Does Out-of-home Care Affect Compliance in Preschoolers?

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When they averaged 28 and 40 months of age, 140 Swedish children were
observed with their mothers in two situations (a problem-solving task and a
clean-up session) designed to allow the assessment of their compliance with
maternal demands. Individual differences in their behaviour were then
related to measures of the quality of care received by them both at home
and in alternative care settings when they averaged 16, 28, and 40 months
of age, the amount of social support reportedly received by the mothers,

the children's ages, and the amount of early out-of-home care received. Analyses using partial least squares (PLS) analyses showed that children were more compliant in the task situation at 40 months when they had experienced high quality care at home, when they were older, and when they had experienced less out-of-home care prior to 24 months of age. Variations in maternal behaviour in these settings were predicted by the same set of variables, suggesting that parent-child harmony, rather than compliance, was being studied. No consistent dimension of compliance was evident at 28 months.

INTRODUCTION

One major goal of socialisation in any culture is to ensure that children learn to comply with adults' requests and to regulate their behaviour even in the absence of adults. Compliance with legitimate demands or warnings can be of relevance to the child's safety and can also be viewed as a precursor to the acquisition of conscience. Theorists differ with respect to the relative importance assigned to cognitive maturity, behavioural rein-forcement, and attachment histories as influences on the development of compliance, but all agree that early experiences are important (Kopp, 1982; Stayton, Hogan, & Ainsworth, 1971). With the recent controversy over the effects of day care on children's development, concerns about the ontogenetic origins of individual differences in compliance have become increasingly prominent. This study was designed to explore how the quality of parental and out-of-home care influence preschoolers' willingness to comply with their mothers' demands.

Maccoby and Martin (1983) defined compliance as a general dimension involving the child's adoption of "a receptive stance toward parental influence attempts" (p. 64). Feldman and Sarnat (1986) defined com-pliance more specifically as "following directions in the presence and absence of others" (p. 366), while self-regulation, the term often used to represent compliance, is defined by Kopp (1982) as "the ability to comply with a request, to initiate and cease activities according to situational demands, to modulate the intensity, frequency and duration of verbal and motor acts in social and educational settings, to postpone acting upon a desired object or goal, and to generate socially-approved behavior in the absence of external monitors" (p. 199).

Clearly, the term "compliance" is used to refer to a wide range of behaviours. Kopp (1982) postulates that the ability to self-regulate and comply is tightly linked with children's cognitive development and suggests that "A fundamental level of cognition has to be obtained before the child can internalize caregiver expectations for self-initiated controls" (p. 201). As infants move into toddlerhood, of course, their parents make increas-ingly extensive and complex demands of them. Likewise, children's in-

creased locomoter abilities, coupled with their curiosity and their attempts to assert their independence, ensure that they frequently test the limits set by their parents. The delicate and constantly changing balance between parental requests and children's compliance with these requests comprises an important dimension of social and emotional development.

In their review, Maccoby and Martin (1983) concluded that compliance was facilitated by sensitive parenting in infancy (Martin, 1981; Schaffer & Crook, 1980; Stayton et al., 1971) and the establishment of secure parent-child attachments (Matas, Arend, & Sroufe, 1978). Likewise, Lytton (1980) reported that the consistent enforcement of rules, the use of psychological rather than material rewards, as well as the frequent occurrence of joint or co-operative play, facilitated the development of compliance. Maccoby and Martin (1983) also cited their own findings on the importance of co-operative interaction, presumably because such interaction, like sensitively responsive parenting, implicitly fosters reciprocity in parent-child relationships. By contrast, the frequent reliance on physical control and physical punishment have adverse effects on the development of compliance, presumably because such actions suppress both individuality and the motivation to co-operate (Maccoby & Martin, 1983). In general, children appear to be more compliant when their parents have adopted practices which establish warm and trusting relationships within which children are motivated to co-operate with the parents' efforts at socialisation (Maccoby & Martin, 1983).

Compliance may also be influenced by experiences outside the family. In recent years, non-compliance has often been mentioned by reviewers as a possible consequence of early non-parental care experiences (e.g. Belsky, 1988, 1989; Belsky, Steinberg, & Walker, 1982; Clarke-Stewart, 1989; Clarke-Stewart & Fein, 1983) although these tentative conclusions may be premature. The early studies that are cited as evidence of this link were based on small samples characterised by much within-group variation, few controls, and only one or two questions relevant to compliance.

In a study comparing toddlers who entered high quality day care between 5 and 22 months of age with toddlers who had been cared for by family members ($n = 11$), in-home sitters ($n = 3$), or neighbours ($n = 4$), for example, Schwartz, Strickland, and Krolick (1974) reported that pre-school teachers described children with early day care experience as "less co-operative" than their control counterparts. When a similar rating scale was used to compare toddlers who had been in day care for more than 13 months ($n = 8$) with toddlers who had 1 to 6 months of day care experience ($n = 8$), however, Macrae and Herbert-Jackson (1976) found no group differences on a care-provider rating of compliance at age 2. Using a combination of observational and rating procedures, furthermore, Vlietstra (1981) found no differences between children who had experienced

part-time ($n = 17$) and full-time ($n = 20$) day care on teachers' evaluations of co-operativeness, refusal of discipline, and persistence. Thus, two of the three early studies found no associations between day care experience and compliance with care-providers.

In one of the first attempts to evaluate children's compliance with their mothers, Rubenstein, Howes, and Boyle (1981) compared children who began attending day care centres at 12 months of age ($n = 10$) with children who had been cared for primarily by their mothers ($n = 13$). Day care children were reported by their mothers to have more temper tantrums than the children in the comparison group. When observed interacting with their mothers in a boring sorting task, the children with experience in day care were less compliant than the other children.

In a larger and more comprehensive study ($n = 89$), Howes and Olenick (1986) explored the extent to which day care enrolment, quality of alternative care, and family background influenced toddlers' compliance with their mothers both in a laboratory and at home. They found that children receiving high quality care ($n = 32$) were more compliant and less resistant to adult authority than were children who received care of "low quality" ($n = 25$). Children experiencing better quality care received the highest scores for "self-regulation" (they did not touch forbidden toys or foods in the laboratory); they were followed by children in low quality day care, whereas children with no day care experience received the lowest scores. Other measures of compliance at home and in the laboratory revealed no group differences.

A major problem characterising the research on day care has been the tendency of reviewers to include aggression and non-compliance in a constellation of negative behaviours often cited as the consequences of out-of-home care (e.g. Barton & Schwarz, 1981; Belsky, 1986; Finkelstein, 1982; Haskins, 1985; Lally & Honig, 1977; McCartney et al., 1982; Rabinovich, Zaslow, Berman, & Heymen, 1987; Rubenstein & Howes, 1983; Schenck & Grusec, 1987; Schindler, Moely, & Frank, 1987; Schwarz et al., 1974; Vandell & Corasaniti, 1988; Vaughn, Deane, & Waters, 1985). This tendency to "package" diverse anti-social or negative behaviours is neither theoretically nor empirically justified. In only one of the six studies concerned with the association between day care and compliance were day care children both less compliant and more aggressive than controls (Schwartz et al., 1974). In two other studies, there were differences in either aggression *or* compliance (Haskins, 1985; Vlietstra, 1981), in one no differences on either dimension (Macrae & Herbert-Jackson, 1976), and in two only compliance was measured (Howes & Olenick, 1986; Rubenstein, Howes, & Boyle, 1981). The available data thus do not reveal a clear association between day care and non-

compliance and do not justify the practice of treating aggression and non-compliance as the common and related outcomes of enrolment in day care.

Attempts to understand the association between day care and compliance have been further complicated by the wide range of operational definitions and measures used to assess compliance. For example, Feldman and Sarnat (1986) used a quasi-experimental procedure to evaluate how the presence or absence of adults affected children's willingness to act (clean up) or refrain from acting (not touch attractive toys). Howes and Olenick (1986) assessed compliance during daily activities (eating dinner, brushing teeth, bathing) in the home and in the course of boring tasks in the laboratory, during which children were enjoined from touching attractive toys and then asked to clean up. Rubenstein et al. (1981) measured compliance by observing children's behaviour in a boring task and by having mothers rate the number of temper tantrums and the difficulties they experienced managing and disciplining their children. And after asking mothers to ensure that their children played with *all* the toys in a laboratory, Schaffer and Crook (1980) measured the mothers' success in directing the children's attention to objects, maintaining the children's focus, and ensuring completion of the designated task. Although there is face validity to the designation of all these procedures as measures of compliance, researchers have yet to demonstrate intercorrelations among measures of behaviour in these diverse contexts. Until such studies are completed, it remains important for researchers to recognise the multi-faceted nature of compliance, and the need to include in their studies multiple measures of behaviour in multiple situations.

The purpose of this study was to evaluate the extent to which the quality of parental and nonparental care influences toddlers' compliance with their mothers. It was hypothesised that high quality care would be associated with greater compliance with maternal requests and that the amount of out-of-home care would have less formative importance than would its quality. Because compliance is a multifaceted construct, we chose tasks from two domains, one with a cognitive emphasis (exploring children's willingness to accept maternal assistance in a challenging task), and one with a more traditional focus on obedience (cleaning-up toys). Both of these situations involve developmentally appropriate demands for "compliance skills" which need to be mastered as children mature and prepare to enter formal schooling. The children in our study were participants in an ongoing longitudinal project, and had varying degrees of experience in out-of-home care. At the time of recruitment, when they averaged 16 months of age, the children had all been cared for exclusively by their parents. Shortly thereafter, some children entered day care centres, others entered family day care homes, and others remained at home with their parents.

Assessments of their compliance with maternal demands were made one and two years after enrolment, when the children averaged 28 and 40 months of age.

METHODS

Subjects

140 first-born children (70 girls) from Göteborg, Sweden participated in this longitudinal study. They ranged in age from 11 to 24 months (M and median = 15.9 months; s.d. = 2.9 months) at the time of initial interview/assessment. Names of two-parent families on the waiting lists for child care facilities were obtained from municipal authorities in all areas of the city; parents were then individually contacted by the research staff and invited to participate in the research. Parents understood that their decision regarding participation would have no effect on their success in obtaining child care assignments. Approximately 75% of the eligible families contacted agreed to participate, and only 5 of the 145 families initially recruited dropped out of the study. Hollingshead (1975) scores showed that the children came from a range of middle-class backgrounds.

Although all of the subjects were drawn from waiting lists for centre-based child care facilities, the shortage of available slots ensured that the majority could not be accommodated. Some of these remained in the full-time care of their parents; others were offered and accepted family day care placements. Subjects were thus divided into three groups: centre daycare ($n = 53$), family day care ($n = 33$), and home care ($n = 54$). Although all parents had applied for day care placements, it is possible that some parents (those who were eventually successful) were more aggressive than the others in their pursuit of day care. It is not clear how such possible self-selection might affect the results reported below.

Procedure

After agreeing to participate in the study, all families were visited in their homes by a member of the research staff. During this visit, demographic data were gathered and parents were interviewed about their social networks. A second visit was then arranged. On this occasion, the observer rated the quality of home care using Belsky and Walker's (1980) checklist and Caldwell's (1970) HOME inventory.

Those children in one of the alternative care groups began out-of-home care within two weeks of the initial (Phase I) home visits. Six weeks later their child care facilities were visited by a member of the research staff who rated the quality of care using Belsky and Walker's (1980) checklist, and

gathered other information about the facility. All data gathered around the time of enrolment are referred to here as Phase I data.

Both one year (Phase II) and two years (Phase III) after the first interview the families were visited again. During one visit the quality of home care was again sampled using Belsky and Walker's checklist and the HOME inventory. During a second visit to the home, the child's compliance with his/her mother was assessed. On subsequent visits to the child care facility (for children in the two out-of-home groups), the quality of care was sampled using Belsky and Walker's checklist, and additional information about the facility was obtained.

On the basis of these procedures the measures described below were derived.

Measures

The *quality* of *home care* was assessed using a number of measures. First, observers completed the HOME Inventory as instructed by Caldwell (1970) in both Phase I and Phase II. There are 45 items on the Infancy version of this well-known inventory measuring the amount of stimulation available in the home environment. The inventory yields scores on 6 subscales as well as a total score, but we considered only the total score in our analyses in an effort to reduce the number of measures. Information about the validity and reliability of HOME-Infancy is provided by Caldwell and Bradley (1979) and Elardo, Bradley, and Caldwell (1975, 1977).

In Phase III, when children averaged 40 months of age, observers completed four subscales—IV (pride, affection, and warmth), VI (modelling and encouragement of social maturity), VII (variety of stimulation), and VIII (physical punishment)—of the preschool version of HOME (Caldwell & Bradley, 1984). The four subscales were chosen because pilot testing revealed little variability on the others. Scores on the four subscales were summed into a single index for analytic purpose in this study. Information related to internal consistency, test-retest reliability, and construct validity can be found in the report by Caldwell and Bradley (1984).

The Belsky and Walker (1980) checklist was also used to assess the quality of care obtained at home. The checklist includes 13 positive and 7 negative events, and the observer notes whether or not each occurred at least once during a 3 minute long "spot" sample unit. The positive events were: care-provider positive regard, care-provider verbal elaboration, care-provider heightened/exaggerated emotional display, care-provider empathise, routine made into learning experience, care-provider engaged with more than one child, care-provider engaged while doing routine maintenance, care-provider engaged in nonstructured attention focusing,

care-provider facilitates peer relations, care-provider on floor involved, care-provider distant involved, child explores non-toy object, and child happy. The negative events were: child crying, care-provider prohibits some child action, child in restrictive device, children waiting, care-providers in non-child conversation, child uninvolved/aimless, and routine as routine. The home environment was sampled three or four times per phase, and the numbers of negative and positive items per phase were then averaged for purposes of analysis.

The *quality of care* provided in the *alternative care settings* was also assessed using the Belsky and Walker checklist, completed in the manner just described. The alternative care settings were assessed three times: 3 months after enrolment, 9 months later, and 12 months after that. Two structural indices of the quality of alternative care were also included. The first was the age range within the child's group or facility and the second was the care-provider : child ratio. Both indices are associated with perso-nality maturity and social skills (Broberg, Hwang, Lamb, & Ketterlinus, 1989). In addition, the number of hours of alternative care per week was included as a variable within the Alternate Care block.

Early Day Care Experience. This was assessed using the number of months of alternative care experienced before the child reached 2 years of age. This continuous variable provided a much more sensitive measure of alternative care experiences than would a categorical designator (e.g. some alternative care vs. none), because over the 2 years of the study several children changed their care arrangements.

Support. A total of 24 questions were asked independently of mothers and fathers about the contacts with and support received from maternal and paternal grandparents, other relatives, friends, and neighbours. Mothers' and fathers' responses were used to create independent compo-site scores on the basis of conceptual relatedness, and the internal coher-ence of the scales was later assessed using Cronbach's alpha. Items were dropped if they did not achieve coefficients of greater than 0.30 with the total score, and 13 of the items were thus eliminated from consideration. Three different composite measures were then computed for each parent: perceived support from *maternal grandparents*; perceived support from *paternal grandparents*; and perceived support from *friends* and *neighbours*. Each of the four grandparent support measures contained three items— number of contacts with the relevant grandmother, number of contacts with the relevant grandfather, and the frequency of visits to the relevant grandparents. The two friend/neighbour support measures each contained five items, referring to the number of neighbours known, the frequency of chatting with them, the frequency with which their children played, the

frequency of having coffee together, and the frequency of sharing toys or household items. Alpha coefficients for the maternal reports of support from maternal grandparents was 0.57, of paternal grandparents, 0.62, and friends/neighbours, 0.79. Alpha coefficients for the same variables based on paternal reports were 0.57, 0.58, and 0.79 respectively. We expected that well-supported parents would provide better quality care than would parents who were more isolated, and that their children would, in turn, be more compliant.

In both Phase II and Phase III, the child's *compliance* was assessed at home in two situations, one involving a challenging cognitive task and one involving an unsupervised clean-up session. In the Phase II task, as developed by Matas et al. (1978), the child was asked to extract an attractive toy from inside a clear-sided tube, using two sticks which were each too short to push the toy out. (The correct solution involving placing the sticks end-to-end.) In Phase III, the task involved asking the child to use a set of illustrated cubes to match the patterns shown to the child on a card. The patterns, which had been pre-selected so as to be challenging, were presented by the mother, who was instructed to be as helpful as possible without solving the tasks for the child. In both phases, the task continued for 10 minutes, during which an observer noted every 10 seconds whether or not the child was working on the task ("on task"), was focused on some other activity ("off task"), or ignored a direction from the mother ("ignore").

At the end of the tasks in both Phases II and III, the child was asked by the mother to clean up a selection of toys, brought by the observer, with which the child had been playing before the task session began. The mother told the child that she was going to the kitchen. The visitor remained in the room and observed the child for 6 minutes, again divided into 10 second units. Dependent measures were: the total number of toys cleaned up during the session; the number of units during which the child actively cleaned up; and the number of units during which the child was playing rather than cleaning up.

The *mother's behaviour* during the task sessions in both phases was also coded. For purposes of the analyses reported below, the following behaviours were coded every *10* seconds on a time-sampled basis: helps, solves the task, explains the task, gives cues, directs verbally, directs physically, makes the tasks into a game, and praises the child.

Reliability

All quality of care, compliance, and maternal behaviour observations were conducted by one of three individuals who trained together using videotapes and pilot subjects until achieving our criterion of 90% agreement.

Once data collection began, 15% of the sessions were conducted by two of the observers, working simultaneously but independently. Inter-observer reliability was maintained above 85% throughout the study. It was impossible to keep observers blind with respect to the group status of the children, but they were not aware of the explanatory model guiding the research.

RESULTS

Group Differences in Compliance

One-way ANOVA procedures revealed no group differences (family day care vs. centre day care vs. home care) on any of the outcome measures. This suggested no direct or reliable associations between nonparental care history and the tendency to comply with maternal requests in two situations both 1 and 2 years after the onset of nonparental care.

Predicting Individual Differences: The Statistical Technique

Further analyses were conducted using the Partial Least Squares procedure to explore the origins of individual differences in compliance (Ketterlinus, Bookstein, Sampson, & Lamb, 1989; Sampson, Streissguth, Barr, & Bookstein, 1989). This analytic method, originally introduced by Wold (1975), may be considered a hybrid of regression analysis and principal component analysis appropriate for studies of the dependence of redundantly measured outcomes (here, Compliance) upon multiple predictors (such as Quality of Home Care or Quality of Alternative Care) themselves redundantly measured. PLS attempts to model only *Part* of the correlation matrix, namely, the correlations relating the predictor measures to the outcome measures, not those relating one predictor to another or one outcome to another. In another simplification, PLS fits the correlations of interest by *Least-Squares*, rather than by maximum likelihood or other probability based techniques.

The first principal component, usually viewed as that linear combination of the variables which "has the greatest variance" of all the linear combinations whose coefficients, squared, sum to 1.0, can also be defined in terms of the correlation matrix itself: As that single vector the products of whose elements best fit the original correlation matrix *in the least-squares sense* (Rao, 1973, p. 63). This characterisation makes no reference at all to variances or case values ("scores"); it refers only to the correlation matrix. A least-squares fit to the case values is the concern of regression analysis, not of principal components analysis.

When there are two or more such collections of related variables, one block may consist of the multiple measures of an outcome—here the six measures of Compliance—whereas the other blocks comprise predictors of that outcome (e.g. Quality of Alternative Care, Quality of Home Care) each multiply measured using diverse indicators. Each predictor indicator can be correlated with each outcome indicator, and these correlations are in general wildly divergent. To summarise them, we could construct a summary indicator of Compliance and a summary indicator of the Quality of Home Care and observe the single correlation between these two summary measures. If each summary were the first principal component of the block concerned then each block would itself be "explained" as well as possible, but there is no reason to expect that the two summaries developed on the basis of correlations within the block of variables would comprise useful summaries for the purpose of predicting the other summary score. Logically, we would like to find a formula for the Quality of Home Care variables which explains the greatest proportion of their correlations with Compliance, and, conversely, a formula for the Compliance variables which explains as much as possible of their correlations with Quality of Home Care. In the simplest two block case, PLS reduces to precisely the same algorithm as for principal components analysis. Just as principal components analysis is the least-squares fit to "one block's worth" of correlations, PLS is the least-squares fit to "two blocks' worth" of correlations: The matrix, no longer necessarily square and certainly no longer having any entries equal to 1.0, of correlations between the indicators of Quality and the indicators of Compliance.

As in principal component analysis, we can use the coefficients, or saliences, as the coefficients for linear combinations of the indicators. Their reliability against sampling fluctuation can be calibrated by the usual boot-strapping methods (Sampson et al., 1989). The method is computationally quite intensive, and we have not carried out these computations here. For models with numerous indicators in the dependent block, whenever the largest single correlation in the cross-block matrix is significantly different from zero, and as long as the fraction of summed squared interblock correlations explained exceeds 50%, and several indicators of the dependent block show substantial salience, each item to LV correlation may be considered similar to an ordinary Pearsonian coefficient, whereas the interblock correlations may be treated conservatively as multiple Rs, replacing the conventional 5% level by the 1% level of a typical Pearsonian coefficient. The PLS procedure does not take into account the correlations of the predictor blocks among themselves, and so the deletion of predictor blocks need not reduce the overall ability to predict individual differences in the outcome construct.

Phase III Compliance

As suggested by Ketterlinus et al. (1989), we first examined all two-block models relating the Compliance 40 outcome block and each of the predictor variable blocks shown in Fig. 1. Because of the saliences of the indicators of compliance, the block they comprise was relabelled *Non-compliance 40*, and this designation is employed in both text and figures below.

The saliences for the Non-compliance 40 indicators were rather consistent across these two-block models; that is, the same Non-compliance Latent Variable (LV)—as defined by its pattern of saliences—was associated with each of the predictor latent variables. Consequently, all predictor LVs were included in the multivariate model and the results of this analysis are presented in Fig. 1. In the left panels of Fig. 1 we define the predictor LVs in terms of their indicator variables, whereas the Non-compliance (outcome) LV appears to the right. To the right of the indicator names in all blocks we report the multivariate saliences with respect to a common opposing Non-compliance LV. Figures on the arrows represent the correlations between individual predictor LVs and the non-compliance 40 LV. The figure on the large arrow, 0.56, is the net correlation of the non-compliance 40 LV with the set of predictor LVs shown in Fig. 1.

The structure of the Non-compliance 40 LV is shown to the right in Fig. 1. Three of the six measures of compliance were equivalently salient in summarising correlations with the indicators of the predictor blocks. This aspect of compliance was defined by the number of time units during which the child (a) was off task and (b) ignored the mother's directions minus (c) the number of units during which he or she was on task. All three measures were obtained in the task setting; compliance scores in the clean-up task were related to different aspects of the predictor blocks (see below).

Figure 1 shows that non-compliance was systematically associated with lower-quality home care (especially Caldwell's HOME inventory) in all Phases, lower-quality alternative care in Phase I, young age, more exposure to early alternative care, and less support—particularly from maternal grandparents. Saliences in the 28 and 40 month Alternative Care LVs were confusing: Saliences for the Belsky Positive and Negative scores were in the same direction as one another, whereas saliences for the Adult/Child ratio were not in the predicted direction.

Figure 1 shows that the coefficients for the Belsky and Walker checklist scores were of varying magnitude and were often in the direction opposite that which was predicted. Consequently, we re-computed the multiblock model excluding the Belsky scores in both the Alternative Care and Home Care predictor blocks. Figure 2 shows that there was no reduction in the net LV correlation. This indicates that knowledge of the quality of care

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ALTERNATIVE CARE 16
Belsky  Positive           -.30
Belsky  Negative            .52
Age  Range                  .06        .18
Adult/Child                -.45      ──────►
Hours/Week                  .33

ALTERNATIVE CARE 28
Belsky  Positive            .47
Belsky  Negative            .62
Age  Range                  .17        .40
Adult/Child                 .38      ──────►
Hours/Week                  .20

ALTERNATIVE CARE 40
Belsky  Positive            .59
Belsky  Negative            .37
Age  Range                  .17        .30
Adult/Child                 .39      ──────►
Hours/Week                  .27
                                              NON-COMPLIANCE 40:
                                   .56        TASK
HOME CARE 16                                  On Task          -.30
Belsky  Positive           -.10        .20    Off Task          .36
Belsky  Negative           -.18      ──────►  Ignore Direct     .38
HOME                       -.97

HOME CARE 28
Belsky  Positive            .46        .23
Belsky  Negative            .17      ──────►
HOME                       -.98

HOME CARE 40
Belsky  Positive           -.12        .34
Belsky  Negative            .41      ──────►
HOME                       -.75

SUPPORT
Paternal Gps.              -.26        .16
Maternal Gps.              -.87      ──────►
Friends                     .22

AGE                                    .23
                                     ──────►
ALT CARE BEFORE AGE 2                  .22
                                     ──────►
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FIG. 1.   Determinants of Non-compliance at 40 months of age. Predictor blocks are shown to the left while the outcome block is on the right. Saliences for each of the indicator variables are shown within the blocks; those exceeding 0.18 can be deemed statistically significant at the 0.05 level. Correlates between each of the predictor blocks and the Non-compliance LV are shown on the arrows; coefficients exceeding 0.22 can be deemed statistically significant at the 0.05 level.

indexed by the Belsky checklist items did not enhance our ability to predict the degree of compliance in the task situation. The only puzzling aspect of the model presented in Fig. 2 is that the coefficient for Adult/Child ratio at 28 and 40 months was again in a direction opposite that which was predicted and opposite that which was evident at 16 months. This indicated that the better the Adult/Child ratio at these ages, the greater the observed non-compliance. Overall, however, both Figs 1 and 2 indicate that compliance is well predicted by high-quality home care, age, and less experience of out-of-home care.

Compliance and Maternal Behaviour

For the sake of construct validity, our Non-compliance LV included only direct measures of the child's behaviour. But the mothers were also present during the compliance task, of course, and their behaviours were also scored. Not surprisingly, there was a high correlation between the Non-compliance 40 LV and a latent variable comprising measures of maternal behaviour: Indeed, the Maternal Behaviour block provides our best single "predictor" of Non-compliance—but this is not prediction, merely concomitant measurement. The high association of these two LVs led us to explore the extent to which their patterns of correlations with antecedent blocks might be the same.

Correlations of a composite LV, now labelled Parent-Child Interaction 40, are accounted for by a pattern of predictor variables very similar to that accounting for correlations with Non-compliance 40 alone: High-quality care at home and in alternative care settings, less out-of-home care, and younger age. This model is shown in Fig. 3, with the meaning of all quantities the same as in Fig. 1. The fact that Parent-Child Interaction has the same patterns of association as its subset, Compliance, is consistent with Maccoby and Martin's (1983) speculation that compliance is best viewed as an aspect of co-operation with adults.

Phase II Compliance

In contrast with the strong patterning of correlations with the indicators of Phase III Compliance, correlations of Phase II Compliance are not easily summarised by a structure of latent variables. Instead, different aspects of compliance are found to be associated with the various antecedent or predictor blocks. For the purposes of LV "prediction", therefore, compliance on the part of 28-month-olds is not a consistent dimension. For this reason, we cannot discuss individual differences in compliance at this age, either with respect to its antecedents or its association with the later assessment of compliance.

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┌─────────────────────────────────────┐
│ALTERNATIVE  CARE  16                │
│Age Range                    .11│  .14
│Adult/Child                 −.77├──────►
│Hours/Week                   .56│
└─────────────────────────────────────┘

┌─────────────────────────────────────┐
│ALTERNATIVE  CARE  28                │
│Age Range                    .33│  .20
│Adult/Child                  .75├──────►
│Hours/Week                   .39│
└─────────────────────────────────────┘

┌─────────────────────────────────────┐
│ALTERNATIVE  CARE  40                │
│Age Range                    .29│  .18
│Adult/Child                  .70├──────►
│Hours/Week                   .50│
└─────────────────────────────────────┘

┌─────────────────────────────────────┐        ┌──────────────────────────────┐
│HOME  CARE  16                       │  .19   │NON−COMPLIANCE  40:           │
│HOME                                 ├──────►  │TASK                          │
└─────────────────────────────────────┘  .57   │On Task            −.32       │
                                                │Off Task            .36       │
┌─────────────────────────────────────┐        │Ignore Direct       .36       │
│HOME  CARE  28                       │  .18   └──────────────────────────────┘
│HOME                                 ├──────►
└─────────────────────────────────────┘

┌─────────────────────────────────────┐
│HOME  CARE  40                       │  .34
│HOME                                 ├──────►
└─────────────────────────────────────┘

┌─────────────────────────────────────┐
│SUPPORT                              │
│Paternal Gps.               −.26│  .15
│Maternal Gps.               −.87├──────►
│Friends                      .21│
└─────────────────────────────────────┘

┌─────────────────────────────────────┐
│AGE                                  │  .23
└─────────────────────────────────────┘

┌─────────────────────────────────────┐
│ALT  CARE  BEFORE  AGE  2            │  .22
└─────────────────────────────────────┘
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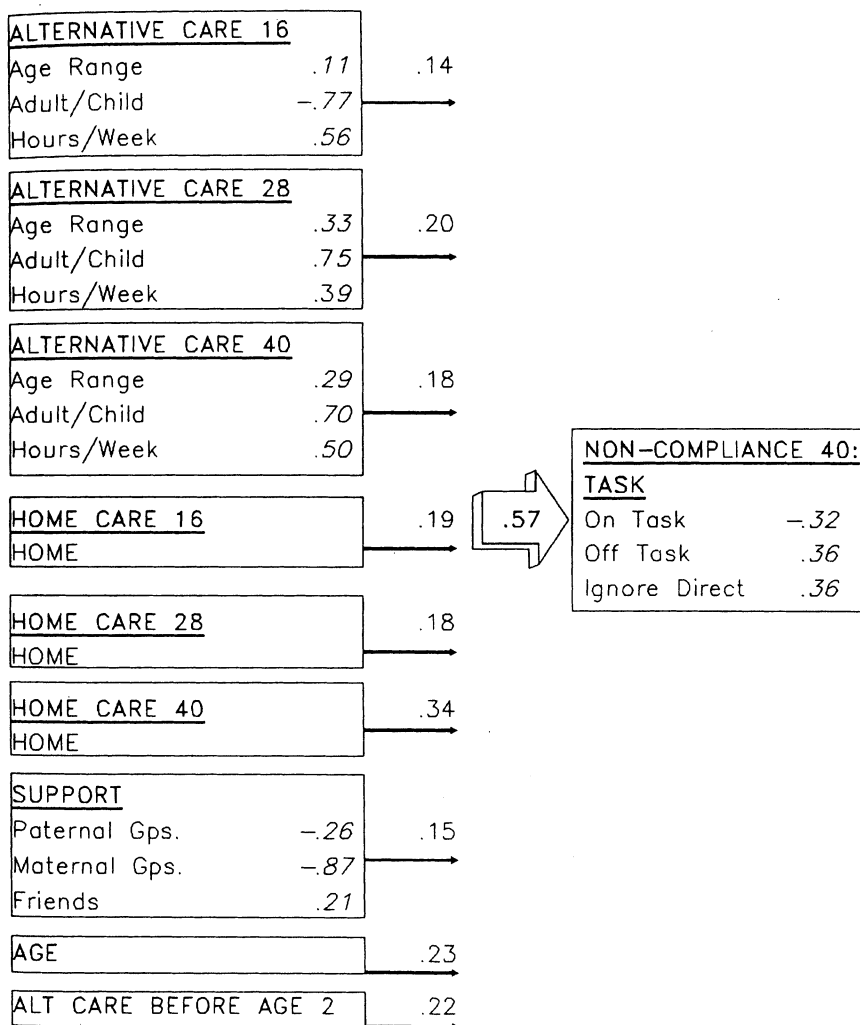
FIG. 2.   Determinants of Non-compliance at 40 months of age with the Belsky and Walker indicators of the quality of home and alternative care excluded. As in Fig. 1, saliences exceeding 0.18 and LV-LV coefficients exceeding 0.22 can be considered statistically significant at the 0.05 level.

ALTERNATIVE CARE 16	
Belsky Positive	−.32
Belsky Negative	.55
Age Range	.03
Adult/Child	−.47
Hours/Week	.25

.39 →

ALTERNATIVE CARE 28	
Belsky Positive	.51
Belsky Negative	.62
Age Range	.22
Adult/Child	.32
Hours/Week	.21

.62 →

ALTERNATIVE CARE 40	
Belsky Positive	.62
Belsky Negative	.32
Age Range	.28
Adult/Child	.49
Hours/Week	.19

.54 →

HOME CARE 16	
Belsky Positive	−.11
Belsky Negative	−.23
HOME	−.97

.49 →

HOME CARE 28	
Belsky Positive	.56
Belsky Negative	.20
HOME	−.95

.53 →

HOME CARE 40	
Belsky Positive	−.02
Belsky Negative	.38
HOME	−.81

.60 →

SUPPORT	
Paternal Gps.	−.40
Maternal Gps.	−.83
Friends	.09

.25 →

AGE	.40

ALT CARE BEFORE AGE 2	.41

.66 ⇨

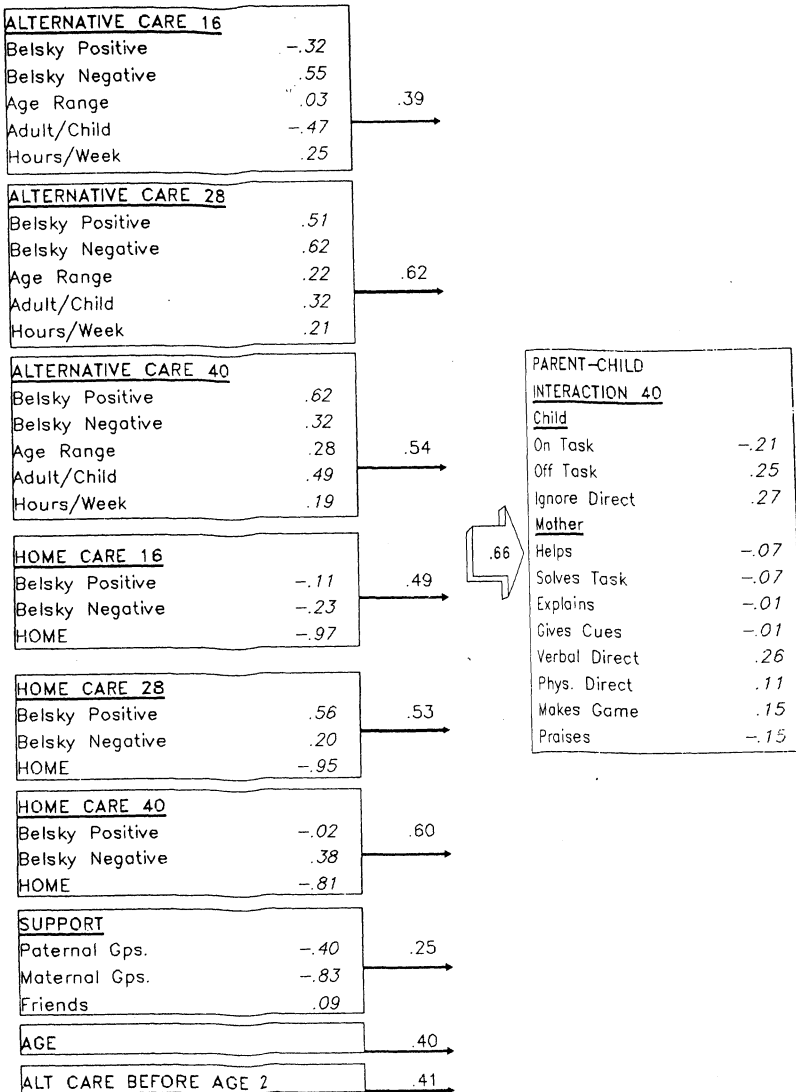| PARENT–CHILD INTERACTION 40	
Child	
On Task	−.21
Off Task	.25
Ignore Direct	.27
Mother	
Helps	−.07
Solves Task	−.07
Explains	−.01
Gives Cues	−.01
Verbal Direct	.26
Phys. Direct	.11
Makes Game	.15
Praises	−.15

FIG. 3. Determinants of Parent-Child Interaction at 40 months of age. An outcome LV comprising the measures of both maternal and child behaviour in the compliance situation is associated with the same predictor blocks included in Fig. 1. As in Figs 1 and 2, saliences exceeding 0.18 and LV-LV coefficients exceeding 0.22 can be considered statistically significant at the 0.05 level.

Compliance in the Clean-up Setting

In each of the models reported here, the saliences for the clean-up variables on the Non-compliance (or Interaction) LV are all negligible. In the case of one indicator variable, this represents an averaging of opposite saliences. Time cleaning up shows saliences in the separate two-block models that are moderate, but inconsistent: Positive correlations with respect to LVs for Quality of Alternative Care, negative correlations with respect to LVs for Quality of Home Care. The finding suggests that compliance with maternal requests to clean up is predicted by higher quality alternative care and lower quality home care, and is thus not predicted by the same latent variables as compliance with maternal demands in a task situation.

DISCUSSION

These results both confirm and extend prior findings concerning the association between out-of-home care and compliance. They also underscore the need to view compliance as an aspect of relationship quality rather than as a personal characteristic, as well as the situationally specific nature of compliant behaviour.

Developmentalists have previously concluded that a history of out-of-home care in early childhood is associated with subsequent non-compliance (see Clarke-Stewart, 1989, for a review). In our study, we found no group differences in compliance, although results summarised in Figs 1 and 2 indicate that the amount of alternative care experienced before 24 months and the extent of alternative care per week at Phases 2 and 3 predict non-compliance at an average of 40 months. However, amount of alternative care is only one of several predictors included in these models. The quality of care received by the children at home consistently proved to be the most predictively valuable construct. The HOME scores were most informative, whereas coefficients for the Belsky positive and negative checklist scores were of variable magnitude and often in the direction opposite that which we predicted. In the case of alternative care quality, the coefficients for the Belsky negative scores were moderate to high and in the expected or appropriate direction, whereas Belsky positive scores were moderately to highly predictive, but were twice in the direction opposite to that which we predicted. The results involving the Belsky and Walker analyses were sufficiently inconsistent, and ran counter to our expectations sufficiently often, that questions were raised about the validity of these scores as measures of quality. Interestingly, recomputation of all analyses excluding the Belsky and Walker scores produced results that again confirmed the central importance of the quality of home

care in predicting individual differences in compliance, although the relative importance of the other predictors increased notably, and the predictive value of the Alternative Care indices declined.

In both the original and re-analyses, the saliences within the Alternative Care block were inconsistent and confusing. More favourable adult-child ratios in Phase 1 were, as expected, associated with reduced levels of later non-compliance, but the ratios in Phases II and III had saliences in the opposite direction. These inconsistencies, along with near-zero saliences for the age range variable and questions about the Belsky and Walker scores, leave us without strong interpretable evidence about the effects of variations in the quality of alternative care, other than in Phase I. Unfortunately, we are unable to say whether these results are attributable to poor measures of alternative care quality or to the consistently high quality of day care in Sweden (Broberg & Hwang, in press)—a situation that ensures a limited range of variability on any designated indicators of the quality of care.

Our results also underscored Maccoby and Martin's (1983) reservations about the designation of compliance as a personal or individual characteristic. The same set of latent variables that predicted compliance also predicted—even more completely—scores on a construct, Parent-Child Interaction, which comprised measures of both the children's compliance and the mothers' attempts to elicit compliance. This illustrates the extent to which compliance—at least as assessed here—might be interpreted as co-operativeness, and as one facet of smooth dyadic interaction. To assess compliance as a dimension of individual difference, it would be necessary to observe children in multiple contexts and with multiple interactants, extract the variance attributable to context and interactant, and then treat the residuals as measures of the individuals.

Unfortunately, some of our analyses make us pessimistic about the likely yield of such endeavours. We observed the children at two ages in each of two different contexts. No stable or reliable dimensions were evident in Phase II (average age 28 months) and the measures of compliance in the clean-up setting at 40 months were predicted (poorly) by different latent variables than the measures of compliance in the problem-solving situation at 40 months. These results are consistent with those reported by Howes and Olenick (1986), confirming the multifaceted nature of compliance and the need for further research on the extent to which any measurable suprasituational individual differences exist. For now, however, we can conclude that compliance with maternal demands in a task-situation at 40 months does not differ depending on whether the child has a history of nonparental care. Nevertheless, the quality of parental care does appear influential, while the extent of early nonparental care also has a modest impact.

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