

“Who Is Sitting Across From Me?” Immigrant Mothers’ Knowledge of Parenting and Children’s Development

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ABSTRACT. *Objective.* Although parents’ knowledge about child development and child rearing is relevant to pediatric practice, very little is known about immigrant parents’ knowledge. To fill this gap in research, this study investigated parenting knowledge in 2 groups of mothers who had immigrated to the United States.

Design. Japanese and South American immigrant mothers of 2-year-olds completed a standardized survey of parenting knowledge and provided information about sociodemographic and infant health status. Their data were compared with European American mothers in the United States.

Results. Immigrant mothers scored ~70% on the evaluation of parenting knowledge, significantly lower than multigenerational US mothers. The majority of immigrant mothers did not know correct answers for 25% of the items, and their incorrect answers were mostly to questions about normative child development.

Conclusions. Parents’ knowledge is relevant to pediatricians’ evaluations of the health and welfare of children as understood by their parents. Gaps in parenting knowledge have implications for clinical interactions with parents, child diagnosis, pediatric training, and parent education. *Pediatrics* 2004;114:e557–e564. URL: www.pediatrics.org/cgi/doi/10.1542/peds.2004-0713; *pediatrics, child-development knowledge, child health, child development, parenting, acculturation, immigration, parent education.*

ABBREVIATIONS. KIDI, Knowledge of Infant Development Inventory; CODQ, Concepts of Development Questionnaire.

Parenting knowledge encompasses understanding how to care for children, how children develop, and the diverse roles parents play in children’s lives.^{1,2} The general state of knowledge that parents possess in these domains constitutes a vital frame of reference from which parents interpret their children’s behaviors. Parenting knowledge affects parents’ everyday decisions about their children’s care and upbringing,^{1–6} which in turn affects children’s development.^{4,5,7} For example, mothers who are appropriately informed of the need for im-

munization usually act accordingly.⁸ Moreover, parents’ descriptions of their children’s behavior can influence physician decision-making.⁹ However, parents are most likely to report behavior that they deem as unusual, and knowledge of child development is basic to parents’ understanding of what is and is not normal behavior for a child of a certain age. In a nutshell, the study of parenting knowledge is important because such knowledge affects parenting decisions and practices that in turn affect child development.

In this study, we examined more closely what mothers know substantively about child development and child rearing. Whereas beliefs, attitudes, and values may or may not be factual, knowledge is thought to draw on the science base and to be valid and reliable by members of the clinical and research communities. Because parents are the main caregivers of infants and young children, investigating the amount and types of knowledge parents possess about child development and child rearing is a necessary early step to increasing and improving the dissemination and utilization of parenting knowledge and thereby to improving children’s quality of life.

THE SIGNIFICANCE OF PARENTING KNOWLEDGE TO CLINICIANS

Parenting knowledge of child development and child rearing is especially relevant to pediatric practice.¹⁰ During child health visits, clinicians must ask about and interpret parents’ expectations, concerns, and opinions about their children’s health and development.¹¹ Accurate and complete developmental anamnesis and surveillance depend on eliciting and properly construing parents’ reports and obtaining relevant developmental histories, among other things. Clearly, the validity of clinical impressions is improved when pediatricians and other clinical practitioners incorporate parental appraisals into their decision-making. After all, parents have the most experience with the child, are thought to know the child best, and are the clinician’s primary source of long-standing and outside information about the child.

Because clinicians routinely draw on parents’ knowledge during interviews, clinicians need to be aware that parents’ replies to the questions they pose are mediated by parents’ knowledge about children’s development and parents’ own child rearing. In other words, when interpreting the information parents provide, clinicians must take the sources and

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contexts of parents' cognitions into consideration. One especially noteworthy context of parenting knowledge is culture (MH Bornstein, PhD, CS Hahn, PhD, MA Suizzo, EdD, LR Cote, PhD, and OM Haynes, PhD, *Cultural, Sociodemographic, and Experiential Factors Predicting Mothers' Knowledge About Child Development and Child Rearing: National Immigrant and Cross-National Studies*, unpublished data, 2004). It is widely accepted that parenting knowledge, from children's attainment of developmental milestones and skills to parents' responsibilities and activities, differs across cultural groups; awareness of such differences is requisite to physicians accurately interpreting parents' reports about child health, development, and behavior during health-supervision visits. In attempting to understand the contemporary "health care gap" in the United States, Geiger¹² warned that "on the physician's side, poor communication, lack of cultural understanding, and subconscious negative, ethnic stereotyping can be involved."

PARENTING KNOWLEDGE IN IMMIGRANT POPULATIONS

The study of cultural differences in immigrant parents' knowledge of child rearing and child development is particularly germane today. The growing influx of immigrants to the United States in the past decade has made the study of immigrant parents a matter of heightened contemporary concern. The 2000 US Census indicates that ~1 in 5 children in the United States, or ~14 million children, lives with at least 1 immigrant parent (defined as a parent who was born outside the United States¹³). This situation has led to "systematic deficiencies and inequities" in health care as well as "disparities in...diagnosis and treatment for this country's most vulnerable populations."¹² The Department of Health and Human Services Agency for Healthcare Research and Quality¹⁴ recently documented these disparities in care associated with race, ethnicity, and socioeconomic status.

In this study, we focused on this vulnerable population of immigrants. Research on immigrant families suggests that the belief systems of the majority group are not always readily adopted and that culturally significant parenting beliefs and norms are among the most resistant to change in a culture.^{15,16} Thus, such government initiatives as the National Institute of Child Health and Human Development "Back to Sleep" campaign may be even less well known among immigrant parents. Unfortunately, little is understood about parenting knowledge among immigrant families. Asian and Latino people, subgroups of which we studied here, are currently the majority immigrant groups in the United States,¹⁷ but they have received comparatively little research attention.^{18,19} Moreover, the Asian and Latino populations in the United States are expected to triple by midcentury,²⁰ making it increasingly important that clinicians better understand Asian and Latino parents. To begin to address the paucity of knowledge on this subject, the main goal of the present study was to determine the nature and composition of immigrant mothers' knowledge of child develop-

ment and child rearing. Taking parental knowledge and cultural background into consideration adds to the subtlety and scope of the clinician's task, but overlooking the knowledge-culture nexus risks losing access to vital information about the patient.

QUESTIONS ABOUT PARENTING KNOWLEDGE

These considerations of the cultural significance of parenting knowledge to clinical decision-making, competence in parenting, and children's healthy and successful growth and development gave rise to the general question that motivated this research: How complete and accurate is immigrant mothers' knowledge of child development and child rearing? To address this question, we studied 2 different ethnic groups migrating to the United States at the same point in time. Recruiting 2 comparison groups allowed us to examine generalities and specificities in the acculturation of parenting knowledge among immigrants to the United States. We recruited groups that were intentionally similar and different on a number of demographic and psychosocial characteristics. Both the Japanese and South American acculturating samples were immigrants and not refugees, an important distinction because psychologic difficulties known to affect parenting frequently accompany refugee status.^{21,22} Mothers in all samples were metropolitan, middle class, similar in age, and had comparable levels of education. However, these comparison groups also differed on a number of psychologic, social, and historical dimensions: Japan and Latin America represent Eastern and Western cultures, respectively, that vary in terms of history, beliefs, and values.²³⁻²⁷ For example, Japan was isolated from the rest of the world until relatively modern times and as a result developed insular and unique ways of thinking and learning.^{18,28,29} In contrast, South America shares with North America a certain heritage and history that is not shared with Japan, in particular their colonization by Europeans, which has resulted in many common political, cultural, and religious beliefs and institutions.^{23,26} Thus, we expected different patterns of knowledge for these 2 distinct immigrant groups despite their equivalent levels of acculturation to US society.

METHOD

Participants

One hundred fourteen mothers of 20-month-old infants from 3 cultural groups participated: Japanese immigrants to the United States ($n = 38$), South American immigrants to the United States ($n = 36$), and European Americans living in the United States ($n = 40$). Participants lived in the Washington, DC, metropolitan area. Mothers were recruited to be demographically similar and to be representative samples of middle-class mothers in their particular ethnic group; US mothers were chosen from a larger sample to achieve sample size and demographic comparability with the Japanese and South American immigrant mothers and yet still be representative of the population of middle-class European American mothers living in and around Washington, DC. Table 1 shows sociodemographic information for the mothers in each ethnic group. Both groups of immigrant mothers were bicultural, as indicated by their scores on a 5-point acculturation scale³⁰ ($M = 2.18$ and 2.36 and $SD = 0.65$ and 0.43 , respectively, $t[72] = 1.42$ [nonsignificant]) and were either first- or second-generation Americans (meaning that either they or their parents immigrated to the United States), respectively: $35:3$, $31:5$, $\chi^2(1, n = 74) = 0.69$

TABLE 1. Descriptive Statistics for Sample Sociodemographic Characteristics

Sociodemographic Characteristics	Japanese Immigrants	South American Immigrants	European Americans
Mother			
Age, y	33.4 (4.0)	33.1 (4.8)	32.5 (3.4)
Education*	5.7 (0.8)	6.0 (0.8)	6.1 (0.7)
Number of h employed weekly†	11.5 (18.8)	18.5 (18.9)	20.6 (18.9)
Child			
Age, mo	20.2 (0.6)	20.5 (0.7)	20.1 (0.2)
Birth weight, g	3200.1 (409.6)	3539.3 (653.8)	3504.1 (485.9)
Family			
Four-Factor Index of Social Status	56.7 (9.7)	49.5 (12.6)	56.8 (6.3)

M(*SD*) is shown for all columns.

* On the Four-Factor Index of Social Status⁴⁷ 7-point scale.

† Includes homemaker mothers.

(nonsignificant). European American mothers were either fourth- or fifth-generation Americans (ie, most or all of their grandparents were born in the United States).

South American immigrant mothers were primarily from Argentina, Peru, and Colombia, and their first language was Spanish.³¹ In areas of the United States in which there are several Latino groups and not a large concentration of 1 particular Latino group, as is the case in the Washington, DC, area,^{31,32} people tend to identify themselves as Latino or by their regional affiliation rather than by their country of origin.³³ Mothers participating in this study self-identified as South American by responding to an advertisement for South American families/familias de origen Sud Americano, an important methodologic issue for research with Latina participants.³⁴ Empirically, there were no differences within the South American immigrant group on the dependent variables. Similarly, Japanese immigrant mothers self-identified as Japanese American, and their first language was Japanese. Our immigrant samples are demographically representative of immigrants from South America and Japan living in US metropolitan areas,^{31,32} and they are representative of Japanese and South American immigrants to the United States, who during the last 2 decades have been well educated, are from the urban middle class, and immigrated primarily for economic reasons.^{35–37}

All data were collected in compliance with the National Institutes of Health Internal Review Board human assurance guidelines.

Procedure

Participating mothers were recruited from hospital and newspaper birth announcements and mass mailings. Parenting knowledge data were collected directly from mothers. Data collection on parenting knowledge took place toward the end of the child's second year when the children were ~20 months old. We studied parenting knowledge at that time for several reasons. First, the instrument we used to assess parenting knowledge covered the child's first 2 years. Moreover, we wanted information from mothers who were settled in the maternal role and whose cognitions about parenting had time to stabilize. Soon after parturition, many women experience fluctuations in mood³⁸ and level of marital satisfaction,^{39,40} and we scheduled the collection of data on parenting knowledge to avoid these transient vicissitudes.

Instruments

The Knowledge of Infant Development Inventory (KIDI) (D MacPhee, PhD, *Manual for the Knowledge of Infant Development Inventory*, unpublished data, 1981) was the principal measure in the study. The first criterion established for the KIDI was that it provides broad coverage of information. It assesses knowledge of effective parenting practices that promote children's healthy psychosocial development, developmental processes, health and safety guidelines, and developmental norms and milestones relevant to children from birth to 2 years of age. The inventory contains 75 items, 48 of which ask respondents to indicate whether they agree, disagree, or are unsure about a series of statements (eg, "You must stay in the bathroom when your infant is in the tub"). An additional 20 items ask parents to choose among 4 responses (agree, younger, older, or unsure) in relation to a statement about when a child should be able to achieve a particular milestone (eg,

"Most infants are ready to be toilet trained by 1 year of age"). The remaining 7 items are either questions or sentence completions with 5 possible answers (eg, "The average newborn sleeps a total of: (a) 22 hours a day, (b) 17 hours a day, (c) 12 hours a day, (d) 7 hours a day, (e) not sure"). All items were worded so that they would be accessible to individuals with no more than a 6th-grade education and so as to be free of sociocultural biases (D MacPhee, PhD, *Manual for the Knowledge of Infant Development Inventory*, unpublished data, 1981). Responses were scored as incorrect (0) or correct (1). As a result of an instrument-validation process (see below) and to increase scale reliability,^{41,42} 4 items were omitted from the analyses (items 1, 31, 39, and 40), and the proportion of total correct across the remaining 71 items was calculated for each mother. Because the data were binary, we performed principal component analyses by using binary similarity coefficients obtained from the 71 items used in larger US and cross-cultural data sets ($n = 331$ and 322 , respectively). The analyses revealed a single dominant factor for data sets with eigenvalues for the first and second factors 51.5 and 4.1 for the US and 44.1 and 5.1 for the cross-cultural data. Extracting a single factor explained 72.5% and 62.1% of the total variance for the US and the cross-cultural data, respectively. The KIDI has good internal and test-retest reliability and construct validity (ie, it was positively related to degree of practical and professional experience with children [D MacPhee, PhD, *Manual for the Knowledge of Infant Development Inventory*, unpublished data, 1981]).

The KIDI is a widely used measure of knowledge of children's development,^{3,10,43,44} and it is used in the Early Head Start Research and Evaluation Project, currently being conducted by the Administration for Children and Families, US Department of Health and Human Services. The KIDI is also related to another widely used measure of mothers' knowledge of children's development: the Concepts of Development Questionnaire (CODQ) (ie, the KIDI was significantly positively related to the Perspective subscale of the CODQ and significantly negatively related to the Categorical subscale of the CODQ).

Sociodemographic information was gathered by using a Family Description Questionnaire (MH Bornstein, PhD, CS Tamis-LeMonda, PhD, JTD Suwalsky, MS, and OM Haynes, PhD, *Family Description Questionnaire*, unpublished data, 1991) and the Hollingshead Four-Factor Index of Social Status (AB Hollingshead, PhD, *The Four-Factor Index of Social Status*, unpublished data, 1975). Because differences exist between countries in the duration, quality, and content of schooling, bicultural researchers adjusted mothers' years of schooling so that the scales were equivalent to the Hollingshead scale. Several steps were taken to promote the validity and cultural appropriateness of all the instruments used, because we aimed to arrive at translations that had "adapted equivalence" across cultures from a psychological perspective.⁴⁵ The questionnaires, originally constructed and written in English, were first translated into Spanish and Japanese and then back-translated by bilingual bicultural South American and Japanese natives using standard back-translation techniques.^{46,47} The translated instruments next were checked for preservation of meaning and cultural appropriateness by professional psychologists or pediatricians from each country. Professionals and bilingual mothers from each culture who lived in the United States and were not participants in the study were then interviewed regarding the

cultural validity of items in the instruments. Finally, pilot testing was undertaken to ensure that the instruments were comprehensible and ethnographically valid.⁴⁵

RESULTS

Data-Screening Procedures

Data were examined for univariate and influential bivariate outliers by using scatter plots and numeric statistics: the studentized deleted residual, leverage, and Cook's SD. Initial estimates of optimal transformations were sought by evaluating inverse fitted-value plots and output from Box-Cox methods.⁴⁸ The KIDI proportion-correct score was raised to the third power to approximate normality and reduce the number and influence of outliers.^{48,49} Transformed variables were used in all analyses; however, untransformed values are reported to facilitate interpretation. Sociodemographic variables appearing in Table 1 were examined as covariates. To qualify as a covariate, a sociodemographic variable had to correlate significantly ($P < .05$) and meaningfully (explain at least 5% of the variance) with mothers' KIDI score as well as have a significant effect in the analysis of covariance ($P < .05$). Only 1 covariate, mothers' education level, met these criteria. Because the assumption of homogeneity of regression slopes was not met for the analysis of covariance, different regression slopes were fitted for each cultural group by using mean-deviated scores.

What Mothers Know

An analysis of variance with 1 dependent variable (mothers' KIDI score) and 1 between-subjects factor (cultural group) with 3 levels (Japanese immigrant, South American immigrant, European American) compared immigrant mothers' knowledge of parenting to that of European American mothers. There

was a significant main effect for cultural group on proportion-correct KIDI scores ($F[2,111] = 23.62, P < .001$, and $\eta_p^2 = 0.30$), indicating that both Japanese immigrant mothers ($M = 0.72$; $SD = 0.09$) and South American immigrant mothers ($M = 0.75$; $SD = 0.11$) scored significantly lower than European American mothers ($M = 0.84$; $SD = 0.05$) on parenting knowledge, all Tukey's honestly significantly different ($P < .05$). These group differences remained when mothers' education level was controlled ($F[2,108] = 19.04, P < .001$, and $\eta_p^2 = 0.26$).

What Mothers Do Not Know

What kinds of questions do immigrant mothers specifically fail to answer correctly? We identified 18 questions (25% of the inventory) for which $\geq 50\%$ of immigrant mothers either answered incorrectly or said they did not know what the answer was. Of these 18 items, 13 (~20% of the inventory) were ones that both Japanese and South American immigrant mothers tended to answer incorrectly. These items appear in Table 2. Nearly all the questions that Japanese immigrant and South American immigrant mothers experienced difficulty answering concerned normative aspects of children's development and parent-child relationships during infancy; none concerned children's physical health or safety.

DISCUSSION

Although 2 distinct groups of immigrant mothers were sampled, their overall scores on the KIDI were similar, and with a few exceptions, immigrant mothers answered correctly and failed to answer correctly the same sets of questions. Specifically, immigrant mothers experienced difficulty answering questions concerned with normative aspects of children's de-

TABLE 2. KIDI Items That the Majority of Immigrant Mothers Had Difficulty Answering

KIDI Item	Mothers Who Answered Correctly, %		
	All Immigrant Mothers	Japanese Immigrants	South American Immigrants
Development: physical and physiological			
A 4-mo-old lying on his (her) stomach can lift his (her) head	15	20	10
Altogether, the average newborn cries ~1-2 h out of every 24 h	36	37	36
Babbling ("a-bah-bah" or "bup-bup") begins at ~5 mo	49	50	48
Development: cognitive and perceptual			
One's IQ (intelligence) score stays the same from infancy through childhood	48	42	55
An infant will begin to respond to his (her) name at 10 mo	48	55	40
An 8-mo-old is most likely to be scared by an unfamiliar person wearing a mask	50	45	56
Infants have depth perception by 6 mo of age (can tell that they are on a high place)	19	25	13
2-mo-olds can tell some speech sounds apart	22	20	24
Development: emotional			
A baby of 6 mo will respond to someone differently depending on whether the person is happy, sad, or upset	44	42	45
Development: temperament and personality			
Some normal babies do not enjoy being cuddled	34	25	44
A baby's personality (individuality) is set by 6 mo of age	41	45	36
Parent-infant relationships			
Some mothers do not get really involved with their infants until the baby starts to smile and look at them	22	32	10
The way the parent responds to the baby in the first few months of life determines whether the child will grow up to be happy and well-adjusted or moody and a misfit.	26	20	34

velopment and parent-child relationships during infancy but had less trouble answering questions about children's physical health or safety. In many ways, it is reassuring that parents tended to answer items concerning children's physical health or safety correctly. For example, because the use of excessive bedding such as soft pillows and blankets is associated with a higher incidence of sudden infant death syndrome,⁵⁰ and because leaving an infant alone in a bathtub may put the child at risk for drowning, it is reassuring that the majority of Japanese and South American immigrant mothers we sampled knew to avoid these practices (94% and 98%, respectively). Similarly, because immunizations are essential to maintaining health and preventing disease in the infant's first year of life, that a majority (96%) of immigrant mothers report knowing this fact is also very positive. However, a majority (85%) of immigrant mothers do not know the age at which an infant can lift his/her head while lying on his/her stomach, which has direct implications for sudden infant death syndrome and the Back-to-Sleep program. This suggests that immigrant mothers generally may be unfamiliar with particular issues, and these areas may be ripe for intervention by pediatricians, development specialists, and parent educators.

The gaps in parents' knowledge about normative child development and the role of parents in their children's development indicate that more needs to be done in educating parents. For example, only ~1 of 3 immigrant mothers knew that the average newborn cries ~1 to 2 hours out of every 24 hours; ~1 of 3 mothers thought the infant cried for 3 to 6 hours a day, and ~1 of 3 did not know. Because crying is one of the primary ways newborn infants communicate their needs to their caregivers, if parents think that several hours of crying per day is normal, they may be less likely to respond to their infants' distress. Other questions immigrant mothers did not know have to do with infants' perceptual development (eg, "Infants have depth perception by 6 months of age [can tell that they are on a high place]"). Infants who crawl before they have depth perception might be more likely to find themselves in dangerous circumstances without closer parental surveillance.

Immigrant mothers also lacked some basic knowledge about infants' cognitive development. For example, <50% were able to answer the question: "An 8-month-old is most likely to be scared by: (a) dreams, (b) large animals, (c) being alone in the dark, (d) an unfamiliar person wearing a mask." This kind of knowledge can help a mother understand why her child, who loves to watch Barney on television, was afraid to go near the character when he made an appearance at the local mall. Similarly, mothers may not understand why their toddler is wary of them after they treat themselves to a change in hair style or color. Similarly, less than half of immigrant mothers were aware of developmental milestones for the onset of babbling and the age at which an infant can respond to his/her name. A mother who is aware of when the onset of babbling should occur and the age at which an infant can respond to his/her name will be more likely to identify potential hearing problems

and bring them to the attention of her pediatrician than a mother who is unaware of such developmental markers. Immigrant mothers to Canada show similar patterns of ethnic variation. Pomerleau et al⁵¹ asked 3 ethnic groups in Montréal about normal ages of attainment of typical developmental milestones during the first 3 years of life: Although responses fit within a normative developmental range, significant differences emerged among ethnic groups for >1 of every 3 developmental milestones. Knowledge of developmental milestones is important because it is widely agreed that early intervention is key to preventing long-term problems in children. If parents are unaware of what those milestones are, they will be less likely to recognize and raise problems with their pediatrician.

Knowledge of normative infant behavior can also impact the mother-infant relationship and the mothers' feelings of investment in parenting and sense of competence. For example, if a mother is expecting a cuddly infant and does not realize that some normal infants do not enjoy being cuddled (as 2 of 3 immigrant mothers in our sample did not), she may feel that her infant is rejecting her. Similarly, only 22% of immigrant mothers in our sample were aware that it may take them time to become truly engaged with their infants and that their engagement with the infant may be regulated by infant behaviors such as infant smiling and eye contact. It is important for parents to realize that infant behavior also influences the parent-child relationship so that they do not put undue pressure on themselves in their new role as parents. That over 1 of 3 immigrant mothers thought that the way the parent responds to the infant in the first few months of life determines whether the child will grow up to be happy and well-adjusted, or moody and a misfit, and another 1 of 3 were not sure further illustrates the unnecessary pressure these mothers may be putting on themselves in their role as new parents.

Formal learning opportunities such as schooling and reading about child development and child rearing are likely to provide mothers with more accurate parenting knowledge than other common sources of parenting support such as family members or friends. Opportunities to glean such knowledge are commonplace⁵² and include taking parenting classes. Maternal education bears a close relation to individual variation in parenting⁵³⁻⁵⁵ and, through this relation, exerts an impact on child health⁵⁶ and development⁵⁷⁻⁵⁹ even across a wide range of child age and ethnic-group membership.^{53,60,61}

The process of acculturation involves exposure to and absorbing new parenting information. In the United States, European American mothers reference their education and tend to rely on expert advice, particularly in the form of published child-rearing materials.^{12,52,62} However, written materials are not a primary source of parenting knowledge for Japanese immigrant and South American immigrant parents as they are for European American parents. These differences in sources of information about child development and child rearing may explain European American mothers' greater knowledge of parenting

norms for child development and child rearing in comparison to immigrant mothers.

Previous research has shown that, for Japanese American mothers living in the United States, acculturation level is predictive of parenting knowledge (ie, the higher the acculturation level, the more knowledge of child development).⁶³ This suggests that although much of the knowledge base evaluated by the KIDI is universal because it is based on scientific research and clinical experience, cultural cognitions about parenting around the world, and especially outside the developed world, accord more or less harmoniously with this knowledge base.⁶⁴ Parents in some cultures hold beliefs about child development or what constitutes ideal parenting that conflict with contemporary scientific knowledge, and future comparative studies of parenting knowledge might reflect on these differences.^{6,65} Parents' "naive theories" of development⁶⁶ are an important source of variability in the timing and style of caregiving and can have consequences for children's development.^{67,68}

Implications for Parenting Education and Pediatric Practice

Our findings have explicit implications for parenting education and pediatrics. Before we turn to them, however, a few caveats deserve mention. The results we report may not be relevant to multiparas or to mothers with children who were not healthy at birth or normally developing. Mothers with >1 child score marginally higher on the KIDI than mothers with only 1 child (MH Bornstein, PhD, CS Hahn, PhD, MA Suizzo, EdD, LR Cote, PhD, and OM Haynes, PhD, *Cultural Sociodemographic and Experiential Factors Predicting Mothers' Knowledge About Child Development and Child Rearing: National Immigrant and Cross-National Studies*, unpublished data, 2004) and mothers score higher on the KIDI when their infants are 20 months old than when they are 5 months old.³⁰ However, these differences in KIDI scores are not large. Moreover, other research comparing primiparous and multiparous parents surprisingly suggests that neither parity nor children's birth order is associated with parenting knowledge (D MacPhee, PhD, *Manual for the Knowledge of Infant Development Inventory*, unpublished data, 1981, and refs 3 and 44) although first-borns are presumably reared by "inexperienced" parents who may still be ill at ease in their new role, and later-borns are reared by parents who are thought to be more experienced, relaxed, and competent.⁶⁹ Finally, our samples were restrictive and our sample sizes are not large (~40 mothers in each group); however, the provocative nature of the findings merits replication with other, larger immigrant samples.

Lack of knowledge of basic childcare is common (eg, the erroneous belief held by some parents that feeding of solid foods too early can lead to stomach discomfort and a more colicky infant) and can even be detrimental (as among maltreating parents).⁷⁰ "Parenting education describes a range of teaching and support programmes which focus on the skills, feelings, and tasks of being a parent,"⁷¹(p222) and

parenting educators are concerned, among other topics, with knowledge of child development and child rearing.⁷² Parent education is therefore opportunely positioned to influence the satisfaction and functioning of families by communicating knowledge about child development and child rearing that increases understanding by providing alternative models of parenting that widen parents' choices, teach new skills, and facilitate access to community services. However, parenting programs have traditionally met with mixed success in improving parents' knowledge.⁷³ There is much information about child development and child rearing available today, but it is often poorly explained, frequently unusable, and commonly delivered in confidence-undermining ways. The need for readily accessible information that will both teach parents about their child's development and help parents cope with the challenges of parenting cannot be overstated. Perhaps specifying more exactly the areas of parenting knowledge to which they need to attend can improve this record.

Previous studies have found that pediatricians do not talk with parents enough about child development or child rearing but instead usually focus on basic care and health-maintenance issues.^{11,43,74,75} Reciprocally, parents generally do not view visits to the pediatrician as opportunities to learn about child development or child rearing in other than the physical health domain. This is a long-standing and continuing problem. Forty years ago mothers were surveyed concerning pediatric care and why parents sought well care⁷⁶: Obtaining immunizations was mentioned as very important (96%), followed by having a complete physical examination (85%), and reassurance of normal growth and development (72%). Only 29% of mothers expressed a desire for information concerning child-rearing practices. Twenty years ago, patients viewed physicians as their main source of medical information, but >20% felt that physicians were not helpful.⁷⁷ Physicians and patients disagreed on the amount and type of information that is desirable. Ten years ago, a nationwide survey of >2000 parents of children <3 years old found that only 42% of mothers discussed non-medical concerns with their children's pediatricians.⁵²

Mothers of young children may not provide pediatricians with sufficient incentives to initiate discussions about development, and pediatricians may not feel comfortable or qualified to discuss these issues with parents because they may receive insufficient training in developmental or parenting science to do so. Pediatricians themselves may not be aware of what parents know, think, and believe and how they cope with their children's development. And yet, 79% of mothers report that they could use more information in at least 1 area of child rearing, and 53% indicate wanting more information in ≥ 3 areas.⁵² More advanced parenting knowledge would enable medical professionals to better advise parents on the child-development and child-rearing questions that they want to ask. Pediatricians wishing to take preventive measures to promote their child patients' well-being may find parents highly receptive

to their efforts. Pediatricians could provide more written or visual materials in their waiting rooms, they could more often initiate age-appropriate developmental discussions during regular office visits, or they could simply broaden their consultations on the child's physical health to include these other developmental domains. Alternatively, for physicians who wonder where they will find the time to do all of this, certified family life educators or developmental specialists working in cooperation with pediatricians might supply the answer for which both parents and pediatricians are looking.^{74,78} Specifically, Zero-to-Three's Developmental Specialist in Pediatric Practice Project⁷⁴ reported that parents and pediatricians alike found developmental specialists to be a valuable addition to their pediatrics practices.⁷⁹ Similarly, the Johns Hopkins University–American Healthway report “Defining the Patient-Physician Relationship for the 21st Century”⁸⁰ offers additional recommendations for physicians and patients, including enhancing a sense of partnership and parents' assuming ultimate responsibility for managing their condition and use of care opportunities provided physicians.

The work of pediatricians can be enhanced by a better understanding of the state of parents' knowledge. Clinicians who know more about maternal expectations will be better able to interpret mothers' expressed concerns and opinions about their children's development¹⁰ as well as more accurately appraise their child patients. Insofar as expectations or the actual attainment of developmental skills and behaviors or illness states differ among members of diverse cultural groups, awareness of such differences will also help clinicians accurately interpret the significance of parents' reports about their children's health and development. Parents' reports should be understood as culturally value-laden, and physicians' interpretations of parents' opinions and concerns about their children will best be understood within the context of parents' cultural belief systems. In consequence, physician assessments will be more accurate and their use of resources more efficient and effective. Considering parental knowledge level and cultural background inevitably introduces a layer of complexity to the clinician's task, but to eschew or negate such considerations risks access to vital information about the child patient.

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