

**Extending the Examination of the HOME-Short Form
to a Further Dataset:
Factor Analyses and Examination of Internal Consistency
in the JOBS Descriptive Study**

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Methods Working Paper #98.3

There is a clear need to extend psychometric analyses of the HOME-Short Form to samples beyond the National Longitudinal Survey of Youth-Child Supplement in order to assure that findings regarding this measure are not sample specific. In the present working paper, we extend the examination of the factor structure and internal consistency of the early childhood version of the HOME-Short Form to a further dataset: the JOBS Descriptive Study. This is a sample of mothers who had applied for or were receiving welfare, all with a child of between about 3 and 5 years of age. Families in the sample were from the Fulton County, Georgia area, and nearly all of the families in the sample were African American.

Analyses reveal the essential similarity of factors underlying the HOME-Short Form in the Descriptive Study sample and the subgroup of African-American families with preschoolers in the 1988 National Longitudinal Survey of Youth-Child Supplement. However, internal consistency of the two original HOME-Short Form subscales, Emotional Support and Cognitive Stimulation, is lower in the Descriptive Study sample.

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Introduction

Of the many researchers who have used the HOME-Short Form in analyzing data from the NLSY-CS, several have demonstrated dissatisfaction with the two subscales provided by the survey (Baker, Keck, Mott, & Quinlan, 1993) by creating their own conceptually-based subscales (Barratt, 1991) or by factor analyzing the HOME-SF and using factor-based subscales (Menaghan & Parcel, 1991; Parcel & Menaghan, 1989; Quint, Polit, Bos, & Cave, 1994; Sugland et al., 1995). This is most likely due to the lack of conceptual specificity or clarity of the two subscales, Cognitive Simulation and Emotional Support. The subscales created by these researchers through factor analyses, however, have never been validated using other data sets.²

The JOBS Descriptive Study (see Moore et al., 1995 for details regarding the purposes and procedures of the study) uses the early childhood form of the HOME-SF in an almost

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²The NLSY-CS and the New Chance Demonstration (Quint et al., 1994) are among the few published data sets which include the Short Form of the HOME, and, to date (to the best of our knowledge) no one has published a comparison of factor analyses of HOME-SF data from more than one data set.

identical format to the NLSY, and can be used to extend the psychometric examination of the HOME-SF.

Method

Sample for the Present Analyses

The sample for the present analyses consisted of the 790 families who participated in the Descriptive Study. The Descriptive Study was carried out as a special substudy within the Child Outcomes Study of the National Evaluation of Welfare-to-Work Strategies (NEWWS, see Hamilton, Brock, Farrell, Friedlander, and Harknett, 1997). The Child Outcomes Study of the National Evaluation of Welfare-to-work Strategies asks whether there are impacts on preschool-age children's developmental outcomes two and five years after random assignment of their mothers within the evaluation. All the mothers in the evaluation had applied for or were receiving Aid to Families With Dependent Children (AFDC) at the start of the evaluation. The evaluation involves a contrast of a control group and two experimental groups. The two experimental groups take contrasting programmatic approaches to encouraging a transition from welfare to work: a labor force attachment approach, in which mothers are encouraged to make a rapid transition into the labor force; and a human capital development approach, in which mothers are encouraged first to pursue basic education and job skills training, in order to enhance their long term employment prospects.

The Descriptive Study, as its name implies, was carried out soon after random assignment with the aim of describing the well-being of the families and children, near the start of the

evaluation. While the Child Outcomes Study of the NEWS was carried out in three study sites (Atlanta, Georgia; Grand Rapids, Michigan; and Riverside, California), the Descriptive Study was completed only in the Atlanta site.

Each of the families in the Descriptive Study sample had a youngest child of between about 3 and 5 years at the time of enrollment in the study. This child served as the "focal" child for the Descriptive Study, i.e., the child focused upon in the interview measures with the mother and given child assessments. Where there was more than one child of between 3 and 5 years in the family at the time of enrollment, one was randomly selected to be the focal child.

Nearly all of the mothers in the Descriptive Study sample (96 percent) were African-American. The Descriptive Study sample did not include mothers who were teenagers when they enrolled in the study. Indeed, most of the mothers in the sample were between 25 and 34 at baseline. However 40 percent of the mothers in the sample *had been* 19 or younger at the birth of the oldest child living in the household. Many of the mothers in the sample (61 percent) had completed high school, and a further 5 percent had obtained a GED. Twenty-seven percent of the mothers had only one birth child living in the household, while 38 percent had two. Only 35 percent of the mothers had three or more birth children living in the household. Approximately equal proportions of the focal children in the sample are males (48 percent) and females (52 percent). Thirty-four percent of the children in the sample were 3-year-olds at baseline, 42 percent were 4-year-olds, and 23 percent were 5-year olds, while a total of nine children were already 6 at baseline.

We will contrast the results of the present analyses with parallel analyses completed with a subsample of African American families in the 1988 wave of the National Longitudinal Survey of Youth-Child Supplement who had a preschool-age child. These results are reported in some detail by Sugland and colleagues (1995), and briefly summarized in Methods Working Paper #98.2. Table 1 notes selected characteristics of the two samples. As can be seen, since approximately 96% of the JOBS Descriptive Study sample is African-American, this sample is similar to the African-American subsample of the NLSY-CS in race/ethnicity. Yet the JOBS Descriptive Study sample is relatively less educated and less likely to be employed than the African-American subsample of the 1988 NLSY-CS.

Procedure

The families in the Descriptive Study were visited in their homes to be interviewed approximately 3 months after enrolling in the evaluation. The interview covered a range of topics, including parenting and the home environment (see also, Methods Working Paper # 98.6), mothers' psychological well-being, contact with extended family and the child's father, emotional support, educational attainment and family economic self-sufficiency. Direct assessments of the children's verbal ability (the PPVT-R) and school readiness (the Caldwell Preschool Inventory) were carried out, and mothers reported on the child's health and social behavior.

As part of the interview and home visit, mothers were asked the maternal report items of the early childhood version of the HOME-Short Form. In addition, based on their observations of the home environment and mother-child interaction during the home visit (which lasted about

1 ½ hours), interviewers completed the observation-based ratings items of the HOME-Short Form.

Strategy of Analysis

This paper will compare the factor structure of the HOME-SF in the JOBS Descriptive Study Sample and the African-American subsample of the 1988 wave of the NLSY-CS, to ask whether the factor structure of the HOME-SF in the NLSY data is replicated in the JOBS Descriptive Study sample. Specifically, we will carry out Principal Components Analysis, with varimax rotation, using unweighted data. Varimax rotation was chosen to simplify the separation of items onto factors, since this technique seldom gives more than one high loading per item. In addition, we will examine the internal consistency (as calculated by Cronbach's alpha) of the two original HOME-SF subscales, Emotional Support and Cognitive Stimulation, within the JOBS Descriptive Study dataset, again asking if findings from the NLSY-CS are replicated.

Results

Factor Analyses

The results of factor analysis of the African-American subsample of NLSY-CS children aged 3 to 6 by Sugland and colleagues (1995) are displayed in Table 2, and the results of factor analysis of the JOBS Descriptive Study sample are summarized in Table 3. While the order of the factors is somewhat different, it can be seen by looking at these two tables that the five factors from the NLSY-CS data are also found in the JOBS Descriptive Study data. The JOBS Descriptive Study data show two additional subscales, father contact or involvement, and another subscale which is difficult to interpret and has a low alpha (.29). The addition of a father contact

factor in the JOBS Descriptive Study data may be a result of the specific sample used. Mothers in the JOBS Descriptive Study were mostly living as single mothers and were receiving or had applied for AFDC. Daily contact with the father is likely to have a different meaning for these children than for the children in the African-American subsample of the NLSY-CS, 37% of whom had married mothers (see Table 1). Also, the questions in the HOME-SF encompass both fathers and father-figures, so the mothers in the JOBS Descriptive Study may have been reporting more frequently on father-figures rather than fathers, and these father-figure/child relationships could be different from those with fathers.

A comparison of the alphas of the factor-based subscales also demonstrates the similarities between the factors in these two data sets. As seen in Tables 2 and 3, the alphas of the five similar factors are quite similar in the two data sets, with the exception of the Positive Paternal Involvement subscale. In the NLSY-CS, this subscale has an alpha of .76 based on 3 items, while the subscale has an alpha of only .42 based on 4 items in the JOBS Descriptive Study data.

Internal Consistency: Emotional Support and Cognitive Stimulation

Tables 4 and 5 show alphas for the two original subscales of the HOME, Emotional Support and Cognitive Stimulation. As can be seen in these tables, the alphas for the two original HOME-SF subscales show a difference in the same direction in the two data sets, with Emotional Support approximately .20 lower than Cognitive Stimulation in both, and the JOBS Descriptive Study alphas approximately .20 below the NLSY alphas on both subscales. It is noteworthy that in the JOBS Descriptive Study data set, alphas for the two original subscales are

in the low to moderate range (.55 for Cognitive Stimulation and only .32 for Emotional Support).

Discussion

The essential similarity of the factors underlying the HOME-SF in these two data sets confirms the factor structure found using the NLSY-CS data, and supports the comparability of the measure in these two studies. Low alphas for the two original HOME-SF subscales and for the Maternal Involvement factor-based subscale in the JOBS Descriptive Study should be kept in mind when utilizing data from either data set, since it is impossible to be certain of the importance of the low alphas in the JOBS Descriptive Study data without information from more than two data sets. These low alphas could mean that there is a problem with the two original subscales and the Maternal Involvement subscale of the HOME-SF that is specific to administration in the JOBS Descriptive Study sample, or that the HOME-SF actually has lower alphas in general than are evident in the NLSY-CS. Only by collecting HOME-SF data from another sample can this be clarified.

The implications of this comparative factor analysis are threefold. First, the confirmation of the basic factor structure found in the NLSY-CS lends support to the reliability of the measure. Second, the fact that each factor analysis found at least five factors to be meaningful supports the judgement of those researchers who showed dissatisfaction with the original two subscales provided by the NLSY-CS. Third, in future measures development, we should be certain to base our subscales on clearly defined constructs to avoid the necessity of continually re-factoring and re-scaling measures.

Table 1: Characteristics of African-American Mothers in NLSY-CS 1988, One Sibling Study Sample¹ Compared to JOBS Descriptive Study Sample

<u>Characteristic</u>	<u>Percent of NLSY Sample</u>	<u>Percent of JOBS Sample</u>
Currently Single	63%	81%
Younger than 25 years	21%	17%
≥ 3 Biological Children ²	36%	35%
Education:		
< 12 years	19%	40%
12 years	51%	53%
> 12 years	30%	8%
Currently Employed	49%	17%
African-American	100%	96%

1. Information taken from Table 1b of Sugland, B.W., Zaslow, M., Smith, J.R., Brooks-Gunn, J., Coates, D., Blumenthal, C., Moore, K.A., Griffin, T., & Bradley, R.H. (1995), in Journal of Family Issues, 16(5), 632-663.

2. In the NLSY-CS, this number refers to the percentage of households in which three or more children have ever been born to the mother, while in the JOBS Descriptive Study sample, the children must be living in the household. Therefore, we would expect the actual percent of households with three or more children ever born in the JOBS Descriptive Study sample to be slightly higher than is reported here.

Table 2: Factor Loadings and Internal Consistency of Factor-Based Subscales:
 Data from Children Ages 3 through 5 years 11 months
 Born to African-American Mothers in the NLSY-CS 1988¹

Factor Subscale	Alpha	Number of Items	Items in Subscale	Factor Loadings
F1: School Preparation	.82	3	Numbers	.88
			Alphabet	.75
			Colors	.74
F2: Positive Maternal Involvement	.76	3	Mother Talks to Child	.75
			Mother Answered Child Verbally	.69
			Positive Tone of Voice to Child	.69
F3: Stimulation	.62	6	Mother Reads to Child	.53
			Trips to Museum	.49
			Child Taken on Outing	.42
			Child Has 5+ Tapes/Records	.41
			Child Owns 10+ Books	.39
			Family gets 1+ Magazines Regularly	.35
F4: Physical Environment	.68	4	Clean	.75
			Not Cluttered	.71
			Safe	.68
			Not Dark or Monotonous	.45
F5: No Observed Punitiveness	.59	3	Mother Physically Restricted Child	.58
			Mother Slapped Child	.50
			Spanked 0 or 1 Times In Last Week	.49

1. Information taken from Table 3b and Table 4b of Sugland, B.W., Zaslow, M., Smith, J.R., Brooks-Gunn, J., Coates, D., Blumenthal, C., Moore, K.A., Griffin, T., & Bradley, R.H. (1995), in *Journal of Family Issues*, 16(5), 632-663.

Table 3: Factor Loadings and Internal Consistency of Factor-Based Subscales:
Data from JOBS Descriptive Study Sample, N=790¹

Factor Subscale	Alpha or Pearson Correlation	Number of Items	Items in Subscale	Factor Loadings
F1: School Preparation	.80	4	Numbers Alphabet Colors Shapes	.89 .88 .85 .69
F2: Physical Environment	.62	4	Clean Not Cluttered Safe Not Dark or Monotonous	.82 .78 .60 .48
F3: Stimulation	.50	5	Child Has 5+ Tapes/Records Child Owns 10+ Books Family gets 1+ Magazines Regularly Trips to Museum Mother Reads to Child	.63 .59 .54 .47 .45
F4: Positive Maternal Involvement	.42	4	Mother Shows Affection Mother Talks to Child Positive Tone of Voice to Child Introduces Child to Interviewer	.67 .65 .58 .38
F5: Father Contact	.56	2	Child Sees Father Daily Child Eats with Both Parents Daily	.81 .81
F6: No Observed Punitiveness	.53	2	Mother Physically Restricted Child Mother Slapped Child	.78 .75
F7: Hit back, Spanking, TV	.29	3	Spanked 0 or 1 Times In Last Week Mother Would Not Hit Child Back Number of Hours TV on Per Week	.66 .55 .54

1. Pearson correlations are provided when only 2 items are present in a factor-based subscale.

Note: Two items, Choice of Food and Child Goes on Outings, did not load on any factor higher than .35, and were therefore not included in the table.

Table 4: Factor Analysis and Internal Consistency of HOME-SF Subscales:
Data from JOBS Descriptive Study Sample, N=790

Subscale	Alpha	Number of Items
Cognitive Stimulation	.55	14
Emotional Support	.32	12

Table 5: Factor Analysis and Internal Consistency of HOME-SF Subscales:
 Data from Children Ages 3 through 5 years 11 months
 Born to African-American Mothers in the NLSY-CS 1988¹

Subscale	Alpha	Number of Items
Cognitive Stimulation	.72	14
Emotional Support	.52	12

1. Information taken from Table 4b of Sugland, B.W., Zaslow, M., Smith, J.R., Brooks-Gunn, J., Coates, D., Blumenthal, C., Moore, K.A., Griffin, T., & Bradley, R.H. (1995), in Journal of Family Issues, 16(5), 632-663.

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