MF	S, A	90	DS	A, I
Klein & Shulman (1981)	71	.47	2	M	MF	S	162	DS	S
McHale et al. (1999)	200	.19	1	W	MF	A	126	DS	A
Meyer (1980)	64	.33	1	W	M	A	132	D	W, I, A
Meyer (1980)	63	.06	1	W	M	A	84	D	I
Nelson & Keith (1990)	300	.05	2	W	MF	A	138	DS	A
Pellett & Ignico (1993)	357	.24	2	W	MF	A	96	DS	A
Perloff (1977)	78	.14	2	M	MF	A	132	DS	A
Perry & Morgan (1993)	35	−.02	4	W	MF	S, A	65	DS	A
Quiñones et al. (1999)	127	.28	1	W	MF	A	264	D	A
Rainey & Borders (1997)	276	.14	1	W	M	S	156	D	S, W, A
Repetti (1984)	35	.27	2	W	MF	S	78	DS	A
Rodgon (1977)	52	.38	4	W	M	A	108	DS	A
Rollins & White (1982)	25	.52	2	W	M	A	144	D	A
Rollins & White (1982)	25	.66	2	W	M	A	144	D	A
Rollins & White (1982)	25	.36	2	W	M	A	144	D	A
Sagara & Kang (1998)	214	.21	2	W	MF	A	132	DS	A
Sagara & Kang (1998)	220	.19	2	W	MF	A	132	DS	A
Schear (1975)	52	.14	3	W	MF	A	54	DS	I, A
M. D. Smith & Self (1980)	74	.36	2	M	M	A	216	D	A
A. E. Smith et al. (1999)	1558	.09	1	W	MF	A	144	DS	S, A
Sokal & Seifert (2001)	176	.16	4	W	MF	S	84	DS	I
Spears (1987)	31	−.07	3	W	MF	S, A	48	DS	A
Stephens & Day (1979)	54	.36	2	W	F	S	210	D	S
Thornton et al. (1983)	916	.36	2	M	M	A	216	DS	A
Trautner (1996)	38	.22	4	M	MF	A	120	DS	S, A
Turner & Gervai (1995)	149	.04	1	W	MF	S	48	DS	A, I
Vogelson (1979)	68	.06	3	W	MF	A	114	S	I, A, W
Weeks et al. (1984)	46	.41	2	M	M	A	192	D	A
Weinraub et al. (1984)	71	.04	1	W	MF	S, A	31	DS	S, A
Weisner & Wilson-Mitchell (1990)	132	.23	1	M	M	A	72	DS	A

[a] 1 = top-tier journal; 2 = second-tier journal or book chapter; 3 = dissertation; 4 = other unpublished study. [b] W = woman first author; M = man first author. [c] M = mother; F = father; MF = mother and father. [d] S = self gender schema; A = gender attitudes about others. [e] D = daughter; S = son; DS = daughter and son. [f] S = gender schema for self; A = gender attitudes toward others; I = gender-related interests and preferences; W = work-related attitudes.

Table 2
Stem-and-Leaf Display of the Correlations Found Between Parent Gender Schemas and Offspring's Outcome Measures

Stem	Leaf
.9	
.8	
.7	
.6	6
.5	2
.4	0, 1, 7
.3	0, 3, 3, 4, 6, 6, 6, 6, 8
.2	1, 2, 4, 7, 8
.1	2, 2, 3, 4, 4, 4, 5, 5, 6, 7, 9, 9, 9, 9
.0	2, 4, 4, 5, 6, 6, 7, 9
−.0	1, 2, 2, 5, 7, 8, 8

a stem-and-leaf figure that represents the effect sizes (r) at the independent sample level. A stem-and-leaf figure graphically represents results by visually displaying the number of effects at each interval. Table 2 indicates that effect sizes ranged from −.08 to .66 with a modal interval of effect sizes in the .1 range.

To address the file-drawer problem, we compared published research with unpublished research. Studies with contradictory or null results may be less likely to be published than studies with significant results in the expected direction. However, Rosenthal (1991) and Lipsey and Wilson (1993) reported that many unpublished studies have significant results in the expected direction. Therefore, we compared dissertations and unpublished studies from ERIC with published work in top-tier and other journals to examine the possibility of a publishing bias.

Computation and Analysis of Effect Sizes

Index of Effect Size

We used the correlation coefficient as the measure of effect size. According to Cohen (1988), correlations are "small" if r is about .10, "medium" if r is about .30, and "large" if r is about .50. A correlation below .10 is considered negligible.

Fixed Effects Model

The present meta-analysis used a fixed effects model (Rosenthal, 1991), which assumes that the effect is consistent in all populations studied and that only within-study variation influences the uncertainty of results.

Effect Sizes

Pearson correlations were used as the measure of effect size, which represents the relation between the two measures. Johnson's (1989, 1993) DSTAT software was used for calculation of the effect sizes. Most of the relevant articles used correlations to compute the relations between parents' gender attitudes and offspring's outcome measures. However, many studies indicating a statistically nonsignificant relationship did not provide a probability value. In this case, an r value of .00 was assigned. A total of 131 tests from four studies were given an r value of .00. This strategy for dealing with incomplete information provides a conservative estimate (Rosenthal, 1991).

Homogeneity of Effect Size

The homogeneity of the effect size was computed by Q_w (see Johnson, 1989; Lipsey & Wilson, 1993; Rosenthal, 1991). When the sample is found to be significantly heterogeneous, the variability is likely to reflect more than sampling error only (Cooper, 1989). To achieve homogeneity, we performed trimming and blocking (see Rosenthal, 1991). Trimming refers to the removal of outliers, whereas blocking refers to grouping the effect sizes on the basis of a shared moderator (e.g., gender self-concept vs. attitudes).

Post Hoc Tests

After grouping the effect sizes by a particular moderator, we computed chi-square tests to determine if the effect sizes between the groups were significantly different from one another. When comparing multiple levels of a moderator, the DSTAT (Johnson, 1989) program increases the degrees of freedom in the chi-square by 1 for each level of moderator in order to control for multiple comparisons in the post hoc probability values. For example, when comparing girl-only, boy-only, and combined samples, the post hoc chi-square uses 2 degrees of freedom. Post hoc p values were used to determine statistical significance in all analyses.

Units of Analysis and Data Sets

Units of Analysis

For the unit of analysis, we separately considered tests, independent samples, and publications. First, as a unit of analysis, *test* refers to the counting of each individual statistical test as an independent contribution. Articles that run many tests have more weight in the overall computation of the effect than those that run fewer statistics. Second, the *independent sample* as a unit of analysis refers to separately analyzed groups consisting of different participants. For example, Sagara and Kang (1998) reported separate statistics for Japanese and Korean families. These two groups therefore constituted independent samples. Third, *publication* as a unit of analysis refers to the effect averaged across all tests and all samples for a given report (including dissertations and unpublished reports). There were 692 separate tests and 48 separate samples in the 43 publications. Among these different units of analysis, independent samples were selected as the primary unit of analysis. Independent samples are more numerous than studies but produce nearly equivalent results when effect sizes are weighted by sample sizes. Also, when study effects can be assumed or shown to be minimal, using the independent sample as the unit of analysis retains important information for moderator analyses with minimal violation of the assumption of independence.

Separate Data Sets According to Offspring and Parent Gender

To investigate whether offspring gender was a moderator, one set of analyses was based on separate independent samples for girls and boys (or adult female and male offspring) whenever studies reported separate effects for daughters and sons. Because these studies were based on the use of female and male offspring from different families, the two samples (daughters and sons) were independent. Including studies that collapsed child gender, there were a total of 67 separate effects for this data set.

The same procedure was repeated for parent gender. However, because mothers and fathers were typically derived from the same family, and thus their measures correlated with the same child, mother and father samples were not usually independent. Despite the lack of independence, tests were conducted to determine whether mothers' or fathers' cognitions were more strongly related to children's outcome measures. Including studies that collapsed parent gender, there were a total of 73 separate effects for this data set.

Separate Data Sets for Different Parent Predictors

To test each type of parent predictor, we created one data set for studies that used parents' gender schemas about self and another data set for

Table 3
Parent Gender Schema Effects by Unit of Analysis for Untrimmed and Trimmed Tests

Type of analysis	*k*	Fail-safe *k*	*N*	*r*	95% CI	*p*	Q_w
Untrimmed samples							
Sample							
Overall	48	133	10,193	.16	.14–.17	.00	285.86**
Mothers and fathers	73	139	12,145	.16	.14–.17	.00	328.45**
Daughters and sons	67	119	10,193	.16	.14–.17	.00	292.93**
Publication							
Overall	43	140	10,193	.16	.14–.17	.00	274.07**
Test							
Overall	692	0	49,580	.10	.10–.11	.00	2747.68**
Trimmed samples							
Sample							
Overall	39	83	6,664	.16	.14–.18	.00	95.76**
Mothers and fathers	59	65	7,947	.15	.13–.16	.00	100.43**
Daughters and sons	52	55	6,963	.15	.13–.16	.00	76.15*
Publication							
Overall	35	81	6,710	.15	.14–.17	.00	84.77**
Test							
Overall	554	0	34,230	.07	.06–.08	.00	799.71**

Note. Confidence intervals (CIs), *p* values, and heterogeneity tests are based on weighted effect sizes. Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented.
* $p < .05$. ** $p < .01$.

studies that examined parents' gender schemas about others. We allowed for more than one type of parent predictor type per study, but we averaged multiple measures of the same predictor type. There were a total of 53 separate effects for this data set.

Separate Data Sets for Different Offspring Outcome Measures

To examine each offspring outcome measure separately, we created different data sets for each measure. Some studies included effects for more than one type of outcome measure. Although we allowed for more than one outcome per study, we averaged multiple measures of the same outcome. There were a total of 66 separate effects for this data set.

Results

A summary of parent gender schema effects by unit of analysis (sample, publication, and test) is presented in Table 3. Information is provided for trimmed and untrimmed analyses. The total units of analysis (*k*), the fail-safe *k*, and the total *N* are indicated. The fail-safe *k*, which was calculated to address issues of sampling bias, is an estimate of the number of studies averaging null results that would be needed to reduce the relationship to nonsignificance.

Overall Effects

Independent Sample as Unit of Analysis

The mean weighted correlation across the 43 independent samples was .16 (95% confidence interval [CI] = .14/.17).[2] Similarly, samples computed separately for daughters and sons had a mean weighted correlation of .16 (95% CI = .14/.17), and samples computed separately for mothers and fathers had a mean weighted correlation of .16 (95% CI = .14/.17). All of the correlations were statistically significant ($p < .01$) with small but meaningful effect sizes (Cohen, 1988).

As can be seen in Table 3, the fail-safe *k* ranged from 140 studies for the data set using publication as the unit of analysis to 133 for the data set using independent sample as the unit of analysis. Therefore, it is unlikely that any unretrieved studies would alter the overall findings.

When independent sample was used as the unit of analysis, the overall mean weighted effect size was significant, with a positive relationship between parents' gender schemas and children's outcome measures. However, homogeneity analyses indicated that the effects were highly heterogeneous, $Q_w(47) = 285.86$, $p < .01$. The large value suggests that the variability in results is not due to sampling error alone (Rosenthal, 1991). As can be seen in Table 3, elimination of 20% of the outliers (i.e., trimming) did not result in homogeneity, $Q_w(38) = 95.76$, $p < .01$. Removal of these outliers resulted in a weighted mean effect size that was equal to that for the untrimmed sample, $r = .16$. Thus, blocking was used to try to reduce heterogeneity of variance (as described in the *Moderators* section below).

[2] Besides averaging across tests and independent samples, an additional analysis used *lab* as the unit by averaging across studies carried out by the same investigator(s). Lab effects are a potential confound in meta-analytic reviews. Rosenthal (1991) argued that results from the same lab are not totally independent because studies conducted by researchers within a lab tend to be more similar to each other than those conducted in different labs. Therefore, a mean weighted effect was also calculated after collapsing studies from the same investigator into one study. The mean weighted effect size across 43 studies from 40 labs was .16. Thus, one can see that lab effects did not bias the results in the present meta-analysis.

Table 4
Parent Gender Schema Effects for Measures of Self Schemas Versus Schemas About Others

Type of analysis	*k*	Fail-safe *k*	*N*	*r*	95% CI	*p*	Q_w
			Untrimmed samples				
Overall	53	129	10,716	.15	.14–.17	.00	301.41**
Self vs. others							
Self	15	0	2,248	$.08_a$	.02–.05	.00	58.73**
Others	38	145	8,468	$.17_b$	.16–.19	.00	212.74**
			Trimmed samples				
Overall	43	82	7,012	.16	.14–.17	.00	102.79**
Self vs. others							
Self	12	0	1,563	.08	.02–.14	.00	17.54
Others	31	87	5,309	.18	.16–.19	.00	73.50**

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p < .05$). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. CI = confidence interval.
** $p < .01$.

Publication as Unit of Analysis

When effect sizes were averaged across tests and independent samples for a given study, the mean weighted effect size across 43 studies was .16 (95% CI = .14/.17).

Moderators

Beyond providing an understanding of overall effects combined across samples, one of the main advantages of a meta-analysis is the ability to examine moderators of the relationships. In particular, we tested for the potential influences of type of parent gender schema, parent gender, type of offspring outcome measure, offspring gender, offspring age, and publication characteristics (first-author gender, publication source, and publication year). Each of these moderators was analyzed using independent samples as the units of analysis.

The results are summarized in Tables 3–12. Each table presents weighted and unweighted effect sizes with separate results using either test, independent sample, or study as the unit of analysis. Furthermore, both untrimmed and trimmed results are presented. Trimmed results reflect the removal of approximately 20% of the outliers. When homogeneity of variance was not achieved by trimming the outliers, we blocked by theoretical and methodological moderators. After blocking files, we again trimmed the outliers to achieve homogeneity of variance. For example, we blocked the parent outcome file by looking at self versus other measures separately. However, blocking did not achieve homogeneity of variance. After trimming, homogeneity of variance was attained for self measures.

Parent Measures

The results associated with tests for type of parent gender schema and for parent gender are summarized in Tables 4 and 5, respectively.

Type of parent gender schema. There was an overall effect for the measure of gender schema, $Q_B(1) = 29.94$, $p < .01$. As shown in Table 4, parents' gender schemas about others ($r = .17$) were more strongly related to offspring outcome measures than were parents' gender schemas about themselves ($r = .08$).

Parent gender. As can be seen in Table 5, there was a significant difference in effect sizes between samples based on mothers only ($r = .19$), fathers only ($r = .14$), and mothers and fathers combined ($r = .12$), $Q_B(2) = 31.09$, $p < .01$. In particular, effect sizes for samples based on mothers only were significantly greater than those from samples based on fathers only or on combined samples. When studies reported effect sizes for mothers-only versus fathers-only samples, we used the effect sizes to conduct a paired *t* test on the values. For the 27 studies that reported separate effects, there was no difference in the effect sizes between mother-only ($M = .11$, $SD = .11$) and father-only ($M = .12$, $SD = .14$) samples, $t(25) = -.64$, *ns*.

We do not report parent gender effects separately for each type of parent gender schema or for each type of child outcome. Unfortunately, there were too few studies to break down the analyses at these levels.

Offspring Measures

The findings from the meta-analyses testing for type of offspring outcome measure, offspring gender, offspring gender by parent gender, and offspring age level as moderators are presented in Tables 6–9, respectively.

Type of outcome measure. The four outcome measures were significantly different, $Q_B(3) = 53.50$, $p < .01$. The correlation between parent gender schemas and offspring outcome was significantly stronger for children's work-related attitudes ($r = .19$) and gender schemas about others ($r = .17$) than for their gender schemas about self ($r = .12$).[3] In addition, the correlations associated with all three of these measures were significantly stronger than the correlation associated with children's gender-related interests ($r = .05$). The reader should note that the mean effect sizes for some of these outcome variables were based on only a few

[3] We initially sought to compare measures of gender labeling ($r = .16$) with other measures of gender understanding or attitudes. However, given that there were only 3 studies looking at labeling and the similarity in the overall correlation with other measures, labeling was included in the attitudes toward others category.

Table 5
Parent Gender Schema Effects for Mothers Only, for Fathers Only, and for Mothers and Fathers Combined

Type of analysis	k	Fail-safe k	N	r	95% CI	p	Q_w
Untrimmed samples							
Mothers	41	141	9,504	$.19_a$	.18–.21	.00	261.42**
Fathers	27	8	2,641	$.13_b$	.10–.16	.00	62.31**
Combined	5	35	3,852	$.12_b$	.09–.14	.00	53.98**
Trimmed samples							
Mothers	34	72	6,042	.16	.14–.17	.00	81.31**
Fathers	23	0	2,204	.11	.08–.14	.00	31.53
Combined	4	31	3,781	.11	.09–.13	.00	32.27**

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p < .05$). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. CI = confidence interval.
** $p < .01$.

studies (see Table 6). The variable with the fewest samples was children's work-related interests ($k = 7$, $N = 1{,}304$).

Offspring gender. The effect sizes computed between girls-only, boys-only, and combined samples were not significantly different from each other, $Q_B(2) = 3.13$, *ns*. When studies reported effect sizes for daughters-only versus sons-only samples, we used the effect sizes to conduct a paired *t* test on the values. For the 19 studies that reported separate effects, there was no difference in the effect sizes between daughter-only ($M = .11$, $SD = .13$) and son-only ($M = .10$, $SD = .16$) samples, $t(17) = .20$, *ns*.

We then looked at girls and boys separately with mothers and fathers, as can be seen in Table 8. Correlations were stronger for girls with mothers ($r = .23$) than for girls with fathers ($r = .06$), $\chi^2(1, N = 21) = 12.51$, $p < .01$. Similarly, correlations were stronger for boys with mothers ($r = .25$) than for boys with fathers ($r = .12$), $\chi^2(1, N = 9) = 6.41$, $p < .01$.

Child gender effects are not presented separately for each type of parent gender schema or for each type of child outcome. There were not enough studies to consider these potential interaction effects.

Offspring age. Correlations between parent and child measures were broken down by offspring age level and are summarized in Table 9. The only age group associated with a nonsignificant and negligible effect size was the 3–5-year olds. In addition, significant differences were found between the different age groups, $Q_B(5) = 99.34$, $p < .01$. Correlations were stronger for 18–21-year-old college students ($r = .29$) than for either 1–2-year olds ($r = .16$), 3–5-year-olds ($r = .01$), 6–11-year-olds ($r = .13$), 12–17-year-olds ($r = .14$), or adults older than 22 years ($r = .15$). Conversely, correlations were significantly smaller for 3–5-year-olds ($r = .01$) than for 6–11-year-olds ($r = .13$), 12–17-year-olds ($r = .14$), or adults older than 22 years ($r = .15$).[4]

Publication Characteristics

The results from the analysis of publication source, first-author gender, and publication year as potential moderators are summarized in Tables 10, 11, and 12, respectively.

Publication source. A significant difference in effect sizes was found between studies from top-tier journals ($r = .12$), other published studies ($r = .22$), dissertations ($r = .07$), and other unpublished sources ($r = .12$), $Q_B(3) = 59.73$, $p < .01$. As can be seen in Table 10, comparison tests indicated that effect sizes associated with studies either in top-tier journals, dissertations, or other unpublished sources had significantly smaller effect sizes than did studies published in second-tier sources. Although studies published in top-tier journals may have larger sample sizes, a follow-up test indicated no significant relation between sample size and effect size, $r(41) = .05$, *ns*.

We also compared published studies (first-tier and second-tier combined) and unpublished reports (dissertations and other sources combined). There was a significant difference, $Q_B(1) = 13.15$, $p < .01$, indicating a stronger effect in published studies ($r = .17$, 95% CI = .15/.18) than in unpublished reports ($r = .09$, 95% CI = .05/.13).

First author gender. The present meta-analysis found a significant difference between women and men as first authors in the effect sizes of their respective studies, $Q_B(1) = 41.00$, $p < .01$. Articles published by men as first authors ($r = .24$) had a larger effect size than articles published by women as first authors ($r = .13$).

[4] Five of the 6 studies associated with the 18–21-year-olds were based on measures of the offspring's attitudes toward others. Given that this type of outcome measure was associated with the largest effect sizes, we sought to explore whether it influenced the larger effect size associated with the 18–21-year-olds. When the association between parent gender schemas and offspring gender attitudes toward others was examined separately by age, the age difference persisted. The effect size associated with 18–21-year-olds ($k = 5$, $r = .33$) was significantly larger than that associated with either 3–5-year-olds ($k = 6$, $r = .02$), 6–11-year-olds ($k = 15$, $r = .13$), 12–17-year-olds ($k = 6$, $r = .14$), or adults older than 22 years ($k = 1$, $r = .20$). There was not a significant difference, however, with 0–2-year-olds ($k = 2$, $r = .24$). Nonetheless, the age level effect should be interpreted cautiously because of the possible lack of measurement equivalence between measures of gender attitudes used with children and those used with adults.

Table 6
Parent Gender Schema Effects for Different Types of Offspring Outcome Measures

Type of analysis	k	Fail-safe k	N	r	95% CI	p	Q_w
Untrimmed samples							
Overall	66	160	14,283	.15	.13–.16	.00	382.59**
By outcome measure							
Self-concept	9	16	2,468	$.12_a$	.09–.14	.00	66.56**
Attitudes	35	150	8,809	$.17_b$	.15–.18	.00	211.73**
Interests	15	0	1,702	$.05_c$	.01–.08	.01	24.08
Work	7	27	1,304	$.19_b$	.15–.22	.00	26.22**
Trimmed samples							
Overall	53	109	9,197	.16	.14–.17	.00	127.42**
By outcome measure							
Self-concept	8	20	833	.21	.17–.26	.00	43.19**
Attitudes	35	106	8,809	.17	.15–.18	.00	211.73**
Work	6	0	574	.12	.06–.17	.00	16.26**

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p <$ .05). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. CI = confidence interval.
** $p < .01$.

Year of publication. A significant difference was found in the strength of the correlations based on the year of publication, $Q_B(1) = 27.65$, $p < .01$. Studies published either before or since 1985 were compared. Effect sizes associated with samples from articles published between 1975 and 1984 were significantly larger ($r = .22$) than the effect sizes associated with samples from studies published between 1985 and 2001 ($r = .13$).

Discussion

A meta-analysis of 43 articles (with 48 independent samples) was conducted to determine if there was an overall relationship between parents' gender schemas and various types of their offspring's gender-related cognitions. The overall effect was statistically significant with a small but meaningful correlation. Thus, it appears that certain child outcome measures are related to parents' gender schemas.

Recently, there has been controversy about the relative impact of parents on children's development (Harris, 1998; Maccoby, 1998). For example, Harris (1998) argued that peers may play more important roles in children's socialization than do parents. The present meta-analysis suggests that parents may have an impact on their children's gender-related thinking. Depending on particular moderator variables, observed correlations were statistically significant and generally in the .1 to .2 range, which according to Cohen (1988) reflects a small but nontrivial effect size.

Before we discuss the results in more detail, it is important to emphasize the correlational nature of the findings. It is not possible from our analyses to know if parents' gender schemas have a causal influence on their children's gender-related thinking. As with any correlation, it is possible that the reverse could be true. In other words, parents' gender-typed thinking may be a reflection of

Table 7
Parent Gender Schema Effects for Daughters Only, for Sons Only, and for Daughters and Sons Combined

Type of analysis	k	Fail-safe k	N	r	95% CI	p	Q_w
Untrimmed samples							
Daughters	30	59	4,770	$.16_a$	.14–.18	.00	174.68**
Sons	19	30	3,206	$.14_a$	.12–.17	.00	68.29**
Combined	16	32	2,216	$.18_a$	.15–.21	.00	46.83**
Trimmed samples							
Daughters	24	35	2,902	.16	.14–.19	.00	46.52**
Sons	17	11	2,492	.12	.09–.15	.00	23.52
Combined	14	31	2,046	.18	.15–.21	.00	17.94

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p <$ .05). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. CI = confidence interval.
** $p < .01$.

Table 8
Parent Gender Schema Effects by Child Gender and Parent Gender

Type of analysis	k	Fail-safe k	N	r	95% CI	p	Q_w
Untrimmed samples							
Overall	67	119	10,193	.16	.14–.17	.00	292.93**
Daughters							
With mothers	18	78	2,382	$.23_a$	.21–.26	.00	89.35**
With fathers	3	0	221	$.06_b$	−.03–.15	.20	1.01
Sons							
With mothers	7	24	678	$.25_a$	.20–.30	.00	30.57**
With fathers	2	1	272	$.12_b$	.04–.21	.01	2.58
Trimmed samples							
Overall	52	55	6,963	.15	.13–.16	.00	76.15*
Daughters with mothers	15	23	1,692	.17	.14–.21	.00	37.76**
Sons with mothers	6	0	212	.07	−.02–.17	.14	10.24

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p < .05$). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. With trimming, there were not a sufficient number of studies to report separate effects for fathers separately with daughters and sons. CI = confidence interval.
* $p < .05$. ** $p < .01$.

their offspring's own behavior and attitudes. It is likely that parents and their children influence one another's views in many respects (e.g., see Grusec & Kuczynski, 1997). In addition, it is possible that there is a third variable (or set of variables) that accounts for parent–child similarities. For example, parent–child concordance in values may be moderated by the quality of the parent–child relationship (see Grusec & Kuczynski, 1997). Moreover, being members of the same local cultural community may present similar socialization pressures to both parents and their children.

There is reason to suspect that parents may actually have an influence on their children. Parents themselves vary within any given community in terms of demographic characteristics as well as their adherence to dominant cultural traditions. These types of variations, in turn, can be associated with differences in the gender-related beliefs of parents as well as their children. For example, parents' gender schemas may vary according to their amount of education (Leaper & Valin, 1996). Also, children's endorsement of gender stereotypes may vary with family structure. Specifically, children of single-parent mothers may be less likely to adopt traditional gender stereotypes than children in two-parent mother–father households (see Stevenson & Black, 1988). Gender stereotypes are also less likely for children in two-parent, dual-career families (see Hoffman, 1989). The interpretation in both cases is that having nontraditional mothers may help dispel gender stereotypes in these children.

The previously described studies point to possible mediating influences that may connect parents' and children's gender-related thinking (and behavior). The broader question addressed by the present meta-analysis was whether or not children's gender-related thinking could be predicted from knowing about a parent's gender

Table 9
Parent Gender Schema Effects by Offspring Age Level

Age level (years)	k	Fail-safe k	N	r	95% CI	p	Q_w
Untrimmed samples							
0–2	3	0	287	$.16_{a,b}$	.06–.26	.00	4.74
3–5	8	0	552	$.01_b$	−.05–.06	.86	5.45
6–11	19	17	3,132	$.13_a$	.10–.15	.00	78.60**
12–17	11	48	3,833	$.14_a$	.12–.17	.00	68.17**
18–21	6	101	1,659	$.29_c$	.26–.32	.00	29.55**
Over 22	1	N/A	730	$.15_a$	.10–.20	.00	N/A
Trimmed samples							
6–11	15	39	2,064	.19	.16–.22	.00	26.34*
12–17	9	41	3,737	.13	.11–.17	.00	30.31**
18–21	5	109	1,325	.33	.30–.36	.00	1.21

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p < .05$). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. CI = confidence interval.
* $p < .05$. ** $p < .01$.

Table 10
Parent Gender Schema Effects by Publication Source

Publication source	k	Fail-safe k	N	r	95% CI	p	Q_w
Untrimmed samples							
Top-tier publications	14	36	4,765	$.12_a$	.10–.14	.00	55.43**
Second-tier publications	21	124	4,101	$.22_b$	.20–.24	.00	141.74**
Dissertations	7	0	790	$.07_a$	.02–.12	.01	12.52
Other unpublished	6	0	537	$.12_a$	.06–.18	.00	16.44*
Trimmed samples							
Top-tier publications	12	40	2,713	.16	.14–.19	.00	25.57**
Second-tier publications	17	54	2,990	.18	.15–.21	.00	55.98**
Other unpublished	5	0	485	.09	.02–.15	.01	5.64

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p < .05$). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. CI = confidence interval.
* $p < .05$. ** $p < .01$.

schemas. Indeed, given the numerous mediating variables that likely link parents' gender schemas to their children's gender cognitions, perhaps it should not be surprising that the observed effect was small in magnitude.

Although it was not possible to test for mediating influences in the present review, we were able to examine several possible moderators. Some of these turned out to be significant influences on the magnitude of the observed effects. These findings are discussed next. First we consider moderators associated with parent characteristics. This discussion is followed with a review of the offspring characteristics and then the publication characteristics that appeared as significant moderators.

Parent Characteristics: Type of Gender Schema and Parent Gender

The type of parent gender schema was found to moderate the relationship with child outcome measures. Parents' gender schemas about others were a stronger predictor of outcome measures ($r = .17$) than were parents' self gender-related measures ($r = .08$). The significant differences between the two types of gender schemas in their ability to predict child outcomes gives support to those researchers who posit that gender schemas are multidimensional (Bigler, 1997; Bigler et al., 2002; Cross & Markus, 1993; Katz & Ksansnak, 1994; Martin, 1993; Signorella, 1999; Spence & Buckner, 1995). One possible explanation for the difference is that parents' gender schemas about others may be easier for children to infer than parents' gender schemas about themselves. For example, the gender attitudes that parents hold may influence the activities in which they themselves engage. Also, mothers with traditional attitudes may tend to perform more tasks that are considered "women's work" (e.g., housecleaning, dishwashing) than mothers with egalitarian attitudes may perform (Hoffman & Kloska, 1995; McHale, Crouter, & Tucker, 1999). By observing the division of labor in traditional families, children may be more apt to adopt traditional values themselves.

We found a significant difference between mothers' and fathers' gender schemas in relation to child outcome measures (rs = .19 and .13, respectively). Mothers may be more likely than fathers to hold nontraditional gender schemas (Leaper & Valin, 1996), to tolerate nontraditional behavior in their children (Siegal, 1987), and to enact nontraditional gender roles themselves by working outside of the home. Moreover, mothers may spend more time

Table 11
Parent Gender Schema Effects by Author Gender

Author gender	k	Fail-safe k	N	r	95% CI	p	Q_w
Untrimmed samples							
Women	37	69	8,044	$.13_a$	.12–.15	.00	153.40**
Men	11	80	2,149	$.24_b$	.21–.27	.00	91.45**
Trimmed samples							
Women	30	63	5,626	.15	.13–.17	.00	63.23**
Men	9	7	1,162	.14	.10–.18	.00	36.13**

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p < .05$). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. CI = confidence interval.
** $p < .01$.

Table 12
Parent Gender Schema Effects by Year of Publication

Year of publication	k	Fail-safe k	N	r	95% CI	p	Q_w
Untrimmed samples							
1975–1984	23	70	2,750	$.22_a$	.19–.24	.00	163.98**
1985–2001	25	74	7,443	$.13_b$	.12–.15	.00	94.22**
Trimmed samples							
1975–1984	19	4	1,633	.14	.11–.18	.00	66.73**
1985–2001	21	75	5,127	.16	.14–.18	.00	36.56*

Note. Rows of effect sizes for untrimmed samples with different subscripts are significantly different ($p < .05$). Tests using untrimmed samples (with outliers) and trimmed samples (without outliers) are presented. CI = confidence interval.
* $p < .05$. ** $p < .01$.

with children than do fathers (Bailey, 1994). In addition, not all the mothers in the different studies may have been employed outside the home. For these reasons, perhaps mothers' impact was somewhat stronger than that of fathers. Nonetheless, the overall finding was that both parents' gender schemas were related to their children's gender-related self-concepts and attitudes.

Unfortunately, the present study could not consider how social-structural factors in the family may underlie the connection between parents' and children's gender schemas. This possibility was suggested by a recent study by Fulcher et al. (2001), who compared children of lesbian and heterosexual parents. They found that the division of labor among the parents—rather than the parents' gender composition—predicted children's gender stereotypes regarding future occupational choices. In both heterosexual and lesbian couples with a traditional division of labor (i.e., breadwinner and homemaker), children tended to have more traditional gender stereotypes. In contrast, there was less stereotyping of occupational choices among children in families whose parents shared roles and responsibilities.

Offspring Characteristics: Type of Outcome Measure, Gender, and Age Level

Depending on the type of outcome measure, there were significant differences in the relationships between parents' gender schemas and offspring's outcome measures. First, parents' gender schemas had a negligible association with children's gender-related interests ($r = .05$). Prior studies have indicated little impact of parents on children's interests (see Ruble & Martin, 1998). This is an area in which peers may have a larger impact (see Leaper, 1994; Maccoby, 1998; Sebald, 1986; but also see Serbin, Powlishta, & Gulko, 1993).

In contrast to the previously discussed finding, parents' gender schemas were most strongly related to measures of offspring's gender self-concept ($r = .12$), gender-related attitudes toward others ($r = .17$), and work-related attitudes ($r = .19$). Of these three measures, the correlations for gender attitudes and work-related attitudes were significantly stronger than those for gender self-concept. It seems, therefore, that parents may have more of an influence on their children's gender attitudes about others than on their children's gender self-concepts. Parents provide children with their first lessons on what it means to be a woman or a man, and perhaps parents are therefore more apt to shape their offspring's attitudes about other people than their offspring's attitudes about their selves.

The significant association between parents' gender schemas and offspring's occupation-related attitudes is consistent with prior research suggesting that parents can affect gender-related variations in their children's educational interests and achievement (see Brown, 1990; Eccles, 1994; Tenenbaum & Leaper, in press). Barak (1981) suggested that parents may contribute to the development of children's vocational self-schemas about success and abilities. Parents with more egalitarian beliefs may communicate different ideas to children about their skills. As was seen in the present study, offspring whose parents had more egalitarian gender schemas were less likely to hold gender-stereotyped views about occupations.

Turning to a different type of moderator, we did not find that offspring's gender influenced the magnitude of the effect size. The relationship between parents' gender schemas and their children's gender-related development may be mediated more through the type of role modeling that parents provide than through differential treatment. Indeed, prior reports have not indicated a strong link between parents' gender values and parents' differential treatment of sons and daughters (e.g., Tenenbaum & Leaper, 2001; Weitzman, Birns, & Friend, 1985). Instead of differential treatment, the more pervasive way that parents may influence their children's gender development is through role modeling and the types of opportunities that they provide (see Leaper, 2002).

Child age was the last of the investigated child variables to appear as a significant moderator. The relationship between parents' gender schemas and child outcome measures was stronger among children of college-student age than among other children. This result appears contrary to the assumption that parents become less prominent while peers become more influential in children's lives as they get older (e.g., see Harris, 1998). However, other research suggests that parents are important in shaping children's and adolescents' basic values and attitudes (see Collins et al., 2000). Indeed, from the present review, parents' gender schemas appear to influence children's gender self-concept, gender attitudes toward others, and work-related attitudes—all of which can guide a person's life course. In addition, flexibility in gender attitudes may be more likely in later adolescence and early adulthood, when advances in cognitive development and reductions in peer pressures make it easier to reexamine traditional gender-role prescriptions (Crouter, Manke, & McHale, 1995; Eccles, 1987). However, we caution the reader from making too much of the difference in effect sizes between studies of young adults and children. The types of measures used with children and with adults may not be directly comparable even for the same construct (e.g., gender attitudes toward others). In addition, there may have been less variability in educational and socioeconomic backgrounds among the college-age offspring and their parents than among the younger samples and their parents.

One age difference that may be more interesting to consider is the contrast between 3–5-year-olds and older children. There was virtually no relation between parents' and children's measures when children were from 3 to 5 years old. In contrast, the effect became larger when children were older than 5 years.[5] Children entering middle childhood undergo the 5–7-year-old shift in which they experience rapid cognitive and biological changes. As part of the changes, children's memory capacities and memory efficiency increase at this age (Case, 1991; Kail, 1991). As a result of these increases in ability, children may be better able to encode and remember their parents' attitudes once they have entered middle childhood than when they were younger, especially if parents' attitudes are counter to general societal norms. Moreover, kindergarten children have more difficulty integrating various sources of information than do older children (Martin, 1989). With the shift in children's cognitive capacities around age 5, there is a corresponding shift in the way that parents treat children (Rogoff, Sellers, Pirotta, Fox, & White, 1975). As parents come to view children as more mature, they often provide them with more adult tasks (Goodnow, Cashmore, Cotton, & Knight, 1984). Parents may also expose their children to more of their beliefs, which children then may appropriate as their own.

Publication Characteristics

The last set of factors examined as possible moderators were three aspects of the publication. First, we examined publication source as an admittedly imperfect proxy for study quality. The meta-analysis indicated that second-tier publications had significantly larger effect sizes (r = .22) than did either first-tier publications (r = .12), dissertations (r = .07), or other unpublished papers (r = .12). It is unclear how to interpret this pattern of results. Studies in both first- and second-tier journals were associated with small and significant effect sizes, although the effects were stronger in second-tier journals. However, published studies had generally larger effect sizes than nonpublished studies.

The first author's gender was a second publication characteristic that was considered. Significant differences were found between studies with women and men as first authors. Male authors tended to be more likely to report stronger relationships than were female authors. Other meta-analyses testing for gender differences in various forms of social behavior have similarly indicated a greater likelihood of reporting larger effect sizes among male than among female authors (e.g., Eagly & Carli, 1981; Leaper et al., 1998). The finding may reflect a form of researcher bias in which one gender is biased to find gender effects and/or the other gender is biased against finding gender effects. Biases may occur in the nature of the research questions, features of the research design, or the method of analysis. Future studies should examine the relation between researcher gender and gender effects to better understand this potential bias.

Finally, year of study appeared as a significant moderator. Effect sizes were stronger for studies appearing earlier (1975–1984) than for those appearing more recently (1985–2001). The reason for the apparent decline in the magnitude of the effect cannot be inferred from the present study. It may reflect a cultural change whereby children are becoming increasingly influenced by extrafamiliar factors such as peers, teachers, and the media as both mothers and fathers have become busy working outside of the home.

Conclusions

Given the debates regarding the extent to which parents influence their children in general (cf. Collins et al., 2000; Harris, 1998) and with regard to gender socialization in particular (cf. Leaper, 2002; Lytton & Romney, 1991; Maccoby 1998), our meta-analysis suggests that parents *may* have an impact—especially in the formation of their children's self-concepts and attitudes related to gender. However, we reiterate our earlier caveat that the observed relationships between parents and their children in the studies reviewed were based on correlations. Therefore, the present results cannot establish a causal link. Some authors might argue that the children have simply inherited a proclivity to view the world in ways similar to those of their parents (e.g., Harris, 1998; Olson, Vernon, Harris, & Jang, 2001). There have been some longitudinal studies that suggested ways in which socialization and genetic influences can be disentangled (see Collins et al., 2000; Maccoby, 2000). Future research along these lines will help clarify the impact that parents may have on their children's gender development.

Although the observed magnitude of the overall effect was small (r = .16), it is not considered trivial (Cohen, 1988). If parents' gender schemas do have an impact on their children, we presume there would be many mediating and moderating factors that affect this association. The present analyses highlighted a few moderators but were not able to consider possible mediating variables. In other words, our review does not reveal how variations in parents' gender schemas might be conveyed to children. Prior attempts to link parents' gender beliefs with their behavior have not been very successful (e.g., Weitzman et al., 1985). It may be that parents' gender attitudes are communicated to their children in subtle ways that are not readily detected by looking for blatant forms of differential treatment such as overall amounts of warmth, control, or encouragement (e.g., see Lytton & Romney, 1991). Parental gender typing may depend on very specific types of behaviors in particular contexts (see Leaper, 2000a, 2002; Leaper et al., 1998). If so, as researchers, we need to embrace the challenges of trying to understand the interrelations among beliefs, behaviors, and social contexts for parents and children at different age levels. Moreover, we need to consider the types of factors in the larger macrosystem that influence whether or not parents adopt traditional or egalitarian gender beliefs (Leaper, 2000b).

[5] The 0–2-year-old age level was also associated with a significant effect size. All 3 studies were based on measures of gender labeling, which may not be comparable to more advanced measures of gender understanding used with older children.

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