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ABSTRACT

Extending earlier findings of the effects of socioeconomic status (SES) on child outcomes, this study investigated the variables of mothers' language complexity (levels of distancing) and degree of involvement in interactions with their children in order to clarify the relationship of the variables to each other and their relationship to their 4- to 5-year-old children's cognitive and language performance. The variables were examined within free-play and task-oriented sessions involving 40 Hawaiian/part-Hawaiian mother-child dyads from middle and low SES groups. Results of analyses of maternal verbalizations indicated that, comparatively, middle-SES mothers engaged in more complex and cognitively demanding types of language with their children while low-SES mothers engaged in more restrictive and commanding types of language. During the task-oriented session, both groups of mothers increased use of intermediate level distancing strategies and task-management statements while decreasing use of high-level and low-level distancing strategies. Differences were found in the type of verbal learning environments created for their children by middle- and lower-class mothers. Preliminary results of the analysis of the maternal states of involvement data suggested that middle- and low-SES mothers and their children spend comparable amounts of time in mutual play, passive participation, and independent play. Generally, SES differences appeared to be a matter of preferred style, not of deficiency. (RH)

Differences in the Quality of Maternal Verbalizations and Quantity of Involvement during Hawaiian Mother-Child Interactions

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Introduction

Over the past several decades one of the most consistent findings by psychologists and educators has been the strong association between children's socioeconomic status (SES) and their performance on cognitive and linguistic tasks (Ramey, Sparling & Wasik, 1981). Predictably, low-income children score substantially below their middle-income peers on standard measures of intelligence. SES is also a strong predictor of educational attainment and interacts significantly with the skills needed to cope within the classroom. Lower SES children demonstrate different intellectual abilities than their middle SES peers and these skills are less valued within a typical educational setting (Hess & Shipman, 1965; Ramey et al., 1981).

The search for environmental determinants of these performance differences has led to a number of studies of children's early home environments comparing the parenting styles of middle- and low-income families (Farran & Haskins, 1980). The rationale for these studies evolved from earlier investigations which suggested that children's early experiences were important determinants of their later development (Hunt, 1961). Within the child's home environment mothers often became the objects of scrutiny because they were considered the primary socializing agents of their children (Farran & Haskins, 1980).

Longitudinal studies which examined mother-child dyadic differences according to SES have concluded that the degree of both verbal and physical stimulation supplied by the mother throughout the child's development was predictive of the child's later cognitive and language development (Olson, Bates & Bayles, 1984). Summarizing across studies which examined SES differences Farran and Haskins (1980) concluded that "middle-income mothers are more involved, less commanding, more indirectly controlling, and more positively reinforcing of their children's behavior." (p. 781).

The study being reported today extends some of these earlier findings to examine the relationship between the cognitive complexity of the mothers speech and the types of skills mastered by the child. This study has its intellectual roots in two previous lines of research by Farran and Haskins (1980) and Sigel (1969)

Farran and Haskins (1980) examined the reciprocal interactions patterns of low- and middle-SES dyads. Patterns of interactions included things such as who initiated interactions, who initiated changes in activity, degrees of compliance and more. They also measured the frequency and duration of four states of activity (degree of involvement); mutual activity, passive participation, independent play and no clear activity. These observations were made while mothers and their children were together in an unstructured, free-play situation. The researchers concluded that the patterns of mother-child interactions did not differ according to SES but that the quantity of interactions did, with middle-SES mothers spending more time in mutual play and less time in independent play than low-SES mothers. They have suggested that it is the degree of involvement within mother-child interactions that is predictive of children's cognitive development.

Sigel (1982) has proposed that the quality of complex cognitive demands that are placed on children via adult verbal interaction play an important role in cognitive development. Sigel (1981) has reported that middle-SES mothers

engage their children in a structured setting using more complex and cognitively demanding language (which he calls levels of distancing; high, intermediate and low) then low-SES mothers. Low-SES mothers seem to engage their children using predominately controlling statements (task-management statements) and low level distancing strategies.

Combining the work of Sigel (1982) along with that of Farran and Haskins (1980), the present study investigated the variables of maternal language complexity (levels of distancing) and degree of involvement in interactions with their children in order to clarify their relationship to each other as well as their relationship to children's cognitive and language performance. These variables were examined within free-play and task-oriented sessions. Mothers' abilities to adapt to changing task demands could be studied by including observations from two different settings . Finally, these variables were examined within a Hawaiian/part-Hawaiian population. This population is of particular interest considering the high rates of school failure and poor performance on standard measures of cognitive and language abilities exhibited by Hawaiian/part-Hawaiian children (Tharp, Jordan, Speidel, Au, Klein, Calkins, Sloat & Gallimore, 1984).

Method

Subjects - Forty Hawaiian/part-Hawaiian mother-child dyads were recruited to participate in this study (20 middle- and 20 low-SES)> Children's ages ranged from 3 yr. 10 mo. to 4 yr. 10 mo., with a mean age of 4 yr. 5 mo. Gender of child was counter-balanced such that each SES group had approximately the same number of males and females (a total of 19 males and 21 females participated). Dyads were required to make two visits during the study.

Procedure - During the first visit, mothers and their children were videotaped together for 20 minutes in a free-play session and 10 minutes in a

task-oriented session. The free-play session closely resembled the methodology employed by Farran and Haskins (1980). Toys were available for the children to play with and magazines were available for the mothers to read if they were so inclined. Mothers were instructed to play with their children as they would at home. During the task-oriented session, mothers were instructed to teach their child to build 3-dimensional block designs that looked like block designs on cards given to the mothers. At the end of the videotaping session mothers were allowed to view the videotapes while their children were administered the Peabody Picture Vocabulary Test-Revised (PPVT-R). Extensive demographic data were also collected such as family size, number of siblings, birth order of target child, family income, parental occupation and education, and more. At the end of the first day children were scheduled for a return visit at which time the Wechsler Primary and Preschool Scale of Intelligence (WPPSI) was administered.

Coding - Videotapes were coded for complexity of maternal verbalizations and for the frequency and duration of maternal interaction (degree of involvement). A modified version of Sigel, McGillicuddy-Delisi & Johnson's (1980) coding system designed to code verbalizations according to the cognitive demands placed on the listener (levels of distancing) was used. There were three levels of distancing in which verbalizations could be coded. Low level distancing strategies included demands to observe, label, describe, and demonstrate. Intermediate level distancing strategies included demands to sequence, reproduce/recall, compare similarities and differences, and combine. High level distancing strategies included demands to propose alternatives, resolve conflict, evaluate, infer, generalize, transform, plan, and conclude. Verbalizations that did not meet the criteria for any of the levels of distancing were coded as either task-management statements (commands) or as no cognitive demand.

Degree of involvement was coded according to a modified version of Farran

and Haskins (1980) Reciprocal Control Categories. Frequency and duration measures were obtained for the coded behaviors of: mutual activity, passive participation, independent play and no clear activity. Before discussing the results of the study, one comment is in order. We examined and report only the mother's behavior today. We recognize that this is somewhat like listening to only one half of a telephone conversation. Of course all of these data are interactive with both the mother and child as important influences on each other's behavior. However, today we are focusing on the contribution of one of the actors - the mother.

Results

Analyses indicated that both middle- and low-SES mothers engaged their children in similar amounts of verbal interactions (see Figure 1), however, the complexity of the language used differed. Middle-SES mother engaged in significantly more intermediate (F=14.97, p<.000) and high (F=3.92, p<.055) level distancing strategies (see Figures 2 and 3), while low-SES mothers engaged in more task-management statements (F=16.56, p<.000) (see Figure 4). There were no differences in the amount of low level distancing strategies utilized according to SES (see Figure 5).

In general, all mothers engaged in greater amounts of high level (F=41.26, p<.000) and low level (F=12.86, p<.001) distancing strategies during free-play sessions than during task-oriented session (see Figures 3 and 5). During task-oriented sessions mothers engaged in more intermediate level distancing strategies (F=60.78, p<.000) and task-management statements (F=87.08, p<.000) then during free-play sessions (see Figures 2 and 4).

Pearson product-moment correlational analyses indicated that when taken together (maternal utterances collapsed across both sessions) high level distancing strategies were positively correlated with the WPPSI Full Scale

(r=.57, p=.000), WPPSI Verbal (r=.40, p=.005) and WPPSI Performance (r=.59, p<.000); intermediate level distancing strategies were positively correlated with PPVT-R (r=.25, p=.059), WPPSI Full Scale (r=.32, p=.021, WPPSI Verbal (r=.30, p=.028), and WPPSI Performance (r=.27, p=.048); low level distancing strategies were negatively correlated with WPPSI Full Scale (r=.30, p=.031) and WPPSI Verbal (r=-.31, p=.027; and task-management statements were negatively correlated with PPVT-R (r=-.36, p=.011), and WPPSI Performance (r=-.62, p=.000) (see Table 1).

We also have separate Pearson product-moment correlations were also computed for verbalization during the free-play and task-oriented sessions. A series of Student's t-test for dependent r's were performed to compare the correlations of each variable from the two sessions to determine whether verbalizations during one type of session were more highly associated to children's performance measures. The analyses revealed that maternal low level distancing during the task-oriented session was more negatively correlated to children's WPPSI Full Scale score than during the free-play session, t(37)=2.40, p<.05. However, maternal task-management statements during free-play sessions were more negatively associated with children's PPVT-R scores (t(37)=2.12, p<.05); WPPSI Full Scale scores (t(37)=3.00, p<.01); and WPPSI Verbal scores (t(37)=3.32, p<.01).

Initial analyses of the maternal involvement data indicated that there were no SES differences in the frequency or duration of mutual play, passive participation, independent play or no clear activity of mothers during the free-play session. During the task-oriented sessions almost all of the mothers were actively involved with their children throughout the session. This resulted in very little or no variation in the degree of maternal involvement, therefore the coding and analyses of maternal involvement during task-oriented sessions was suspended. Further analyses of the Hawaiian mothers reciprocal control patterns will be reported separately by Farran. Analyses of the SES

differences in the interaction between reciprocal control state and levels of distancing are now in progress. We have just completed the conditional probability analysis which suggest mothers across SES do not very their cognitive demands by degree of involvement.

In sum, middle-SES mothers engaged in significantly more high and intermediate level distancing strategies during both the free-play and task-oriented sessions than lower SES mothers though both groups were similarly involved with their children. Meanwhile, low-SES mothers engaged in more task-management, statements during both sessions. Additionally, mothers' intermediate and high level distancing strategies across sessions were positively correlated with children's performance scores while low level distancing strategies and task-management statements were negatively correlated with these same variables.

Discussion

The results of the analyses on maternal verbalizations were consistent with previous findings with different cultural populations which indicate that middle-SES mothers engage their children using more complex verbal interactions, while low-SES groups remained fairly consistent across the session types. Therefore, one of the major differences noted between middle- and low-SES mothers was not how much they talked to their children, rather, how they talked to their children. That is, middle-SES mothers engaged in more complex and cognitively demanding types of language with their children while low-SES mothers engaged in more restrictive and commanding types of language.

By videotaping the mothers in two different settings we were able to observe the ways in which mothers adapted their verbal interactions with their children to fit the task at hand. Interestingly, both groups of mothers increased their use of intermediate level distancing strategies and

task-management statements while decreasing their use of high level and low level distancing strategies during the task-oriented session. Since the task-oriented session place demands on the mothers to be more directive (task-managing) and to encourage their children to sequence, compare and number (all strategies that fall within the intermediate level category) it is not surprising, in retrospect, that there were increases exhibited in those behaviors. It was also of interest to note that the correlations between maternal speech and childrens' performance appeared to be somewhat stronger during free-play sessions rather than task-oriented session. It may be that interactions during free-play session are more representative of naturally occurring interactions in the child's environment.

Another way of viewing the language data is to ask what kinds of verbal learning environment the mother is creating with the child. During free play, middle class, moms are more likely to model problem solving strategies which relate on going activities to past and future events as well as to skills the child has already learned. (High level distancing) However, when the task becomes more specific, they engage the child in a more goal directed strategy which is still collaborative in nature but provides more specific cues for the child. It focuses the child more clearly.

During free play, low SES mothers are more likely to correct their children's behavior or suggest things for them to do with less emphasis on tying this activity into events outside the immediate environment.

The problem solving strategy employed while completing a specific task is to be more explicit about what the child should do next and less interactive in joingtly solving the problem.

Preliminary results of the maternal states of involvement data were not consistent with previous findings which reported that middle-SES mothers engaged in more mutual play with their children, while low-SES mothers engaged in more independent play. Rather, within this Hawaiian population it appeared that

middle- and low-SES spend comparable amounts of time in mutual play, passive participation and independent play (there were essentially no occurrences of no clear activity).

These results suggest that measures of mother's talk to children might be better predictors of children's cognitive abilities than measures which strictly attend to the quantity of maternal interactions. This study supports findings reported by Slater (1983) in which mothers of high-risk children were taught to use either more low level (by talking more) or high level distancing strategies (by asking more what and why questions). Results indicated that the children in the high level distancing group demonstrated increases in their scores on some subtests of the McCarthy. This makes intuitive sense given the extremely verbal nature of standard forms of cognitive assessment. Children who are exposed to the type of language that is typically found in school and in standard assessments of their abilities are more likely to do better in those situations.

Finally, it is important to note that mothers from each SES group were able to engage their children using each level of distancing even though there were SES differences in the amount of each category. Therefore, the differences noted between middle- and low-SES mothers did not appear to be one of deficiency but, rather, one of preferred style.

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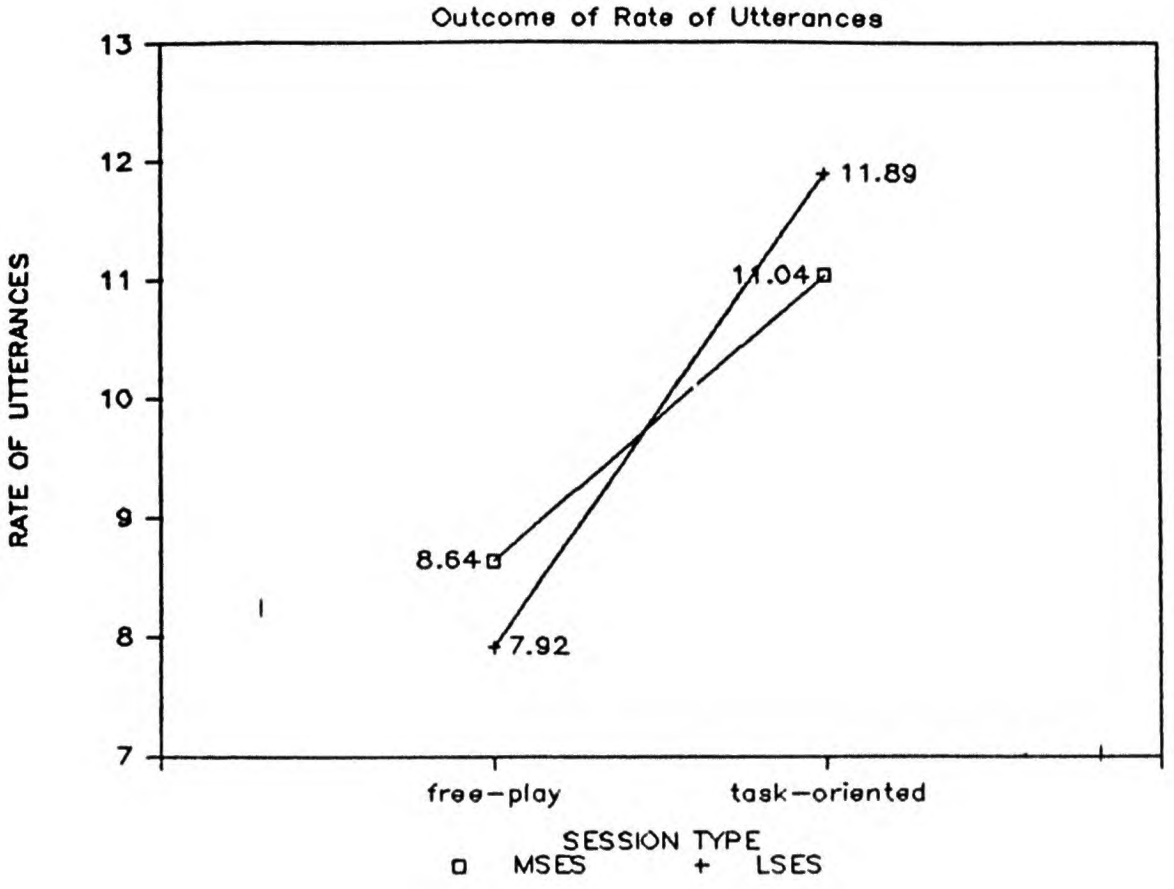
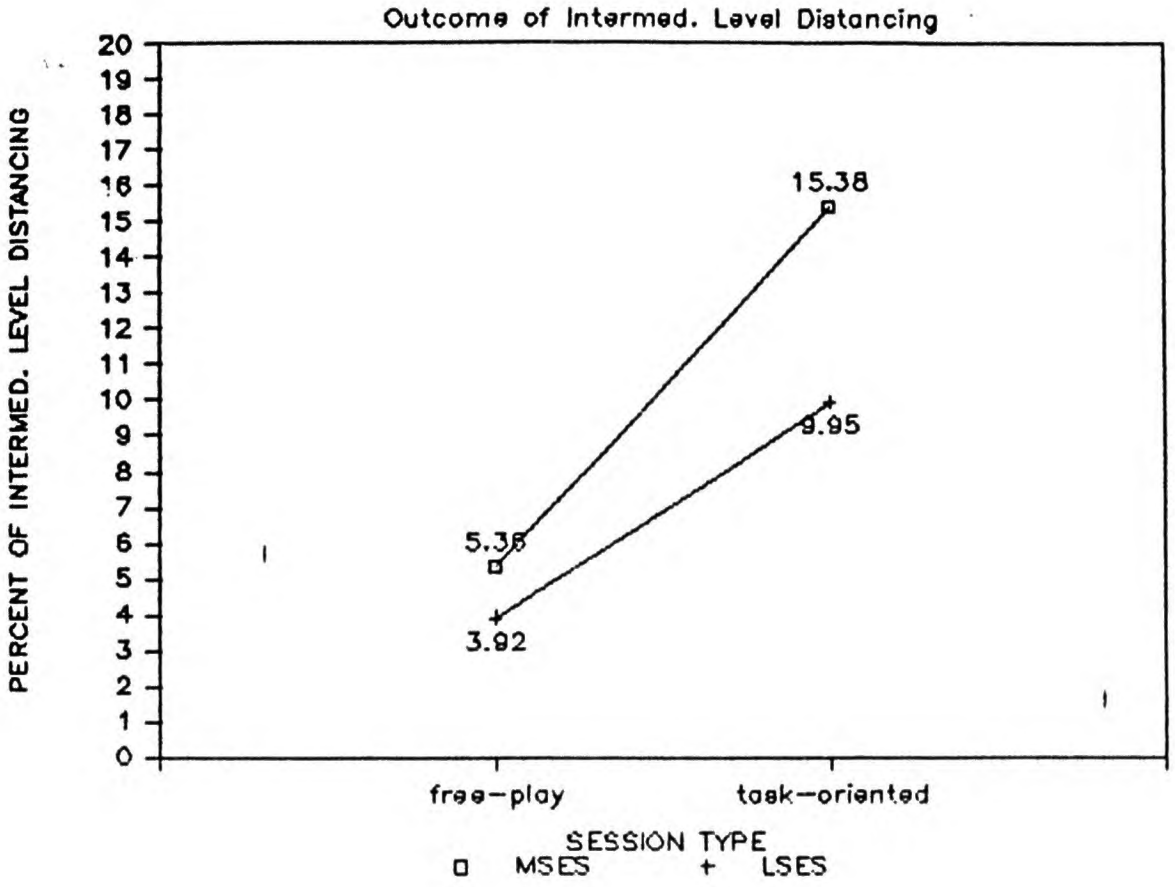
FIGURE 1



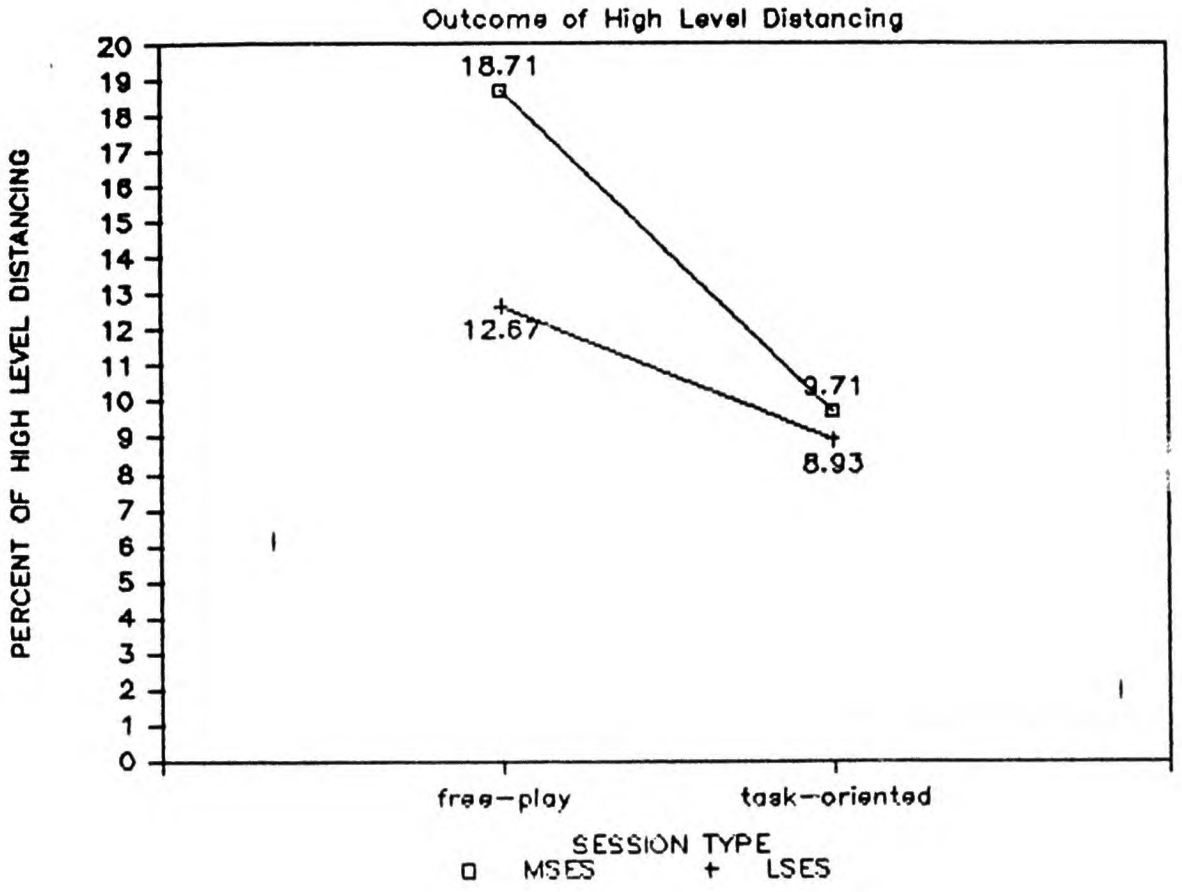
Caption Figure 4. Rate per Minute of Utterances Emitted by Middle-SES and Low-SES Mothers During Free-Play and Task-Oriented Sessions

FIGURE 2



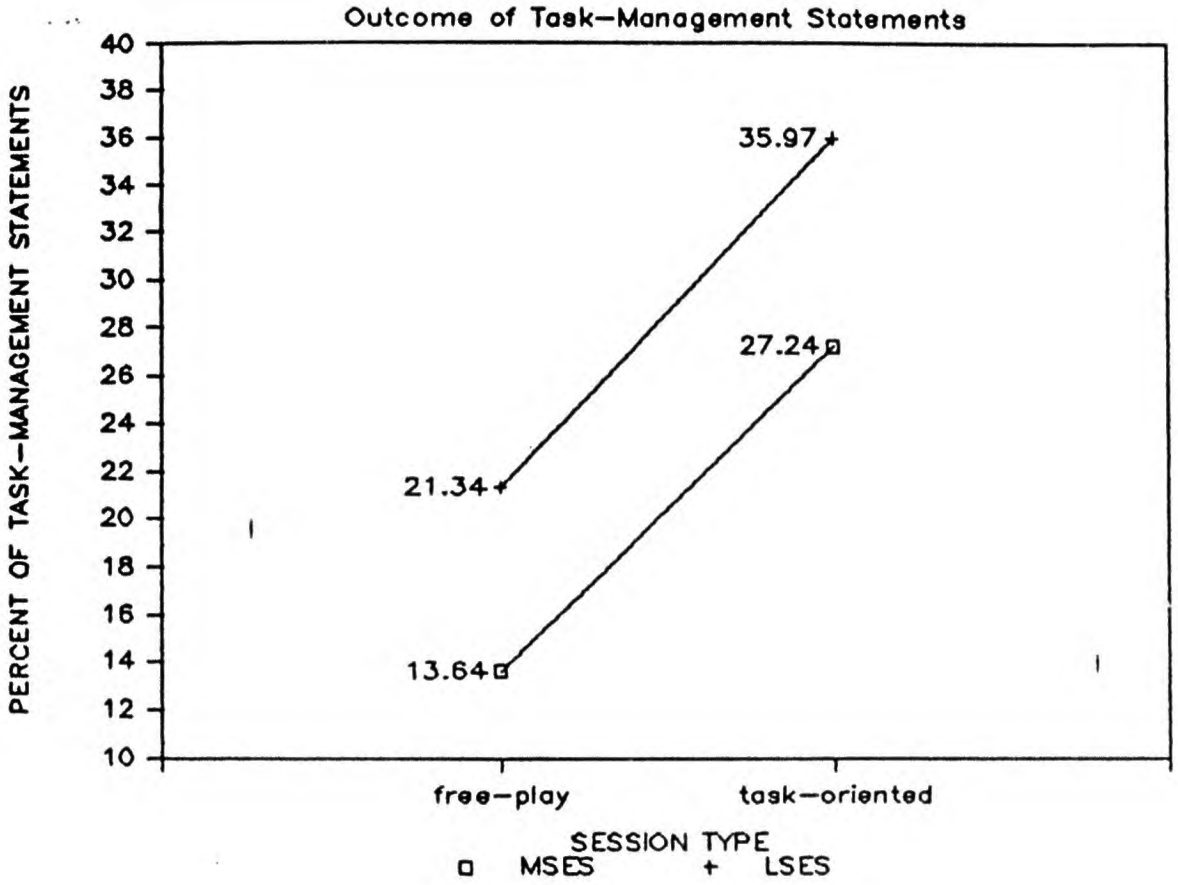
Caption Figure 5. Percent of Intermediate Level Distancing Strategies Emitted by Middle-SES and Low-SES Mothers During Free-Play and Task-Oriented Sessions.

FIGURE 3



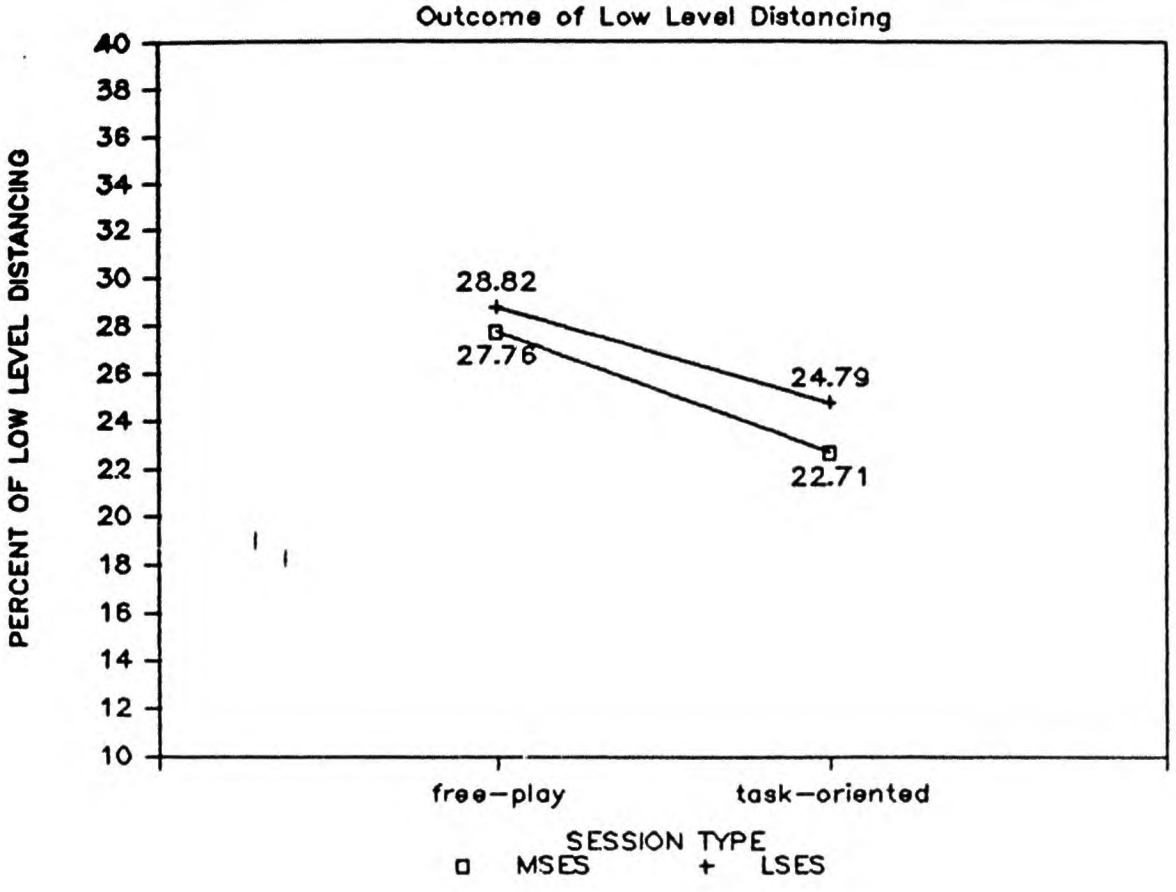
Caption Figure 6. Percent of High Level Distancing Strategies Emitted by Middle-SES and Low-SES Mothers During Free-Play and Task-Oriented Sessions.

FIGURE 4



Caption Figure 7. Percent of Task-Management Statements Emitted by Middle-SES and Low-SES Mothers During Free-Play and Task-Oriented Sessions.

FIGURE 5



Caption Figure 8. Percent of Low Level Distancing Strategies Emitted by Middle-SES and Low-SES Mothers During Free-Play and Task-Oriented Sessions.

TABLE 1

	PPVT-R	WPPSI Full Scale	WPPSI Verbal	WPPSI Performance
Percent High Level Distancing	r=.21 p=.093	r=.57 p.=.000**	r=.40 p=.005**	r=.59 p=.000**
Percent Intermediate Level	r=.25 p=.059	r=.32 p=.021*	r=.30 p=.028*	r=.27 p=.048*
Percent Low Level Distancing	r=-.09 p=.288	r=-.30 p=.031*	r=-.31 p=.027*	r=-.21 p=.095
Percent Task-Management	r=-.30 p=.031*	r=-.57 p=.000**	r=-.36 p=.011*	r=-.62 p=.000**

* p<.05

** p<.001

Caption Table 7. Pearson Correlation Matrix of Children's Performance on the PPVT-R, WPPSI Full Scale, WPPSI Verbal, WPPSI Performance by Percent of Maternal Levels of Distancing and Task-Management.