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Focus on Women's Empowerment in Latin America

Maternal Schooling and Health-Related Language and Literacy Skills in Rural Mexico

EMILY R. DEXTER, SARAH E. LEVINE, AND PATRICIA M. VELASCO

This article reports on a study of the health-related language and literacy skills of mothers living in a rural Mexican town.¹ The study bridges research on the relationship between maternal schooling and child health with research on literacy and literacy acquisition. Many analyses of health and demographic survey data have found that in developing countries maternal schooling is positively correlated with child health and survival; several researchers from the health field have suggested that literacy is an important explanatory variable: women who have attended school are presumably literate enough to obtain public health information. But health researchers have not provided a comprehensive description of the literacy associated both with schooling and access to health information, and only a few studies have included direct measures of women's literacy skills. Reading and literacy specialists emphasize that there is not a single type of literacy, that school-associated literacy is a complex social and psycholinguistic skill, and that reading ability is strongly related to oral language abilities. Our goal is to help fill the gap between research on maternal schooling and health and that on reading and literacy by applying a particular theory of literacy and schooling to understand the health-related language and literacy skills of mothers living in a rural Mexican town.

Maternal Schooling, Child Health, and Literacy

Statistical analyses of large-scale survey and census data from Africa, Asia, and Latin America have shown strong positive relationships between

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¹ Preliminary results of this study, along with results from companion studies conducted in Zambia and Nepal, are reported in R. A. LeVine, E. R. Dexter, P. Velasco, S. E. LeVine, A. R. Joshi, K. W. Steubing, and F. M. Tapia Uribe, "Maternal Literacy and Health Care in Three Countries: A Preliminary Report," *Health Transition Review* 4 (October 1994): 186–91.

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maternal schooling and child health and survival, even when controlling for socioeconomic status. Among women with similar socioeconomic resources, those with more schooling have healthier children, on average, than those with little or no schooling.²

To explain this effect, some have suggested that girls who go to school adopt a modern ideology that advocates the use of modern health-care facilities. John Cleland and Jerome van Ginneken, for example, write, "Education is likely to impart a greater responsiveness to novel ideas and services, a greater identification with the outside world, more social confidence at handling officials and perhaps an enhanced ability and willingness to travel outside the home community in search of services."³ Robert LeVine and colleagues write that schooling is part of the "bureaucratization of the life course": "The individual begins in school, progresses to a bureaucratic workplace, seeks health in bureaucratically organized hospitals and clinics."⁴ John Caldwell asserts that schooling results in an "identification with the whole modern system" as well as an ability to follow the instructions of medical personnel.⁵ For these researchers and others, the ability to communicate in modern medical settings is one of the theorized links between maternal schooling and child health.

There is much indirect evidence for the modernization theory: many studies have shown women who have gone to school are more likely to use modern health-care facilities, even when those services are supposedly available to everyone.⁶ A few studies have focused on women's language and com-

² H. Behm, "Socioeconomic Determinants of Mortality in Latin America," in *Proceedings of the Meeting on Socio-economic Determinants and Consequences of Mortality* (Mexico City: World Health Organization, 1979), pp. 139–65; C. T. Bicego and J. T. Boerma, "Maternal Education and Child Survival: A Comparative Study of Survey Data from 17 Countries," *Social Science and Medicine* 36 (May 1993): 1, 207–28; J. Caldwell, "Routes to Low Mortality in Poor Countries," in *Selected Readings in The Cultural, Social and Behavioural Determinants of Health*, ed. J. Caldwell and G. Santow (Canberra: Australian National University, Health Transition Centre, 1989), pp. 1–46; J. Caldwell and P. McDonald, "Influence of Maternal Education on Infant and Child Mortality," in *International Population Conference, Manila* (Liege: International Union for the Scientific Study of Population, 1981), 2: 79–96; J. G. Cleland, "Maternal Education and Child Survival: Further Evidence and Explanation," in *What We Know about the Health Transition: The Cultural, Social and Behavioral Determinants of Health*, ed. J. Caldwell, S. Findley, P. Caldwell, G. Santow, J. Braid, and D. Broers-Freeman (Canberra: Australian National University, Health Transition Centre, 1990), 2: 400–419; J. Cleland and J. van Ginneken, "Maternal Education and Child Survival in Developing Countries: The Search for Pathways of Influence," in Caldwell and Santow, eds., 1989, pp. 79–100; J. N. Hobcraft, J. W. McDonald, and S. O. Rutstein, "Socioeconomic Factors in Infant and Child Mortality: A Cross-National Comparison," *Population Studies* 38, no. 2 (1984): 193–223; R. LeVine, S. LeVine, A. Richman, F. M. Tapia Uribe, and C. S. Correa, "Schooling and Survival: The Impact of Maternal Education on Health and Reproduction in the Third World," in *Health and Social Change in International Perspective*, ed. L. C. Chen, A. Kleinman, and N. C. Ware (Boston: Harvard School of Public Health, 1994), pp. 303–38.

³ Cleland and van Ginneken, p. 86.

⁴ LeVine, LeVine, Richman, Tapia Uribe, and Correa, p. 317.

⁵ Caldwell, p. 32.

⁶ A. A. Abbas and G. J. Walker, "Determinants of the Utilization of Maternal and Child Health Services in Jordan," *International Journal of Epidemiology* 15, no. 3 (1986): 404–7; I. T. Elo, "Utilization of

munication skills as a pathway between schooling and health. Shirley Lindenbaum and her colleagues in their anthropological study of maternal schooling in rural Bangladesh note that young women who had been to school listened to health and family radio broadcasts, offered “quick conversational replies,” and were “more familiar with an interrogatory style which sometimes puzzles or fatigues their uneducated elders.”⁷ In their analysis of Brazilian survey data that included self-reports of literacy and media access, Duncan Thomas and his colleagues found that access to newspapers, television and radio explained the positive relationship between maternal schooling and child health for both rural and urban women.⁸ LeVine led a study of Mexican mothers that found those who had been to school reported reading and watching television more frequently than unschooled mothers and that schooling level predicted how well the mothers scored on a language task testing the ability to define nouns in a formal, dictionary-like style.⁹ And, Thomas Eisemon and Vimla Patel headed a study of Kenyan mothers that found that level of childhood schooling predicted understanding of the causes of diarrhoeal disease and the ability to follow printed instructions for preparing oral rehydration therapy solutions.¹⁰

These studies evidence that language skills and increased access to public information are benefits of maternal schooling that might lead to improved child health, but some of these studies have relied on mothers’ reports of their own literacy rather than assessing skills directly. And none of these studies has offered a comprehensive description of the language skills associated with schooling and necessary to understand public health information.

A Theory of Literacy

There are many valuable perspectives from which to view literacy—cultural, social, political, personal, economic, religious, historical. A large

Maternal Health-Care Services in Peru: The Role of Women’s Education,” *Health Transition Review* 2, no. 1 (1992): 49–69; R. Fernandez, “Analysis of Information about Mother-Child Care Taken from Fertility Surveys in Latin America” (International Statistical Institute, Voorburg, 1984); A. Elleneweig, “Factors Affecting the Utilization of Prenatal Health Care Services in Jerusalem,” *Journal of Community Health* 18 (April 1993): 109–21; K. Streatfield, M. Singarimbun, and I. Diamond, “Maternal Education and Childhood Immunization,” *Demography* 27, no. 3 (1990): 447–55.

⁷ S. Lindenbaum, M. Chakraborty, and M. Elias, “The Influence of Maternal Education on Infant and Child Mortality in Bangladesh,” in Caldwell and Santow, eds., pp. 112–33.

⁸ D. Thomas, J. Strauss, and M. Henriques, “How Does Mother’s Education Affect Child Height?” *Journal of Human Resources* 26 (Spring 1991): 183–211.

⁹ R. A. LeVine, S. E. LeVine, A. Richman, F. M. Tapia Uribe, C. S. Correa, and P. M. Miller, “Women’s Schooling and Child Care in the Demographic Transition: A Mexican Case Study,” *Population and Development Review* 17 (Spring 1991): 459–96.

¹⁰ T. O. Eisemon, V. L. Patel, and S. O. Sena, “Uses of Formal and Informal Knowledge in the Comprehension of Instruction for Oral Rehydration Therapy in Kenya,” *Social Science and Medicine* 25, no. 11 (1987): 1225–34; V. L. Patel, T. O. Eisemon, and J. F. Arocha, “Causal Reasoning and the Treatment of Diarrhoeal Disease by Mothers in Kenya,” *Social Science and Medicine* 27, no. 11 (1988): 1277–86.

body of research on Third World women focuses on the sociopolitical inequities associated with literacy, barriers to women's literacy, and gender-specific uses of literacy; and there is research describing adult literacy programs targeting women.¹¹

No single type of literacy is associated with printed language. The literacy required to competently read the Qur'an, for example, is not the literacy required to read and write personal letters, and both differ from that needed to read public documents.¹² The theoretical model we present focuses on the type of literacy required to communicate with public-health officials. Specifically, we employ a model that describes public, bureaucratic discourse—spoken and written—as “decontextualized” or “autonomous” text requiring specific linguistic and cognitive skills to comprehend or produce. These skills, we propose, are learned primarily in formal schools rather than at home or in local community settings.

Decontextualized Language

The concept of decontextualized language has been explored by many theorists and researchers and describes language that makes little explicit reference to participants, their personal experiences, or their immediate situation.¹³ Such “autonomous” language is detached from the speaker/author as well as the listener/reader, and meaning must be derived primarily from the words themselves rather than the context to have roughly the same meaning to different people. In contrast, daily conversation allows participants to refer implicitly to their shared interpretive context and background knowledge. Meaning resides as much in the minds of the speaker and listener as in the words themselves, so that the words are only well understood

¹¹ K. Chlebowska, *Literacy for Rural Women in the Third World* (Paris: Unesco, 1990); E. Malmquist, ed., *Women and Literacy Development in the Third World* (Linköping: Department of Education and Psychology, in cooperation with Unesco and Sweden International Development Authority, 1992).

¹² S. Scribner and M. Cole, *The Psychology of Literacy* (Cambridge, Mass.: Harvard University Press, 1981).

¹³ C. Cazden, *Classroom Discourse: The Language of Teaching and Learning* (Portsmouth, N.H.: Heinemann, 1988); W. L. Chafe, “Integration and Involvement in Speaking, Writing, and Oral Literature,” in *Spoken and Written Language: Exploring Orality and Literacy*, ed. D. Tannen (Norwood, N.J.: Ablex, 1982), pp. 35–53; S. B. Heath, “Protean Shapes in Literacy Events: Ever-Shifting Oral and Literate Traditions,” in Tannen, ed., pp. 91–117; P. Kay, “Language Evolution and Speech Style,” in *Sociocultural Dimensions of Language Change*, ed. B. Bount and M. Sanchez (New York: Academic Press, 1977), pp. 21–33; D. Olson, “From Utterance to Text: The Bias of Language in Speech and Writing,” *Harvard Educational Review* 47 (August 1977): 257–81; W. Ong, *Orality and Literacy: The Technologizing of the Word* (London: Methuen, 1982); R. Scollon and S. B. K. Scollon, *Language, Narrative, Literacy, and Face in Interethnic Communication* (Norwood, N.J.: Ablex, 1981); C. E. Snow, “Language and Literacy: Relationships during the Preschool Years,” *Harvard Educational Review* 53 (May 1983): 165–89, “Beyond Conversation: Second Language Learners’ Acquisition of Description and Explanation,” in *Research in Second Language Learning*, ed. J. P. Lantolf and A. Labarca (Norwood, N.J.: Ablex, 1987), pp. 3–16; C. E. Snow and D. K. Dickinson, “Skills That Aren’t Basic in a New Conception of Literacy,” in *Literate Systems and Individual Lives*, ed. E. M. Jennings and A. C. Purves (Albany: State University of New York Press, 1991); D. Tannen, “The Oral/Literate Continuum in Discourse,” in Tannen, ed.

within a particular context. For example, someone can ask a friend, “How did it go yesterday?” and there will be no confusion over what “it” means, while a stranger overhearing the conversation lacks the background knowledge needed to understand the question’s meaning.¹⁴

Another way of expressing the concept of decontextualization is to say that the interpretive context of some texts and utterances—conversations and private letters, for example—is small, local, and private, while that of others—including political speeches, newspaper articles, public instructions, or announcements—is large and public. In order to interpret language that is decontextualized, individuals rely less on their own personal and idiosyncratic experience and more on knowledge derived from the public sphere.

Decontextualized language also could be called “formal” or “bureaucratic.” When societies are organized so that large government or corporate institutions provide services such as education and health care, societal language becomes decontextualized. Instead of communicating informally and directly with individuals or by appealing to local knowledge, government officials communicate to the masses using the decontextualized voice of the state or the institution. Even when officials do meet face-to-face with citizens, the relationship is impersonal and the language resembles that of mass communication, putting citizens not literate in bureaucratic discourse at a disadvantage in obtaining resources such as health care or information.

Ron Scollon and Suzanne Scollon link this type of language with modernization and the rise of large institutions such as prisons, schools, hospitals, and factories.¹⁵ Naturally, one purpose of mass schooling is to train large segments of the population to understand and use a common language and a common set of discourse patterns. In many developing countries, however, much of the population lacks access to schooling or the quality of education is low: students attend sporadically, teachers are barely trained and often are absent themselves, there are no books or resource materials, and pedagogical practices discourage learning.¹⁶ Literacy theorist Emilia Ferreiro claims that low literacy levels of many Latin American adults—particularly among poor and marginalized people—results from the inappropriate literacy

¹⁴ The term “decontextualized language” is an imperfect term, and we use it primarily because it is the term most widely used in the sociolinguistic and psycholinguistic research literature from which our study emerges. Of course all texts and utterances refer to the audience’s background knowledge; all language exists in some context and gains meaning from that context. As the literacy theorist Frank Smith writes, “All meaningful language is contextualized; it is sensitive to its environment (including the intentions of its author) and it is this context that permits comprehension and learning” (F. Smith, “The Creative Achievement of Literacy,” in *Awakening to Literacy*, ed. H. Goelman, A. Oberg, and F. Smith [Exeter, N.H.: Heinemann, 1984], p. 148).

¹⁵ See Scollon and Scollon.

¹⁶ M. E. Lockheed and A. M. Verspoor, *Improving Primary Education in Developing Countries* (Oxford: World Bank/Oxford University Press, 1991).

instruction they received in primary schools.¹⁷ She describes the region's public schools as focusing on decoding at the expense of meaning, as providing no modeling of literacy's social functions, as using textbooks but no real world texts, and as teaching literacy through mechanical exercises rather than through meaningful communication activities.

Given the poor quality of many schools worldwide, even those who attend school for years may acquire few decontextualized language and literacy skills. Where schools are particularly poor, government attempts to deliver services such as health care through bureaucratic institutions and mass media are unsuccessful because of poor communication between service providers and clients. Cameron Mustard, for example, found in Honduras that a public health campaign to increase women's awareness about oral rehydration therapy was ineffective because clinic staff could not convey new information to unschooled rural women.¹⁸

Linguistic Features of Decontextualized Language

To be comprehensible to a wide audience, decontextualized language displays textual features that distinguish it from conversational language. One important feature is the type of vocabulary required to make meaning as explicit as possible. While conversational language often uses vague or general vocabulary that is clarified by context or shared knowledge, the vocabulary of decontextualized language must be as specific as possible in order to constrain interpretation, and words must have standardized meanings. A second feature relates to grammar. Conversational sentences typically are simple and fragmentary for a number of reasons: speakers have little time to compose complex sentences, there is less need for the explicitness that complex grammar creates, and intonation and pauses convey some of the information that complex grammatical structures convey. In contrast, the grammar of decontextualized language is often complex, with each sentence introducing new information and referring to information introduced in past sentences.

A third feature is the discourse structure of decontextualized language, which is more monologic than dialogic. Longer utterances than are common in conversation increase the cognitive load for both speaker and listener, and logical relationships between ideas must be specified with words and phrases such as "because," "in contrast," "rather than," "for that reason," or "therefore," while temporal relationships are described with language such as "after that," "then," "in the meantime," or "in the morning." Still a fourth feature is the impersonalization of the speaker/author in the

¹⁷ E. Ferreiro, "Children's Literacy and Public Schools in Latin America," in *World Literacy in the Year 2000*, vol. 520 of *The Annals of the American Academy of Political and Social Science*, ed. D. A. Wagner and L. D. Puchner (Newbury Park, Calif.: Sage Publications, 1992).

¹⁸ C. Mustard, "Maternal Education and the Incidence and Treatment of Diarrheal Disease in Young Children: Honduras, 1981-83" (Ph.D. diss., Johns Hopkins University, Baltimore, 1990).

text. The speaker/author presents him- or herself as an objective conveyor of truths rather than an individual with a particular perspective. Any reference to the author, such as the use of "I," is rare. In some documents the author is never identified or is identified only as an institution or agency.

Though decontextualization usually is associated with writing, such language can also be oral in the form of television and radio broadcasts, public announcements, and formal speeches and lectures.

Comprehending and Producing Decontextualized Language

Although decontextualized language is aimed at a large audience, that does not mean everyone can understand or produce it equally well. Catherine Snow and her colleagues designed a number of tasks to assess the language development of U.S. children and found that facility with decontextualized language varies and is not correlated with contextualized language ability.¹⁹ For example, children proficient at interviewing an adult (a contextualized task) are not necessarily skilled at describing a picture to someone unable to see the picture (a decontextualized task). Decontextualized oral language abilities are strongly correlated with academic reading ability, however, particularly for children in the upper elementary grades. Patricia Velasco and Ana Maria Rodino, in separate studies, found the same relationship when testing Puerto Rican children living in the United States.²⁰ Rodino also found a relationship between oral decontextualized language abilities and the writing abilities of Costa Rican adults.²¹

Reading theorist Jeanne Chall asserts that children's reading ability develops in qualitatively different stages.²² At an early stage, children can only read language and concepts that are as simple as their oral language. In the upper elementary years, however, children should progress to a stage in which they read "to learn new ideas, to gain new knowledge, to experience new feelings, to learn new attitudes."²³ It is at this level that children cannot rely primarily on their own personal experiences to understand what

¹⁹ C. E. Snow, "Beyond Conversation," "The Development of Definitional Skill," *Journal of Child Language* 17 (October 1990): 697-710, "Diverse Conversational Contexts for the Acquisition of Various Language Skills," in *Research on Child Language Disorders: A Decade of Progress*, ed. J. F. Miller (Austin, Tex.: Pro-Ed, 1991), pp. 105-24, "Language Proficiency, Towards a Definition," in *A Case for Psycholinguistic Cases*, ed. H. Dechert and G. Appel (Amsterdam: John Benjamins, 1991), pp. 63-89, "The Correlation of Imponderables: Assessing Relations between Language Proficiency and Academic Achievement" (Harvard Graduate School of Education, Cambridge, Mass., 1989); C. E. Snow, H. Cancino, P. Gonzalez, and E. Shriberg, "Giving Formal Definitions: An Oral Language Correlate of School Literacy," in *Classrooms and Literacy*, ed. D. Bloome (Norwood, N.J.: Ablex, 1989), pp. 233-49.

²⁰ P. M. Velasco, "The Relationship of Oral Decontextualized Language and Reading Comprehension in Bilingual Children" (Ph.D. diss., Harvard Graduate School of Education, 1989); A. M. Rodino, "Y . . . no puedo decir mas na": The Maintenance of Native Language Skills by Working-Class Puerto Rican Children in Mainland Schools" (qualifying paper, Harvard Graduate School of Education, 1992).

²¹ A. M. Rodino, "Determinants of Writing Performance and Writing Difficulties of Costa Rican Adults" (Ed.D. diss., Harvard Graduate School of Education, 1997).

²² J. S. Chall, *Stages of Reading Development* (New York: McGraw-Hill, 1983).

²³ J. S. Chall, V. I. Jacobs, and L. E. Baldwin, *The Reading Crisis: Why Poor Children Fall Behind* (Cambridge, Mass.: Harvard University Press, 1990), p. 12.

they are reading.²⁴ Snow suggests that the reading or writing problems many children encounter after learning a simple level of skills are problems of processing and producing decontextualized language, both oral and written.²⁵

The idea that literacy requires mastery of decontextualized language is compatible with the work of Ferreiro, who has done extensive research, much of it in Mexico, on the earliest stages of children's literacy development.²⁶ Ferreiro's work is based on Piagetian theory, which emphasizes that learners do not passively receive knowledge but actively interpret information according to their "assimilation schemes." Observing young children trying to read simple texts, Ferreiro noted that they often develop erroneous hypotheses about printed language, which they later modify. For example, many children believe that all words appearing next to pictures will be nouns, and so they misread verbs or other parts of speech as nouns until they modify that particular "assimilation scheme." By proposing that advanced literacy requires skills with decontextualized language, we are trying to characterize the assimilation schemes readers must employ to interpret formal written or spoken texts. These schemes must include a familiarity with the social and linguistic conventions of formal, public, bureaucratic language as compared with the conventions of more intimate speech.

What cognitive and linguistic skills are necessary to produce and understand decontextualized bureaucratic language? Snow suggests the need to be able to analyze one's own knowledge in relation to the knowledge of a nonpresent audience or author and the ability to reflect on aspects of language such as word meanings.²⁷ Writers or speakers must be able to anticipate what a public audience needs to know to understand a text and must choose words and phrases that best convey that information. Readers or listeners must be able to analyze their own knowledge to revise that understanding in light of the new information they are receiving from an unknown speaker or author.

David Olson describes decontextualized language ability as "being able to exist in a purely linguistically specified, hypothetical world for both pur-

²⁴ See Chall.

²⁵ Snow, "Language and Literacy" (n. 13 above).

²⁶ E. Ferreiro and A. Teberosky, *Literacy before Schooling* (Exeter, N.H.: Heinemann, 1982); E. Ferreiro, "The Underlying Logic of Literacy Development," in Goelman, Oberg, and Smith, eds. (n. 14 above), pp. 154–73, "Literacy Development: A Psychogenetic Perspective," in *Literacy, Language and Learning*, ed. D. Olson, N. Torrance, and A. Hildyard (New York: Cambridge University Press, 1985), pp. 217–28, "The Interplay between Information and Assimilation in Beginning Literacy," in *Emergent Literacy*, ed. W. Teale and E. Sulzby (Norwood, N.J.: Ablex, 1986), pp. 15–49, and "Literacy Development: Construction and Reconstruction," in *Implicit and Explicit Knowledge: An Educational Approach*, ed. D. Tirosch (Norwood, N.J.: Ablex, 1994), pp. 169–80.

²⁷ Snow, "Language and Literacy," "Beyond Conversation," "Diverse Conversational Contexts," and "Development of Definitional Skill."

poses of extracting logical implications of statements and of living in those worlds that . . . are opened up by texts.”²⁸ Comprehension of decontextualized language, therefore, requires a knowledge base derived from *language*—from listening and reading—rather than from first-hand experience. It also requires a vocabulary derived from decontextualized texts rather than intimate interactions with others.

Scollon and Scollon describe school-associated literacy in terms of a “fictionalized self” that is part of the “modern consciousness.” Becoming literate is a process of developing an identity as a “rational mind” without a specific personality, history, or viewpoint: “The ‘reader’ of an essayist text is not an ordinary human being. It is an idealization, a rational mind formed by the rational body of knowledge of which the essay is a part. . . . By the same token, the author is a fiction. The author, as a person, by a process of writing and editing, seeks to achieve a state of self-effacement. The author seeks to write as a clear communication from rational mind to rational mind.”²⁹ They suggest that some of the literacy barriers faced by Athabaskan-speaking students in Alaska and the Canadian North are caused by identity conflicts as students attempt to adopt the decontextualized voice required for school-based literacy.

Acquiring Decontextualized Language Skills

In literate societies, schools have primary responsibility for training children to use decontextualized language. This is the childhood environment in which children, separated from their intimate family and community, are expected to acquire knowledge that does not originate with their own experience but rather with the experience of distant experts.

Schools formally teach children to read, and as children progress they read more and more decontextualized texts. But school also is an intensely oral-aural environment. Most teachers teach by talking, so children must develop listening comprehension skills. And teachers also train children to speak in decontextualized ways. Courtney Cazden, for example, describes how a U.S. teacher asked children to offer examples of bodies of water, rejecting local examples such as “Lake Juniper” in favor of generic responses such as “lakes,” “rivers,” and “oceans.”³⁰ Requiring students to answer questions in complete sentences trains them to eschew the more abbreviated fragmentary structures of casual conversation in favor of decontextualized sentences resembling those found in books. When a teacher asks, “What are the major exports of Brazil?” and a student answers “rubber and bauxite,” the reply contains only some of the meaning, with the rest found in the

²⁸ Olson (n. 13 above), p. 267.

²⁹ Scollon and Scollon (n. 13 above), pp. 48–49.

³⁰ Cazden (n. 13 above).

teacher's question. A more decontextualized response would be, "The major exports of Brazil are rubber and bauxite."

In school-dominated societies, many parents, perhaps unconsciously, train their children from an early age to use decontextualized language structures. Shirley Brice Heath and Scollon and Scollon describe how many middle-class U.S. parents use elaborate questioning strategies to elicit decontextualized descriptions of objects or events—practices that seem peculiar to parents from other social classes or cultures.³¹ Similarly, LeVine and his colleagues have suggested that mothers in developing countries who have been to school adopt a more verbal and less physical interaction style with their infants than mothers without schooling.³² Snow and her colleagues have shown that the U.S. children most successful in primary school are those who have been socialized to use decontextualized language forms during early childhood.³³

Our goal was to examine directly the decontextualized language and literacy skills of mothers with varying amounts of schooling in a rural Mexican town. We devised a set of health-related spoken and written language tasks and focused on two main questions: (1) Were there correlations between performances on the different tasks? That is, did the same ability appear to underlie both written- and spoken-language facility? (2) How strongly were performances on these tasks related to childhood schooling? Was length of schooling a significant predictor of these skills, even controlling for background factors such as age and socioeconomic status?

The Current Study

Setting

The small town of Tilzapotla, Morelos, located 80 miles south of Mexico City, was selected for the study because of the unusually high value that community leaders—heirs to the populist tradition of the revolutionary leader Emiliano Zapata—have placed on education. When pilot research was initiated in the mid-1980s, this town with only 4,500 inhabitants had two *primarias* (primary schools), a *secundaria* (middle school), and a *preparatoria* (high school). The older primary school was established in 1922, just 2 years after the Mexican Revolution (1910–20) ended. Supported entirely by the community, the school admitted boys and girls in equal numbers. A second primary school was built as the community grew, and by 1950, when the Secretaría de Educación Pública took over the financing and administration of

³¹ Heath (n. 13 above); Scollon and Scollon.

³² R. LeVine, "Influences of Schooling on Maternal Behavior in the Third World," *Comparative Educational Review* 24, suppl. (June 1980): S78–S105; R. LeVine, S. E. LeVine, A. Richman, R. M. Tapia Uribe, C. S. Correa, P. M. Miller (n. 9 above); A. Richman, P. M. Miller, and R. A. LeVine, "Cultural and Educational Variations in Maternal Responsiveness," *Developmental Psychology* 28 (July 1992): 614–21.

³³ Snow, "Language Proficiency" (n. 19 above); Snow and Dickinson (n. 13 above).

both schools, most children attended for at least a few years. Those who wished to continue their education had to go outside the community, however, and most girls stopped after primary school because their parents were reluctant to let them travel unsupervised to the larger towns that offered secondary education. But in 1970, a middle school—one of the very first in rural Mexico—was opened in Tilzapotla, followed a few years later by a high school. In both schools girls regularly outnumbered boys, who usually chose employment over education by adolescence. Given this background, we were able in 1989–90 to locate mothers with considerable schooling, as well as women with little or no education who had migrated to the town.

Tilzapotla is in the southernmost sector of the state of Morelos, close to the state of Guerrero. The economy is based on agriculture and limestone quarrying. Tilzapotla is a relatively prosperous as well as progressive community. Nevertheless, it is a two-class town. The leading families, whose ancestors founded Tilzapotla, live in well-constructed houses lining the paved streets around the central plaza. They have access to *ejido*, or communal lands, and thus to bank credit, and they typically have more education. The men are the town's ranchers, teachers, shopkeepers, building and haulage contractors, and proprietors of the many small factories that process the limestone produced by the *ejido*'s two quarries. Though most married women do not work outside the house, many are engaged in small business enterprises conducted within the home. Their children tend to marry one another and, when they do not, they are likely to choose spouses from other communities rather than from the four outlying *colonias* (neighborhoods) of families who have migrated to Tilzapotla. These "newcomers," most of whom came from the mountains of Guerrero in search of work, live in simple houses that frequently lack running water and, until recently, electricity. Most of these adults are not literate, and only those who arrived in Tilzapotla as children have had a chance to go to school. The men are laborers for the farms, quarries, and plaster factories. Although the men may apply to the *ejido* for plots to grow corn and beans for their families, they are barred from membership in the *ejido* itself, and, thus, without collateral, they cannot obtain bank loans. Many of their wives work as laundresses or perform other domestic chores for families living in the central *colonia* (Centro). Despite their restricted opportunities, these men and women emphasize that the medical care and schools available for their children make life much better in Tilzapotla than the *rancherías* where they were born.

Although parents in both groups stress the value of primary education, they have very different attitudes toward higher levels of schooling. "Old-timers" are unambivalent about the importance of education. Knowing how difficult it is to make a good living in Tilzapotla, they strive to equip their children with the academic credentials for white-collar employment in distant cities. To this end, they willingly send their teenage children to cities to

live with relatives or in boarding houses so that they can attend private high schools and eventually a university or technological institute. These parents are also willing to invest equally in the education of sons and daughters. This reflects the financial reliance of elderly parents on children in a society with a restricted social security system; daughters are perceived as remaining emotionally closer to parents than sons, and therefore more reliable sources of support. For girls, the expectations are clear: study hard, get a good job, marry a man with at least as much education, keep on working—and never forget your parents.

“Newcomer” parents also stress the importance of education for daughters, and girls from the outlying *colonias* are likely to continue studying well beyond the age at which their brothers dropped out of school to work as manual laborers. But these parents rarely believe their children will get good jobs in the city, as these families lack the family and social connections that would make such employment likely. Instead, many expect their children will go to the United States, legally or illegally, to work in menial factory or domestic jobs. Thus, although many of these parents want daughters to at least complete middle school, it is not because they expect the school credential to be important for employment. Rather, they see school as providing the structure capable of protecting them from romantic relationships that could lead to premature marriage to boys as young and as poor as themselves. At the same time, mothers with little or no schooling often express an awe of schooling. They base this on their perception that educated women can better stand up for themselves (*se pueden defender*) against *machista* husbands and other authority figures (including their children’s teachers) and that educated women can effectively help their children with homework. Unschooling mothers want their daughters to acquire these advantages.

In terms of medical care, three systems were available to Tilzapotla residents in the late 1980s. First, employees received health coverage for themselves and their families from one of the national social security systems, to which both they and their employers made monthly contributions. Care was provided by hospitals and clinics in market towns some distance from Tilzapotla. Second, at the time of this study, four doctors who lived elsewhere maintained offices in Tilzapotla and were available for consultation for an hour or two each day. In addition, two midwives with some medical training had set up “clinics” in their homes where they monitored women during pregnancy and attended their deliveries. It was common for women covered by the social security system to prefer that their babies be delivered by one of these midwives in familiar surroundings. Third, those without health coverage who could not afford private care used the public health service clinic in the town center. This clinic—which was operated by a *pasante*, or medical intern, and two nursing students—often lacked staff and medicine. The

backstop in the system was provided by the town's only pharmacist, who dispensed advice along with medication.

Design

Three of Tilzapotla's five neighborhoods were sampled to ensure socio-economic diversity: Centro, home to the elite families, and Santana and Zapata, two of the four outlying neighborhoods where poorer families live. A house-to-house census was conducted in these neighborhoods, and 215 women with children under 5 were identified. All of these women agreed to participate in a survey focusing on schooling and health, but because of limited research resources only 90 were asked to take the time-consuming language and literacy tests described below. Because of missing data, only 78 of these women are included in the following analysis.

We hypothesized correlations among spoken and written tasks that required decontextualized language skills and that these abilities would be predicted by the length of the women's childhood schooling. Following Snow in her research with schoolchildren, we employed a noun definition task to assess women's decontextualized language skills. Women were asked the meaning of 10 simple nouns such as "knife," "thief," and "dog" with the question, "What is a _____?" Their responses are scored on a continuum from highly contextualized to highly decontextualized. A contextualized definition of "thief" would be "One stole my television," while a decontextualized response would refer to abstract properties: "A person who steals from others." A highly contextualized description of "cat" might be to point to a cat in the room, while a decontextualized description would describe it in terms of its superordinate category membership ("a cat is an animal . . .") and specific properties ("that is domesticated, nocturnal, and has fur and whiskers"). Each definition was rated on a scale ranging from 0 to 12 (with 12 representing the most decontextualized), with the final score based on an average of the 10 nouns.

There are several reasons for using this task to assess decontextualized language skills. The nouns employed were common words known to all the women, so what was being tested was their *way* of conveying what they knew about words. The task is oral, so performance does not require the ability to read. Finally, the task requires participants to take a distanced view of words rather than to use words for communication. As Olson notes, formulating a definition is "essentially a literate enterprise outside of the context of ongoing speech—an attempt to provide the explicit meaning of the word in terms of other words in the system."³⁴

The noun definition is the verbal equivalent of the object classification

³⁴ Olson, p. 267.

task that A. R. Luria used when investigating the reasoning strategies of Soviet peasants.³⁵ Luria found that nonliterate with no schooling were more likely to classify objects according to function rather than superordinate category: a scythe would be grouped with wheat rather than with other tools, for example. Luria proposed that schooling and literacy promote classification systems that are abstracted from everyday life.

To assess women's health-related language and literacy skills we employed tasks in listening comprehension, reading comprehension, and interview response. For listening comprehension, the women heard four brief public health messages that had been broadcast on Mexican radio, then repeated the contents. Scores represented the percentage of ideas women were able to recall. For example, the first message was, "Children between the ages of 6 months and 3 years should be weighed every month. If there is no weight gain for 2 months, something is wrong." Women earned a score from 0 to 4 based on whether they recalled the following four ideas: (1) as of 6 months children should be weighed monthly, (2) until 3 years children should be weighed, (3) if there is no weight gain for 2 months, (4) something is wrong.³⁶ The reading comprehension task was similar, as the women read short health-related messages and orally repeated the contents. The scores were the percentages of ideas the women repeated back. Women who told us they could not read and those who failed a first-grade reading test were not given the reading portion of the assessment.

For the interview task, the women were asked about their own or their children's health. The interviewer began with the question, "How have you been?" or "How have your children been?" When the woman finished her reply she was prompted with follow-up questions such as "So what did you do?" or "How long did that last?" or "What did the doctor tell you?" The interview was recorded, and the first 2 minutes transcribed. The transcriptions were then scored for the average number of ideas the woman offered in response to each interviewer question. This score was designed to measure the degree to which she offered a monologic description of her own or her child's health versus brief answers to each question while the interviewer structured the interview. The two examples that follow demonstrate the difference captured by this simple measure. The first is from an interview with a woman with no schooling, while the second is from an interview with a woman with 6 years of schooling.

³⁵ A. R. Luria, *Cognitive Development: Its Cultural and Social Foundations* (Cambridge, Mass.: Harvard University Press, 1976).

³⁶ The other three messages were (1) "Breast milk alone is the best possible food for the first 4-6 months of a child's life"; (2) "A child under 3 years of age needs food five or six times a day"; and (3) "Talking, playing, and showing love are essential for a child's physical, mental, and emotional growth."

1. No schooling:

How have you been? (¿Cómo ha estado de salud?)

Well just now I'm okay. (Pues ahorita bien.)

You haven't been sick at all? (¿No se ha enfermado?)

Only backache. (Solamente de dolor de espalda.)

How did that happen? (¿Cómo pasó eso?)

Because of so much work I guess. Washing clothes, making tortillas, and then drawing water from the well. So many chores. (De tanto trabajo, yo creo, de lavar ropa, hacer las tortillas, y luego sacar el agua del pozo, de tanto quehacer.)

And what did you do? (¿Y que hizo usted?)

I went to the doctor. (Fuí al doctor.)

Which one did you go to? (¿A cuál vió?)

The one here, Jorge, and the last name is Gutiérrez. (Con éste que está aquí, Jorge, y el apellido es Gutiérrez.)

What did he give you? What did he tell you you had? (¿Que le dió, que le dijo que tenía?)

Well, that I should have a lot of rest, that I shouldn't do any chores. And he gave me medicine. And I think it's already taken away the pain because I was thinking I couldn't stand it. He gave me a quite long course of treatment and now I'm feeling better. I took all the medicine. (Pues que tuviera yo mucho reposo, que no hiciera yo nada de quehaceres, y me dió medicina. Y si, creo que ya me quitó el dolor por que yo sentía que no aguantaba, me dió un tratamiento larguito y ahorita ya me siento mejor. Me tomé todo el tratamiento.)

2. Complete primary schooling (6 years):

How has your health been? (¿Cómo ha estado de salud?)

Well right now, since I had my last pregnancy, I've had low blood pressure. . . . I don't know if I've gotten better. . . . I've been going to the doctor but nothing changes. (Pues, ahorita desde que tuve el último embarazo se me bajó mucho la tensión. . . . No se si me ha compuesto. He estado yendo al doctor, pero sigo igual.)

How long have you had low blood pressure? (¿Cuánto tiempo tiene así con la tensión baja?)

Well, at the time I was 4 months pregnant and now my little girl is 7 months . . . almost 8. So it's more than a year. I was taking medicine, and the last thing they gave me were injections. I finished with them and I haven't been to see the doctor lately. I went (to the doctor) three times. First of all they gave me drops and pills, and (they told me) if I wasn't getting better, they would increase the dosage. I went another time and they gave me vitamins, and I was taking them. Recently I began feeling that my pressure was low again. (Pues, tenía cuatro meses de embarazo y la niña ya tiene siete . . . ya va para ocho. Ya tiene más de un año. Estaba tomando medicina, ya las últimas que me dieron fueron inyecciones. Me las terminé y ahorita no he ido ver a la doctora. Y me he estado sintiendo igual. Yo he ido tres veces. Primero me dieron unas gotas y pastillas, y que si no no me componía con esas me iban a aumentar la dosis. Y yo fuí otra vez y me dieron las vitaminas, y me las estuve aplicando. Hace poco empecé a sentir otra vez que la tensión se me baja.)

Note that the first woman answers only the questions asked and the interviewer needs six questions to elicit the complete story about her health problem—that she has a backache, perhaps caused by overwork, that she went to the doctor, and that the doctor prescribed a treatment which was effective. The responses in the second interview, in contrast, go beyond the

questions, and the interviewer asks only two questions to elicit a complete story.

The speaking task is the most naturalistic of the four language tasks and thus the most difficult to evaluate. We do not want to make strong claims about what *quantity* of speech means in this setting. Volubility can reflect women's empowerment, but it can also reflect loneliness and a need to talk to someone; taciturnity can reflect meekness, or it can reflect efficiency and a trust that the doctor will ask what is most pertinent. Consequently, we use this as a very rough measure of a woman's tendency to speak in units larger than single sentences, while recognizing the need to create more complex measures of natural speech.

Not captured by our quantitative measure are the health concerns that these women voiced. By and large, these women described their children as healthy. Though common childhood illnesses were frequently mentioned and were the cause of acute concern, major health problems appeared to be rare, and child mortality was low. Regardless of socioeconomic background, children in Tilzapotla during the 1980s were immunized against many childhood diseases often fatal to their parents' generation. By contrast, mothers had many complaints about their own health; this was particularly the case with mothers of very young children, many of whom talked about chronic conditions such as gastrointestinal problems, high and low blood pressure, and fatigue. Moreover, with the exception of the two midwives who were universally liked and admired, there was a marked absence of trust in or respect for the medical profession. When a treatment was successful, there was little indication of warmth or gratitude toward the doctor, and when a treatment failed, there was anger and a sense of futility. This might have reflected a perception of doctors as outsiders and high-status professionals unlikely to concern themselves with "la gente."

Results

Table 1 describes basic demographic information about the women—age, length of schooling, and childhood and adult socioeconomic status—and summarizes their scores on the language task. The sample includes women ages 16–44 from varied socioeconomic backgrounds and with a wide range of schooling (0–17 years).³⁷ The average school attendance was

³⁷ The childhood socioeconomic status (CH-SES) is a composite representing two pieces of information—(1) whether the woman was born in Tilzapotla and (2) whether her own mother could read; 1 point was assigned for each benefit so the variable ranges from zero to two. Birth in Tilzapotla was chosen as a childhood socioeconomic status measure because those born in Tilzapotla tend to be of higher socioeconomic status than migrants who came from more rural areas, where there is widespread poverty and illiteracy and few public resources. The adult socioeconomic status variable (AD-SES) is a composite of four pieces of information—(1) whether the woman currently resides in the elite central neighborhood of Centro (3 points), and whether her home was equipped with (2) running water (2 points), (3) a refrigerator (2 points), and (4) a television (1 point); i.e., this variable had a potential range of zero to eight.

MATERNAL SCHOOLING IN RURAL MEXICO

TABLE 1
SUMMARY STATISTICS DESCRIBING WOMEN'S LANGUAGE AND LITERACY SKILLS, SCHOOLING, AGE,
CHILDHOOD, AND ADULT SOCIOECONOMIC STATUS (*N* = 78, EXCEPT WHERE NOTED)

Variable	Description	Range	Mean (SD)
SCHOOL	Woman's schooling (years)	0–17	7.0 (4.1)
AGE	Woman's age (years)	16–44	28.2 (6.6)
CH-SES	Childhood socioeconomic status composite	0–2	1.2 (.7)
AD-SES	Adult socioeconomic status composite	0–7	4.2 (2.6)
HUSED	Husband's education (years)	0–19	6.7 (4.6)
NOUNS	Noun definition score	2.1–8.2	4.4 (1.7)
LISTENING	Listening comprehension score	12–78	39.8 (15.9)
PRINT (<i>N</i> = 71)	Print comprehension score	25–90	56.5 (16.3)
INTERVIEW	Health interview score	.33–94	8.4 (14.0)
INTERVIEW (logged)	Health interview score, logged	–1.1–4.5	1.3 (1.2)

7 years, with only six of the women reporting no school attendance and 18 reporting partial primary school attendance (1–5 years).

Table 1 also shows wide variation in performances on all language tasks. On the noun definition task, scores range from 2.1 to 8.2 out of a possible score of 12. Scores on the health-related language and literacy tasks—understanding oral and printed health messages and describing their child's health to an interviewer—also varied considerably. On the listening comprehension test, the lowest-scoring woman recalled only 12 percent of the ideas, while the highest repeated 78 percent. Of those taking the print message test, the lowest score was 25 percent while the highest was 90 percent. The scores on the interview task, ranging from 0.33 to 94, show that some women gave brief replies to the questions while others delivered lengthy monologues.³⁸

Language Task Correlations

Our first hypothesis predicted correlations between scores on the different language tasks—providing abstract definitions of nouns, understanding both spoken and written health messages, and providing a monologic health description in an interview. In other words, literacy should be thought of broadly as including facility with decontextualized language in oral and written forms. The estimated simple correlations among the scores on the language tasks are shown in table 2.

There are fairly strong correlations among scores on most of the tasks, suggesting that, on average, women skilled at one task also are skilled at the others. In particular, the noun definition score—an abstract task not

³⁸ Because the distribution of the speaking scores was skewed upward, the speaking scores were logged (using the natural log): using logged values also reflected the concept that small differences in the length of short answers are more important than small differences in the length of long answers. For example, a woman who answers questions with an average of 10 ideas gives much more information than a woman who answers with an average of only 2 ideas, but this 8-idea difference is less important if the difference is between 50 and 42 ideas: both are extremely long answers.

TABLE 2
ESTIMATED SIMPLE CORRELATIONS BETWEEN LANGUAGE VARIABLES
($N = 78$ FOR ALL VARIABLES EXCEPT PRINT)

	NOUNS	LISTENING	PRINT ($N = 71$)	INTERVIEW
NOUNS	1.00			
LISTENING	.71***	1.00		
PRINT ($N = 71$)	.52***	.76***	1.00	
INTERVIEW	.38***	.29**	.08	1.00

** $P < .01$.

*** $P < .001$.

encountered in most adult settings—correlates with all three of the more practical tasks: understanding radio announcements ($r = .71, P < .001$), understanding printed health messages ($r = .52, P < .001$), and offering a monologic description in a health interview ($r = .38, P < .001$). In addition, the listening comprehension scores are very strongly correlated with the reading comprehension scores ($r = .76, P < .001$). These correlations among oral and written language skills, which are similar to those found by Snow and colleagues in their studies of the reading development of U.S. schoolchildren, support the theory that the literacy associated with bureaucratic health-language is related to oral decontextualized language skills.

The strong correlation between listening and reading skills also shows it is not easy to circumvent literacy barriers by offering health information in the spoken modality. Our results showed wide variation in ability to understand spoken health messages, and it is the women with the lowest literacy abilities who have the most difficulty understanding.

As table 2 shows, our measure of the women's health interview skills displays the weakest pattern of correlation with the other skills—only moderately strong correlations with the noun definition score ($r = .38, P < .001$) and the listening comprehension score ($r = .29, P < .01$), and no correlation with the reading score ($r = .08$). This weaker pattern of correlations is not surprising, as the interview task is more complex, unbounded, and naturalistic than the noun definition and listening and reading comprehension tasks. Many cultural, social, and psychological issues—only one of which is the psycholinguistic ability to structure a monologue—affect how long a person speaks in an interview.

Schooling and Language Skills

Our second hypothesis was that length of schooling would be a major predictor of how well the women performed on all of the language tasks. We used regression analysis to test the effect of schooling on each of the language measures. For each language outcome, we first tested the effect of

schooling only, then added the control variables of age, childhood and adult socioeconomic status, and husband's education.³⁹

As table 3 shows, length of schooling does predict performances on noun definition, listening, and reading comprehension, though the size of the schooling effect differs by task. And when control variables are added, the schooling effect is only attenuated 15–25 percent. This attenuation occurs because of the correlations between schooling and the control variables, but it is not enough to suggest that the schooling effect is attributable primarily to youth and socioeconomic advantages. Length of schooling does not, however, predict performances of the interview task when controls are included in the regression equation. This score is best predicted by the adult socioeconomic status variable.

Length of schooling has the largest effect on the noun definition score, accounting for 58 percent of the variance ($R^2 = .58$), and has almost as large an effect on the listening comprehension score, alone explaining 44 percent of the variance ($R^2 = .44$). Schooling, however, has a statistically significant but much weaker effect on the print comprehension scores, explaining only 15 percent of the variance ($R^2 = .15$). What these equations suggest is that most of the women with substantial schooling were proficient at the noun definition and listening comprehension tasks—both oral language skills—but their reading comprehension abilities showed considerable variation. The schooled women typically were better readers than the women with less schooling, but many of them read poorly despite their education and some women with little schooling were somewhat proficient readers.

One explanation for these results can be found in our theoretical model of the relationship among schooling, decontextualized oral language skills, and reading ability. Schools are typically talk-saturated environments where teachers discuss concepts distant from children's experiences.⁴⁰ And, in classrooms all over the world, teachers do most of the talking, giving students ample opportunity to practice their listening comprehension skills. Snow and her colleagues suggest that decontextualized language skills are acquired first and most easily in the oral mode. Thus, it is not surprising that length of schooling is a more reliable predictor of oral language abilities than of reading abilities. Most children who attend school acquire some school-based oral language skills, but they do not necessarily acquire reading skills because these are more difficult to acquire and therefore more subject to individual variation and to differences in school quality. The strongest

³⁹ For all regression analyses we examined scatterplots, tested and found no interactions between schooling and control variables, examined residuals to ensure that normality assumptions were not violated, and conducted sensitivity analyses to ensure that single data points did not exert undue influence on the results.

⁴⁰ Cazden (n. 13 above).

TABLE 3
ESTIMATED REGRESSION COEFFICIENTS (AND STANDARD ERRORS) PREDICTING LANGUAGE AND LITERACY SKILLS
ON THE BASIS OF SCHOOLING AND CONTROL VARIABLES

	NOUNS (N = 78)		LISTENING (N = 78)		PRINT (N = 71)		INTERVIEW (N = 78)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SCHOOL	.31*** (.03)	.24*** (.05) N.S.	2.57*** (.33)	2.16*** (.49) -.39+ (.22)	1.69*** (.49)	1.24+ (.69) N.S.	.08* (.03)	N.S.
AGE								N.S.
CH-SES		N.S.		N.S.		N.S.		N.S.
AD-SES		N.S.		N.S.		N.S.		N.S.
HUSED		N.S.		N.S.		N.S.		N.S.
INTERCEPT	2.24*** (.25)	2.49*** (.68)	21.84*** (2.68)	34.27*** (7.32)	43.64*** (4.14)	56.56*** (10.31)	.73*** (.26)	.23*** (.07) N.S.
F	104.24***	22.30***	60.06***	13.44***	11.92***	3.32*	6.77*	4.78***
df	1,76	5,72	1,76	5,72	1,69	5,65	1,76	5,72
R ²	.58	.61	.44	.48	.15	.20	.08	.25

NOTE.—N.S. = not significant. Standard errors are in parentheses.

+ $P < .10$.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

correlate of reading ability, as shown in the correlation table (table 2), is listening skills ($r = .76, P < .001$). That is, oral language skills, acquired in school or elsewhere, should be considered a foundation for reading skills.

Returning to table 3 and the regression equation predicting women's natural speech in an interview, we see that this skill clearly has a different pattern of prediction from that of the other skills. While the noun definition, listening comprehension, and reading comprehension scores were predicted by length of schooling, adult socioeconomic status is the only variable that predicts how much a woman speaks in an interview. Women with more socioeconomic resources, on average, gave longer responses than women with fewer resources, regardless of education level. We have not found evidence, then, that women learned this skill in school. It should be noted, however, that adult socioeconomic status explains only 25 percent of the variance in this measure, showing that at each level of socioeconomic status considerable variation exists in the length of responses. Most important, we should not conclude from these null findings that schooling has no relationship to the way women speak to medical professionals in interviews. Our sample size is small—only 78 women—and failure to detect an effect could be due to a lack of statistical power or the imprecision of our measure. Instead, we take these null findings as an indication of a need to develop more complex measures of natural speech samples.

Summary and Discussion

This study of health-related language and literacy skills of women in rural Mexico showed the following: (1) there was wide variation in performance on all the skills we measured; (2) there were significant correlations between oral language skills and reading skills; (3) scores on a decontextualized language task correlated with skills on the health-related listening, reading, and speaking tasks; (4) length of schooling was a significant predictor of the ability to provide decontextualized noun definitions, to understand spoken health messages, and to understand printed health messages, but at all levels of schooling there was wide variation in women's reading abilities; and (5) childhood schooling was not a significant predictor of women's health-interview speaking skills, although the control variable of adult socioeconomic status did predict this ability. These findings provide some support for our hypothesis that women acquire decontextualized oral language abilities in school and that these abilities contribute to health-related reading and listening ability. We did not find support, however, for the hypothesis that women acquired in school a more monologic interview style.

In assessing these findings the importance of oral language abilities stands out. As Nelly Stromquist writes, "Illiteracy is far from being a technical problem, that is, [as simply] the inability to decode and encode the written

word.”⁴¹ Literacy is a complex social and psychological phenomenon, and one component, we assert, is the ability to understand language, oral or written, that is not presented in the context of personal relationships—the decontextualized language of public broadcasts and public documents. The oral language skills effective for local, face-to-face communication, we argue, are not a sufficient foundation for the bureaucratic literacy required to understand public-health messages. In our study, the women able to provide the most decontextualized, impersonal definitions of common words were also, on average, the most skilled at understanding spoken health messages, and those with the greatest listening-comprehension skills were best able to understand printed health information. In Tilzapotla, these skills appear to have been learned primarily at school rather than in the many other community and family environments that nurture other kinds of language abilities.

One could argue, of course, that we have not really measured language skills but rather test-taking abilities and so that the schooled women naturally would be more proficient at tasks such as recalling the contents of a radio message or defining a common noun. We cannot claim that we are testing *only* language skills, which do not exist in isolation from social skills. Clearly we are testing facility with language and with the social relationships and routines implied by a standardized research study. But those relationships and routines are not so different from women’s experiences when dealing with a health agency or what children encounter at school: in both settings individuals come into linguistic contact with a powerful nonlocal institution and must use whatever resources they have to gain services or access to skills and information, and, of course, to negotiate the terms of self-presentation.

Returning to our theory of language decontextualization, we argue that the ability to understand public, bureaucratic language—spoken and written—requires an orientation to language emphasized in schools but not necessarily in other family and community settings. This orientation includes a heightened attention to words and their standardized meanings, an extensive vocabulary acquired from reading and listening to public media, and some degree of identification with the public realm. This identification gives one the *option* to suspend or reject some of what one has learned from more local worlds in order to accept public information. If a woman’s personal and local world dominates her approach to spoken or written texts, she will not understand or believe novel health information presented in the public media. In their study of how mothers in Kenya understood the brief instructions for preparing oral rehydration therapy, for example, Eisemon

⁴¹ N. P. Stromquist, “Women and Literacy: Promises and Constraints,” in Wagner and Puchner, eds. (n. 17 above), pp. 54–66, esp. p. 55.

and his colleagues found mothers often ignored oral or written instructions—such as to boil the water—that did not conform to local practices.⁴² This does not mean that women can or should forget their personal experiences when encountering public information, however. Many women have good reasons for distrusting public authorities and institutions, and that mistrust can contribute to the development of a critical feminist consciousness.

This strong relationship between oral and reading skills suggests that a major goal of women's literacy classes should be to expand oral language abilities. Not only will these skills serve as a foundation for literacy, but they also will give women greater access to the information provided by the increasingly ubiquitous radio and television.

A second implication of our study is that public-health planners must be conscious not only of literacy barriers but also of oral language barriers. Many of the mothers did not understand simple health-related radio announcements. Oral messages that are brief, grammatically complex, informationally dense, and presented with little narrative context may be comprehensible only to the most educated members of the populace and completely inaccessible to those with little schooling. Guidelines for making spoken health messages more accessible could follow measures similar to those suggested by Eisemon and his colleagues for printed health instructions, including standardizing text markers and explaining reasons for unfamiliar procedures.⁴³ Several public health campaigns in African countries have made orally presented information more accessible by presenting public health information in the context of plays or televised soap operas.⁴⁴

A third implication of our research is that childhood schooling can play an important role in mothers' ability to understand health-related information. Schooling was strongly related to oral comprehension abilities, and oral comprehension abilities were strongly related to reading abilities. Tlzapotla is unusual because girls have been attending primary and secondary school there for several generations. In other areas of the world, female schooling may have a much weaker effect on mothers' language and literacy skills because schools are of poor quality and there is little community support for female education.

In closing, we suggest that a fruitful area of research and theory-building might involve the relationship between decontextualized language and critical feminist consciousness. What do these two concepts have to do with one another and how is the development of one related to the development of the other, both in young girls and in adult women? Surrounding each of

⁴² T. O. Eisemon, J. Ratzlaff, and V. L. Patel, "Reading Instructions for Using Commercial Medicines," in Wagner and Puchner, eds., pp. 76–91.

⁴³ *Ibid.*

⁴⁴ S. Armstrong, "South African Soap Aids the Health of the Nation," *New Scientist* 143 (August 1994): 5.

these concepts is a community of scholars and a body of research; and yet, to our knowledge, there has been little intersection between these two research areas.

One place to start might be with the concept of definitions. In the research described above we have focused on definitions as linguistic structures and we have argued that the ability to construct definitions with a particular formal structure is related to literacy. The *act* of defining words, however, is also a fundamental and powerful way of participating in the public sphere of meaning-making. A formal definition is an assertion that a word has a standardized—or shared—meaning that conveys not only one's own experience but also the experience of a collective, or an implied "we." Definitions are agreements about what words mean, and those agreements can be challenged. It is through the act of redefining words that new meanings can be created in the public sphere, and social change for women occurs, in part, when they successfully challenge the public definitions of words such as "marriage," "motherhood," "home," "work," "economy," "sexuality," "politics," and "equality." A critical feminist consciousness requires an ability to understand the way the world is currently defined and an ability to become an active participant in defining the public world.