In this article, we examine differences across three racial/ethnic groups in (a) the psychometric properties of the Early Childhood HOME Inventory and the HOME-Short Form and (b) the prediction of the two versions of the HOME Inventory to cognitive and behavioral outcomes among preschool children. Data are taken from the National Longitudinal Survey of Youth–Child Supplement (NLSY–CS) and the Infant Health and Development Program (IHDP) sample. Findings suggest few racial/ethnic differences in the psychometric properties of either version of the HOME scale. Both show better prediction of cognitive child outcomes for all three racial/ethnic groups. Both show better prediction of child outcomes generally for European American than for Hispanic and African American families. Findings suggest that although certain aspects of parenting are common, these dimensions of parenting are not equally important in explaining child outcomes for different racial/ethnic subgroups.

The Early Childhood HOME Inventory and HOME-Short Form in Differing Racial/Ethnic Groups

Are There Differences in Underlying Structure, Internal Consistency of Subscales, and Patterns of Prediction?

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Measures of parenting and the home environment are widely used in child development research, as well as in large-scale surveys and multisite intervention evaluations with diverse samples. There is extensive evidence of a link between children's development and the cognitive stimu-

632

lation and emotional support available to them in the home (e.g., Bradley et al., 1989; Gottfried, 1984; Maccoby & Martin, 1983). According to Bradley, Mundfrom, Whiteside, Casey, and Barrett (1994), "the increase in the number of studies of home environment/child development relations over the past 15 years has been facilitated by the availability of several comprehensive, yet easy-to-use measures of the environment" (p. 880). Perhaps the most widely used of such measures is the Home Observation for Measurement of the Environment, or HOME Inventory, developed by Caldwell and Bradley (1984). The HOME uses maternal report and interviewer ratings to capture the cognitive stimulation and emotional support available in the home environment for infant, pre-school, and school-age children.

Despite the wide use of parenting and home environment measures in child development, survey, and intervention research, little empirical work has been done to date asking whether such measures function in a comparable manner across population subgroups. This question appears essential, given theoretical as well as empirical work suggesting that parents of differing racial/ethnic groups may differ in their socialization goals and attitudes (Bartz & Levine, 1978; Durrett, O'Bryant, & Pennebaker, 1975; Okagaki & Sternberg, 1993). Ogbu (1981), for example, argues that child-rearing priorities reflect the demands of the ecological contexts that parents of varying backgrounds are rearing their children to enter.

Previous reviews have called attention to the need for work examining how parenting measures function in differing population subgroups. In a review of 83 parent-attitude questionnaires, Holden and Edwards (1989) pointed to an overall lack of psychometric evaluation of such measures. For example, reliability data were available for only 59% of the measures considered, and validity data of any kind for only 45%. Moreover, the authors found virtually no examination of how well the parent attitude measures functioned in differing population subgroups: "Population validity refers to how well scores on a test generalize to different populations. No evidence exists on this topic" (p. 42).

Two recent studies have begun to address this serious gap with regard to measures of parenting. In choosing measures of family relations for a

longitudinal study of conduct disorders, delinquency, and criminality, McGuire and Earls (1993) encountered both a lack of documentation regarding test-retest reliability in the measures they were considering and a lack of empirical investigation of the internal consistency of items for samples other than European American middle-class families. They carried out assessments of internal consistency and test-retest reliability for four of the measures under consideration in a sample that consisted primarily of low-income and minority mothers in single-parent households. Their results indicated significant coefficients for test-retest reliability across the measures and internal consistency quite comparable to that reported originally for each measure.

Although these results about the appropriateness of such parenting measures for low-income and minority samples are encouraging, it must be noted that the sample of 40 cases used by McGuire and Earls was quite small and unrepresentative and did not permit a contrast of the functioning of the measures *across* differing racial/ethnic groups. Recent work by Bradley and colleagues (1994) permits such a contrast.

Bradley et al. (1994) used factor analysis to examine the underlying structure of the items composing the infant and early childhood versions of the HOME Inventory for African Americans, European Americans, and Hispanic Americans in the Infant Health and Development Program (IHDP) sample. The IHDP was a comprehensive program for families with preterm low birthweight infants that included pediatric care, early childhood education, and parenting support and instruction. As we have noted, the HOME Inventory is a measure of the cognitive stimulation and emotional support available to a child in the home environment, with differing versions for infant, preschool, and school-age children. The HOME was one component of a comprehensive evaluation of the IHDP intervention. The measure rests on a combination of maternal report items and interviewer ratings that are completed based on a home visit lasting approximately 1 hour, during which a particular child and his or her primary caregiver are present and awake. A review of the validity data on the HOME Inventory notes that this measure predicts later cognitive, social, and physical development and distinguishes between children who do and do not show developmental delay and poor achievement (Baker & Mott, 1989). In addition, this measure accounts for much more variance in children's academic achievement than does socioeconomic status (Bradley et al., 1989).

Bradley and colleagues note that if the factor structure of the HOME items differed substantially across racial/ethnic groups within their sample, this would suggest that perhaps particular parenting behaviors had

different meanings within the three groups. Factor analyses carried out by Bradley and colleagues were interpreted as pointing to the same set of underlying constructs for the HOME Inventory for African American and European American families, with only small differences in terms of the order in which factors emerged and in which items loaded on each factor. For Hispanic American families, although there was substantial overlap in the factor patterns, differences were viewed as more marked. For example, for Hispanic American families, verbal and physical behaviors made up separate factors, whereas for the other families, individual factors were more likely to encompass both modalities of interaction. Finally, for Hispanic families, a somewhat smaller proportion of variance was explained by all the identified factors than was the case for European American and African American families.

Thus from the limited data available regarding the functioning of measures of parenting in differing racial/ethnic groups, a pattern that may be identified is that parenting measures show comparable internal consistency across racial/ethnic groups and similar underlying constructs, although with some differences emerging, particularly for Hispanic families.

Further careful examination of how parenting measures function in differing racial/ethnic groups appears warranted on multiple grounds. First, the groups differ on such key background characteristics as family structure, parental education, and poverty (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Duncan, Klebanov, & Brooks-Gunn, 1994; Klebanov, Brooks-Gunn, Chase-Lansdale, & Gordon, in press). Furthermore, there is evidence that child outcome measures (e.g., indices of reading recognition and intelligence) have differing characteristics across racial/ethnic groups (central tendency as well as variation; Baydar & Brooks-Gunn, 1991; Brooks-Gunn et al., 1993). In addition, patterns of prediction of such child outcome measures have also been found to differ by group (Baydar & Brooks-Gunn, 1991; Brooks-Gunn, Duncan, & Klebanov, in press). Such differences may also exist in predicting child outcomes for versions of the HOME Inventory.

The purpose of this article is to present findings from two studies on the internal consistency, underlying structure, and patterns of prediction of two versions of the Early Childhood HOME Inventory for European, African, and Hispanic American subgroups. Our work extends previous research in this area in two ways. First, we report on parallel analyses with two different versions of the HOME Inventory for preschoolers: the full

HOME Inventory and the HOME-Short Form (HOME-SF). The HOME-SF is an adaptation of the full HOME for use in large-scale surveys, addressing limitations of time and budget that accompany the substantially larger sample sizes. The HOME-SF contains fewer than half the items in the full HOME Inventory, and the wording of both the questions and the response options has been revised. In addition, interviewer training in the use of the HOME-SF is far less extensive than for the full HOME Inventory (Baker, Keck, Mott, & Quinlan, 1993). Bradley (personal communication at NICHD Methodology Grantee Workshop, October 20-21, 1994) corroborated that the full HOME Inventory and its short form should be viewed as separate measures and should accordingly receive separate psychometric evaluations. By reporting on parallel analyses for the full HOME Inventory and the HOME-Short Form, the present work will inform studies able to implement the full inventory, as well as those large-scale surveys and evaluations that must rely on the abbreviated form.

Second, our work goes beyond previous research in that it assesses patterns of prediction of child outcomes for different population subgroups. The possibility exists that underlying constructs and internal consistency may be quite similar across groups, yet measures of parenting differ in their capacity to predict children's cognitive or social development. Consistency in our findings across the two studies would increase our confidence about the HOME Inventory's ability to capture those aspects of the child's environment that are important to development across different groups.

Beyond the common strategy of examining the structure of the HOME Inventory and patterns of prediction of child outcomes separately by racial/ethnic group, the two studies reported on are also parallel in that

1. They use a common set of covariates in predicting child outcomes (with some adjustments to reflect the unique characteristics of each study).
2. Each study chooses one cognitive and one socioemotional child outcome.

Methods and results for these parallel sets of analyses based on the National Longitudinal Survey of Youth–Child Supplement (NLSY–CS) and the IHDP are reported on separately below. Study 1 uses data from the 1988 and 1990 waves of the NLSY–CS to examine racial/ethnic differences in parenting and child outcomes using the HOME-SF. Study 2, using the same data set reported on by Bradley and colleagues (1989, 1994), the IHDP, examines the full HOME Inventory.

STUDY 1

NATIONAL LONGITUDINAL SURVEY
OF YOUTH–CHILD SUPPLEMENT

The NLSY is a nationally representative survey of 12,686 women and men who were aged 14 to 21 in 1979. Surveys of these men and women have been conducted every year since 1979, with a modest attrition rate (10%). The NLSY oversampled African Americans and Hispanic Americans. Starting in 1986, the data collection effort was expanded to include assessments of the children born to female members of the sample (NLSY–CS). Assessments of the child's home environment as well as cognitive, socioemotional, and physical development were conducted in 1986, 1988, 1990, and 1992. For the present study, 1988 data regarding the home environment and family background characteristics are used to predict one behavioral and one cognitive outcome for the child in 1990.

Although the NLSY is a representative sample of young men and women, the children in the NLSY–CS do not represent all American children. Rather they approximate children who have been born to mothers in their early to late twenties as of January 1, 1986. Therefore, they tend to overrepresent children born to younger, less educated, and minority mothers.

SAMPLE

A total of 1,541 children between the ages of 3 years and 5 years and 11 months in 1988 constituted the sample for Study 1. This sample included only one child per family in the age range of interest. Where families had more than one child in the designated age range, one was randomly selected for inclusion in the present sample.

Of the 1,541 children included in this study, 55% were European American, 27% were African American, and 18% were of Hispanic origin. In this sample, African American and Hispanic American mothers were likely to be younger than European American mothers and more likely to be unemployed. Minority mothers were also more likely to have given birth to their first child during adolescence. Within the ethnic minority sample, roughly 1.8 times as many Hispanic as African American mothers were married at the time 1988 data were collected, and a higher proportion of Hispanic mothers had not completed high school.

MEASURES

The Early Childhood HOME-SF is the primary independent variable of interest in Study 1. This measure consists of 26 items, 15 of which are based on maternal report and 11 of which are completed by the interviewer, based on observations of the home environment and mother-child interaction. Two global subscales based on the HOME-SF have been widely used: a cognitive stimulation subscale, consisting of 14 items, and an emotional support subscale, with 12 items. Baker and Mott (1989) report internal consistencies of .65 and .47 for the cognitive stimulation and emotional support subscales, respectively, for preschoolers, based on 1988 NLSY–CS data from a sample including all racial/ethnic subgroups.

The child outcomes selected for examination in the 1990 NLSY–CS data are the Behavior Problems Index (BPI) and the Peabody Individual Achievement Test (PIAT) of reading recognition. The Behavior Problems Index (BPI) was developed by Drs. Nicholas Zill and James Peterson to measure the frequency, range, and type of behavior problems exhibited by children age 4 and older (Achenbach & Edelbrock, 1981; Graham & Rutter, 1968; Kellam, Branch, Agrawal, & Ensminger, 1975; Peterson & Zill, 1986; Rutter, Tizard, & Whitmore, 1970). The gender-normed BPI summary score in 1990 is based on mothers' responses to 28 questions about behaviors that the focal child may have exhibited over the past 3 months (Baker et al., 1993). The BPI has high internal consistency ($\alpha = .89$), as well as demonstrated construct validity (Parcel & Menaghan, 1988).

The PIAT reading recognition subtest measures word recognition and pronunciation ability, both of which are identified as essential components of reading achievement (Baker & Mott, 1989). The PIAT reading recognition subtest contains 84 items, each having four response options, which increase in difficulty as the assessment progresses. The test-retest reliability for the PIAT reading recognition is quite high, ranging from .81 to .94 depending on the age of the child. It also exhibits moderately high concurrent validity, noted by its correlation (a median of .55 for grades kindergarten through 12) with the Peabody Picture Vocabulary Test-Revised (PPVT-R; Baker et al., 1993), a measure of receptive vocabulary. It is important, however, to note that this test was administered only in English; as a result, the noncompletion rates were significantly higher for Hispanic children.

ANALYSES

Four sets of analyses were carried out in this study:

1. Principal axis factoring with oblique rotation was conducted within the full sample (i.e., families from all three racial/ethnic groups combined) to examine the constructs underlying the HOME-SF in this combined sample.
2. Factor analyses were carried out separately within each of the three racial/ethnic groups to examine whether the HOME-SF items reflected similar underlying constructs for all groups.
3. Cronbach's alpha was computed separately for the three racial/ethnic groups, looking at the internal consistencies for subscales based on the combined-race and race-specific factor analyses.
4. Ordinary least squares (OLS) regressions were carried out, controlling for background and selected child characteristics, to examine the prediction of the new subscales to the selected child outcomes.

RESULTS

Factor patterns of the HOME-SF items in the combined sample. Table 1 identifies the factors that emerged in our analyses based on the combined-race sample. Our first factor concerns cognitive stimulation of the child from direct interactions (reading to the child), experiences outside the home (outings and trips to museums), and materials (books, record player, magazines). We labeled this first factor *stimulation*. The set of four items concerning instruction of the child in shapes, letters, colors, and numbers formed a second factor, which we named *school preparation*. Factor 3 concerns affectively positive involvement between mother and child, labeled *positive maternal involvement*. Factor 4 concerns items describing the physical environment of the home, and Factor 5 concerns the use of physical punishment. We labeled Factors 4 and 5 *physical environment* and *nonpunitiveness/no observed physical punishment,*[1] respectively. The total variance explained by all five factors was roughly the same for all racial/ethnic groups, ranging from 32% for European Americans and African Americans to 35% for Hispanic Americans.

Factor patterns for separate racial/ethnic subgroups. In general, when analyses were conducted separately by race/ethnicity, the same five parenting dimensions emerged for all three racial/ethnic groups as were observed for the combined-race sample. This suggests that some aspects

TABLE 1
**Factor Structure for All Races of the HOME-SF
for Children Aged 3 Through 5 Years 11 Months**

Item and Description	Loading	Item and Description	Loading
Factor 1, Stimulation		Parent answered child's questions	
Parent reads to child	.64	verbally	−.67
Has at least 10 children's books	.52	Parent's voice conveyed positive	
Has 5 tapes/records and tape		feeling	−.64
recorder	.37	Factor 4, Physical Environment	
Child taken on outing	.35	House/apartment reasonably clean	−.82
Family gets magazines regularly	.35	House/apartment minimally	
Child taken to museum	.33	cluttered	−.56
Factor 2, School Preparation		Child's play environment is safe	−.54
Parent helps child learn numbers	−.85	Home not dark/perceptually	
Parent helps child learn colors	−.78	monotonous	−.51
Parent helps child learn alphabet	−.75	Factor 5, No Observed Physical	
Parent helps child learn shapes	−.61	Punishment	
Factor 3, Positive Maternal		Parent did not slap/spank child	.74
Involvement		Parent did not restrict/shake/	
Parent conversed with child at		grab child	.63
least twice	−.76		

SOURCE: Child Trends, Inc. calculations of the National Longitudinal Survey of Youth–
Child Supplement (NYSY–CS) 1988 data, one sibling study sample.
NOTE: Table values are based on weighted data.

of parenting are common across all families, irrespective of race/ethnicity.
Despite the consistency in the number and nature of factors that emerged,
the order in which various factors emerged differed slightly by race/
ethnicity. For example, stimulation and school preparation emerged as the
first and second factors, respectively, for both European and Hispanic
American subgroups, whereas among African Americans, school prepa-
ration was identified as Factor 1 followed by positive maternal involve-
ment. Similarly, the no observed physical punishment/nonpunitive
subscale was identified as Factor 3 for Hispanics, yet it emerged as Factor 5
for African and European Americans. Further, in a few instances, certain
items within subscales did not load at .30 or higher across all three
racial/ethnic subgroups and therefore were not included in a particular
group's race-specific subscales.

    In sum, we find broad similarity in the factors that emerged for different
racial/ethnic groups but subtle differences in the order in which factors
emerged and in which items loaded on particular factors. These findings
are consistent with results reported by Bradley and colleagues (1994).

TABLE 2
**Reliabilities of HOME-SF Cognitive Stimulation
and Socioemotional Subscales, and New Parenting Scales
Based on All Race and Race-Specific Factor Analyses
for Children Aged 3 Through 5 Years 11 Months**

	Cronbach's Alpha			
Subscale Description	*All Races*	*Hispanic American*	*African American*	*European American*
HOME-SF subscales				
Cognitive stimulation	.71	.69	.72	.70
Socioemotional support	.59	.60	.52	.57
New subscales based on factor analyses of all races				
Stimulation	.58	.65	.62	.51
School preparation	.84	.83	.81	.85
Positive maternal involvement	.73	.69	.76	.72
Physical environment	.70	.66	.68	.71
No observed physical punishment	.63	.86	.59	.60
	$(r = .46)$[a]	$(r = .76)$	$(r = .42)$	$(r = .43)$
New subscales based on factor analyses separately by race				
Stimulation	—	.65	.62	.53
School preparation	—	.83	.82	.85
Nonpunitive/no observed physical punishment	—	.71	.59	.60
				$(r = .43)$
Positive maternal involvement	—	.69	.76	.72
Physical environment	—	.66	.68	.71

SOURCE: Child Trends, Inc. calculations of the National Longitudinal Survey of Youth–Child Supplement 1988 data, one sibling study sample.
NOTE: Table values are based on weighted data.
a. Correlation coefficients (r) are shown in addition to alpha for two-item subscales.

Internal consistencies of the HOME-SF subscales. Table 2 summarizes Cronbach's alpha for the subscales created on the basis of the combined race sample and the subscales created through separate analyses within each racial/ethnic group. Reliabilities for the subscales created from the combined-race sample indicate that the school preparation subscale has the greatest internal consistency and the least variation across racial/ethnic subgroups (ranging from .81 to .85) of all the subscales that emerged from the combined-race sample factor analyses. The remaining subscales have Cronbach's alphas that are generally consistent across sociocultural

groups, although with somewhat wider variation. One exception to this pattern, however, is the no observed physical punishment subscale, which shows the highest internal consistency for Hispanic American families (.86) and clearly lower but comparable reliabilities for European American (.60) and African American (.59) families.

Cronbach's alphas for the HOME-SF subscales generated by the race-specific factor analyses are similar to the reliabilities for the combined-race subscales. The school preparation subscale has the highest internal consistency for all three groups, and the remaining subscales show similar reliabilities by race/ethnicity. The race-specific nonpunitive subscale again has the highest internal consistency for Hispanic Americans (.71).

Prediction of child outcomes. Prediction from the Early Childhood HOME-SF to the BPI and PIAT reading recognition test was examined separately for each racial/ethnic group. In each case, we began our multivariate analyses with a base model (Model 1) to test only the effects of background characteristics on the two outcome measures of interest. The control variables, measured in 1988, include mother's education, mother's marital status, mother's age at first birth, gender of the child, and low birthweight status. Model 2 tested the residual effect, after controlling for these background measures, of the five subscales based on factor analyses for the combined-race sample. Model 3 examined the residual effect of the five subscales based on race-specific factor patterns.[2]

Our multivariate work had two goals. First, we were interested in the extent to which the measures of the home environment predicted the child outcomes of interest in each of the sociocultural groups, after considering background and child characteristics. Second, we wanted to assess whether the race-specific subscales were more predictive of child outcomes within each respective sociocultural subgroup than the subscales developed from the combined-race sample.

PIAT reading recognition. Table 3 presents standardized coefficients for the regression models assessing the impact of parenting measures on the child's 1990 PIAT reading recognition scores separately for each racial/ethnic group. In Model 1, background characteristics were statistically significant predictors of performance on the PIAT across all these groups; however, those characteristics that contribute to PIAT scores differed by race. For European American and Hispanic American children, mother's education below college significantly reduced PIAT scores, but for African American children, this effect emerged only if the child's mother failed to complete high school. Male gender also significantly

TABLE 3

OLS Regression Analyses of Parenting Subscales Predicting PIAT Reading Recognition, Ages 3 to 5 Years, 11 Months

	Hispanic American (n = 217)			African American (n = 340)			European American (n = 488)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Controls									
Mother's education less than high school	-.43†	-.31†	-.31†	-.30†	-.29†	-.29†	-.28†	-.21†	-.23†
Mother's education high school, no college	-.34†	-.26***	-.26***	-.09	-.07	-.07	-.17†	-.13***	-.14†
Marital status, single	.05	.07	.07	-.09*	-.09*	-.09*	.03	.07*	.07*
Age at first child's birth less than 20	-.08	-.10	-.11	-.05	-.03	-.03	-.04	-.04	-.04
Gender of child, male	-.16**	-.11*	-.10	-.03	-.03	-.03	-.08**	-.05	-.05
Low birthweight child (less than 2,500 g)	-.04	-.05	-.05	-.13***	-.11**	-.11**	-.06*	-.06	-.06
Subscales based on analyses of total sample									
Stimulation		.10			.10*			.15†	
School preparation		.05			.04			.10***	
Positive maternal involvement		.07			.09*			.09***	
Physical environment		.11*			-.05			.07*	
No observed punishment		.19***			-.11**			.09**	
Subscales based on analyses of race-specific samples									
Stimulation			.09			.10**			.10***
School preparation			.05			.03			.11***
Positive maternal involvement			.06			.09*			.09***
Physical evironment			.11*			-.05			.07**
No observed punishment			.19***			-.06			.09**
R^2	.17†	.25†	.24†	.12†	.15†	.14†	.08†	.14†	.13†
R^2 change[a]		.07***	.07***		.03**	.02		.06†	.05***

SOURCE: Child Trends, Inc. calculations of the National Longitudinal Survey of Youth–Child Supplement 1988 and 1990 data, one sibling study sample.

NOTE: Table values are based on weighted data.

a. This statistic compares R^2 in Model 1 to the applicable model.

*$p < .10$; **$p < .05$; ***$p < .01$; †$p < .001$.

reduced PIAT scores for European American and Hispanic children but had no substantial impact on PIAT scores for African American children. Finally, among African American children, those born low birthweight generally tested lower on the PIAT reading recognition subtest than children born weighing at least 2,500 grams. Low birthweight demonstrated a marginally significant impact on PIAT scores for European American children and no significant impact for children of Hispanic origin.

In Model 2, we examined the impact of parenting subscales on PIAT scores using the HOME-SF subscale scores developed from the combined-race sample factor analyses. Strong differences emerged across the groups in the ability of HOME-SF subscales to predict PIAT reading recognition scores in the presence of background and child characteristics. Specifically, subscales based on the combined-race sample were more consistently and significantly predictive of PIAT scores among European American children than among minority children. Four of the five subscales based on the combined-race sample factor analyses significantly predicted PIAT scores for European American children ($p < .05$). Among African and Hispanic American children, the nonpunitiveness subscale was the only parenting measure to show a statistically significant impact on children's PIAT scores. However, the direction of impact was not the same for these two groups. Among Hispanic Americans, nonpunitiveness worked to increase the child's PIAT score, whereas for African Americans, this same measure was associated with a lower PIAT score.

For all three racial/ethnic groups, there was a significant increase in the proportion of variance explained in the PIAT in Model 2 over Model 1. Yet the change in R^2 was not greatest for the European American families. We note that the total variance explained by Model 2 was quite modest, particularly for European American (13%) and African American (12%) families. Interestingly, among Hispanic Americans, 25% of the total variance in PIAT scores was explained by the combined effect of background and the combined-race sample HOME-SF subscales, pointing to the importance of the nonpunitive subscale as a predictor within this subgroup.

Model 3 examined the relative impact of the race-specific HOME-SF subscales on children's PIAT scores. We found that, in general, the race-specific subscales did not improve the level of prediction of PIAT scores for preschool children in our study, compared to the HOME-SF subscales computed for the combined sample. In fact, the size of the coefficients and the specific subscales that emerged as significant in Model 3 were virtually identical to the results presented in Model 2.

Behavioral Problems Index. Table 4 presents standardized coefficients for regression models predicted from the HOME-SF parenting measures to children's behavior problems for the three racial/ethnic groups. From our base model, we noted that background and child characteristics exhibited few significant effects on behavioral problems among children in our sample, particularly for Hispanic American children. The total variance explained by Model 1 ranged from 3% to 5% across the three racial/ethnic subgroups.

The addition of the combined-sample HOME-SF subscales in Model 2 generally increased the total variance explained for all three groups, although the total variance explained by Model 2 remained extremely modest for all three groups. Further, the increase in the proportion of variance explained for the Hispanic American sample was not statistically significant.

In addition, we observed racial/ethnic differences in prediction of the combined-sample HOME-SF subscales to BPI scores. As we saw for the PIAT reading recognition test, the parenting subscales generally showed better prediction of BPI scores for European American children than for minority children. Although the stimulation and physical environment subscales significantly predicted behavior problems for European American children, among minority children, only one subscale demonstrated a significant impact on BPI scores. For African Americans, only the stimulation subscale predicted significantly fewer behavior problems, whereas among Hispanic Americans only a more positive physical environment contributed to lower BPI scores.

As Model 3 indicates, the race-specific subscales failed to improve prediction of BPI scores over and above the combined-sample parenting subscales. Two exceptions to this pattern were observed. Among African Americans, the nonpunitive subscale emerged as a significant predictor of a lower BPI at the .05 level of significance. For European American children, the race-specific school preparation subscale significantly reduced BPI scores.

SUMMARY—STUDY 1

Four main findings can be summarized from Study 1. First, factor analyses, both in the combined sample and separately by racial/ethnic group, indicated a great deal of similarity across racial/ethnic groups in various aspects of parenting and the home environment as measured by the HOME-SF. Second, levels of internal consistency of the HOME-SF parenting subscales developed both from the combined sample and from

TABLE 4
OLS Regression Analyses of Parenting Subscales Predicting Behavior Problems Index (BPI), Ages 3 to 5 Years, 11 Months

	Hispanic American (n =222)			African American (n = 349)			European American (n = 508)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Controls									
Mother's education less than high school	.02	-.01	-.01	-.05	-.10	-.11*	.06	.01	.02
Mother's education high school, no college	-.01	-.004	-.0007	-.06	-.10*	-.10	.05	-.01	.0006
Marital status, single	.12*	.13*	.13*	.15***	.12**	.12**	.18†	.15†	.15†
Age at first child's birth less than 20	.06	.04	.04	.05	.03	.03	-.03	-.04	-.04
Gender of child, male	.07	.07	.07	.00009	-.01	-.02	-.08**	-.11***	-.10***
Low birthweight child (less than 2,500 g)	-.06	-.06	-.06	.04	.01	.01	.03	.02	.03
Subscales based on analyses of total sample									
Stimulation		-.05			-.16***			-.16***	
School preparation		.06			-.05			-.06*	
Positive maternal involvement		.07			-.05			-.05	
Physical environment		-.14**			.04			-.09***	
No observed punishment		.03			-.09*			-.03	
Subscales based on analyses of race-specific samples									
Stimulation			-.05			-.16***			-.14†
School preparation			.06			-.03			-.08**
Positive maternal involvement			.06			-.05			-.05
Physical environment			-.14**			.04			-.10***
No observed punishment			.05			-.12**			-.03
R^2	.03	.06	.06	.03	.07***	.08****	.05†	.10†	.09†
R^2 change[a]		.03	.03		.04****	.05****		.05†	.05†

SOURCE: Child Trends, Inc. calculations of the National Longitudinal Survey of Youth–Child Supplement 1988 and 1990 data, one sibling study sample.
NOTE: Table values are based on weighted data.
a. This statistic compares R^2 in Model 1 to the applicable model.
*$p < .10$; **$p < .05$; ***$p < .01$; †$p < .001$.

analyses based on separate racial/ethnic groups were generally compara-
ble across racial/ethnic groups, with all five subscales having moderate to
high reliability (α ranges from .51 to .86). Third, our multivariate analyses
indicated that the combined-sample HOME-SF subscales generally im-
proved prediction of the two child outcomes of interest over and above
background and child characteristics. The level of prediction tended to be
better for the cognitive child outcome (PIAT) than the socioemotional one
(BPI). More subscales predicted significantly to child outcomes for Euro-
pean American than for minority families, although the proportion of
variance explained by the HOME-SF subscales was not greatest for
European Americans. Finally, subscales based on race-specific factor
patterns did not improve prediction of either the cognitive or socioemo-
tional child outcome. This is not surprising in light of the comparability
in factor structures and internal consistency across racial/ethnic groups.

STUDY 2

INFANT HEALTH AND DEVELOPMENT PROGRAM

The goals of Study 2 were:

1. To examine possible similarities and differences in the subscales of the
   HOME Inventory across three racial and ethnic groups: African American,
   Hispanic American and European American (Caucasian and Asian),[3]
2. To explore the predictive power of the HOME subscales to child outcomes
   within each of the three racial/ethnic groups.

As noted earlier, our concern is the within-group correlation patterns;
consequently we conducted separate analyses of the HOME scale within
each group (Steinberg & McLoyd, in press).

DESIGN

Data for Study 2 were taken from the IHDP, an eight-site randomized
clinical trial designed to test the efficacy of educational and family support
services in reducing the incidence of developmental delays in low birth-
weight, preterm infants (Brooks-Gunn et al., 1994; Infant Health and
Development Program [IHDP], 1990). Infants weighing less than 2,500
grams at birth were screened for eligibility if they were 37 weeks or less
postconceptional age between January 7, 1985, and October 9, 1985, and

were born in one of the eight participating medical institutions (Arkansas at Little Rock, Einstein, Harvard, Miami, Pennsylvania, Texas at Dallas, Washington, and Yale). Of the 1,302 infants who met enrollment criteria, 274 (21%) were eliminated because consent was refused, and 43 were withdrawn before entry into their assigned group, leaving a birth cohort of 985 infants. One third of the sample was randomly assigned to an intervention group ($n = 377$) and two thirds to the follow-up group ($n = 608$) immediately after nursery discharge (IHDP, 1990). Children were assessed annually at 12, 24, and 36 months. Attrition from randomization was low (7%) for those in the remaining sample at age 3. However, there were fewer cases assessed for the HOME score because this measure necessitated a home visit. Additional funding was obtained to carry out the cognitive assessments of children who had moved, but this was not possible for HOME assessments or other child outcome measures.

SAMPLE

Only children who had complete data for the 36-month assessment of the HOME were included in these analyses. This resulted in a final sample of 819 children; 53% were African American, 11% were Hispanic American, and 37% were European American. Attrition rates from hospital discharge to the 36-month HOME assessment within each racial/ethnic group were parallel (Klebanov, Brooks-Gunn, & Duncan, 1994).[4] About 40% of the mothers did not complete high-school, 48% were single mothers at the time of the 36-month assessment, and 23% were teenage mothers at their infant's birth. A comparison of the subsamples showed large racial/ethnic differences on the demographic and child outcome measures. The Hispanic American mothers were least likely to have graduated from high school, and the African American mothers were most likely to be single parents. The mean total HOME score was higher in this sample for European American families (mean of 43) than for African American and Hispanic American families, where the means were 34 and 36 respectively.

MEASURES

Developmental outcomes. The child's cognitive functioning and behavioral competence were measured at age 3. The child's cognitive skills were measured with the Stanford-Binet Intelligence Scale (Terman & Merrill, 1973). The child's behavioral competence was rated by the mother

with the Child Behavior Checklist (CBCL) (Achenbach, Edelbrock, & Howell, 1987; McConaughy & Achenbach, 1988). The CBCL is a 99-item questionnaire in which mothers characterize their child's behavior within the past 6 months on a scale of *not true* (0), or *often* or *very true* (2) of their child. Higher scores indicate more behavior problems. The total score of the CBCL is used in this analysis.

Child and maternal characteristics. Several initial status variables of the child were obtained prior to randomization and were used in the regression analyses. These include gender, birthweight (a continuous measure in grams), and neonatal health index (a measure that standardized the length of stay for the neonatal hospitalization by birthweight, standardized to a mean of 100, with higher values signifying better neonatal health; Scott, Bauer, Kraemer, & Tyson, 1989). In addition, whether the child was in the intervention or follow-up group was indicated, as was the site of the intervention. To provide comparability, parallel maternal characteristics were used in these analyses as in Study 1: mother's age at first child's birth, mother's education, and mother's marital status.

The HOME. The IHDP HOME scale was administered when the child was 36 months of age (corrected for prematurity). The IHDP eary childhood HOME scale consists of 55 items. The interview is done within the context of a home visit and takes approximately 1 hour to administer. For this study, the inventory was given to the mother along with several other measures. Extensive training was given to the interviewers, including criterion videotapes to test administration at each site. Assessors had to achieve at least a 90% level of agreement with the criterion tape before being allowed to administer the inventory. Within-site reliability was maintained at 90% or better at all sites. IHDP staff maintained oversight control of the data-gathering process.

The 55 items have been found to cluster into eight subscales: learning materials, language stimulation, physical environment, responsivity, academic stimulation, modeling, variety, and acceptance/punitiveness (Bradley et al., 1989). Table 5 lists the composition of the variables into their respective subscales. Correlation analysis of the eight subscales in the full sample showed that there was relatively high intercorrelation of four of the subscales that revolved around cognitive learning in the home: language stimulation, learning materials, academic stimulation, and variety of learning experiences. Language stimulation, for example, was highly correlated with learning materials (.54), academic stimulation (.54), and variety of learning experiences (.45).[5] A composite scale,

TABLE 5
Eight Subscales of the HOME Inventory in the IHDP

Item Description	Item Description
Learning materials	Child is encouraged to learn spatial
Toys that teach color, size, shape	relationships
Child has 3 or more puzzles	Child is encouraged to learn numbers
Child has record player and at least	Child is encouraged to learn to read a
5 children's records	few words
Child has toys permitting free expression	Physical environment
Child has toys or games requiring	Building appears safe[a]
refined movements	Outside play environment appears safe[a]
Child has toys that teach numbers	Interior of apartment not dark[a]
Child has at least 10 children's books	Neighborhood is aesthetically pleasing[a]
At least 10 books are visible in the	House has 100 square feet of living
apartment[a]	space per person
Family buys and reads newspaper daily	Rooms are not overcrowded with furniture
Family subscribes to at least one magazine	House is reasonably clean and minimally
Child is encouraged to learn shapes	cluttered[a]
Language stimulation	Warmth
Child has toys that teach names of animals	Parent holds child close to 10-15 minutes
Child is encouraged to learn alphabet	per day
Parent teaches verbal manners	Parent converses with child at least twice
Mother uses correct grammar[a]	during visit[a]
Parent encourages child to talk and	Parent answers child's questions or
takes time to listen	requests verbally[a]
Parent's voice conveys positive feeling	Parent usually responds verbally to
to child[a]	child's speech[a]
Child is permitted choice in breakfast	Parent spontaneously praises child's
or lunch menu	qualities twice during visit[a]
Variety of stimulation	Parent caresses, kisses, or cuddles
Child has real or toy musical instrument	during visit[a]
Child is taken on outing by family	Parent helps child demonstrate some
member at least every other week	achievement during visit[a]
Child has been on trip more than 50	Modeling
miles during past year	Some delay of food gratification is
Child has been taken to a museum	expected
during past year	TV is used judiciously
Parent encourages child to put away toys	Parent introduced visitor to child[a]
without help	Child can express negative feelings
Parent uses complex sentence structure	without reprisal
and vocabulary[a]	Child can hit parent without harsh reprisal
Child's art work is displayed someplace	Acceptance/positiveness
in house	Parent does not scold or derogate child
Child eats at least one meal per day with	more than once[a]
mother and father	Parent does not use physical restraint
Parent lets child choose some foods	during visit[a]
or brands at grocery store	Parent neither slaps nor spanks child
Academic stimulation	during visit[a]
Child is encouraged to learn colors	No more than one instance of physical
Child is encouraged to learn patterned	punishment during past week
speech (songs, etc.)	

a. Interviewer rating.

titled home learning, was therefore created based on these four subscales (Brooks-Gunn, Klebanov, & Liaw, in press; Klebanov et al., 1994; Klebanov et al., in press). Consolidating the four home learning subscales into one composite scale in conjunction with three other subscales provides four subscales that parallel those factors found previously by Parcel and Menaghan (1989), using the HOME-SF within the NLSY–CS: home learning, physical environment, maternal warmth, and acceptance/ punitiveness.

Analytic plan. Two sets of analyses were carried out for this study:

1. Cronbach's alpha was computed separately for the three racial/ethnic groups, as well as for the full sample, looking at the internal consistencies of each of the HOME subscales.
2. Ordinary least squares regressions were carried out, controlling for background and selected child characteristics, to examine prediction of the HOME subscales with reliability above .60 to the selected child outcomes.

Factor analyses to determine the underlying structure of the HOME within each of the racial/ethnic groups were not carried out, as this has been completed by Bradley et al. (1994) on the IHDP sample.

RESULTS

Reliability analysis. Table 6 shows that the reliability analyses of the total HOME score were fairly consistent across racial/ethnic groups, with strongest consistencies for the European American sample and lowest for Hispanic Americans (α = .84 to .87). Reliability analyses of the four subscales that parallel those identified by Parcel and Menaghan (1989)– home learning, acceptance/punitiveness, maternal warmth, and physical environment—indicated that the home learning subscale had the highest internal consistency and the least variation by racial/ethnic group (ranging from .82 to .84). The warmth and physical environment subscales had somewhat lower internal consistencies (.65 and .74) and greater variation among racial/ethnic groups. All four subscales had weakest internal consistency for the Hispanic Americans, except for the acceptance/ punitiveness subscale; in this case, alpha was highest for Hispanic Americans and lowest for European Americans (.60 compared to .52).

The reliability analysis revealed low levels of internal consistency in all three racial/ethnic groups for the subscale modeling (alphas ranged from .18 to .36) and moderately low levels for the acceptance/

TABLE 6
**Reliability Analyses of the Total HOME Inventory
and Eight Subscales for the Full Sample and by Race/Ethnicity,
Infant Health Development Program**

	All Races	African American	Hispanic American	European American
HOME total score	.89	.86	.84	.87
Subscales				
Home learning	.86	.83	.82	.84
Acceptance/punitiveness	.54	.54	.60	.52
Warmth	.65	.67	.49	.56
Physical environment	.74	.69	.64	.78
Modeling	.36	.18	.19	.30
Home learning				
Learning materials	.80	.73	.76	.77
Language stimulation	.57	.53	.55	.55
Academic stimulation	.53	.53	.43	.53
Variety of stimulation	.49	.44	.04	.47

SOURCE: Center for Young Children and Families, Teachers College, Columbia University, calculation of the Infant Health and Development Program 36-month data.

punitiveness subscales (alphas ranged from .52 to .60). The warmth subscale emerged as the least consistent across racial/ethnic groups. This subscale cohered poorly for the Hispanic American group in particular (α = .49) and best for the African American group (α = .67). The finding of weak reliability scores for the warmth subscale for Hispanic American families parallels the Bradley et al. (1994) examination of the factor structure of the HOME scale across ethnic groups. They found a unique pattern for Hispanic families in the loading of the items within the warmth subscale related to parental affective and physical responsiveness.

Reliability analyses were also done on the four subscales that compose the home learning scale. Learning materials had the highest internal consistency (α = .73 to .77). The alphas were very consistent across racial/ethnic groups for learning materials and language stimulation; yet there was much inconsistency in the subscale variety of stimulation (ranging from .04 to .47), with the lowest internal consistency among Hispanic American families.

Prediction of child outcomes. Prediction from the HOME subscales to child outcomes was examined separately for each racial/ethnic subgroup. Only subscales with reliability in the combined sample greater than .60

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TABLE 7

OLS Regression Analyses of Three HOME Inventory Subscales Predicting Stanford Binet Scores

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	African American (n = 433)		Hispanic American (n = 85)		European American (n = 296)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Controls						
Birthweight	.05	.05	.09	.06	.15†	.12***
Gender, male	.11†	.11***	.14	.08	.01	.05
Neonatal health status	.14†	.13†	.15	.12	.09*	.10**
Mother's age at first child's						
birth less than 20	.06*	.04	.06	.05	.01	.01
Mother's education,						
high school graduate,						
no college	−.16***	−.07	.14	.19	−.30†	−.14***
Mother's education less						
than high school	−.21†	−.09*	.14	.13	−.36†	−.16***
Marital status, single	−.14†	−.05	.05	.12	−.01	.04
HOME subscales						
HOME learning		.40†		.37***		.51†
HOME warmth		−.01		−.02		.02
HOME physical						
environment		−.01		−.03		−.03
R^2	.27†	.38†	.23†	.30**	.23***	.41†
R^2 change		.11†		.07**		.18†

SOURCE: Center for Young Children and Families, Teachers College, Columbia University, calculation of the Infant Health and Development Program 36-month data.
*$p < .10$; **$p < .05$; ***$p < .01$; †$p < .001$.

were included in the analysis: home learning, physical environment, and warmth. Regression analyses indicated that the effect of the HOME subscales on child outcomes at age 3 (Stanford-Binet Intelligence Scale and Achenbach Child Behavior Checklist) varied across the three racial/ethnic groups. In each case we tested two models. In Model 1, we tested the effect of child and maternal background characteristics on each of the child outcomes. In Model 2, we tested the effect of the three subscales of the HOME Inventory, controlling for the child and maternal characteristics.

Stanford-Binet. Table 7 presents the standardized coefficients for the regression models assessing the impact of parenting measures in the HOME subscales on the child's Stanford-Binet score at age 3. In Model 1, several child and maternal characteristics were important predictors of

the child's Stanford-Binet score, yet these predictors varied within the racial/ethnic groups. For European Americans, the child's birthweight and mother's education were important. For African Americans, gender (boys had higher scores), neonatal health status, single-parent household (lower scores), and mother's education were important. In contrast, for Hispanic American families, none of the background factors achieved statistical significance. Yet the lack of statistical significance within the Hispanic sample may be due to sample size, as the overall model is statistically significant and the total variance explained is 23%, the same variance explained for European Americans and only slightly less than that explained for African American families (27%).

In Model 2, we examined the impact of the three HOME subscales on the child's Stanford-Binet score. This analysis demonstrated the consistency of the home learning subscale in positively predicting to the child's Stanford-Binet score in each of the three racial/ethnic groups. The effect of HOME learning on Stanford-Binet scores was largest for European Americans and smallest for Hispanic Americans, although the coefficient was significant for all three groups. It is also important to note the substantial drop in the standardized coefficient for mother's education, once the home learning variable is in the model. This may suggest that the home learning environment is an important mechanism through which mother's education operates.

Behavior Problem Checklist. Table 8 presents standardized coefficients for regression models predicted from the three HOME subscales to children's behavior problems in the three racial/ethnic groups. Model 1 demonstrates the effect of background and child characteristics on maternal reports of child behavioral problems. The overall variance explained in each of the sociocultural groups, compared to the Stanford-Binet cognitive outcome, was much weaker. For European Americans, where the model was strongest, only 12% was explained, compared to 23% for the Stanford-Binet measure. The power of the demographic variables to explain the child's behavior problems was weakest for Hispanic families; none of the control variables achieved statistical significance for this group. Yet mother's education was an important explanatory variable for African American and European American families in predicting the child's behavioral problems, as we found when examining the cognitive outcome. For the African American families, a mother's being a single parent increased the child's behavior problems. In the European American

TABLE 8
OLS Regression Analyses of Three HOME Inventory Subscales Predicting the Child's Behavior Checklist

	African American (n = 433)		Hispanic American (n = 85)		European American (n = 296)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Controls						
Birthweight	.06	.07	−.10	−.10	−.10*	−.08*
Gender, male	−.08*	−.07*	−.14	−.10	−.06	−.09*
Neonatal health status	−.04	−.04	−.02	−.03	.11**	.08**
Mother's age at first child's birth less than 20	.03	.03	.08	.07	.04	.03
Mother's education, high school graduate, no college	.13**	.08	.02	.06	.23†	.09
Mother's education less than high school	.16**	.08	.06	.07	.26†	.08
Marital status, single	.15***	.11**	.14	.12	.01	−.06
HOME subscales						
HOME learning		−.10*		−.27*		−.39†
HOME warmth		.02		.11		.01
HOME physical Environment		−.15***		.18		−.12*
R^2	.06†	.09†	.02	.04	.12†	.25†
R^2 change		.03†		.02		.13†

SOURCE: Center for Young Children and Families, Teachers College, Columbia University, calculation of the Infant Health and Development Program 36-month data.
*$p < .10$; **$p < .05$; ***$p < .01$; †$p < .001$.

families, the child's neonatal health status at birth was an important positive predictor of behavior problems, yet surprisingly the better the health status, the more behavior problems were reported.

Model 2 shows the significant predictive power of the home learning subscale in decreasing the maternal reports of behavior problems in the European American subsample. This variable also approached statistical significance for the other two subgroups, but the overall model was not significant for the Hispanic American subgroup. The measure of the physical home environment was significant, however, in predicting lower behavioral problems in the African American families. Inclusion of the three HOME subscales increased the variance explained by 13% for the European American families and 3% for the African American families.

SUMMARY—STUDY 2

Except in a single instance (prediction of child behavior problems for African American children), inclusion of the HOME subscales generally improved prediction of both the cognitive and socioemotional outcomes for all racial/ethnic groups. As in Study 1, prediction was stronger for the cognitive than the socioemotional child outcome variable. However, the HOME measure predicted most strongly for the European American families, fairly well for the African American families, and least strongly for the Hispanic American families. In all three racial/ethnic groups, the subscale that had the highest predictive power on both outcome variables was the composite home learning subscale.

OVERVIEW OF RESULTS

Two major issues are addressed by this work. The first issue involves racial/ethnic differences in the psychometric properties of the HOME Inventory and HOME-SF, specifically, whether underlying constructs and levels of internal consistency of the HOME Inventory and the HOME-SF differ across racial/ethnic subgroups. The second issue concerns patterns of prediction of child outcomes in each of the three groups.

UNDERLYING CONSTRUCTS

There is little evidence of strong distinctions by racial/ethnic subgroups in the underlying constructs of either version of the HOME scale. In Study 1, the same five parenting dimensions—stimulation, school preparation, positive maternal involvement, physical environment, and non-punitiveness—were identified for all three racial/ethnic groups, suggesting that some aspects of parenting are common across all these diverse families. At the same time, factor analyses also revealed some differences in the order in which factors emerged for different subgroups, suggesting that there may be sociocultural differences in the relative importance of parenting constructs. These results are generally consistent with findings from work by Bradley and colleagues (1994) on the full version of the Early Childhood HOME Inventory in the IHDP sample, although their study did find some indications of differences in the underlying organization of the HOME, particularly for Hispanic American families.

INTERNAL CONSISTENCY

Few racial/ethnic differences were observed in the reliability analyses conducted on both the HOME Inventory and the HOME-SF. Furthermore, differences that were observed did not fall into a systematic pattern by race/ethnicity. Both studies show that the HOME parenting measures have moderate to high levels of internal consistency for most subscales across racial/ethnic subgroups, and relatively little variation by racial/ethnic groups. In particular, parenting subscales designed to capture activities that help the child learn (i.e., the school preparation subscale in Study 1 and the home learning subscale in Study 2) have the highest internal consistency and the least variation across all three racial/ethnic subgroups. Somewhat lower internal consistencies are observed for the remaining subscales (warmth or positive maternal involvement, physical environment, stimulation, and punitiveness) for each racial/ethnic group in both studies, with the exception of punitiveness for Hispanic American families in Study 1, which had high reliability. The high reliability of this particular subscale for Hispanic Americans provides one interpretation of the significant prediction from this subscale to PIAT scores in Study 1. Further, it is important to note that the strength of the alpha reflects the number of items in a scale, which may explain, for example, the high alpha for the home learning subscale in Study 2 (Cortina, 1993). In Study 1, internal consistencies were not improved when subscales were created from factor patterns retained from race-specific analyses of the HOME-SF.

RACIAL/ETHNIC DIFFERENCES
IN PREDICTING CHILD OUTCOMES

The second major issue addressed by this investigation concerns racial/ethnic differences in the prediction of the HOME Inventory and the HOME-SF to cognitive and behavioral child outcomes. That is, do both versions of the HOME significantly predict cognitive and behavioral child outcomes for all three racial/ethnic groups? Both studies show that the two versions of the HOME scale predict child outcomes after controlling for background and child characteristics, but that stronger effects of the HOME subscales emerge for cognitive than for behavioral child outcomes for all three racial/ethnic groups.

Across the two studies we do see some indications of better prediction of child outcomes for European American than for minority (and particu-

larly Hispanic American) samples. In Study 1, the number of HOME subscales that were significant predictors of the child outcomes was greater for this group. Four of the five subscales significantly predicted PIAT reading recognition scores for European American families, but only one subscale did so for minority families. A similar but less marked pattern was observed for regression analyses predicting the socioemotional outcome in Study 1. In Study 2, although the number of subscales predicting the cognitive outcomes was consistent across the three racial/ethnic groups, none of the HOME subscales significantly predicted behavior problems for Hispanic American families, whereas for African American and European American families, one did. Second, in Study 2 the change in R^2 with the addition of the HOME subscales was generally larger for European American families and smaller for Hispanic American families. In neither Study 1 nor Study 2 did the addition of the HOME subscales in the regression analyses predicting the behavioral outcome result in a significant increase in R^2 for Hispanic American families.

Our analyses suggest that the same identifiable constructs of parenting can be observed for different racial/ethnic groups when using the HOME Inventory, but that the relative importance of certain aspects of parenting may differ. Furthermore, it appears that different aspects of parenting may not be equally important in explaining the impact of the home environment on the development of children for different racial/ethnic subgroups.

DISCUSSION

The issue to emerge from our work that will require further attention is that of *why* the dimensions of parenting and the home environment appear to better predict child outcomes in European American than in African American and especially Hispanic American families, despite the emergence of similar parenting dimensions across these three subgroups. Three types of explanations are plausible. One explanation focuses on the nature of the independent variables, a second concerns the nature of the dependent variables, and the third involves sampling issues.

Nature of the Independent Variables

Although it taps aspects of parenting and the organization of the home environment that are important across racial/ethnic groups, the HOME Inventory may nevertheless fail to capture all aspects of children's experiences in the home that are important to development, particularly in minority families. The individual HOME measures focus primarily on

stimulation and support provided by the mother and father. Perhaps interaction with a broader range of social partners (e.g., grandmothers, siblings) are equally important to child development in some subgroups. Perhaps other important dimensions of parenting among minority families (e.g., affirmation of ethnic identity) are entirely unmeasured in the HOME, but central to development for minority children. A number of the cognitive stimulation items in the HOME are materially based (e.g., possession of books, tape recorders). Perhaps in minority families, who tend to have fewer material resources on average, other means of cognitive stimulation that do not rely as much on material possessions (e.g., storytelling, mutual participation in chores) are important but presently unmeasured. In addition, the HOME Inventory might not function equivalently across sociocultural groups if families interpret the presence of the interviewer differently and react differently in his or her presence. Finally, language differences, particularly in Hispanic American families, may affect the validity of interviewer ratings in this subgroup.

To explore these possibilities, work is needed that goes beyond the set of constructs now tapped by the HOME Inventory. Qualitative work is needed that explores the nuances of parenting across different racial/ethnic groups to capture parenting dimensions not tapped by the HOME Inventory and to broaden our understanding of the ways in which parenting activities manifest themselves for various subgroups. Qualitative work to explore family interpretations of the interview situation is also warranted, as is the selection of interviewers with sufficient language and cultural background to interpret and rate observed behaviors appropriately across diverse samples. Items tapping maternal behaviors may be perceived differently as a function of class, race, or culture, particularly if the interviewer comes from a different background than the respondent.

Nature of the Dependent Variables

An entirely separate interpretation of our findings is that the child outcomes examined here do not function equally well across racial/ethnic groups. We have already noted the occurrence of missing data for Spanish-speaking children on PIAT reading recognition tests in the NLSY–CS. In addition, there may be problems in administering assessments of cognitive development to children who are bilingual. Researchers have also questioned the assumptions underlying IQ tests; for example, the extent to which they reflect experiences in school rather than an underlying characteristic of the child (Ceci, 1991). Certainly the school experiences of children in the three racial/ethnic groups in our research

may have also differed, given the variability across these groups on background characteristics. Thus a measure we assume to be consistently tapping particular child characteristics may actually be tapping widely divergent experiences across groups. Although the cultural equivalence of cognitive measures has been more widely questioned than that of measures of socioemotional development, the cultural interpretations of specific "problem" behaviors in children may also differ across racial/ethnic groups. These possibilities are best addressed by the careful choice of outcome measures in future research. Certain measures may be more free of problems of cultural bias than others.

Sample Size

A third possible interpretation of our results concerns sample size. In both Study 1 and Study 2, sample sizes were smaller for Hispanic American than for European American families.[6] Sample sizes were also smaller in Study 1 for African American families compared to European American families. The question remains open of whether sample size differences, on the one hand, limited our capacity to detect racial/ethnic differences, or on the other, accounted in part for differences found in predicting child outcomes. Future work will need to address the possibilities that we may have examined behavior in samples too small or too heterogeneous in origin (in terms of immigration) to detect important patterns in minority families.

Overall the present work has an important strength in that it identifies consistent patterns across substantially different databases. A further strength is the examination of both the full and short forms of the preschool HOME Inventory. Although each of the databases examined was large enough to include all three racial/ethnic groups, neither sample was entirely free of limitations to generalizability, and both had problems of unequal sample sizes. Future work will need to move beyond the confines of existing data sets, seeking further dimensions of parenting of potential importance to development, selecting child outcomes with evidence of cultural equivalence, and relying on samples of greater generalizability and more adequate representation of minority families.

NOTES

1. The EC-HOME-SF contains three items pertaining to punishment or discipline; two of these items were observed by the interviewer and one was based on maternal report. For

African and Hispanic Americans, all three of these items loaded into a factor that seemed appropriate to label nonpunitiveness, as it combined maternal report about the use of punishment with interviewer observation of physical punishment. However, for European Americans, only the two interviewer-observed items loaded into the factor. We called this factor no observed punishment to reflect the fact that the measure is based solely on interviewer observation of physical punishment.

2. For all five subscales, Cronbach's alphas, based on the combined sample, fall into a moderate to strong range ($\alpha = .58$ to .84). The range for Cronbach's alphas for analyses based on separate racial/ethnic groups is slightly wider ($\alpha = .51$ to .86) but generally comparable to analyses for the combined sample. As a result all subscales were included in the multivariate analyses examining prediction of child outcomes. Prior to carrying out the multivariate analyses, the full correlation matrix of all explanatory variables and HOME-SF subscales was examined. Tolerance tests for all final models were performed to determine the presence of multicollinearity. Correlation coefficients ranged from 0 to .35, indicating modest associations, and tolerances for all final models were within an acceptable range (greater than .4). We concluded that all control and parenting measures of interest could be included in our regression models.

3. The European American sample includes Asian Americans, who compose 8% of the sample. The groups were combined because of the small size of the Asian sample. Initial analyses showed no differences whether they were included in the group (Brooks-Gunn et al., 1994; Infant Health and Development Program, 1990).

4. Comparisons of the samples at randomization and with complete HOME data showed no significant differences.

5. Separate correlation analyses were conducted by race/ethnicity for these four variables. For each group, there were also relatively parallel high intercorrelations of the four variables related to home learning. The two exceptions were (a) European Americans on the variety subscale (the correlation of language stimulation and variety is .38) and (b) higher correlation for Hispanic American families of the language stimulation and academic stimulation (.62).

6. In Study 1, weighting up analyses to adjust for sample size differences across racial/ethnic groups revealed a few more significant results than in the multivariate analyses conducted separately by race. For example, for Hispanic Americans, the stimulation and physical environment subscales became significant predictors of the PIAT. For African Americans, the stimulation and positive maternal involvement subscales became significant predictors of the PIAT, where earlier they were marginally significant. For the BPI outcome, weighting up analyses revealed even fewer changes. For African Americans, the no observed punishment subscale moved from marginal significance to significance at the .05 level.

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