

# Reading and Believing: Beliefs, Attributions, and Reading Achievement in Moroccan Schoolchildren

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This article reports data collected in Morocco. Measures of beliefs (metacognitive knowledge of reading skills and strategies, causal attributions, and conceptions of good readers) and reading performance were collected on a cohort of 350 first-grade children over a 5-year period, and on a second cohort of 464 fifth-grade children over a 3-year period. Metacognitive and causal attribution measures predicted significant portions of variance of subsequent reading achievement beyond the effects of background variables and cognitive skills. First-graders' conception of good readers was an important predictor of beginning reading, but metacognitive knowledge of particular reading skills was not. However, among fifth and seventh graders, both metacognitive knowledge about skilled reading and causal attributions to internal factors predicted reading performance. This study is one of the first cross-cultural demonstrations that metacognitive knowledge and other beliefs affect young children's reading.

Around the world, children are exposed to a rich variety of symbols, text, and instructional procedures in formal and informal settings. By the age of 6 or 7, many children in different cultures, even before schooling, can read and write their own names and identify familiar words, and often can read connected sentences. Some children may receive a great deal of assistance from parents, whereas others learn to read from preschool teachers or from siblings or other children. Children may also develop notions and expectations about the components of good reading through exposure to cultural norms and models in the process of socialization. Despite diversity in languages and orthographies, literacy experiences, instructional opportunities, and the age at which skilled literacy is acquired, virtually all children seem to develop concepts and beliefs about reading, as well as about themselves as "cognitive processors." The purpose of this article is to explore, in a culture markedly different from that of the United States, the influence of metacognitive knowledge, beliefs, and attributional self-concepts on reading achieve-

ment. As will be discussed, the cultural setting of Morocco offers a favorable context in which to study the development of beliefs about reading.

The development of metacognitive knowledge about reading is an expanding area of research (Paris, Wasik, & Van der Westhuizen, 1988). There is no simple way to categorize children's emerging knowledge about literacy. Children learn many features of literacy, including concepts about print (Clay, 1972; Johns, 1980), structural features of text (Stein & Glenn, 1979), and metacognitive aspects of text-processing strategies (Brown, Armbruster, & Baker, 1986; Paris, Wasik, & Turner, in press). As children learn to read, they notice that some children learn more quickly than others and that reading tasks can be easy or difficult. They begin to understand purposes for reading (Hiebert, 1981) and the regularity of grapheme-phoneme correspondences. Understanding of the parameters and complexity of reading appears to develop at the same time that children receive instruction in reading. Thus, metacognition and reading performance are often correlated (Baker & Brown, 1984).

The number of studies concerned with the young child's emerging beliefs about literacy is beginning to grow. We know, for example, that young children often do not understand simple rules for decoding text, such as the directionality of print and the role of punctuation (Clay, 1972). Even 8-year-olds may not understand that creating meaning is a central purpose of reading and that certain strategies facilitate comprehension (Garner, 1987; Myers & Paris, 1978). In a review of research on metacognition and reading, Garner (1987) concluded that beginning and poor readers misconstrue many concepts about print and strategies for constructing meaning. In addition, children's metacognition about reading emerges slowly from their interaction with text and develops considerably between the ages of 6 and 12. Furthermore, skilled readers have more accurate concepts and more positive ori-

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entations about reading than less skilled readers (Paris, Lipson, & Wixson, 1983). Some researchers have designed questionnaires to assess children's beliefs and metacognition about reading. For example, Paris and Jacobs (1984) used a structured interview to measure third and fifth graders' understanding about strategies for evaluating, planning, and regulating their own reading, and found that younger children knew significantly less about reading than older children. Furthermore, metacognition was correlated with reading skill; poor readers in each grade had less understanding about the strategies that facilitate comprehension than good readers. The present article reports parallel findings on metacognitive knowledge and reading in Morocco.

Along with metacognitive knowledge, the child's emerging sense of self-competence develops during the elementary school years and, in turn, influences academic progress (Harter, 1982). American research has shown that some children develop concepts of intelligence as a fixed ability or trait and regard themselves as being more or less intelligent than their peers (Nicholls, 1984). Dweck and Bempechat (1983) characterized the difference in terms of whether children become "mastery oriented" or "helpless" in academic situations, and Elliott and Dweck (1988) characterized some children as oriented toward learning (i.e., as having mastery goals) and others as oriented toward performance goals. These concepts about intelligence and self-competence are related to children's causal attributions for success and failure (Weiner, 1986). During the primary school years, most children in Euro-American studies appear to shift their attributions for school success on tasks like reading, from simply "trying hard" to skill, intelligence, and experience. Thus, the optimistic, effortful 8-year-old learning to read differs from a 12-year-old in knowledge, metacognition, concepts, and attributions. The relation between causal attributions and reading performance among Moroccan children is also examined in this study.

In addition to concepts of themselves, children also develop concepts about others as cognitive processors. Children's socially constructed knowledge or conceptions of a "good reader" may influence beliefs about their own competencies and expectations, because their performance is seen in relation to that of others. According to social learning theory, children attend to real and ideal models of behavior in their environment and shape their own behavior in accordance with such models (Bandura, 1987). Therefore, determining children's perceptions of the characteristics that constitute a good reader is an important component in understanding children's reading acquisition. In low-literate societies or communities, moreover, where literate adults may be relatively few in the child's immediate environment, a clear sense of such good reader models may be especially critical to children's reading. Little research links this aspect of social cognition to the domain of reading; the present study provides an exploratory step in this direction.

In summary, this study explored three belief systems hypothesized to influence reading performance: metacognitive knowledge, causal attributions, and conceptions of good readers. In the context of Arabic literacy learning in Morocco, we examined the hypotheses that: (a) Children's metacognition about reading becomes more strongly connected to reading

performance with age; (b) children increasingly attribute academic success and failure to internal causes; and (c) during elementary school years, children establish clear concepts of successful readers.

### The Cultural Context: Reading and Schooling in Morocco

There is little cross-cultural research available on children's concepts, beliefs, and attributions about the nature and process of reading. One purpose of this study was to examine these variables in children in a non-Western, low-literate society, and in a language other than English. Morocco's educational heritage derives from two distinct school systems, Islamic and French, each with its own pedagogy and perspective on the nature and functions of reading. This heritage, and an accelerating pace of educational expansion, constitute a context for literacy that differs greatly from that found in America and Europe. On the one hand, becoming literate in Morocco may involve learning religious text, largely by rote memorization, with the capacity for public and private recitation as a primary goal. On the other hand, becoming literate may involve developing the ability to decode text with comprehension, in the fulfillment of primarily secular, school-like tasks. In the sample of Moroccan families on which this study is based, only a small percentage of the older generations are literate individuals, and these are often of the first type, schooled in Islamic educational institutions; those of the generation presently in school are becoming literates primarily of the second type, through a public school system modeled after that of the French Protectorate.

Indeed, the large majority of parents in the Morocco study had received no more than a few years of primary schooling; for their generation, schooling had been neither prevalent nor enforced by law. Thus, one might expect these parents to hold beliefs about the nature and the importance of reading that differ considerably from those of their children who are attending school. This point is important, because many current Euro-American studies (e.g., Miller, 1986; Sigel, 1985) assume that parental beliefs are the primary basis for children's beliefs. Our own work in Morocco has shown that the beliefs of low-literate parents have only a modest relation to either children's beliefs or reading achievement, a finding that appears to be linked to the dramatic educational changes taking place across generations (Wagner & Spratt, 1988). In relatively low-literate environments such as Morocco, the child's conceptual models of reading and good readers may be influenced by a wider range of factors outside the home than would be expected in mainstream America, where literacy activities are more available within the family. Further details on the cultural context of literacy in Morocco may be found in Wagner, Messick, and Spratt (1986). The stereotypical "fatalism" of Islamic societies would appear to support causal attributions with an orientation toward external factors and native ability beyond the individual's conscious control—an orientation found, in American research, to impair motivation for achievement (e.g., Connell, 1985; Dweck & Bush, 1976). Our own ethnographic research, however, revealed

that Moroccan parents and teachers also commonly held a belief in the efficacy of personal effort. Thus, the cultural context of Moroccan childhood—influenced by religion, Qu-ranic and modern schooling, and changing patterns of social-ization—provides an opportunity to study attributional style under conditions quite different from those found in American studies.

Given the growing awareness that cultural factors play a crucial role in cognitive and academic achievement, it is becoming increasingly important that developmental and educational theories be understood within particular social contexts. Morocco, of course, is only one contrasting context, and, in itself, presents within-country contrasts (we report rural and urban settings). The design of the broader study, of which the present analysis is one piece, provided opportunities to extend our understanding of variation in reading acquisition and the social and cognitive factors associated with literacy.

### Method

The data in this study were gathered as part of the Morocco Literacy Project, a longitudinal study of literacy acquisition and retention among Moroccan children. Begun in 1982, the project studied two cohorts of children, a group of first graders followed through 5 years of primary school (Cohort 1) and a group of fifth graders followed for 3 years (Cohort 2). In the course of the study, subjects responded to measures of metacognitive knowledge about reading, causal attributions, and conceptions of good readers, as well as to assessments of reading performance and cognitive skills, so that the relationship among reading performance, specific domains of knowledge, and metacognitive beliefs could be examined over time. In addition, sociodemographic information was collected in interviews with both cohorts (see Wagner & Spratt, 1988).

### Sample

Cohort 1 consisted of 350 children drawn from Moroccan public primary schools in the city of Marrakech (population 600,000) and a small rural town in the Middle Atlas mountains. These children were in first grade (roughly 7 years of age) when assessed initially in the 1982–1983 school year and were followed through the primary school system over the next 4 years. The children’s families represented the working-class and lower-middle-class sectors of Moroccan society (which constitute about 75% of the population), where incomes are derived primarily from agriculture, small trades, and unskilled to semiskilled labor and services. The sample allowed contrasts by gender and preschool experience in both settings (urban and rural). The small-town, rural setting included two distinct linguistic communities (Moroccan Arabic and Berber; see Wagner, Spratt, & Ezzaki, 1989). Cohort 2, the second sample of children, consisted of 464 children who were in the fifth grade of primary school (ranging from 12 to 15 years of age) when first tested in the 1984–1985 school year. These children were selected from the same geographical and socio-cultural settings as the younger children. Descriptive statistics on each cohort are provided in Table 1.

Because of the need to make developmental inferences based on the two cohorts, it is important to go into some detail concerning their differential composition. In addition to age differences, the two cohorts differed markedly in their school experiences. Cohort 2, for example, was more heterogeneous than Cohort 1 in age and number of years spent in school, because of a broader range of grade repetition

histories prior to inclusion in the study. In the Moroccan educational system, grade repetition is not uncommon during primary and secondary schooling (see Spratt, 1988), and it led to considerable variation in grade level over time for both cohorts of this study. Out of Cohort 1, (350 children who were in Grade 1 during the first year of the study), it was found 4 years later that 109 had left the sample because they dropped out of school altogether or had changed schools. Of the remaining in-school sample, 50 (22%) were in Grade 3, 98 (43%) were in Grade 4, and 80 (35%) were in Grade 5. For Cohort 2 (464 children first tested when all were in Grade 5), it was found 2 years later than 146 had left the sample. Cohort 2 attrition was primarily due to the difficult and selective fifth grade primary school exam, the *shahada*, which prevents roughly 25% of all fifth-graders from entering intermediate schools; of the sample children remaining in school after 3 years in the study, 129 (41%) were in Grade 6 and 189 (59%) were in Grade 7. To simplify subsequent discussion, the samples are discussed as though all children were “at grade level,” even though Cohort 2 “Grade 5” children were in Grade 5 at the beginning of the study and were, on average, about 1.5 years older than the same-grade children of Cohort 1, because of repetitions in earlier grades. Post hoc analyses conducted on each cohort to determine whether dropouts or “repeaters” were substantially different from “in-grade” students in terms of regional background, maternal language, or gender showed no significant differences. However, as expected, grade repeaters tended to be poorer readers than in-grade students, and their beliefs tended to correspond to the beliefs of low-performing in-grade students.

These sampling variations, which produced proportions of children with different curricular experiences in each year of the study, reflect the reality of the Moroccan educational system, as well as that of many other developing countries. Because test items were varied to match children’s abilities at each grade level, longitudinal assessment of change using identical tests (such as that proposed by Rogosa, Brandt, & Zimowski, 1985) was not possible.

As noted earlier, parents of the sample children tended to have

Table 1  
Description of the Sample Cohorts

Characteristics	Environment	
	Rural	Urban
Cohort 1 (first graders at first assessment in 1983)		
Subsample size	166	184
Gender		
Boys	83	89
Girls	83	95
Mean age in years	7.4	7.2
Range	6–8	6–8
N = 350		
Cohort 2 (fifth graders at first assessment in 1985)		
Subsample size	178	28
Gender		
Boys	92	150
Girls	86	136
Mean age in years	12.9	12.7
Range*	11–15	11–15
N = 464		

\* The wide age range in the fifth-grade sample is due to a high rate of grade repetition. Such a range, which indicates that the average child repeated at least 1 year of primary school, is typical in the Moroccan educational system.

little or no formal schooling. Among the younger cohort of children in this study, 30% of urban children and 51% of rural children were from families in which neither parent had any schooling. Whereas 63% of urban fathers and 24% of urban mothers had received either some primary schooling (1–5 years) or an equivalent number of years of Quranic education, only 26% of fathers and 6% of mothers had reached secondary school. In the rural setting, 31% of fathers and 13% of mothers had some primary education, and only 13% and 1.5%, respectively, had secondary or higher education. Parents of the Cohort 2 children were even less likely to have gone to school.

### Procedure

In this article, we report end-of-school-year assessments as follows: for Cohort 1, in 1983 (Grade 1) and 1987 (Grade 5); for Cohort 2, in 1985 (Grade 5) and 1987 (Grade 7). The children of Cohort 1 were assessed on their beliefs about reading in the spring of the first year of the study and by a second series of measures 5 years later. The beliefs of Cohort 2 were also assessed again 2 years after their first assessment.

All tests were administered by trained Moroccan testers in the presence of American field research assistants fluent in Moroccan Arabic. During the testing sessions of first graders, instructions were provided in the child's home language (Moroccan Arabic or Berber). Testing instructions in later grades were provided in Moroccan Arabic, but the content of all reading tests was in Standard Arabic, the children's first written language. Children were tested in two 1-hr sessions each year, usually in a quiet part of the school yard or in a vacant classroom. Both group and individual sessions were conducted, depending on the nature of a given test. It should be noted that each of the tests used in the study was adapted culturally and linguistically for use in both urban and rural Moroccan contexts, and each was extensively pretested before use with the children in the sample. Following is a brief description of each of the measures used in the present study.

*Metacognitive knowledge of reading skills and strategies.* Separate age-related instruments were developed to assess the metacognitive knowledge of readers in first grade and in later school years. The examination of first graders' metacognitive knowledge about reading skills required the development of a simple, easily understood task. We designed three stories about the "habits of a good reader" that described a pair of children with contrasting reading habits. The presentation of each story was accompanied by a picture of each child in the story. Stories were read aloud to children, who were required to choose which of the two children in the story would "learn to read better." Children were tested individually and indicated their responses by simply pointing to the picture of the "better reader" in each story. Story questions were created to contrast features of traditional (Islamic) with modern (Western or French) perspectives on learning to read in the Moroccan school setting. The stories, forming what we termed the Habits of a Good Reader (HGR) scale, presented three contrasts of these perspectives.

1. Individual versus group study. The collective spirit of traditional Morocco and Islamic education may be said to contrast with the advent of modern public schooling's emphasis on competitive individual examinations.

2. Silent versus oral reading. Traditional Moroccan/Islamic pedagogy has emphasized oral reading practice and recitation skills, whereas modern pedagogy typically supports silent reading practice.

3. Comprehension versus memorization. Traditional pedagogy has treated text memorization as a goal in itself, whereas modern pedagogy generally stresses comprehension as a more important goal of reading and learning. The following story, representing this third contrast, illustrates the procedure:

These two girls are both learning to read. This girl [tester indicates picture of girl at left of card] studies by memorizing her lesson without understanding the words. This other girl [tester indicates picture of a second girl, on the right] tries to understand the meaning of the words but doesn't memorize everything. Which of these girls will learn to read best? Point to her picture. [The choice of the second girl would earn the child one point.]

Overall, the HGR assessment was intended to yield a measure of socialization toward "modern" as contrasted with "traditional" learning styles.

A second assessment of metacognitive knowledge of reading skills and strategies, designed for older children, was administered to Cohort 1 in Grade 5 and to Cohort 2 in Grade 6. The questions that constituted this measure were derived from the work of Paris and his colleagues (Paris & Jacobs, 1984; Paris & Oka, 1986) and modified for the Moroccan context. A child's score on the 10-item Reading Awareness Index (RAI) indicated the number of times the child chose a response that was expected to be linked with better reading performance. Items were constructed in dichotomous fashion, but unlike the HGR scale described above, the dichotomies presented in the RAI were focused on reading beliefs derived from Western research studies, rather than tied to specific Moroccan cultural stereotypes. An example of an item from the RAI scale follows:

When you are reading and don't understand a whole sentence, do you (1) think about what the other sentences in the story are saying, or (2) immediately ask someone else what it means? [The first response would earn the child one point.]

*Causal attributions about success and failure.* Children's causal attributions for hypothetical positive and negative events were examined along two dimensions: effort versus ability and internal versus external. First graders (Cohort 1) received a single story, in HGR format, that presented a contrast between an intelligent reader who did not study (high ability) and a hard-working but less intelligent reader (high effort). For this age group, no internal/external attributional assessment was made. For older children, a version of Crandall, Katkovsky, and Crandall's (1965) Intellectual Achievement Responsibility (IAR) scale, presented in an oral questionnaire format, was administered. The original scale, designed to examine whether the individual tended to provide internal or external rationales for various hypothetical positive and negative experiences, was modified to incorporate situations relevant to the Moroccan experience and to include items that contrasted ability and effort attributions within the internal dimension. Cohort 1 was tested on this measure in Grade 5; Cohort 2 was actually assessed early in Grade 6, several months after the testing for reading skills. The scale was analyzed for two independent scores: Internal/External (IE; 17 items) and Effort/Ability (EA; 7 items). The following are examples from the IE and EA attribution scales (respectively):

When your mother asks you to buy many things at the market and you forget one thing, is that more likely because (1) your mother spoke too quickly [external], or (2) you have a bad memory [internal]?

When you do well on a test in school, is that more likely because: (1) you always do well on exams [ability], or (2) you prepared well for that test [effort]?

*Conceptions of good readers.* To examine the impact of role models on beginning readers, a task was created to assess first graders' conceptions of typically good readers in Morocco. Using the same format as the HGR scale described above, three stories were constructed that formed the Characteristics of a Good Reader (CGR)

scale. This scale included three contrasts, representing well-known categories of individuals in Moroccan society.

1. Arabic speaker versus Berber speaker. Although some Moroccan pedagogues claim that native speakers of Berber tend to excel in school because of cultural strengths, others have argued that learning in a second language is a more difficult task (Wagner et al., 1989).

2. Quranic preschooled versus modern preschooled. Whereas some specialists have suggested that the strict pedagogy and discipline of Quranic schooling prepares the child well for primary school learning, others have claimed that the modern preschool's greater variety of activities enhances the child's general development (Wagner & Spratt, 1987).

3. Boys versus girls. Although educational participation in Morocco was male dominated until relatively recently, girls' participation in schooling has been growing rapidly.

Naturally, the access of first graders to formal debates on the above dichotomies is quite limited. Nonetheless, our observations and subsequent data suggest that even young children may hold distinct beliefs on these subjects. Because early interviews indicated that the CGR scale produced diverse responses, no predetermined scoring system was developed. Therefore, items were aggregated during post hoc analyses, and subsequent analyses are treated as exploratory and descriptive rather than as tests of particular hypotheses.

*Reading tests.* Several measures of Arabic reading ability were constructed for this project. Tests were based on Arabic vocabulary and syntactic structures selected from Moroccan primary school textbooks used in first through seventh grade and were pretested with other children prior to use in the study. Because competence generally increased as children became older, tests were designed to increase in difficulty across years. The individual reading subtests used in this study included measures of letter knowledge and word decoding (Cohort 1, Grade 1), word-picture matching (Cohort 1, Grades 1 and 5; Cohort 2, Grade 5), sentence maze (Cohort 1, Grade 5; Cohort 2, Grades 5 and 7), and paragraph comprehension (Cohort 2, Grade 5; Cohort 2, Grades 5 and 7). Detailed descriptions and examples of these reading subtests are available in Wagner and Spratt (1987, in press). Each child's overall score of reading performance for a given year represents the mean of  $z$  scores of individual reading subtests used in that year.

*Cognitive tasks.* A variety of cognitive tasks were also administered to children over the years of the study. These tests included measures of concept identification (Cohort 1, Grade 1; Cohort 2, Grade 5), digit span memory (both cohorts, all grades), general information (Cohort 1, Grade 1; Cohort 2, Grade 5), perception (Cohort 1, Grade 5; Cohort 2, Grades 5 and 7), and logic (Cohort 1, Grade 5; Cohort 2, Grade 7). An overall cognitive score was calculated for each grade as the average of  $z$  scores on the tasks administered that year. This score was used in analyses as an estimation of the child's cognitive skill level. Descriptions of the cognitive tasks are available in Wagner and Spratt (1987) and Wagner et al. (in press). Split-half reliabilities of the reading and cognitive tests ranged from .76 to .90 (after the Spearman-Brown correction was used).

*Sociodemographic background variables.* Socio-demographic information on subjects' family background was collected through structured interviews. A 2-hr interview was conducted with one parent (usually the mother) of most children (85%) in Cohort 1 in the parent's native language (Moroccan Arabic or Berber). The interview provided information about educational level, language use of the child's parents and siblings, and father's occupation (the best available measure of socioeconomic status, or SES). Equivalent information was obtained through a similar structured interview with each of the students in Cohort 2. Detailed information on these interviews is contained in Wagner and Spratt (1988).

## Results

No significant differences in reading performance between boys and girls were found for any grade or cohort. Although differences by region were found (e.g., urban children outperformed rural age mates), there were no interactions by gender. Likewise, beliefs scales used in this study generally did not produce gender or regional differences, though a few exceptions will be discussed. Thus, the subcategories of gender and region were collapsed into cells that differed only by grade in school, and data analyses are presented according to the grade level involved.

### *Beliefs and Reading Achievement in First Grade*

The relationship between first graders' beliefs about reading and their actual reading performance was first examined through a series of chi squares on individual item responses by reading level (representing the low, middle, and high thirds of the distribution of reading scores). The results of the analyses of the HGR and CGR items are presented in Table 2.

Overall, children in each level of reading performance held generally traditional beliefs on the HGR items, believing especially that good readers tend to study with others and memorize text. However, neither individual nor combined HGR items showed a significant relationship to first grade reading level. This finding is not surprising; these first graders were, for the most part, very inexperienced readers with little home reading stimulation and few opportunities to learn much about specific reading habits. At this age, most Moroccan children with little primary school experience believed that traditional learning styles, supported substantially by the Islamic school tradition, offered the best ways to study.

On the CGR items, better readers were found to hold beliefs that a good reader was likely to be male and Arabic-speaking, and to have attended a modern preschool. The total score was significantly correlated with reading ( $r = .32$ , Table 3), and was found to differentiate between high, medium, and low reading levels in first grade,  $F(2, 347) = 14.70$ ;  $MS_e = .875$ ;  $p < .01$ . This finding suggests that young and inexperienced children hold distinct patterns of belief or knowledge about the social attributes of successful readers in Moroccan society, and that this knowledge is predictive of actual reading performance.

With regard to the story designed to examine causal attribution, most first graders chose effort (74%) over ability (26%) as more important for achievement—as, it has been found, do American children of comparable ages (Dweck & Bempechat, 1983). Such beliefs were unrelated to actual reading performance in the Moroccan sample, however, although there was a nonsignificant tendency for more low-achieving (11%) than high-achieving children (7%) to believe that ability was more important than effort.

A series of hierarchical regressions examined the contributions of background variables (SES and parental education), the CGR scale, and cognitive measures to prediction of first-grade reading ability for Cohort 1 (see Table 4). Adjusted  $R^2$ s

Table 2  
*Beliefs Among First Graders of Low, Middle, and High Reading Levels*

Story No.	Response <sup>b</sup>	Grade 1 reading level <sup>a</sup>			$\chi^2$
		Low ( <i>n</i> = 118)	Middle ( <i>n</i> = 118)	High ( <i>n</i> = 118)	
Habits of a good reader (HGR scale)					
1	Best to study alone <sup>c</sup>	8	8	7	1.05
	Best to study with others	26	24	27	
2	Best to comprehend <sup>c</sup>	13	11	12	0.46
	Best to memorize	21	21	22	
3	Best to read for pronunciation	18	14	15	2.93
	Best to read for meaning <sup>c</sup>	16	18	19	
HGR Total score means (range: 0-3)		1.07	1.13	1.10	
Characteristics of a good reader (CGR scale)					
1	Arabic speaker <sup>c</sup>	29	27	33	6.42*
	Berber speaker	5	4	2	
2	Girl reads better	15	13	9	22.07***
	Boy reads better <sup>c</sup>	8	12	18	
	No difference	11	7	7	
3	Modern preschooled better <sup>c</sup>	14	16	21	11.98**
	Quranic preschooled better	20	16	12	
CGR Total score means (range: 0-3)		1.48	1.70	2.07	

*Note.* Because of missing data on specific items, *N* ranges between 342 and 350. <sup>a</sup> Individual subjects' global reading scores were categorized as low, middle, or high on the basis of their position in the distribution of all subjects' scores; this distribution was grouped into approximate thirds. <sup>b</sup> Numbers indicate the percentage of respondents in each category for each story. Because of rounding, these numbers may not sum exactly to 100%. <sup>c</sup> Indicates that this response for the story contributed to a child's total score. An HGR score of 3 indicates a "modern" perspective; a CGR of 3 indicates the "ideal" stereotype of a good reader.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

were used to provide conservative assessments of increments of prediction. CGR beliefs were found to predict reading performance, even when entered after parental education, SES, and CGRfit, an index representing the extent to which the child actually possessed the attributes of what might be called the stereotypical good reader (i.e., the characteristics described by good readers). When entered after background and belief variables, cognitive ability in first grade (Cog/1) also contributed significant additional variance to first grade reading. However, when CGR was entered after Cog/1, the former still remained a significant predictor (i.e., it predicted 3% of the variance). Additional analyses showed that the only background variables that predicted CGR beliefs themselves were parental education (which explained 4% of the variance) and CGRfit (which explained 8%). The possibility that CGR beliefs and their strength in predicting reading performance reflected a tendency of better readers to choose CGR responses consistent with their own language background, gender, or preschooling (suggesting an effect of self-confidence) was also explored. An additional index representing the correspondence of the child's CGR beliefs with his or her own characteristics correlated only weakly with reading level in Grade 1 ( $r = .14$ ), less strongly than CGRfit (see Table 3). This finding suggests that belief in one's own attributes was less important in promoting reading performance than recognition of the

stereotypical male, Arabic-speaking, modern-preschooled model as most likely to be the better reader.

### *Beliefs and Reading Achievement in Higher Grade Levels*

Analyses showed that metacognitive beliefs and causal attributions were more strongly related to the reading performance of older children than to that of younger children. Hierarchical regression analyses were performed within each cohort to assess the independent contribution of the RAI to reading performance. For Cohort 1 (Grade 5), results indicated that the RAI scale explained little of the variance in reading performance after background, cognitive, and early (Grade 1) reading variables were included. For Cohort 2, however, RAI beliefs had a greater impact. Table 5 presents the hierarchical regression results for Cohort 2 in Grades 5 and 7. Whereas parental education and SES had little effect on reading, RAI predicted a modest but significant portion of the variance in Grade 5 reading, and became a stronger predictor in Grade 7. The fact that the Grade 5 children in Cohort 2 were likely to be older and to have attended more years of school than Cohort 1 fifth graders may explain the differences found between the two cohorts. Although the limited effects of parental education and SES would be sur-

Table 3  
Correlation Matrices of Variables (Cohorts 1 and 2)

		Cohort 1 (N = 205)											
		1	2	3	4	5	6	7	8	9	10	11	12
1	HGR/1												
2	EA/1	-.22											
3	CGR/1	.03	.27										
4	RAI/5	-.09	-.00	-.07									
5	EA/5	-.02	.03	.05	.01								
6	IE/5	.03	-.01	.07	-.02	.01							
7	Read/1	.06	.09	.32	.02	.04	-.08						
8	Read/5	.11	.06	.16	.07	.07	-.17	.53					
9	Par Ed	.08	.09	.21	.09	-.10	-.02	.17	.14				
10	SES	.00	.12	.10	-.00	.01	-.08	.20	.11	.29			
11	CGRfit	-.08	.28	.26	-.15	-.03	.03	.27	.16	.21	.01		
12	Cog/1	.09	.03	.13	.05	.09	-.10	.28	.35	.08	.12	.06	
13	Cog/5	.10	.02	.16	.02	.08	-.13	.51	.67	.08	.08	.15	.44

  

		Cohort 2 (N = 300)							
		1	2	3	4	5	6	7	8
1	RAI								
2	IE	.13							
3	EA	.09	.20						
4	Read/5	.15	.12	.14					
5	Read/7	.23	.07	.26	.59				
6	Par Ed	.00	-.02	-.02	.02	-.02			
7	SES	.05	.04	.03	.10	.11	.39		
8	Cog/5	.23	.08	.21	.41	.45	.06	.06	
9	Cog/7	.10	-.01	.06	.28	.23	.02	.04	.33

Note.  $r > .19$  significant at  $p < .05$ ;  $r > .22$  significant at  $p < .01$ . HGR = Habits of Good Reading scale; EA = Effort/Ability scale; CGR = Characteristics of a Good Reader scale; RAI = Reading Awareness Index; IE = Internal/External scale; Read = reading ability; Par Ed = parental education; SES = socioeconomic status; CGRfit = the correspondence between the child's beliefs, as measured by the CGR scale, and his or her own background; Cog = cognitive skill level. The numerals 1 and 5 after acronyms refer to Grades 1 and 5.

prising in some contexts, it should be recalled that the present study was designed so that such factors would play a minimal role—that is, children were selected from families who were largely uneducated and of modest economic means.

The contribution of causal attributions is also presented in Table 5. For Cohort 1 (Grade 5), the internal (IE) attribution scale explained a modest but significant 3% of the variance in reading ability ( $F = 5.83, p < .05$ ), whereas attributions to effort (EA scale) explained little variance. For Cohort 2 (see

Table 5), the effect of the IE attribution scale was smaller than for Cohort 1, whereas the Effort (EA) attribution scale, after background factors, explained a significant 5% of the variance for reading performance by Grade 7. All belief scales together predicted a significant 11% of the variance.

Interpretations of results from regression analyses should be made with caution, because linear regressions assume monotonic relationships. The present measures of reading awareness and causal attributions reflect judgments of Moroccan children regarding specific, concrete, and everyday situations. Because no prior assumptions could be made with regard to the degree of consistency across contexts that can be expected in children's causal attributions or metacognitive strategies, the primary justification for aggregation of specific items into scales was the validity of individual items themselves. The "preferred" response (i.e., toward greater reading awareness or internal attribution) was chosen in 14 out of 17 IE items in both cohorts; 4 out of 7 (Cohort 1) and 5 out of 7 (Cohort 2) for the EA scale; and 7 out of 10 (Cohort 1) and 9 out of 10 (Cohort 2) in the RAI scale. Overall, subjects chose the preferred responses with rates of 62%, 57%, and 63%, respectively, for the three scales in Cohort 1, and 62%, 65%, and 70% in Cohort 2. Moreover, the percentage increase across cohorts for the EA and RAI scales (from 57% to 65% and from 63% to 70%, respectively) indicated a developmental change in the expected direction.

Table 4  
Hierarchical Regression Model to Predict Reading in Grade 1 From Background Variables and CGR Scale (Cohort 1, N = 294)

Model	Adjusted R <sup>2</sup>	R <sup>2</sup> change	F
Par Ed + SES	.07	.07	11.95*
Par Ed + SES + CGRfit	.13	.06	19.37*
Par Ed + SES + CGRfit + CGR	.17	.04	17.38*
Par Ed + SES + CGRfit + CGR + Cog/1	.22	.05	28.26*

Note. CGR = Characteristics of a Good Reader; Par Ed = parental education; SES = socioeconomic status; CGRfit = the correspondence between the child's beliefs, as measured by the CGR scale, and his or her own background; Cog/1 = cognitive skill level in Grade 1. \*  $p < .001$ .

Table 5  
*Hierarchical Regression Models Predicting Cohort 2 Reading in Grades 5 and 7 (N = 300)*

Model	Adjusted $R^2$	$R^2$ change	$F$
Dependent variable: reading in Grade 5			
Par Ed + SES	.00	.00	2.84
Par Ed + SES + RAI	.02	.02	6.67*
Par Ed + SES + IE	.01	.01	4.03*
Par Ed + SES + EA	.02	.02	5.29*
Par Ed + SES + RAI + IE + EA	.04	.04	13.04**
Par Ed + SES + RAI + IE + EA + Cog/5	.17	.13	48.82**
Dependent variable: reading in Grade 7			
Par Ed + SES	.01	.01	4.57*
Par Ed + SES + RAI	.06	.05	15.76**
Par Ed + SES + IE	.01	.00	1.23
Par Ed + SES + EA	.07	.06	20.92**
Par Ed + SES + RAI + IE + EA	.11	.10	35.36**
Par Ed + SES + RAI + IE + EA + Cog/5	.24	.13	52.78**
Par Ed + SES + RAI + IE + EA + Cog/5 + Read/5	.42	.18	92.71**

Note. Par Ed = parental education; SES = socioeconomic status; RAI = Reading Awareness Index; IE = Internal/External scale; EA = Effort/Ability scale; Cog/5 = cognitive skill level in Grade 5; Read/5 = reading ability in Grade 5.

\*  $p < .05$ . \*\*  $p < .001$ .

With regard to criterion validity, children who selected the preferred responses on an item almost always had a mean global reading score higher than those who selected the other option on the same item, although only a few of those differences were statistically significant. In one extreme example, the preferred "reading awareness" option on a certain item was endorsed by only 25% of the subjects; nonetheless, this group of subjects had a mean Year 5 reading score 0.21 standard deviations higher than that of children who chose the other option.

Further examination of internal consistency revealed that the alpha coefficients for the EA and RAI scales were much lower (Cohort 1: EA = .19, RAI = .03; Cohort 2: EA = .17, RAI = .15) than the alpha coefficients for the IE scale, which were relatively high (Cohort 1 = .53; Cohort 2 = .62), indicating considerable inconsistency in responses to individual items. This situation, in which individual and grouped items in a combined scale are both good predictors but tend to have low intercorrelations, suggests that the measured beliefs may be situation-specific and may not generalize to other situations. Scores on these scales should be interpreted with caution, because they may not reflect a unitary underlying construct when measured in populations such as those used in the present study.

Additional analyses showed that the RAI, IE, and EA scales were more predictive at the extreme ends of each scale. For this reason, each scale was divided into low, middle, and high levels, and analyses of variance (ANOVAs) were performed to contrast mean reading ability for each level. When aggregated

into these levels, the RAI scale exhibited a coherent, positive pattern for both cohorts. The higher the child's level on the RAI, the better his or her reading performance. Although not significant for Cohort 1, this pattern was significant for Cohort 2 [Grade 5:  $F(2, 461) = 11.60$ ,  $MS_e = .600$ ,  $p < .01$ ; Grade 7:  $F(2, 313) = 7.65$ ,  $MS_e = .623$ ,  $p < .01$ ]. The IE and EA scales showed similar patterns: the IE scale in Cohort 1 was significantly related to same-year reading performance [Grade 5:  $F(2, 215) = 3.04$ ,  $p < .05$ ]; in Cohort 2, this relationship was significant for Grade 5 [ $F(2, 461) = 3.47$ ,  $MS_e = .621$ ,  $p < .05$ ], but not for Grade 7. Although the EA scale was not significantly related to reading for Cohort 1, it approached significance for Cohort 2 in Grade 5 [ $F(2, 461) = 2.76$ ,  $MS_e = .623$ ,  $p < .10$ ], and was more predictive of reading performance 2 years later [Grade 7:  $F(2, 313) = 5.82$ ,  $MS_e = .760$ ,  $p < .01$ ]. In Cohort 2, significant interactions by region [Grade 5:  $F(5, 458) = 3.72$ ,  $p < .05$ ; Grade 7,  $F(5, 310) = 3.16$ ,  $p < .05$ ] suggested that the scale was more predictive in the urban than in the rural context.

Although Cohort 1 and 2 samples differed in age and schooling history, it is useful for the subsequent discussion of developmental trends to demonstrate that the performance variability of the two samples was essentially the same. A comparison of performance variability was accomplished by selecting a subsample from Cohort 1 consisting of only those Grade 5 subjects who never failed in school ( $n = 80$ ) and a subsample from Cohort 2 consisting of only those Grade 5 subjects who never repeated Grade 5 ( $n = 123$ ). These analyses showed that the pattern of variability apparent in comparisons



of standard deviations was highly similar across the two cohorts, despite reliable differences in mean performance on several variables that were most likely due to cohort effects.

### Discussion

The context of learning to read in Morocco differs in a number of obvious ways from that found in the United States. For example, the special reverence for Quranic text in the Islamic religion, the Arabic language and orthography, a traditional pedagogical emphasis on rote memorization, and a dearth of books and literacy materials are among the many factors that make the lives and learning experiences of Moroccan schoolchildren distinct from those of typical American children. Despite the unique features of their educational culture, the results of this study suggest that Moroccan children's acquisition of reading is comparable in several respects to that of many other children around the world during the early school years.

First, a significant pattern of relations between beliefs and reading performance was found among Moroccan schoolchildren. The beliefs of first graders (Cohort 1) about the characteristics of good readers were clearly related to their own reading performance. In their answers to the CGR stories, good readers were more likely to state that an Arabic speaker would be a better reader than a Berber speaker. Similarly, the highest group of readers thought that boys would read better than girls, and that a child attending modern preschool would read better than a Quranic school pupil; the pattern was reversed for the lowest readers. This pattern of responses suggests the existence of clear cultural stereotypes about good readers. Children who learned these cultural stereotypes early on—even if they did not fit the stereotypes themselves—were successful readers. Although much of the variance in CGR beliefs remains unaccounted for, it is likely that parents, siblings, and teachers helped to shape children's knowledge about the typical characteristics of individuals who acquire literacy in Moroccan society. These social beliefs may, of course, represent a larger set of more specific ways in which Moroccan and other children characterize school success. These findings are among the few that link specific social beliefs and reading achievement in young beginning readers; further research will be needed to examine how these beliefs influence students' motivation and, reciprocally, teachers' attitudes.

Another pattern revealed in this study was that young children appear to be relatively naive about the skills and habits of good readers (cf. Hiebert, 1981; Johns, 1980; Myers & Paris, 1978). They may not know the strategies, goals, and plans used selectively by good readers. Young children's responses on the HGR scale revealed a lack of consensus about the skills of good readers. Although most children reported that good readers study with others, try to read for meaning, and try to memorize what they read, the HGR scale was unrelated to children's reading performance because of variability in students' perceptions of effective reading habits. For older children (Cohort 2), however, metacognitive beliefs about reading (the RAI scale) were significantly related to reading performance. Moroccan children who were experi-

enced, successful readers knew how to monitor and "repair" comprehension, how to adjust reading for different purposes, and what strategies might help their reading comprehension. In this regard, Moroccan and American schoolchildren show parallel developmental increases in what they know about reading as a cognitive activity. In fact, analyses showed that the extreme ends of the RAI scale were particularly effective in identifying good and poor readers. Thus, children with a more thorough understanding of the metacognitive parameters of literacy tended to become the most effective readers.

Finally, Moroccan schoolchildren's causal attributions were, with one exception, similar to those of American students. For Cohort 1, the most predictive attribution scale was the IE scale. Like children in many countries, those children who chose internal explanations tended to be the most successful readers. This pattern of results is consistent with data from around the world. For example, Stevenson, Lee, and Stigler (1986) and Holloway (1988) have found that Asian schoolchildren believe effort to be the most important factor in the acquisition of reading and math proficiency and that they rank effort more highly than American schoolchildren. Among American children, Connell (1985) has found that children who attribute responsibility to internal causes are more successful students than children who attribute causal explanations to unknown factors or to other external sources. In other words, good beginning readers tend to take responsibility for their own learning and assume control through effort and diligence in their learning. In an Islamic country such as Morocco, where the ubiquitous expression *Insha'Allah* ("if Allah wills it") has often been interpreted by Westerners to reflect a fatalistic attitude, this finding is particularly important. Moroccan children who ascribed failure most often to external factors beyond their control tended to be the least successful students in school. The Effort/Ability scale was not as effective as the Internal/External scale in differentiating good from poor readers, perhaps because of the restricted range of items (7 vs. 17 for the IE scale). Nonetheless, by Grade 7 (Cohort 2), a strong belief in effort as a reason for success or failure was significantly related to reading performance. Parallel to the increasing correlation with age between metacognition and reading performance, this result also reveals an increasing developmental relation between children's beliefs in effort and their success in reading.

One exception to expected trends was in the domain of gender differences. Dweck and her colleagues (e.g., Dweck & Bush, 1976; Elliot & Dweck, 1988) have argued that sex differences in American school achievement may be a function of different attributional styles socialized in boys and girls. Even though major differences in gender socialization exist in Morocco (Davis, 1984; Spratt, 1988), no differences were found in either causal attributions or reading performance in the present study. This result calls into question simplistic notions concerning gender differences in traditional societies, which may be characterized as "male-dominated." Indeed, in spite of the clear advantage that exists for men in employment opportunities, girls are just as likely as boys to become good readers. Other aspects of our research suggest that girls and boys in Morocco may have very different goals

in their use of reading skills (Wagner, Spratt, Klein & Ezzaki, in press), but that these goals result nonetheless in roughly equivalent levels of reading achievement.

This study and others from the same project (Wagner et al., 1986; Wagner & Spratt, 1988) reveal a pattern of results that supports the importance of belief systems for explaining children's acquisition of literacy. Beginning readers, especially good readers, learn some of the characteristics of good readers in contemporary Moroccan society. They come to regard males who have attended modern preschools and speak Arabic as successful literacy models. Yet at the same time, beginning readers may not know which specific reading habits or skills are critical for becoming good readers. By fifth grade, however, children have become much more aware of the parameters of skilled reading, and this knowledge remains important for reading performance at least through seventh grade. With increasing age, beliefs about personal effort also influence reading performance. Thus, over the school years, it appears that children's belief systems progress from general notions, or "social intelligence," about who good readers are, to encompass beliefs that are more specifically linked to particular types of skilled cognitive activity. Children no doubt construct these theories from their cultural and educational experiences. Although we do not believe that Moroccan teachers should teach schoolchildren that only male Arabic-speaking students who attend modern preschools will become good readers, there may be some merit in directing the attention of beginning readers to successful models in their environment, and in teaching them some of the metacognitive knowledge possessed by older successful readers about the purposes and skills of reading.

The results of this study are qualified by several factors. First, this study has shown that such beliefs emerge developmentally and are related to educational outcomes, but it has not identified the processes by which they develop. Second, as the educational system changes and educational opportunities increase for Moroccan children, the present pattern of results may change. Finally, it is evident that a number of important variables were not included in our regression analyses. Children bring to school many other types of beliefs that may also influence how they learn to read and write. Cross-cultural researchers will need to identify beliefs specific to each society, and those that are more general, to articulate how particular beliefs influence literacy in different countries. This exploratory study gives promise to that line of investigation because it provides evidence that even young children, living in low-literate households that would be labeled as "disadvantaged" in numerous contemporary societies, acquire a wide variety of beliefs about literacy that are related to their educational success.

In recent ethnographic studies, the social nature of literacy has been a focal topic of investigation (Heath, 1983; Street, 1984). These studies have revealed that even so-called "illiterates" often have well-developed notions about the functions and uses of literacy. For example, in making an order for fertilizer, an illiterate farmer may know exactly which forms are required, whom he could count on to fill out the forms properly, how much time it would take to get them processed,

and which family relative could verify that all steps had been completed accurately. It is increasingly apparent that young children, even before they have acquired the cognitive bases for reading and writing, have accumulated a great deal of knowledge about literacy. As in America, young Moroccan "preliterate" children acquire specific knowledge about the nature of literacy and its acquisition in the process of becoming proficient readers and writers. Data from Morocco provide only one additional cultural comparison, yet it is increasingly clear that children's beliefs, metacognition, and reading become interconnected as children progress through school and acquire literacy (Cross & Paris, 1988). Although reading is considerably more than believing or knowing or trying hard, our understanding of the acquisition of literacy is substantially enhanced when we measure the concurrent development of these important dimensions of literacy acquisition.

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