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Gender Effects in Children's Beliefs about School Performance: A Cross-Cultural Study

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Do young boys and girls understand what leads to academic success (e.g., talent, effort, good teaching, luck) in the same way? Do young girls and boys have equivalent perceptions of their academic competence? Are these beliefs gendered in the same way across sociocultural contexts? In a cross-cultural study of over 3,000 children in grades 2 to 6, ages 7.2 to 13.6, we discovered that boys and girls around the world have very similar ideas about what generally leads to academic success. Moreover, in the few contexts where boys' and girls' academic performances were equal, their beliefs were also equal. However, when girls outperformed boys, their beliefs in their own talent were no greater than boys' beliefs, even though they did have stronger beliefs than boys in other facets of their achievement potential (e.g., putting forth effort, being lucky, getting their teacher's help). Our findings support the generally close correspondance between children's achievement and their competence-related beliefs, with the exception that young girls appear to specifically discount their talent. The effects held regardless of the children's achievement, intelligence, or age (approximately 8 to 13 years). Girls were more biased in some contexts than in others, however, suggesting that competence-related biases are rooted in culture-specific aspects of school settings.

INTRODUCTION

Children's beliefs about their own academic potential and their perceptions of what leads to school performance outcomes are important factors affecting many aspects of their behavior—for example, how much they persist on a task and how well they achieve in school (e.g., Bandura, 1997; Skinner, 1995). Two general findings in this literature are that girls show lower perceptions of their competence and lower performance expectations than boys (see Frey & Ruble, 1987; Parsons & Ruble, 1977; Stipek, 1992). Girls are also (1) less likely to attribute success to their ability, (2) more likely to attribute failure to a lack of ability, and (3) less likely to believe that success can be achieved through effort (Dweck & Elliot, 1983; Nicholls, 1979; Stipek & Gralinski, 1991; Wittig, 1985). However, these effects are conditional in that they are (1) task specific (e.g., dependent on subjective task value, task difficulty, and sex typing of the task; see Deaux & Emswiller, 1974; Eccles, Adler, & Meece, 1984), (2) most consistent in mathematics (Ryckman & Peckham, 1987; Stipek & Gralinski, 1991), and (3) especially pronounced in adolescence (Phillips & Zimmerman, 1990). The nature and magnitude of these effects also appear to depend on the methods and measures that are used. For example, they are more pronounced when girls have just been exposed to a failure experience or when they must explain the failures of other females (Licht & Dweck, 1984; Frey & Ruble, 1987; Nemerowicz, 1979).

Even though these gender effects are rather conditional and sometimes inconsistent (for reviews of such inconsistencies, see Eccles, Wigfield, Harold, & Blumenfeld, 1993; Frey & Ruble, 1987; Stipek & Gralinski, 1991), they are often viewed as general and pervasive throughout school age (see Eccles et al., 1984, for a similar observation). A gap in the literature that may contribute to such a misconception is that similarities between boys and girls in these kinds of beliefs have received less attention than differences and, moreover, the similarities are often underreported (e.g., Golombok & Fivush, 1994; for a similar critique, see Lott, 1995). Yet another gap is that cross-cultural comparisons have been only sparsely integrated into the study of gender differences in children's achievement-related beliefs (cf., Best & Williams, 1993; Lummis & Stevenson, 1990). Such gaps help propagate the stereotype of a pervasive difference between boys' and girls' beliefs. Given that such gender effects in school contexts have a variety of sociodevelopmental and school-policy implications, a further validation of findings in this field is clearly needed.

Overview of the Present Study

We examined whether children's beliefs about school performance are gendered and whether they are gendered in the same way cross-culturally. We reasoned that a large-scale comparative approach would provide a broader picture of gender effects in such be-

liefs, thereby helping to further test their generality. Moreover, a comparative approach can suggest possible bases of gender effects because it varies (albeit quasi-experimentally) their possible antecedents and consequences (Edwards & Whiting, 1980). In addition, a comparative approach addresses an assumption of recent sociocognitive theories of gender, namely, that gender stereotyping practices and attitudes of a socializing community are mirrored in children's beliefs (e.g., Cross & Markus, 1993) and thus differentially (i.e., in culture-specific ways) shape gender effects in such beliefs. The samples in our study stem from diverse settings (Eastern and Western Europe, Russia, Japan, the United States) that vary along a number of sociocultural dimensions. Similarities and differences among these contexts allow one to draw comparisons along a number of naturally occurring combinations of various dimensions. For example, comparisons can be drawn (1) between the sociopolitically and culturally similar contexts of German-speaking Switzerland and West Germany, (2) among countries with different political, and hence schooling, systems (e.g., established democracies of Western Europe and the United States versus the transitioning systems of Eastern European countries), (3) among countries with the same Western-type political democratic institutions but differing cultural background (Western European countries and the United States versus Japan). We also want to emphasize that although this is an archival study and many findings have been reported from these data (for overviews, see Little, 1998; Oettingen, 1995), none of these studies has focused on gender effects and the issue of possible interactions between these effects and sociocultural context.

Definitions of action-control beliefs. The conceptual framework of our study stems from an action-theory perspective and allows us to examine gender effects in three distinct types of beliefs (for details, see Chapman, Skinner, & Baltes, 1990; Little, 1998; Skinner, Chapman, & Baltes, 1988). First, *means-ends beliefs* are beliefs about whether specific *means* (i.e., effort, ability, teachers, luck, and unknown causes) generally lead to a desired goal (e.g., good grades). These beliefs are generalized ideas about the causes of school performance (Little & Lopez, 1997). Examples of this belief type are the child's judgment that hard work (i.e., effort) at school tasks generally leads to good grades or that lack of ability causes poor school performance. Second, *agency beliefs* are beliefs about whether one has the means (i.e., effort, ability, luck, and access to teachers) to perform well (cf. self-efficacy beliefs, Bandura, 1997; Skinner, 1995). For example, a child might believe that she or he is (or is not) able to put forth effort to achieve success in school or that she or he is (or is not) smart enough to do well in school. Third, the *control expectancy* is a belief about whether one can achieve a goal, without reference to any specific means. For example, a child might believe that she or he can get good grades even without reflecting on what it takes to achieve this outcome.

Across many studies this conceptualization has shown substantial cross-cultural generality as reflected, for example, in measurement and structural equivalence of the respective constructs (for overview, see Little, 1998). This finding indicates that children are remarkably similar in the categories they apply when thinking about school performance and provides a valuable baseline against which possible gender effects in these types of beliefs can be compared.

Specific goals and expectations. Our goals were to examine, across a wide spectrum of sociocultural contexts, whether boys and girls differ in (1) the level of their achievement-related beliefs and (2) the correspondence between these beliefs and school grades (i.e., gender effects in the correlations between beliefs and actual school performance). We also examined whether any gender effects, if found, are moderated by age, ability, and actual performance levels (i.e., interactive effects).

Based on related research and our own previous work (e.g., Little, Oettingen, Stetsenko, & Baltes, 1995; Oettingen, Little, Lindenberger, & Baltes, 1994; Stetsenko, Little, Oettingen, & Baltes, 1995), we had two expectations. First, we expected cross-cultural and cross-gender similarity in the means–ends beliefs because these beliefs reflect generalized theories about school performance and, as such, are closely tied to overall contingencies of formal schooling practices (Little & Lopez, 1997). These contingencies and conceptions are (1) generally common across modern industrialized societies and (2) not likely to include overt gender biases (for discussions of explicit and implicit stereotyping processes, see Greenwald & Banaji, 1995).

Second, we assumed that cross-cultural variations in gender patterns would emerge for the perceptions of one's own achievement potential because these beliefs reflect individualized experiences such as one's personal feedback history as well as gender-typed expectations. For example, research involving U.S. samples suggests that girls' self-perception biases occur because they receive messages from teachers and parents that their ability is at fault when they do not do well at school (e.g., Phillips & Zimmerman, 1990). In other parts of the world, different gender-typing practices may be reflected in culture-specific gender profiles in the children's beliefs.

We emphasize at the outset that because our study did not include direct measures of gender-related fea-

tures in these settings, any interpretations linking children's beliefs to particular schooling or culture-related variables can only be considered tentative. Given the general lack of cross-cultural data on this issue, however, this study reflects a necessary step toward identifying possible sources of such effects.

METHODS

Participants

The data come from a large-scale study of children's beliefs about school performance across seven sociocultural settings (East Berlin, West Berlin, Moscow, Tokyo, Berne, Los Angeles, and Prague), with two longitudinal follow-ups in East Berlin, West Berlin, and Moscow. Given the crucial changes that occurred while the study was conducted (e.g., the demise of the Soviet Union, the fall of the Berlin Wall, and the implementation of democratic reforms), each measurement reflects a unique sociohistorical setting associated with the processes of transition and change. Because we had follow-ups in only three contexts, we do not focus on the longitudinal aspects but treat each time of measurement as a distinct context.

Over 3,000 boys and girls in grades 2 to 6 participated (22 to 179 children per grade level with approximately equal gender distributions and comparable average ages; see Table 1). The data were collected at the end of each school year (except for Moscow at Time 1, which was in the fall, and Tokyo, which was in the winter). As detailed in other reports on these samples (Karasawa, Little, Miyashita, Mashima, & Azuma, 1997; Little, Oettingen, Stetsenko, & Baltes, 1995; Little & Lopez, 1997; Oettingen et al., 1994; Stetsenko et al., 1995), each represented generally typical middle- to lower-middle class settings. Supplemental analyses of between-school and ethnicity (when applicable) differences in each setting revealed nearly no differences (Little, Oettingen, & Baltes, 1995; Little, Oettingen, Stetsenko, & Baltes, 1995), indicating that our findings are consistent within each context and, therefore, are more readily interpretable.

The issue of whether our samples reflect the corresponding national schooling systems and various racial groups within multicultural societies (especially in a multicultural society such as the United States) is very complex (see also Little, Oettingen, Stetsenko, & Baltes, 1995; Stetsenko et al., 1995). However, previous research has demonstrated that, within-system variability notwithstanding, quite stable aspects exist that are characteristic of each national schooling system and that can be used as effective explanatory features (e.g., Stevenson, et al., 1985).

Measures

The CAMI. The three types of school-performance beliefs are assessed by the Control, Agency, and Means-ends Inventory (CAMI; Little, Oettingen, & Baltes, 1995). The CAMI contains 58 statements and

Table 1 Summary of the Sample Sizes for the Various Data Sets by Grade Level and Overall

	Grade															
	2			3			4			5			6			
	n	%	Age	*n*	%	Age	*n*	%	Age	*n*	%	Age	*n*	%	Age	Total
E90	58	43	8.55	63	44	9.66	64	48	10.69	74	42	11.76	54	41	12.62	313
E91	95	42	8.55	46	43	9.48	33	58	10.59	60	48	11.61	63	46	12.68	297
E92	102	54	8.55	96	43	9.55	65	46	10.49	79	47	11.57	80	48	12.57	422
M90	100	51	8.52	124	54	9.61	109	52	10.70	112	55	11.54	106	53	12.51	551
M92	118	50	8.92	71	49	9.77	22	55	10.14	67	48	11.09	80	51	12.20	358
M94	78	53	8.71	76	46	9.68	93	53	10.95	138	44	11.55	50	52	12.31	435
W91	112	58	8.62	115	53	9.63	113	59	10.59	104	54	11.58	73	60	12.66	517
W92	73	45	8.63	93	56	9.62	112	51	10.56	98	56	11.64	76	62	12.53	452
W93	156	56	7.66	55	42	8.59	95	54	9.67	110	48	10.53	100	60	11.67	516
B93	74	50	8.60	95	57	9.50	104	54	10.60	96	45	11.90	69	48	13.00	438
T93	145	50	7.54	154	46	8.52	178	48	9.52	176	45	10.51	164	49	11.53	817
L92	141	51	8.08	132	38	9.15	138	49	10.16	124	47	11.14	122	46	12.18	657
P91	119	44	8.42	160	49	9.30	138	42	10.20	172	44	11.37	179	47	12.36	768

Note: *n* = number of subjects; % = percentage of females; Age = average age; E90 = East Berlin, 1990; E91 = East Berlin, 1991; E92 = East Berlin, 1992; M90 = Moscow, 1990; M92 = Moscow, 1992; M94 = Moscow, 1994; W91 = West Berlin, 1991; W92 = West Berlin, 1992; W93 = West Berlin, 1993; P91 = Prague, 1991; B93 = Berne, 1993; L92 = Los Angeles, 1992; T93 = Tokyo, 1993.

Table 2 Sample Items from the Control, Agency, and Means-Ends Interview (CAMI)

Means Category	Sample Item
Means–ends beliefs (general or causality-related and means-specific)	
Effort	Doing well in school—is that because kids really try hard?
Ability	When a kid does badly at school, is it because the kid is just not smart enough?
Luck	Is doing well in school a matter of luck?
Teachers	Do kids do well in school because their teachers help them?
Unknowns	When kids get good grades in school, is it hard to know why?
Agency beliefs (personal and means-specific)	
Effort	I can really pay attention in class.
Ability	I am just not very smart at school work.
Luck	I would say that I am unlucky in school.
Teachers	I have teachers who will help me when I want them to.
Control expectancy (personal and means unspecified)	
Unspecified	If I want to do well at school, I can.

Note: Items are responded to on a 4-point scale: 1 = never, 2 = sometimes, 3 = often, 4 = always. Each of the 10 action-control dimensions is measured by six items, except for control expectancy which has four items. See Little, Oettingen, and Baltes, 1995, for the complete instrument as well as full validity and psychometric information.

questions that assess a total of 10 beliefs across three categories: a single control-expectancy belief, four agency beliefs (effort, ability, luck, and teachers), and five means-ends (causality) beliefs (effort, ability, luck, teachers, and unknown causes; see Table 2 for sample items from each category and subdomain; see Stetsenko et al., 1995, for translation procedures). In the teacher's absence, the CAMI was group-administered in the children's classrooms (20 to 30 children each). Each item was read aloud as the children followed silently along, answering each on a 4-point scale (never, seldom, often, always). The children were told that their answers were private and that they should respond with what was most true for them.

School grades. We used the children's school grades for math and language, which we collected either from the class records or directly from their teachers, as indices of academic performance. Both scores correlated highly in each sample, ranging from .63 to .81. We standardized these scores within classrooms to remove teacher-specific scaling effects (see e.g., Oettingen et al., 1994).

Analytic Procedures

Given the cross-cultural nature of our data, we used multiple-group mean and covariance structures (MACS) analyses because they (1) explicitly test the cross-cultural validity of the constructs, (2) correct for measurement error (disattenuation), (3) allow the inclusion of covariates to control for possible confounding effects, and (4) provide a powerful hypothesis-testing framework (Little, 1997). For some follow-up analyses, we used standard regression procedures.

For each gender in each sociocultural context (a 26-group MACS model), we controlled for the linear and quadratic effects of grade in school. Because the size of our models would lead to quite significant statistical indices of model fit (i.e., the log-likelihood ratio), we assessed model fit with the non-normed (NNFI) and incremental fit indexes (IFI). For these indexes, values of about .9 and higher are generally considered acceptable. We also used the root mean squared error of approximation (RMSEA) for which values less than .08 are generally considered acceptable.

We tested for gender differences and interactions across the sociocultural settings using χ^2 difference tests (Jöreskog & Sörbom, 1989). We first examined the causality-related beliefs as a multivariate grouping and then the competence-related beliefs. We used a conservative .01 p-level in these comparisons. Significant effects were followed up by univariate tests for which we also adopted a conservative .01 p-level, because of the substantial power of our sample sizes.

Before testing for gender differences in these constructs, we tested the cross-group comparability of the CAMI, even though it has shown strong comparability in these settings before (Little, 1998). The equivalence model showed good practical fit, $\chi^2(12768, n = 6{,}541) = 24{,}206.3$, NNFI = .88, IFI = .89, RMSEA = .012, and, in comparison to the freely estimated model, small and negligible differences (Δ) in fit, ΔNNFI = .04, ΔIFI = .04, ΔRMSEA = .003. This outcome indicates that the CAMI constructs have the

same factorial and measurement structure in boys and girls across these sociocultural settings, and, therefore, are psychometrically comparable.

RESULTS

We first report the mean levels of the children's beliefs and their actual school performance. Second, we report the correlations between the beliefs and school performance. Last, we examine interactive effects between gender and other variables such as age, achievement, and intelligence.

Mean-Level Comparisons

Table 3 presents the relative mean-level differences between boys and girls for (1) their actual school performance, (2) their beliefs about what generally causes performance outcomes (means-ends beliefs), (3) their perceptions of their ability to utilize the various means (agency beliefs), and (4) their general sense of control over school performance (control expectancy). These values are relative differences between girls and boys within each sociocultural context, where positive values indicate that girls were higher than boys.

Actual school performance. In most sociocultural contexts, except West Berlin, East Berlin (but only at one measurement point in both cases), and Berne, girls had higher school grades overall than did boys (see Table 3). The differences in overall performance stem from the girls' verbal grades which were higher than the boys' (all ps $< .01$, except Berne, $p = ns$). Math performance was mostly equal for both genders, but girls had higher math grades than did boys in Moscow (at each measurement, $p < .01$) and girls had lower math grades than boys in West Berlin (but only at Time 3). These findings are generally consistent with previous research (e.g., Hyde, Fennema, & Lamon, 1990); however, the specific pattern of cross-cultural variations contributes to the growing literature on cross-national comparisons in achievement (e.g., Stevenson et al., 1985).

Means-ends beliefs. As we expected, for the children's beliefs about what it takes to do well in school, we found nearly no gender-related differences across the sociocultural contexts (only in Moscow at Time 3 did we find a trend effect, multivariate $p = .04$; see Table 3). In other words, girls and boys reported high agreement as to how much school performance depends on effort, ability, teachers, luck, and unknown causes.

Agency and control-expectancy beliefs. In contrast to the expected similarities (and therefore, lack of bias) between boys' and girls' beliefs about the causes of school success, they were both unbiased and biased in their perceptions of their own academic potential (see Table 3). First, regarding the lack of bias, in each case when boys and girls had equally good school grades, their beliefs about their achievement potential were equally high. In addition, in those contexts where girls achieved better than boys, their perceptions of how

Table 3 Mean-Level Differences of Girls Relative to Boys in Each Sociocultural Context

Data Set	ACH	p_1	Agency Beliefs					p_2	Means–Ends Beliefs				
			EFF	ABL	LUC	TEA	CNTRL		EFF	ABL	LUC	TEA	UNK
E90	.44***	<.01	.23*	.18	.39***	.46***	.21*	*ns*	−.09	−.10	.09	−.07	−.03
E91	.34***	*ns*	.18	.06	.03	.15	.05	*ns*	−.11	−.15	.29	−.15	.09
E92	.44**	=.02	.19	.13	.43**	.34**	.27*	*ns*	−.07	−.08	.16	−.02	−.14
T93	.37**	<.01	.30**	−.23	−.—	.29*	.07	*ns*	−.09	−.41**	.26	−.17	−.06
M90	.64***	<.01	.48***	.41***	−.05	.32*	.38**	*ns*	−.08	−.24	.11	−.17	−.12
M92	.47***	<.01	.61***	.26	.34*	.44***	.42**	*ns*	−.05	−.28	−.09	−.24	−.14
M94	.71***	<.01	.46***	.20	.40**	.52***	.30*	=.04	.05	−.55***	−.31*	−.45**	−.30
P91	.39***	*ns*	.24*	.01	.08	.17	.11	*ns*	−.18	−.15	.11	−.11	−.01
B93	.09	*ns*	.09	−.12	.27	.15	−.03	*ns*	.09	−.25	.06	−.14	.02
L92	.30*	=.01	.48***	.18	.43**	.29*	.07	*ns*	−.18	−.31	−.08	−.30	−.09
W91	.14	*ns*	.02	−.16	.13	.14	−.02	*ns*	.07	−.05	−.00	.21	.05
W92	.36**	*ns*	.08	−.03	−.04	.29*	−.10	*ns*	.28	−.16	−.21	−.11	−.03
W93	.09	*ns*	−.12	−.23	−.06	.09	−.16	*ns*	−.11	−.23	.06	.06	−.04

Note: Positive values indicate that girls were higher than boys and negative values indicate that girls were lower than boys. p_1 is the result of the multivariate test of gender differences for the agency and control-expectancy beliefs, and p_2 is the result of the multivariate test of gender differences for the means–ends beliefs. Although marginal trends, $p < .05$, are identified, we focused on the univariate differences when this multivariate test was pronounced, $p < .01$. EFF = effort; ABL = ability; LUC = luck; TEA = teachers; CNTRL = control expectancy; UNK = unknown. See note to Table 1 for sample abbreviations.

* $p < .05$, ** $p < .01$; *** $p < .001$.

well they can utilize most of the four means necessary to achieve good performance were higher than in boys (as would be expected; see agency beliefs in Table 3). For example, compared with boys, girls generally reported higher beliefs that they (1) can exert the effort necessary to achieve good grades and avoid bad grades, (2) can get their teachers to help them to achieve these goals, and (3) have luck in achieving success at school. They also were often higher than boys in the belief that they can generally achieve good grades in school (i.e., control expectancy). We found no instance of a reverse trend favoring boys. That is, boys' self-assessments were either equal to or lower than those of girls on all belief facets. (We found no evidence of floor or ceiling effects, and the tests for variance differences on all of the constructs were nonsignificant. See also Little et al., 1995, for complete validity and psychometric information on the instrument.)

Regarding the evidence for biased self-perceptions, in 3 of the 13 settings, the concomitant correspondence between the gender profiles in achievement and the competence-related beliefs was not supported. Namely, in Prague and at Time 2 in East and West Berlin, girls achieved better than boys but their self-perceptions of their academic potential were equal to the boys (i.e., not higher as would be expected from the performance differences).

Furthermore, a more specific and notable form of bias was evinced. Specifically, in 9 of 10 contexts where girls achieved better than boys, girls and boys were equal in their self-assessment of how talented (i.e., able, smart) they are. In other words, despite the fact that girls had higher grades than did boys, they never (with just one exception for Moscow at Time 1) reported having stronger beliefs in their own talent.

When viewed from the level of cross-cultural effects, some contexts showed more gender differences than others. Particularly in Moscow, the effects of gender were pronounced (12 of 15 comparisons were significant, always favoring girls). Boys and girls in Los Angeles and Tokyo differed in their agency beliefs but not in their control expectancy. For the East Berlin sample the gender effects varied inconsistently across measurement points (i.e., in 1990 and 1992 a number of gender differences emerged, but no differences in beliefs emerged in 1991). This inconsistency in the gender patterning is difficult to interpret, but is most likely related to the dramatic and variable changes that occurred in this context during the course of the study.

Correlational Comparisons

Table 4 presents the correlations between the children's beliefs about school performance and their actual performance. These correlations reflect the degree of correspondence (individual differences) between the children's beliefs and their teacher-assigned school grades.

Means–ends beliefs. For beliefs about general causes of school performance, the correlations with school grades were generally the same for boys and girls (see Table 4). These correlations were also quite low (as would be expected given the findings from previous research; e.g., Chapman et al., 1990; Little, Oettingen, Stetsenko, & Baltes, 1995).

Agency and control-expectancy beliefs. Our research indicates that the self-related beliefs about one's potential are more strongly related to performance than are the general causality beliefs (see Little, 1998; Oettingen, 1995). As shown in Table 4, such patterns are maintained when examined by gender. These correlations reflect the degree to which children's judgments of their performance potential correspond with their actual school performance. Differences in magnitude thus reflect the extent to which boys and girls differ in how much they consider their teachers' performance feedback (i.e., school grades) when appraising their own academic potential.

As shown in Table 4, boys and girls in Los Angeles, Tokyo, Prague, and Moscow did not differ with regard to these correlations. That is, in these contexts both boys and girls whose school grades were high also had high beliefs in their talent, effortfulness, luck, and access to their teachers. In other words, boys and girls in these contexts appear to be equally aware of their performance standing (as judged by teachers). However, girls and boys in Berne, East Berlin, and West Berlin showed a number of differences in the beliefs–performance correlations (see Table 4). For the most part (five of seven univariate comparisons), Berne and East Berlin girls' judgments of their performance potential corresponded more strongly with their actual school performance than did boys' judgments, whereas in West Berlin boys seemed to be more accurate in their self-perceptions than girls.

Tests of Interactive Effects

Some research has shown that gender differences in beliefs and attributions are not the same in high-ability versus low-ability students (Licht & Dweck, 1984; Lubinsky & Humphreys 1990; Raymond & Benbow, 1986; Stipek & Hoffman, 1980) or that they interact with age (Eccles et al., 1993; Lummis & Stevenson, 1990). To check the generality of the primary findings, we also examined whether the gender effects interact with other processes or variables. Specifically, we examined the possible influences of (1) RAVEN intelli-

Table 4 Latent Correlations between Academic Performance and the CAMI Constructs

Data Set	Gender	p_1	Agency Beliefs					p_2	Means–Ends Beliefs				
			EFF	ABL	LUC	TEA	CNTRL		EFF	ABL	LUC	TEA	UNK
E90	F		.81	.72	.82	.54	.65		.28	.24	−.25	−.32	−.12
	M	<.01	.65***	.77	.71***	.44	.60	*ns*	.23	.24	−.23	.01	.00
E91	F		.67	.69	.53	.51	.64		.40	.27	−.29	−.29	−.02
	M	<.01	.67	.82***	.76***	.46	.57	=.04	.23	.05*	−.14	−.07*	−.27**
E92	F		.64	.70	.67	.41	.52		.31	−.18	−.49	−.25	−.14
	M	=.02	.50***	.61**	.62	.21**	.45	<.01	.31	.13***	−.09***	.02***	−.10
T93	F		.31	.56	.36	.07	.30		.27	−.10	−.17	−.17	−.13
	M	*ns*	.34	.55	.34	.16	.37	*ns*	.12*	−.20	−.14	−.26	−.12
M90	F		.52	.56	.56	.32	.43		.09	.00	−.09	−.12	.00
	M	*ns*	.51	.57	.60	.36	.36	=.01	.43***	.04	−.27*	−.26	−.29***
M92	F		.45	.54	.59	.34	.32		.10	.06	−.27	−.35	−.05
	M	*ns*	.46	.59	.49*	.46	.21	*ns*	.19	.13	−.28	−.17	−.14
M94	F		.42	.58	.53	.43	.40		.03	−.01	−.27	−.21	−.19
	M	*ns*	.45	.41**	.48	.43	.37	*ns*	.16	.11	−.33	−.16	−.17
P91	F		.46	.61	.72	.41	.33		−.04	−.18	−.20	−.15	−.18
	M	*ns*	.49	.68*	.65**	.45	.32	*ns*	.12*	.06***	−.09	−.10	−.17
B93	F		.64	.79	.64	.42	.53		.11	.10	−.09	−.06	.00
	M	<.01	.34***	.55***	.45**	.26*	.40	*ns*	.22	.22	−.19	−.11	.26*
L92	F		.32	.36	.41	.25	.15		.11	.08	−.21	−.09	−.19
	M	*ns*	.40	.41	.44	.19	.23	*ns*	.07	−.08*	−.34*	−.28**	−.28
W91	F		.62	.68	.60	.49	.50		.12	.27	−.09	−.05	−.10
	M	<.01	.65	.74*	.66	.27***	.66***	=.04	.26	.16	−.31**	−.26**	.07*
W92	F		.58	.70	.66	.42	.58		.22	.07	−.07	.06	−.05
	M	=.03	.70***	.77**	.73**	.37	.63	=.02	.29	.32**	−.33**	−.20**	−.16
W93	F		.64	.69	.69	.34	.54		.27	.19	−.21	.03	−.09
	M	=.03	.70	.80***	.66	.42	.64*	*ns*	.43*	.31	−.20	−.04	−.07

Note: p_1 is the result of the multivariate test of gender differences for the agency and control-expectancy beliefs, and p_2 is the test for the means–ends beliefs. We focused on the univariate differences only when this test was <.01. F = Female, M = Male. EFF = Effort; ABL = ability; LUC = luck; TEA = teachers; CNTRL = control expectancy; UNK = unknown. See note to Table 1 for sample abbreviations.
* $p < .05$, ** $p < .01$, *** $p < .001$.

gence,[1] (2) level of actual school performance, and (3) age. In all tests, we found no systematic or pronounced interactive effects. For example, only 5% of the relevant comparisons with RAVEN intelligence were significant and the pattern was unsystematic. Similarly, none of the gender effects changed when level of achievement was entered in the regression. In addition, we found that (1) there were no gender differences on RAVEN intelligence, (2) the correlations between RAVEN intelligence and the beliefs about one's achievement potential were the same for boys and girls (and generally lower than the correlations between school grades and these beliefs), and (3) the correlations between RAVEN intelligence and school grades were the same for boys and girls (and mostly within the range of .45 to .55).

All of these follow-up analyses indicate that the gender effects revealed in this study operate regardless of the children's intellectual skill (as measured by the RAVEN), level of school performance, or age (i.e., at least within middle childhood).

[1] We did not have RAVEN (i.e., Raven Standard Progressive Matrices Test) data for Moscow 1992 and 1994, East Berlin 1990, Berne, and West Berlin 1993.

DISCUSSION

We found a number of cross-culturally invariant trends and a few culture-specific variations in the gender patterning of children's achievement-related beliefs, indicating that (1) there are important regularities in how gender effects in beliefs come about across many different parts of the world, and (2) contextual influences can produce culturally unique profiles in some aspects of children's self-belief systems.

Cross-Culturally Consistent Gender Effects in Children's Beliefs

Boys and girls across the contexts were notably alike in that (1) when their performance was equal, their perceptions of their achievement potential were

also equal; (2) better achieving students of both sexes had higher self-perceptions of their potential than lower achieving students; and (3) when girls had higher grades than boys, they also had higher beliefs than boys (with just a few exceptions) on several facets of their achievement potential (i.e., effort, luck, ability to access teachers' help), and on their general ability to achieve good grades (control expectancy). Finally, boys and girls around the world held similar views of what it generally takes to do well in school (means–ends beliefs).

These findings speak against a pervasive (across-the-board) bias in girls' beliefs about school performance and suggest that both boys and girls are, for the most part, realistic in their self-assessments (i.e., they are aware of their performance standing and credit themselves for it in one form or another). These important similarities are related to numerous aspects of formal schooling that are generally common across modern industrialized societies and appear to exclude overt gender typing. For example, boys and girls appear to receive similar messages about what it takes to do well at school and these communicated contingencies are similar across the contexts we studied. Moreover, many aspects of the individualized school-related experiences of children (e.g., feedback regarding effort and luck) also seem to be similar across these contexts and not pervaded by gender stereotyping.

However, one effect represents a significant exception to this general trend and suggests that one specific form of gender typing prevails in schooling contexts across many parts of the world. Specifically, notable evidence of biased self-perceptions was observed in girls' evaluations of how talented they are. In 9 of 10 contexts where girls actually achieved better than boys, their self-assessments of their own ability were only equal to those of boys, not higher. In these contexts, girls were generally as aware of their actual performance standing as were boys (i.e., the correlations between school grades and the personal agency beliefs were high and equal for boys and girls); however, girls did not credit themselves with being talented even though they performed better than the boys. Compared with boys, then, girls discounted their talent and showed no evidence of compensatory beliefs patterns (e.g., overly ascribing performance outcomes to factors such as effort or luck instead of talent).

This finding is in line with other work indicating that girls tend to downplay their own achievement potential and, specifically, to discount their own talent as a cause of their success at school (e.g., Eccles et al., 1984). The types of beliefs that we measured, however, are not overall self-perceptions of competence nor are they attributions about the causes of success or failure. Instead, they are self-assessments of specific facets of performance potential. Our findings, therefore, isolate one type of self-belief (i.e., self-perceptions of talent) in which the girls' bias is particularly pronounced even when they (1) actually perform better than boys, (2) are as aware as boys of their performance standing, (3) have veridically high beliefs in other aspects of their academic competence, and (4) share boys' views on the importance of factors that cause school performance, including the importance of talent. In addition, these findings are unique to the literature because they reveal quite remarkable cross-cultural consistency of the bias in girls' self-perceptions of their talent, suggesting that similar processes operate in many parts of the world.

Given the lack of gender differences in RAVEN intelligence, the equal correlations between RAVEN intelligence and achievement, and the absence of other interactive effects (i.e., age, achievement level), the nature of the expectations and feedback that the children receive (implicit or explicit) is a likely source for this effect. For example, prior research with U.S. samples indicates that teachers and parents are more likely to communicate to girls who are having difficulty at school tasks that their problem is related to a lack of ability, whereas they are more likely to communicate to boys that their problem results from a lack of effort (e.g., Phillips & Zimmerman, 1990; Yee & Eccles, 1988). Our findings suggest that gender stereotyping associated with girls' perceptions of their talent can be found in many parts of the world.

Culture-Specific Variations in Gender Patterning of School Performance-Related Beliefs

Gender effects were quite pronounced, but consistent, in Moscow, Los Angeles, East Berlin (at Times 1 and 3) and Tokyo, with girls showing higher mean levels than boys for achievement and for most or several of the self-belief dimensions (i.e., effort, teachers, and luck). In Prague and at Time 2 in East Berlin and West Berlin, on the other hand, girls and boys showed no differences on self-reported beliefs even though girls had higher school grades than boys. Perhaps even more strikingly, in several contexts (i.e., West Berlin at Time 1 and 3, and Berne) there were no gender differences in either performance or self-beliefs. The differentiated patterns are consistent with the idea that gender stereotyping practices and attitudes of a socializing community influence how boys and girls are treated in schooling contexts and thereby gender-type their beliefs about their achievement po-

tential in culture-specific ways. Moreover, the variability suggests that gender stereotyping is more pronounced in some schooling contexts than in others.

Given the descriptive nature of this study, the exact reasons for why gender effects were more pronounced in some contexts than in others emerges as a central question for future research. We do not know, for example, when the gender patterns first emerge. Are girls better prepared for school than boys are in some contexts and thus achieve better from the start? Do some contexts operate to dampen girl's self-assessment or, alternatively, do these contexts simply sustain the initial levels of beliefs? To answer such questions, children's beliefs even at younger ages and the culture-specific characteristics of school contexts should be examined.

How Do the Findings Compare to those from Previous Research?

As mentioned above, our finding that girls appear to downplay their talent is consistent with some previous research. However, observed differences favoring girls on the dimensions of perceived agency unrelated to ability (effort, luck, teachers, and control expectancy), as well as the pronounced similarities between girls' and boys' causality beliefs, appear to depart from the gender effects often reported in the literature. At least two factors may be responsible for such apparent discrepancies. First, we did not experimentally expose children to failure or difficult tasks, whereas many previous studies have utilized methods that are more experimental. Second, we measured general reasoning about what causes school performance and self-assessments of specific facets of performance potential, whereas related research has focused on self-reported attributions about participants' own successes or overall perceived competence.

It should be clear, then, that our study was not specially targeted to detect the kinds of differences that most previous research has detected, nor was this our goal. Instead, we designed our research to assess gender effects in central aspects of self-regulatory beliefs about school performance as found in natural school settings across various parts of the world. In our view, this work helps fill certain gaps in this research area. For example, they show that gender differences in achievement-related beliefs should not be overgeneralized and similarities should not be underestimated. In a similar way, our findings should not be overgeneralized (e.g., not all possible kinds of beliefs are measured). In addition, we cannot exclude the possibility that a historical cohort effect may be operating as a result of ongoing changes in gender-related practices (i.e., gender roles, female employment rates) at a societal level. Given that such processes are mirrored in school settings (see Little, 1998; Oettingen, 1995), our findings may reflect such changes.

In our view, our findings complement those from previous research. To understand how competent and agentic individuals emerge and the role played by gender in this process, gender effects in various facets of perceived academic potential and causality thinking at various ages and in various schooling contexts must be carefully compared. Future research can now examine which culture- and schooling-specific factors operate to dampen girls' self-views of their talent and, on the other hand, to enhance girls' views of themselves as generally efficacious students, and whether such factors can protect them from low perceptions of their potential even in a specific domain like mathematics and even at later ages.

CONCLUSIONS

Our study demonstrates that a cross-cultural approach is a viable strategy to understand gender effects in children's beliefs. However, the findings support conclusions that go beyond simply establishing cross-cultural consistencies or diversity in these effects. For example, they pinpoint sociocultural contexts and belief dimensions that are most associated with gender biases, thus helping to outline directions for future research into the bases of such effects. In addition, our results indicate that the presumed negative bias in girls' school performance-related beliefs may not be as general as is commonly concluded. As our findings suggest, such conclusions need to be qualified not only according to the particular age range, performance domain, and belief dimension, but also according to the sociocultural context that is examined.

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