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# Effects of Social Context and Mothers' Requesting Strategies on Down's Syndrome Children's Social Responsiveness

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Social context and maternal style of requesting and responsiveness were examined in teaching and social interactions in relation to 28 Down's syndrome (DS; 30 to 69 months old) and 28 mental-age matched normal children's cooperation and social initiative. Compliance for DS children was similar to normal children for child-initiated exchanges but decreased during mother-initiated exchanges, particularly in less structured situations. The DS children initiated fewer exchanges but were comparable on self-directed behavior. Differences in mothers' requests and children's social competence related to risk, language skills, and social situation. The DS but not normal children were more likely to increase compliance with directive vs. suggestive requests, but only in the structured situation. Mothers' behaviors, social context, and expressive language skills were important in understanding the social competence of DS children.



Once children reach the second year of life, parents begin to make demands and impose restrictions for their children's social behavior (Kopp, 1982; Lytton, 1979; Parpal & Maccoby, 1985). By this developmental period, children are expected to comply with parental requests and, at the same time, develop a sense of autonomy in social interactions (Kopp, 1982). For this to happen, mothers need to create a balance between providing direction and allowing the child to have a sense of control (Kochanska & Kuczynski, 1991). This balance promotes the development of cooperation as well as social-initiating skills, two important aspects of young children's social development (Barocas et al., 1991; Crockenberg & Litman, 1990; Kopp, 1987). This type of specialized assistance from mothers during early social interactions is described as maternal scaffolding (Bruner, 1982) because mothers provide a support for young children's emerging social abilities.

Mothers' encouragement of their young children's attempts to take the lead during social exchanges is associated with increased cooperation (Kochanska & Kuczynski, 1991; Kuczynski & Kochanska, 1990; Parpal & Maccoby, 1985; Rocissano, Slade, & Lynch, 1987; Schaffer & Crook, 1980). Responsiveness to children's social-initiating behavior facilitates cooperation because it gives the child a sense of being involved in a mutually cooperative exchange (Parpal & Maccoby, 1985) and provides a context for children to develop social initiative in an acceptable manner (Kuczynski, Kochanska, Radke-Yarrow, & Girnius-Brown, 1987). By maintaining their child's focus of interest, mothers place fewer demands on the young child's attentional capacity by not requiring them to make quick shifts in topics, thus enhancing the child's efforts to follow through with a specific maternal request (Rocissano et al., 1987).

The degree to which mothers assert control in their style of requesting is also associated with young normal children's cooperation (Schaffer & Crook, 1980). Requests that offer the child choices rather than directives to do something are related to increased child compliance (Crockenberg & Litman, 1990; Lytton, 1977; Rocissano et al., 1987). Other studies report positive associations between more directive styles of requesting (i.e., those that provide the child with clear information about what is expected of them) as long as they are given in the context of a highly responsive style of interacting (Baumrind, 1972).

The type of scaffolding mothers provide in early social interactions may be particularly important for children with developmental problems (Bromwich, 1981; Girolametto, 1988; Marfo, 1990). In particular, children with Down's syndrome have difficulty requesting objects from mothers (Mundy, Sigman, Kasari, & Yirmiya, 1988) and initiating social interactions (Beeghly, Perry, & Cicchetti, 1989; Berger, 1990; Buim, Rynders, & Turnure, 1974; Jones, 1980). These children also use fewer strategies to monitor their own behavior than mental-age matched normal children (Kopp, Krakow, & Johnson, 1983) and are less contingently responsive to their parents (Beeghly et al., 1989; Stoneman, Brody, & Abbott, 1983). These differences may explain why mothers of children with Down's syndrome take a more active role in social interactions compared with mothers of mental-age matched normal children (Jones, 1980; Kopp, 1990; Marfo, 1990). Unfortunately, the efficacy of this maternal style on Down's syndrome children's social skills has not been clearly evaluated.

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Evidence suggestive of a facilitative effect of responsiveness and directiveness on Down's syndrome children's social responsiveness can be found in several studies. In two studies evaluating effects of maternal directiveness on play responses, results show that directive versus suggestive requests are more likely to be followed by higher level responses for young children with Down's syndrome (Landry & Chapieski, 1989; Maurer & Sherrod, 1987). Landry and Chapieski also reported that maintaining versus redirecting Down's syndrome children's interests is more likely to be followed by higher level joint-play responses. Two additional studies reported positive associations between mothers' responsiveness with Down's syndrome children's social and communicative competence. However, in both studies, general correlational analyses were used (e.g., Crawley & Spiker, 1983; Mahoney, 1988). Strong support that maternal scaffolding facilitates social competence for children with Down's syndrome is lacking from these studies because general correlational analyses do not provide information concerning whose behaviors are influencing whom (Marfo, 1990).

To address methodological limitations of previous research, we included measurement of the conditional probability that a maternal-requesting strategy would be associated with an increase in the child's level of compliance immediately following the maternal request. Although this analytical approach does not absolutely prove causation, it provides better evidence of causation than general correlational approaches because of the close temporal relation between the predictor variable (maternal behavior) and the criterion variable (child response). In addition, this analysis measures only increases in the child's level of compliant response, thereby controlling for the tendency of the child to persist in a previous response mode.

The context in which interactions occur may also provide important information about social development. Social situations differ in task constraints, functional purposes, and cognitive demands, which can result in distinct patterns of compliance and self-directed behavior (Beeghly, Bretherton, & Mervis, 1986; Landry, Chapieski, Richardson, Palmer, & Hall, 1990; Schneider-Rosen & Wenz-Gross, 1990). However, the association between social context factors and social functioning of children with Down's syndrome has not been reported. In the present study, a structured cognitive-puzzle teaching task and a less structured, socially oriented pretend play situation (i.e., tea party) were included so that we could evaluate whether compliance of children with Down's syndrome varied in relation to social context demands. We compared the social behaviors of children with Down's syndrome and their mothers with those of a group of mental-age matched normal comparison children and their mothers.

## Mothers' Requesting Behaviors

Our first objective was to evaluate for differences between the two groups of mothers in their use of directives, suggestions, and restrictions. The mothers of the children with Down's syndrome were expected to be more directive than the mothers of normal children because of the children's decreased responsiveness (Jones, 1980). In contrast, the mothers of the normal children were expected to use more suggestive strategies because they show a greater proportion of behaviors that provide their children with choices than the mothers of at-risk children (Landry et al., 1990). These differences were expected to be more apparent in the puzzle task (as opposed to the tea party) because of the greater cognitive demands on children and because the mothers were instructed to encourage their children to complete a specific task. The mothers of the children with Down's syndrome were also expected to use more restrictions than the mothers of the normal children, but only in the tea party where there were increased opportunities for mishaps (see Landry et al., 1990). Higher control strategies for mothers of Down's syndrome children have been attributed to an increased concern for socially acceptable behavior from their children (Jones, 1980; Maurer & Sherrod, 1987).

We also evaluated whether the two groups of mothers differed in their use of praise in relation to their children's efforts to comply. Praise was regarded as an aspect of maternal responsiveness in the interaction. High directiveness and responsivity have been shown to be orthogonal interactional styles (Crawley & Spiker, 1983; Schaffer & Crook, 1980; Tannock, 1988). Therefore we expected that, in spite of their high degrees of directiveness, the mothers of the children with Down's syndrome would be comparable with the mothers of the normal controls in their use of praise. With regard to social context, both groups of mothers were expected to show more praise during the puzzle task, because we anticipated that mothers would recognize the cognitive difficulties of the teaching situation and would therefore be more rewarding of competent behavior shown in this situation.

## Children's Compliance and Social Initiative

A second objective was to evaluate for group differences in the children's responses to their mothers' requests and in social-initiating skills. Three child responses were of interest, including (a) compliant acts to mother's requests, (b) unsuccessful attempts to carry out a maternal request, and (c) noncompliant responses. It is important to consider whether some children want to follow through with a maternal directive but are unable to do so because they have difficulty understanding social context demands (Kaler & Kopp, 1990). The children with Down's syndrome were expected to show a smaller proportion of compliant behaviors than the normal children because decreased compliance is typically seen with the former children (see Beeghly et al., 1989). However, because children with Down's syndrome have difficulty responding to social cues (Jones, 1980), they were expected to show a higher proportion of attempts to comply than the normal children. We also predicted more noncompliance for the children with Down's syndrome compared with the normal children, but only in the tea party because this context is less familiar and less structured.

We also evaluated for group differences in the children's initiating and self-directed behaviors, because these behaviors have not been investigated for Down's syndrome children in relation to the effects of different social contexts. We expected the children with Down's syndrome to be comparable with the normal children in self-directed behavior, because this skill does not require the same degree of attention and understanding as re-

sponding to mothers' social signals. However, these children were predicted to show fewer social initiations than the normal children, particularly in the unstructured tea party, because of their difficulty with initiating and directing someone else's attention (Jones, 1980).

## Effects of Mothers' Requesting Behaviors on Children's Compliance

The last two objectives of the study concerned the facilitative effects of mothers responsiveness and requesting style. We evaluated for differences between the two groups of children in their compliance to maternal requests that were responsive to child initiatives versus requests that originated because of the mothers' initiative. We hypothesized that the children with Down's syndrome would be similar to the normal children in showing compliant responses to child- versus mother-initiated exchanges. An earlier study showed increased play responses for children with Down's syndrome following mothers' attempts to maintain their attention (Landry & Chapieski, 1989).

Finally, we evaluated the conditional probability that the children would increase their compliant behavior in response to *directive* versus *suggestive* requests. We hypothesized that the children with Down's syndrome would have a greater likelihood of increasing compliance in response to directives because of the increased information provided by these requests about what is expected of them. The normal children were expected to show a greater likelihood of positive change in response to suggestions. Providing choices is reported to facilitate social functioning for normal children (Parpal & Maccoby, 1985), whereas strategies that provide increased structure relate to increased responsiveness for children with Down's syndrome (Landry & Chapieski, 1989). We expected that the children with Down's syndrome will benefit more from directive as opposed to suggestive requests in the more open-ended tea party than in the more structured teaching task because of their need for more specific information about what was expected from them in this less familiar social situation.

## Method

### Subjects

Twenty-eight children (14 male and 14 female) of the Trisomy-21 subtype were recruited from the local support group for parents of children with Down's syndrome to participate in this study. The comparison group consisted of 28 nonhandicapped children (12 male and 16 female) who were the result of a normal pregnancy and delivery. The normal children were between the ages of 2 to 3 years, with the majority of the children being in the 2-year range. They were recruited from local pediatric clinics or private pediatricians.

The groups were matched on mean mental age scores calculated from assessments with the Bayley Scales of Infant Development or the McCarthy Scales of Children's Abilities. The expressive and receptive language development of each child was evaluated with the Sequenced Inventory of Communication Development (SICD). The two groups were similar on receptive language but showed differences on expressive language scores, $F(1, 53) = 4.46$, $p < .04$. The mean expressive scores for the normal group were approximately 3 months higher than scores for the Down's syndrome group. The mean chronological age for the Down's syndrome group was 42.6 months (range = 30–69) and was significantly different from the mean chronological age of 28.2 months (range = 24–36 months) for the normal group, $t(52) = 6.80$, $p < .0001$ (see Table 1).

Table 1
*Demographic Characteristics for the Two Groups of Children*

| Variable | Down's syndrome ($n = 28$) | Normal ($n = 28$) |
|---|---|---|
| Mental age (months) | | |
| *M* | 29.07 | 31.82 |
| *SD* | 9.44 | 8.44 |
| Range | 18–59 | 23–47 |
| Receptive language age (months) | | |
| *M* | 28.40 | 30.07 |
| *SD* | 4.90 | 7.51 |
| Range | 20–40 | 20–44 |
| Expressive language age (months) | | |
| *M* | 27.01 | 30.38 |
| *SD* | 5.18 | 7.07 |
| Range | 20–40 | 20–48 |
| Chronological age (months) | | |
| *M* | 42.61 | 28.20 |
| *SD* | 9.42 | 5.60 |
| Range | 30–69 | 24–36 |
| SES[a] | | |
| *M* | 3.00 | 2.88 |
| *SD* | 1.13 | 1.28 |
| Maternal age (years) | | |
| *M* | 33.70 | 28.38 |
| *SD* | 10.50 | 5.25 |
| Maternal education (years) | | |
| *M* | 14.50 | 13.37 |
| *SD* | 2.86 | 2.04 |

[a] SES = socioeconomic status, measured by the Hollingshead (1975) scale; range = 1–5.

### Procedure

The children and mothers were videotaped in a playroom that was equipped with a child-sized table and chairs, dolls and a crib, and a tricycle in a teaching and a social situation. First, each mother was asked to assist her child in constructing a puzzle during a 5-min time period. Puzzles of varying complexity were available, and mothers were asked to select a puzzle that was difficult enough so that the child would require help to complete the task. If a child completed one puzzle before the 5 min elapsed, then the mother was instructed to begin a second puzzle.

Next, the mother was asked to engage her child in a 5-min pretend tea party. The mother and child sat at a child-sized table holding a tray that contained small plates, cups, spoons, napkins, a teapot (filled with fruit juice), and a plate of cookies.

### Observational Measures

The two videotaped sessions were coded by a two-person team. The team coded maternal and child behaviors related to each maternal request. Each time the mother requested her child to do something or restricted the child's behavior, the child was coded for whether they complied, attempted to comply, or did not comply. When mothers gave rapidly repeated requests that did not allow time for the child to respond, the series was considered a single event. The three types of ma-

ternal requests of interest were directives, suggestions, and restrictions. Requests could be verbal or nonverbal, although the mothers in both groups rarely made nonverbal requests. The amount of praise mothers gave their children in response to their efforts to carry out their requests or take initiative in the interaction was also of interest. Directives were considered explicit requests for a certain behavior, whereas requests that included an implicit directive to do something were coded as suggestions. We included these two types of requests because children with Down's syndrome are thought to have more difficulty with implicit as opposed to explicit maternal requests (Maurer & Sherrod, 1987).

The child's response was coded only when 3 s or more elapsed between one request and the next. For a child to be coded as *complying* with a request or restriction, the child had to do what the mother requested. If the child was offered a choice and responded in a socially appropriate manner, the behavior was coded as compliance (e.g., mother asks "do you want a cookie now?" and child responds "not right now"). This was because compliance usually refers to child behavior that is consistent with what the mother wants the child to do (Crockenberg & Litman, 1990). In situations in which mother asks what the child's preference is, a *no* response on the part of the child was considered consistent with what the mother wanted the child to do. An *attempt to comply* was coded when the child attempted to do what the mother asked but was unsuccessful. This behavior was included because children's noncompliance can occur because they do not understand the specific request. Finally, *noncompliance* was coded as a direct refusal or ignoring the request. These behaviors represent both active and passive forms of noncompliance. Passive noncompliance is considered a nonassertive way of expressing resistance, and active noncompliance represents direct defiance (Kuczynski & Kochanska, 1990).

Each time the children initiated directing their mothers' attention by using a verbal or gestural behavior (e.g., pointing to a toy), they were coded as initiating a social-communicative exchange. When mothers maintained this focus of interest by requesting a particular response related to the child's initiation, the children were also coded for the level of compliant response they showed (i.e., attempts to comply, comply, and noncomply) to mothers' request. Whenever children attempted to direct their own behavior with regard to the puzzle or tea party behavior without the involvement of the mother (e.g., pouring "tea" without mother's assistance), their behavior was coded as a self-directed behavior. Behaviors that were unrelated to the specific goal of the context were not coded. Detailed descriptions of the child and maternal behaviors are presented in Table 2.

To estimate reliability across raters, a second observer recoded 25% of the videotapes. We calculated generalizability coefficients using repeated measures analysis of variance (ANOVA) for each variable to determine the reliability of the observational measures. We chose this method because it is a true reliability index and it looks at the consistency across aspects of the raters' responses that are actually used as variables in the analyses (Frick & Semmel, 1978). Coefficients above .50 indicate adequate reliability (Mitchell, 1979).[1] For the maternal behaviors, reliability coefficients were .93 for directives, .90 for suggestions, .88 for restrictions, .97 for praise, and .76 for mother initiates. The reliability coefficients for the child measures were .99 for comply, .85 for attempt to comply, .95 for noncomply, .95 for self-directed behavior, and .98 for child social initiates. Generalizability coefficients approach 1.0 only when the subject score variance is large and the difference between coders is small (Mundy et al., 1988). The reliability coefficients were similar across the two groups.

The four maternal behaviors and three child responses were expressed as a proportion of the total number of exchanges in which mothers made a request. The child social initiations and the child's initiation of self-directed behaviors were expressed as a proportion of the total number of child initiations. The mother and child behaviors were expressed as proportions to control for the frequency with which mothers made requests of their children.

## Results

### *Group Differences in Mothers' Interactive Behaviors*

The first objective of this study was to compare mothers of the children with Down's syndrome with mothers of children in the comparison group in terms of their use of requesting and praise behavior during the two social situations. Group differences across the tea party and puzzle conditions in mean proportions of each of their interactive behaviors (i.e., directives, suggestive, restrictions, and praise) were investigated with a mixed-model multivariate analysis of variance (MANOVA) design. Group (Down's syndrome vs. normal) was the between-subjects factor, and condition (puzzle-teaching task vs. tea party) was the within-subject factor. Mothers' interactive behaviors (directives, suggestives, restrictions, and praise) were the multiple dependent variables. Because the groups were different on expressive language, we included SICD expressive scores in the model to evaluate for the separate effects of language skills on the mother's behavior. All dependent variables were included in the model because algorithms used in the Statistical Analysis System general linear models procedure are based on a generalized inverse that corrects for multicollinearity.

The first hypothesis was that differences in mothers' requesting style and use of praise were related to risk group and condition. Results indicated that there was a significant main effect for condition, $F(3, 46) = 3.75$, $p < .02$, but no main effect of group. A marginally significant multivariate effect for Group × Condition was also found, $F(3, 46) = 1.90$, $p < .07$ (one-tailed test). In this case, a one-tailed test was appropriate because of the directional nature of the hypothesis. The univariate tests were examined because of specific hypothesis regarding the relation of the child's risk status and condition on mothers' requesting behaviors. However, caution should be exercised in interpreting these differences. Univariate tests revealed that the mothers of the children with Down's syndrome had a higher proportion of directives in the tea party compared with the mothers of the normal children, $F(1, 48) = 5.67$, $p < .02$, but that both groups were similar in their use of directives in the puzzle task. A significant condition effect showed that both groups of mothers used a higher proportion of directives, $F(1, 48) = 8.23$, $p < .006$, during the puzzle task than during the tea party. For directives, there was also a significant effect of condition by SICD expressive language, $F(3, 46) = 4.45$, $p < .01$, indicating that expressive language scores were inversely related to mothers' use of directives in both conditions but to a greater extent in the puzzle condition. These results show that

[1] Generalizability studies are recommended for the estimation of the interobserver reliability of continuous data sets (Frick & Semmel, 1978; Mitchell, 1979). To calculate generalizability coefficients, we used mean squares (MS) from repeated measures analyses of variance to calculate variance components for each main effect and interaction: (MS subject − MS coders + MS subcoders/$N$ of coders). Variance components are used to calculate a $G$ coefficient (see Mundy et al., 1988).

Table 2
*Coded Behaviors*

| Interactive behavior | Definition |
|---|---|
| Types of maternal requests | |
| Directives | Imperative statement that directs the child to do or say something (e.g., "Put this one here" or "Say thank you"). |
| Suggestions | Question or suggestive statement that provides the child with a choice (e.g., "Where does this one go?" or "Do you want a cookie?). |
| Restrictions | Imperative statement that attempts to limit the child's action (e.g., "Don't put it there" or "Stop pouring now"). |
| Praise | Statement that provides positive feedback to the child about his or her behavior (e.g., "That was good"). |
| Children's social responses | |
| Compliance | Child successfully carries out an action that mother has directed the child to do. |
| Attempts to comply | Child attempts to carry out a task that mother has directed the child to do but is not successful. The child has to show a response that makes it clear that he or she understood a request was made of him or her and that he or she was interested in responding. |
| Noncompliance: refuse/ignore | Child indicates with a gesture (e.g., shakes head no) or a verbalization that he or she will not do what the mother tells him or her to do, or the child continues doing what he or she was already doing, showing no attempt to follow the mother's directive. |
| Initiations | |
| Communicative | Child attempts to direct mother's behavior using a verbal or gestural behavior (e.g., child gives mother something from the tea party tray so child initiates exchange with mother). |
| Self-directed behavior | Child attempts to direct his or her own task-related behavior without the involvement of the mother (e.g., child tries to place puzzle piece without mother's assistance). |



risk group, expressive language skills, and condition account for differences in mothers' use of directives.

The follow-up univariate Group × Condition test for mothers' suggestions was also significant, $F(1, 48) = 4.52$, $p < .04$. Suggestions were accounted for by risk group and condition only. The mothers of the normal children used a higher proportion of suggestions in the tea party compared with mothers of the children with Down's syndrome, but the groups were comparable in their use of suggestions during the puzzle task. A significant follow-up univariate condition effect for suggestions showed a higher proportion of suggestions ($p < .0002$) used during the tea party compared with the puzzle task. The univariate follow-up test for differences in praise by condition showed that a higher proportion of praise ($p < .02$) was used during the puzzle task. There was a positive relation between SICD and mothers' praise in the puzzle task and no relation during the tea party. Mean proportions and frequencies for the mother and child behaviors are presented in Table 3.

### *Group Differences for the Children's Compliance to Mothers' Requests*

We conducted a mixed-model MANOVA to evaluate for group differences in the proportion of child responses to maternal requests that showed successful compliance, attempts to comply, or noncompliance and to determine if responses varied across conditions. The three types of child responses (compliance, attempts to comply, or noncompliance) were the multiple dependent variables. Again, SICD expressive language scores were included in the model to evaluate for the separate effects of expressive language skills on the children's social responses.

Results showed a significant overall Group × Condition effect, $F(3, 48) = 3.61$, $p < .02$, and a overall main effect of condition, $F(3, 48) = 2.62$, $p < .06$. Univariate tests revealed that the normal children had a higher proportion of compliant responses, $F(1, 50) = 4.61$, $p < .04$, than the children with Down's syndrome but that this was only during the tea party, $F(1, 50) = 3.30$, $p < .05$. The SICD expressive scores were not related to differences in the groups' responses across the two conditions ($p < .44$) but were related to differences in the child measures averaging across condition, $F(3, 48) = 3.49$, $p < .03$. Follow-up univariate tests showed a significant positive relation of SICD scores with compliance and a negative relation with attempts-to-comply responses for both groups. A follow-up univariate test for the Group × Condition interaction for attempts to comply showed a higher proportion of unsuccessful attempts to comply during the puzzle task than during the tea party ($p < .01$), but the difference was greater for the normal comparison children ($p < .01$). Noncompliance did not vary by group or condition.

### *Group Differences for the Children's Social Initiations and Self-Directed Behaviors*

A multivariate analysis of covariance was performed to examine the differences across the two groups of children in the frequency with which they showed social initiations with their mothers and attempted to direct their own behavior during the task without being directed to do so. Group was the between-subjects factor, and condition was the within-subject factor. The number of social initiations and self-directed behaviors were the multiple dependent variables. The SICD expressive language skill was included as a covariate in the model. There was only a significant main effect of group, $F(2, 49) = 4.57$, $p < .02$. Univariate analyses revealed that the children with Down's syndrome had fewer social initiations compared with the normal

Table 3
*Expected Mean Proportions, Frequencies (Freq.), and Standard Errors for the Mother and Child Behaviors for the Two Groups of Children*

| | Down's syndrome | | Normal | |
|---|---|---|---|---|
| Behavior | Tea party | Puzzle | Tea party | Puzzle |
| Mother | | | | |
| % directives | | | | |
| *M* | .31 | .36 | .23 | .39 |
| *SE* | .03 | .04 | .03 | .04 |
| *M* freq. | 10.9 | 16.5 | 6.9 | 16.6 |
| % suggestions | | | | |
| *M* | .60 | .54 | .68 | .52 |
| *SE* | .04 | .04 | .04 | .04 |
| *M* freq. | 23.2 | 22.5 | 22.3 | 22.1 |
| % restrictions | | | | |
| *M* | .08 | .06 | .09 | .05 |
| *SE* | .01 | .01 | .01 | .01 |
| *M* freq. | 3.28 | 2.57 | 2.50 | 1.57 |
| % praise | | | | |
| *M* | .01 | .05 | .01 | .04 |
| *SE* | .003 | .01 | .003 | .01 |
| *M* freq. | 0.53 | 1.75 | 0.14 | 1.68 |
| Child | | | | |
| % comply | | | | |
| *M* | .53 | .45 | .67 | .48 |
| *SE* | .04 | .03 | .04 | .03 |
| *M* freq. | 20.2 | 17.2 | 20.9 | 17.4 |
| % attempts to comply | | | | |
| *M* | .29 | .36 | .28 | .48 |
| *SE* | .02 | .04 | .02 | .04 |
| *M* freq. | 5.1 | 11.1 | 2.5 | 11.1 |
| % noncomply | | | | |
| *M* | .27 | .28 | .25 | .20 |
| *SE* | .03 | .02 | .03 | .03 |
| *M* freq. | 10.8 | 10.7 | 7.6 | 7.2 |
| % communicative initiations | | | | |
| *M* | .20 | .24 | .31 | .28 |
| *SE* | .03 | .02 | .03 | .02 |
| *M* freq. | 9.78 | 12.04 | 13.27 | 14.77 |
| % self-directed behavior | | | | |
| *M* | .14 | .27 | .14 | .25 |
| *SE* | .01 | .03 | .01 | .03 |
| *M* freq. | 7.00 | 12.78 | 5.96 | 13.00 |

comparison children ($p < .01$) across both the tea party and puzzle situations. The SICD scores also showed a significant relation ($p < .05$). There were no differences for self-directed behavior.

### *Effects of Child Versus Mother as Initiator on Children's Compliance*

To address the hypothesis that children with Down's syndrome would be more similar to the normal children in showing compliance to child- versus mother-initiated exchanges, we performed a 2 × 2 × 2 factorial repeated measures ANOVA. We evaluated for group differences in the proportion of compliant responses to exchanges initiated by mother (e.g., mother makes request of child and child responds) versus those initiated by the child (e.g., child directs mother's attention to object or topic, mother responds with a request related to the topic or object, and child responds).

Group was the between-subjects factor, and initiator (child vs. mother) and condition (puzzle vs. tea party) were the two within-subject factors. The proportion of responses to mothers' requests that were compliant was the dependent variable. There was a significant Group × Initiator interaction, $F(1, 51) = 9.83$, $p < .003$. The normal comparison children had a significantly higher proportion of compliant responses compared with the children with Down's syndrome when mothers initiated the interaction but not when the child initiated the exchange. A significant Group × Initiator × Condition effect, $F(1, 51) = 5.38$, $p < .02$, indicated that this was particularly true in the tea party situation (see Figure 1).

### *Effects of Mothers' Style of Requesting on Children's Compliance*

The final set of analyses evaluated the conditional probability of a positive change in the children's compliance in response to different maternal requesting strategies (directives or suggestions). We first evaluated whether the mothers' directive versus suggestive requesting behaviors were related to increases in the level of the children's compliance responses and whether this relation differed between Down's syndrome and normal comparison groups. Each maternal request was coded to compare the level of compliant response to mother's request versus their response in the previous event. A response that reflected an increase in compliance after the maternal request (e.g., from noncompliance to attempts to comply or to compliance) was coded as +1. These analyses yielded estimates of the conditional probability that the child would increase level of compliance in response to mothers' directive as opposed to suggestive requests.

We determined conditional probability estimates by first counting the number of events in which the mother used directive or suggestive requests and then calculating the number of times the child increased their level of compliance after the request. Each frequency was divided by the total number of events. Group differences in these measures (mean percentages) were investigated with a 2 × 2 × 2 ANOVA with repeated measures on the second and third factors. Group was the between-subjects factor, and condition (tea party vs. puzzle) and mothers' requesting strategy (directive vs. suggestive) were the within-subject factors. The conditional probability of an increase in the level of the child's compliance was the dependent variable.

There was a significant Group × Condition × Strategy interaction, $F(1, 54) = 3.03$, $p < .05$. Results showed that the children with Down's syndrome were more likely than the comparison children to show an increase in their level of compliance in response to mothers' directive as opposed to their suggestive requests and that this was apparent in the tea party but not the puzzle condition (see Figure 2).

## Discussion

These results demonstrate that the interactive behaviors of children with Down's syndrome and their mothers are both

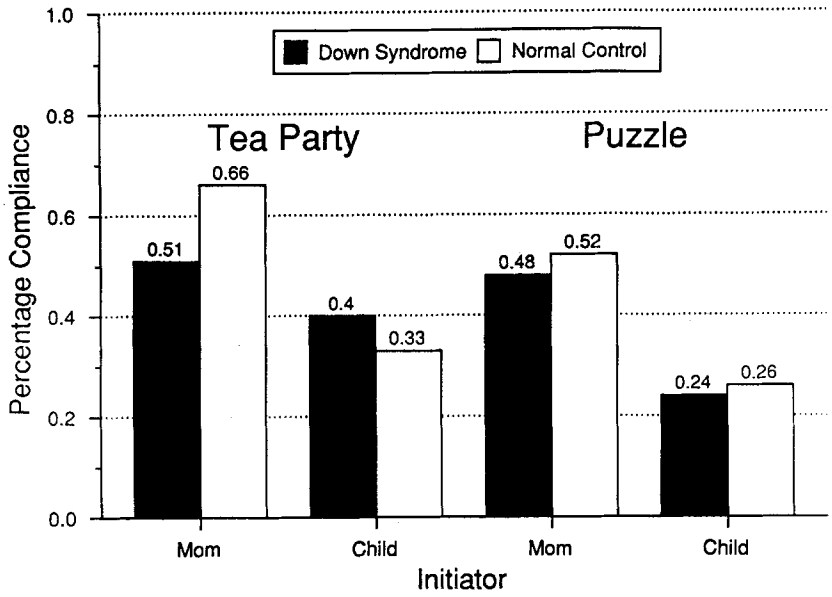


*Figure 1.* Effects of child versus mother as initiator on children's compliance.

similar to and different from those of dyads comprised of normal children and their mothers. Differences between the two groups were associated with social context demands, risk group, as well as the children's expressive language skills. Mothers of children with Down's syndrome were more directive than mothers of normal children, but only during the tea party. Directive strategies were consistent across the two situations for the mothers of the children with Down's syndrome. Increased directiveness for the mothers of the Down's syndrome children was related to the child's risk status as well as lower expressive language skills. The mothers of the normal comparison children showed a lower proportion of directives during the tea party but increased their use of more structured strategies in the puzzle task. For mothers of the children with Down's syndrome, stability in their use of directives across situations may reflect a more consistent interactive style as well as the perception that their children require a relatively constant amount of structure in order to behave appropriately. An increased use of directive strategies is reported for mothers of children with Down's syndrome by others (Jones, 1980; Landry & Chapieski, 1989; Mahoney & Robenalt, 1986) and is interpreted to represent mothers' attempts to provide the structure and stimulation necessary to support these children in social interactions (Bell & Harper, 1977; Marfo, 1990). As predicted, both groups of mothers praised their children's efforts more in the puzzle task compared with the tea party, and this was particularly true for children with better language abilities. Increased directiveness for mothers of the children with Down's syndrome did not interfere with their responsiveness to the children's efforts. This finding provides further support that these two aspects of mothers' interactional behaviors are orthogonal (Schaffer & Crook, 1980).

The compliance behavior of children with Down's syndrome differed from that of normal children. Again, the social context contributed significantly to the pattern of results. In the tea party, the children with Down's syndrome showed fewer compliant behaviors compared with the normal children, but the groups showed similar compliance in the puzzle task. The lack of structure and increased novelty of the tea party may have made it more difficult for the Down's syndrome children to understand what was expected of them. Expressive language skill did not explain group differences in the children's compliant behaviors in relation to the different demands of the two social contexts. Better expressive language skills did, however, relate to both groups' ability to show increased compliance and decreased attempts to comply when social context was ignored.

Compliance for the normal children was high in the tea party situation. However, in contrast to a consistent degree of directiveness for mothers of the children with Down's syndrome across situations, mothers of the normal children offered more choices during the tea party compared with the puzzle task. Contextual differences in the mothers' behavior suggest that they are sensitive to the changing demands of two situations such as increased cognitive demands or opportunities for independent behavior for the child. The mothers' sensitivity to these situational factors may explain, in part, the normal children's high proportion of compliant behavior across contexts. By adjusting their own behavior, mothers may provide the support necessary for their children to behave appropriately across the two situations. Both groups, but particularly the normal children, showed more unsuccessful attempts to comply in the puzzle task. Although the children seemed to know what was expected of them socially during the puzzle task, the greater cognitive demands of placing puzzle pieces in a form board resulted in more unsuccessful completions of mothers' specific requests.

With regard to social initiative and self-directed behavior, the children with Down's syndrome showed fewer attempts to initiate directing their mothers' attention across both social situa-

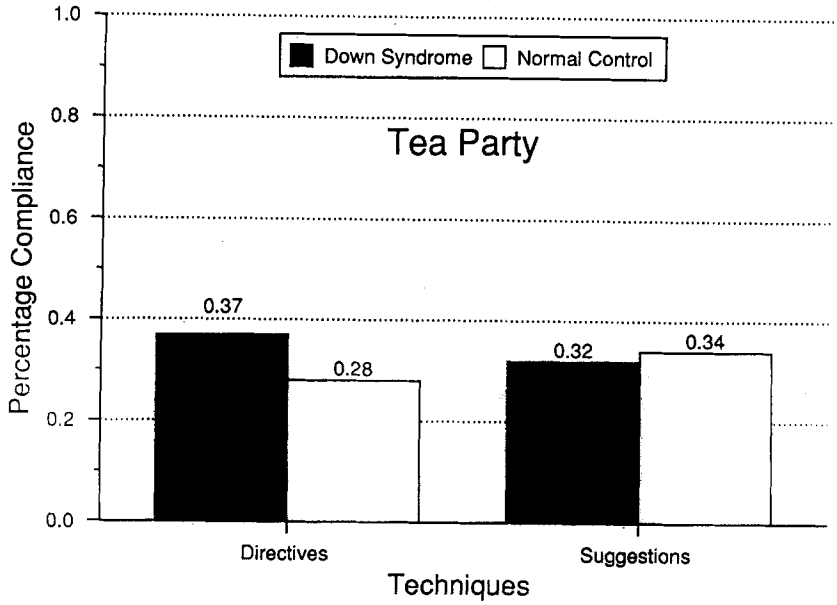


*Figure 2.* Effects of mothers' techniques on probability of increase in compliance during the tea party.

tions compared with normal children. These difficulties were apparent even after differences in expressive language skills were controlled for, which is consistent with other studies (Beeghly et al., 1989; Jones, 1980; Mundy et al., 1988). The fact that a higher frequency of silent responses for children with Down's syndrome compared with normal children has been noted (Tannock, 1988) suggests that the children with Down's syndrome do not take advantage of the opportunity for turn taking afforded them by their mothers.

The children with Down's syndrome did not show problems directing their own task-related behavior (e.g., putting a puzzle piece in the form board) in either social situation. Children's ability to produce specific task-related outcomes (e.g., pouring their own juice) does not require the same understanding of complex social information as required for the initiation of social exchanges. Although we attempted to account for that portion of the Down's syndrome children's social-initiating behavior that could be explained by their less well-developed expressive language skills, it may be that their language limitations resulted in fewer opportunities for taking an active role in social situations and for learning from these experiences.

When compliance was evaluated for the two groups of children for mother-initiated exchanges, the children with Down's syndrome showed a smaller proportion of compliant responses compared with the normal children. In contrast, for child-initiated interactions, their compliance was comparable with that of the normal children. However, the facilitative effect of mothers' responsiveness to the Down's syndrome children's attempts to take the lead was most apparent in the less structured tea party. The children with Down's syndrome may benefit more from their mothers' positive attention to their interest in this more novel situation because appropriate social scripts were not as well defined for them. Fewer compliant responses during mother-initiated exchanges may occur because these exchanges often required the child to shift from one topic of interest to a different one. In a child-initiated exchange, mothers were coded as making a request only if their request maintained the child's focus of interest. We have shown that, at earlier ages, children with Down's syndrome have particular difficulty moving their attentional focus when mothers attempt to redirect their attention from a toy they are interested in to a different toy (Landry & Chapieski, 1989). In this earlier study, the Down's syndrome toddlers' decreased responsiveness when their mothers shifted toys was thought to occur because of difficulties they had regulating their attention, a problem associated with Down's syndrome (Krakow & Kopp, 1982). Other studies also describe facilitative effects of maternal responsiveness to infants' and young children's visual and communicative interests for both normal and high-risk groups (Akhtar, Dunham, & Dunham, 1991; Landry, Schmidt, & Richardson, 1989; Rocissano et al., 1987; Tomasello & Farrar, 1986).

Children with Down's syndrome also showed a greater probability of increasing their compliance when their mothers provided information about what was expected from them in contrast to requests that offered choices. The relation of directiveness with changes in compliance for the children with Down's syndrome was differentially affected by social context factors. When a set structure for how to act was not as apparent, as in the more open-ended tea party, directing the children's behavior was associated with greater increases in compliance than requests that offered choices. However, when there was a high degree of structure inherent in the situation, such as the puzzle task, providing information about how to carry out a request did not enhance the children's efforts to comply with maternal requests. In an earlier study, mothers' attempts to direct their Down's syndrome infants' attention to toys were more

successful when they used strategies that provided structure versus strategies that merely oriented the infant's attention to toys (Landry & Chapieski, 1989). These results, in combination with those of our earlier research, provide strong evidence that mothers' provision of additional structure has the potential to modify Down's syndrome children's responsiveness across a broad range of ages. Differences in the effectiveness of directive requesting strategies across social contexts emphasize the importance of accounting for the varying demands of different social situations when one evaluates the effect of mothers' interactive behaviors on children's compliant responses.

The normal children did not increase their compliance in response to directive requests. In fact, these children had a tendency to show increased compliance in response to mothers' suggestive requests in the tea party. Other studies have demonstrated a facilitative effect of choice-providing interactive styles for young normal children (Crockenberg & Litman, 1990; Lytton, 1977). The normal children also showed a high degree of compliance to their mothers' requests in mother- as well as in child-initiated exchanges across both situations. The normal children did not seem to require the same degree of direction or responsiveness to their attempts to take the lead from their mothers as did the children with Down's syndrome. The mothers of the normal children, however, showed more context-related changes in their requesting strategies than the mothers of the children with Down's syndrome. This may have been an important factor in the high degree of compliance the normal children showed across social situations.

The results of this study suggest that the normal comparison children may have internalized appropriate social behaviors to a greater extent and are able to generalize them across different contexts. In contrast, the children with Down's syndrome continue to require more specialized input from their mothers, especially in situations in which their role is less clear. Mothers' responsiveness and style of requesting, factors associated with normal children's cooperation, also facilitated the Down's syndrome children's cooperation in the present study. These findings also demonstrate that social context is an important factor to consider in understanding the social behaviors of normal children and Down's syndrome children.

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