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Grandfathers, teen mothers and children under two

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The cognitive deficits and nonadaptive social functioning associated with children of teen mothers in the USA have been well-documented (Baldwin and Cain 1980; Furstenberg 1976; Furstenberg, Brooks-Gunn and Morgan 1987; Phipps-Yonas 1980). For example, these children tend to perform more poorly on intelligence and academic tests and to be more impulsive and distractible than peers born to older mothers. The scope of the problems can be expected to increase in the coming decade as data on parenting show that the birthrate of unmarried adolescents 14 to 18 years of age has been rising steadily since 1965, particularly for very young adolescents under 15 and among 15 to 17-year-old whites (Guttmacher Institute 1981; Thornton and Freedman, 1983). Augmenting the difficulty is the increasingly large percentage of unwed young mothers who keep their babies rather than give them up for adoption. In 1981, the figure was 96 per cent (Guttmacher Institute 1981). It has been estimated that there are over half a million babies born each year to adolescent mothers in the United States (Hayes 1987), thus half a million infants who are likely to face difficulties in attaining their optimal development.

The investigation to be described focused on individuals who may help prevent some of those intellectual and adaptive deficits from developing; that is, grandfathers who function as surrogate fathers to the offspring of their adolescent daughters. Several bodies of literature converged to undergird this premise. Demographic data provided evidence that in the vast majority of cases, the biological father of the adolescent mother's baby is not an active participant in caring for the child, and in the United States, a substantial percentage of teen mothers live with both parents. Another body of literature provided theoretical and empirical evidence that paternal involvement with young children has beneficial outcomes for the child. Further, the literature on grandparenthood gave strong support for the view that grandfathers feel positively towards their young grandchildren and are likely to participate in their care, particularly if help is needed. The literature from these three domains will be very briefly reviewed.

As to demographic data, it has been reported that only 29 per cent of the fathers of adolescent mothers' babies are involved with the child (Vecchiolla and Maza 1989), and only 27 per cent of teen mothers in a large-scale study were living

with a spouse one year after giving birth (Furstenberg and Crawford 1978). A more recent study reported a further decline as the child became older; when adolescents' infants reached 18 months of age, only 16 per cent of the babies' fathers were found to be married to or living with the teen mothers (Hardy, Duggan, Masnyk and Pearson 1989). Published figures on the number of adolescent mothers living with two parents vary from 25 per cent to 50 per cent. For example, the figure of 50 per cent emerged in a large-scale, longitudinal study of adolescent mothers (Furstenberg and Crawford 1978).

Evidence concerning the influence that fathers exert on their children's cognitive development has been particularly pronounced for sons (Blanchard and Biller 1971; Pedersen, Rubinstein and Yarrow 1979; Radin 1981, 1986). It appears that the more nurturant the father, the greater the stimulation of the boy's cognitive growth; it has also been shown that the more contact with the father, the more the boy's intellectual development flourishes. Detrimental to sons' mental growth, however, is paternal hostility and restrictiveness (Harrington, Block and Block, 1978; Radin 1981). The influence that fathers exert on daughters' cognitive growth is more complex, but it is clear that father presence stimulates the girls' mathematical skills (Goldstein 1982; Rosenberg and Sutton-Smith 1966). In addition, a number of investigations have shown that fathers have a powerful influence on the social competence of children, particularly sons; for example, on their self-direction, persistence at a task and peer relations (Easterbrooks and Goldberg 1984; Hetherington, Cox and Cox 1982; Nietfeldt 1984). However, there is also evidence that women who achieved a high level of success are likely to have had a strong relationship with their fathers who expected their daughters to be competent (Biller 1981).

Concerning grandfathers, it has been found that males become more nurturant as they age (Guttman 1977; Livson 1981), and one way in which men can express these qualities is through taking care of their grandchildren. It has even been proposed that grandparenthood is particularly gratifying for men because it gives them a second chance to succeed in an emotional role that they have avoided, or was denied to them as fathers (Baranowski 1985). It also appears that the baby itself elicits positive feeling on the part of both grandparents. For example, the results of a large study of pregnant adolescents yielded the information that the grandchild was universally esteemed in the family regardless of how the teen's parents felt about her pregnancy (Furstenberg 1980). Grandparents often do become involved as surrogate parents to the offspring of their teenage children (Denham and Smith 1989). This fact is significant because there is evidence suggesting that surrogate father figures – for example, stepfathers and male teachers – enhance the development of young children, especially in the case of boys (Biller 1981; Santrock 1972).

Based on the above theoretical and empirical literature, it was hypothesized that the greater the quantity and the better the quality of the grandfather's involvement with the young child of the teen mother, the higher the level of cognitive development of the child and the more adaptive the socio-emotional

functioning of the child at 12 months and 24 months. In addition, the question of whether the sex of the child mediates the influence exerted by the grandfather was explored because of indications that father effects are stronger for sons than daughters. It is possible that the same sex linkage exists between men and their grandchildren.

Method

Subjects

The sample consisted of sixty-six families composed of a teen mother living with her father or a father figure, and her first-born child 1 or 2 years of age who was not low birth-weight. In 61 per cent of the families the male figure was the teen's father, in 36 per cent her stepfather, and in 3 per cent her grandfather. No other adult male was in the home. In all but two families there was also a grandmother present. Seventy-six per cent of the babies were white and 24 per cent minority, primarily black. Seventy per cent of the babies were 1 year of age and 30 per cent 2 years of age. There were thirty-nine white 1 year-olds in the study, seven white 2-year-olds, eleven minority 1-year-olds, and nine minority 2-year-olds. Forty-seven per cent of the babies were female and 53 per cent male.

In Table 6.1 appear demographic data about the total sample. As the table indicates, the subjects were primarily working class; the average social stratum on the Hollingshead Four Factor Index of Social Status (Hollingshead 1975) for the total sample was three, described by Hollingshead as consisting of skilled craftsmen, clerical and sales workers. About a half of the sample received some form of welfare aid. The grandparents' education on the average ended with high school and their average age was in the low to mid-forties. The teen mother's average age was approximately 17½ years and her education was between tenth and eleventh grade.

The sample was obtained primarily from public schools offering special programmes for pregnant and parent teens residing in seven counties in the metropolitan Detroit area. To obtain the sample, the typical scenario involved contacting teachers in such schools, asking for permission to discuss the study with potentially eligible students, identifying students who met the project's criteria, and informing those who agreed to participate that a letter would be sent to their parents explaining the study and requesting their participation.

The teens' parents were subsequently phoned, or contacted in some other way, and if they agreed to take part in the study after being informed of what participation involved, the parents were told that we would contact them within one month of the infant's first or second birthday (depending on the age of the child). The grandparents were interviewed individually at home, and each grandparent was also videotaped playing with the target grandchild for ten minutes. The teen mother was interviewed at home on one occasion, and the child was administered one of the instruments used to assess cognitive development. On

Table 6.1 Demographic data about the sample¹

<i>Variables</i>	<i>N</i>	<i>Mean or %</i>	<i>SD</i>
Family Hollingshead score ²	62	32.64	8.31
Family class on Hollingshead scale ³	62	3.23	0.80
Grandmother's age in years	64	41.52	7.59
Grandmother's highest grade in school ⁴	63	4.05	0.97
Grandmother's occupational rating ⁵	47	4.60	1.85
Hours grandmother works per week	48	35.75	11.88
Grandfather's age in years	64	45.28	8.49
Grandfather's highest grade in school ⁴	66	3.82	1.02
Grandfather's occupational rating ⁵	60	3.80	1.62
Hours grandfather works per week	60	48.38	14.56
Teen mother's age in years	66	17.59	1.10
Teen mother's highest grade in school ⁴	66	3.33	0.64
% of families with any type of public assistance	66	47.00	

Notes

1. The figures are based on information provided by the teen mother. Her views were employed because there was a teen mother for every family in the study; this was not true for grandmothers and grandfathers.
2. The Hollingshead (1975) score is determined by multiplying the scale value for occupation by 5 and the scale value for education by 3 and then adding those two figures. Computed scores range from a high of 66 to a low of 8. The family score is determined by adding the total score for each employed spouse and dividing by 2. If only one spouse is employed, that individual's total score becomes the family score.
3. According to the Hollingshead (1975) Four Factor Index of Social Status, family scores are placed into 5 social strata with the highest stratum being major business and profession and the lowest, unskilled labourers and menial service workers. Although Hollingshead did not assign numbers to these strata, in an earlier version of the scale (Hollingshead and Redlich 1958), numbers were assigned with 1 representing the highest stratum and 5 the lowest. When total family scores range between 30 and 39, Hollingshead (1975) describes this group as representing skilled craftsmen, clerical, sales workers. This stratum is essentially equivalent to class 3 in his 1957 scale.
4. According to Hollingshead's (1975) 7-point rating scale for education, in which 7 is the highest rating and 1 the lowest, 3 refers to tenth or eleventh grade completed and 4 refers to high school completed.
5. According to Hollingshead's (1975) 9-point rating scale of occupations, where 7 represents the highest rating and 1 the lowest, 3 refers to machine operators and semi-skilled workers and 4 refers to skilled manual workers and craftsmen.

a second occasion, the teen was driven to Merrill-Palmer Institute in Detroit with her infant for an hour-long videotaped laboratory assessment session, which included a ten-minute play episode identical to that conducted with the grandparent and the child, and a Strange Situation assessment. The interview schedules for grandparents and the teen mothers were identical except for appropriate references to the other members of the family. The gender of the interviewer matched the gender of the respondent.

Each parent and teen was paid \$10 per session or given a videotape of the play session, and presented with a book for the baby. When one of the grandparents refused to participate, the family could be included in the study so long as the teen, the baby and at least one grandparent took part. In twelve families, the grandfather refused to be interviewed; in one family, the grandmother refused.

Despite diligent efforts to include as many families as possible in the study, there was a 50 per cent refusal rate. The major reason given for the refusals was

lack of time as the teen was working and going to school, or the grandmother was too busy working and helping to care for the baby. In some cases, it was evident that either the teen or the grandparents did not wish to discuss the difficult situation, although it was explained to all potential subjects that the focus of the study was on grandparent influence on the young children.

Instruments

There were two independent variables, quantity and quality of grandfather participation in childrearing, and five dependent variables, security of attachment, compliance with teen mother requests, negative affect, mastery motivation and mental development.

Quantity of grandfather involvement was assessed by including in the interview schedule the Paternal Involvement in Childcare Index (PICCI), slightly modified to make the instrument relevant to the grandparents of children 1 or 2 years of age; the index was originally developed for administration to parents of preschoolers. On a number of studies the PICCI has been shown to be valid and have internal reliability (Nietfeldt 1984; Radin 1982; Radin and Goldsmith 1985; Sagi 1982). The Cronbach alpha for the father's score was found to be .62; for the mother's score it was .72. To assess the test-retest reliability of the instrument, in this investigation a shortened version was administered twice, one week apart, to 102 parents of preschool-aged children. The average correlation of the twenty-three items in the two administrations was .72 ($p < .001$).

The PICCI score is comprised of five components: (1) grandfather involvement in the physical care of the child; (2) in the socialization of the child; (3) availability to the child; (4) in decision-making about the child; and (5) overall estimate of his participation in the care of the child. Total scores were obtained for the teen's view and the grandmother's view of the grandfather's involvement, and these were added together to yield a grand total PICCI score. Because twelve of the sixty-six grandfathers who were involved in the investigation refused to be interviewed, it was decided not to rely on the viewpoint of the three family members as initially planned. The PICCI total scores of the grandmother and teen mother were significantly correlated at the .001 level of significance ($r = .49$; $d.f. = 61$). The grandfather's view of his involvement was also significantly associated with the perceptions of the other family members. The correlation between grandfather and grandmother PICCI total scores was .58 ($d.f. = 49$; $p < .001$); the figure was .44 ($d.f. = 50$; $p < .01$) for the association between grandfather and teen mother total PICCI scores.

The quality of grandfather involvement was assessed in fifty-two families (in two families the grandfather refused to be videotaped) through the play session with the child which consisted of two five-minute segments. In the first, the grandparent was told to permit the child to lead the play with the age-appropriate toys brought by the interviewer, and in the second five-minute segment, the adult was asked to lead the play and try to have the baby follow. The entire videotaped

session was subsequently coded, using a coding scheme which integrated one developed by Radin and colleagues (Epstein and Radin 1975; Kamii and Radin 1967; Radin 1972) and found to be valid in prior studies, and the Eyberg and Robinson Dyadic Parent-Child Interaction Coding System (Eyberg and Matarazzo 1980). The validity and reliability of the latter instrument are well established (Eyberg and Matarazzo 1980; Robinson and Eyberg 1981).

Twenty-six adult behaviour categories were coded for the frequency of their occurrence during the ten-minute period. Most were verbal behaviours but some were nonverbal. Intercoder reliability was assessed using Cartwright's (1956) alpha which yields the percentage of agreement between two coders. The alpha value was 89 per cent for the project's two coders who independently scored nine videotapes. The twenty-six categories were collapsed into three major categories: nurturance, restrictiveness and neutral behaviours (neither nurturant nor restrictive). The nurturance cluster was composed of three sub-clusters which, on theoretical grounds, were felt to be aspects of parental nurturance: reinforcement of the child, sensitivity to the child and consultation with the child (Kamii and Radin 1967). Restrictiveness included items such as giving orders with no explanation and threatening the child. In the neutral category were behaviours neither nurturant nor restrictive, such as physically stopping an undesired behaviour. In addition, to control for the sheer activity or verbal fluency of the adult, the total number of nurturant and restrictive behaviours were divided by the total number of coded adult behaviours, yielding scores for the relative nurturance and relative restrictiveness of the adult's observed behaviour. Because relative nurturance and relative restrictiveness were very highly negatively correlated ($r = -.99$; $p < .001$), only relative nurturance was used as the measure of quality of grandfather behaviour.

For the dependent variables, both socio-emotional and cognitive child outcomes were employed. In the former category were security of attachment to the teen mother, compliance with the teen mother's requests, and negative affect. Security of attachment was assessed in the Strange Situation (Ainsworth *et al.* 1978; Main and Solomon 1986), which was coded using the A, B, C, D classification scheme. Compliance was assessed in two contexts using codes adapted from Matas, Arend and Sroufe (1978), during a clean-up situation and during the five-minute period of the play session when the teen mother was attempting to get the baby to follow her lead. In addition, the number of toys the infant or toddler put away during the clean-up episode was calculated and used as another measure of compliance. For data-reduction purposes, these three scores for compliance were combined into a single measure by averaging the Z scores for each of the assessments. Only two of the three scores were significantly associated, but the mean was used nevertheless because the measures were conceptually identical.

Negative affect was assessed in three contexts: negative affect displayed in the Strange Situation prior to the first mother-child reunion during which there is only moderate stress; negative affect shown in the play situation with the teen mother, and fear displayed during the administration of the Bayley Scales. For

the first two situations, negative affect – that is, fear, anger and distress – was assessed using an established observation rating scale (Gaensbauer and Harmon 1981). For the third measure, the score for fear was a factor score derived from the Infant Behaviour Record completed after the administration of the Bayley. Again, for data reduction purposes, a single score was used: namely, the average of the three Z scores computed for each of the three assessments of negative affect. In this case, the three scores were not significantly associated with one another but again the mean Z score was used as the components were conceptually alike.

In the cognitive category were intellectual status as measured by the Mental Development Index (MDI) on the Bayley Scales of Mental Development (Bayley 1969); and mastery motivation. Mastery motivation was assessed by an adaptation of the procedure developed for 1-year-olds (Yarrow *et al.* 1983), and through tasks developmentally appropriate for 2-year-old children (Matas *et al.* 1978). The measure used was a Z score for the length of time the child persisted working on the tasks (for example, trying to find a way to get toy animals out of a little barn). The Z score was computed for 1- and 2-year old children separately because of the discrepancy in their scores.

For all child observation codes (attachment, mastery motivation, affect and compliance), raters had to achieve a .90 reliability rating prior to coding the subject videotapes.

Results

Independent variables

The mean for the quantity of grandfather involvement, 34.8 (SD = 8.5), was approximately two-thirds that obtained for father involvement using a slightly modified version of the Paternal Index of Childcare (PICCI) in a study of working-class families with a preschool-aged child (Radin and Harold-Goldsmith 1989). As the score is composed of a total of several sub-scores reflective of various aspects of child-care, there is no specific behaviour to which it can be related. However, one of the items of which it is composed, the percentage of time the grandfather was the primary care-giver when the child was awake and not out of the home, is readily interpretable. The mean percentage was 11.1 per cent (SD = 7.7) from the grandmother's perspective and 10.0 per cent (SD = 6.5) from the teen's perspective. These figures are approximately one-half of the percentage found for middle-class, traditional fathers of preschoolers (Radin 1982).

As to quality of involvement, the mean percentage of observed grandfather behaviours which were nurturant in quality was 76 per cent (SD = 12). This figure is comparable to the percentages obtained in a study of working-class fathers of preschoolers using a similar observational procedure; the figure was 74 per cent for unemployed fathers and 88 per cent for employed fathers (Harold-Goldsmith, Radin and Eccles 1988). Some comments made by grandfathers during the interview provide a flavour of the overall warmth that appeared to permeate

their relationship with the child in most families. (The same positive affect was not always expressed about the teen mother.) 'We always wanted more kids but could not have more. He was a godsend. Couldn't have asked for a better baby.' 'We all share in his care and as long as I'm alive and financially able, he'll never go without. I enjoy him.' 'The amount of love the infant gets is unreal.' And this comment was made by a teen's stepfather, 'This is the first time I've had a baby in the house and I enjoy the hell out of it.'

The two independent variables were negatively correlated ($r = -.37$; $p < .01$; $d.f. = 48$); this relationship is in keeping with research findings on paternal behaviour in the United States suggesting that fathers who are heavily involved in child-rearing display a 'tougher', more restrictive stance with their offspring than those who are less involved.

Dependent variables

In so far as child outcome measures are concerned, the mean score on the Mental Development Index on the Bayley Scales was 104 (SD = 14.74); the mean on national norms is 100. Thus the children were well within the normal range. This finding is consonant with the literature, which reports that cognitive deficits for the children of adolescent mothers do not generally emerge until the preschool years (Hayes 1987). Based on the Strange Situation, it was found that 68 per cent of the babies were securely attached, a figure comparable with published reports on middle-class families (Ainsworth *et al.* 1978; Benn 1986) and with a comparable population of teen mothers (Benn and Saltz 1989). The three remaining child outcome scores were means of standardized Z scores and therefore cannot be described in terms of child behaviours. The only dependent variables that were significantly intercorrelated were the mastery motivation and MDI ($r = .34$; $p < .01$; $d.f. = 64$), a finding in keeping with the literature (Yarrow *et al.* 1983). The dependent variables were correlated with the demographic variables listed in Table 6.1. Only one significant association emerged; the lower the grade in school of the adolescent mother, the more the fear expressed by the child. While this relationship appears to have face validity, it may well be due to chance factors, as sixty-five correlations were computed.

Because the sample consisted of diverse racial groups, *t* tests were performed to determine if there were significant differences between the white and minority sub-groups on the independent, dependent and demographic variables. There were no significant differences in quantity or quality of grandfather involvement or in demographic characteristics, but there were significant differences in four of the five child outcomes. The minority children obtained significantly lower scores on mastery motivation, on the MDI, on security of attachment, and significantly higher scores on negative affect. It should be pointed out that, in the United States, black families experience greater hardships than white families, which are not reflected in the demographic variables listed in Table 6.1; for example, housing discrimination and poorer access to medical facilities.

A comparison was also made of the independent and dependent variables across age and sex of children. On neither the grandfather variables nor the child outcome measures were there any significant differences across age or gender of the child.

Major findings

To test the hypothesis that a high level of quantity and quality of grandfather involvement is associated with more desirable child outcomes for both 1- and 2-year-old children, hierarchical multiple regression equations were computed using the five child outcomes as dependent variables, and race and quantity of grandfather involvement, in that order, as the predictor variables. The analysis was then repeated using quality of grandfather involvement in place of quantity. This procedure was followed because of the significant association obtained between race and child outcomes for four out of the five dependent variables. The regressions were computed for the total sample and for each age sub-group to test the hypothesis and for each gender sub-group to explore the impact of gender of child on grandfather influence.

Table 6.2 Regressions with a significant beta weight for the grandfather variable

Group	Dependent variable	Independent variable	R ²	F	Beta wt	% Var. expl.	Partial r
Total (N=52)	Compliance	Race	.13	3.62 ²	.11	0	.04
		GF nurturance			.36 ²	13	.36 ²
(N=62)	Negative affect	Race	.22	8.34 ⁴	.33 ³	12	.34 ³
		Amount of GF involvement			-.32 ³	10	-.34 ³
1-yr-olds (N=38)	Compliance	Race	.15	3.20 ¹	-.02	1	-.11
		GF nurturance			.39 ²	14	.38 ²
(N=44)	Negative affect	Race	.29	8.37 ⁴	.33 ²	13	.35 ²
		Amount of GF involvement			-.41 ³	16	-.43 ³
2-yr-olds (N=13)	Mental Development Index on Bayley Scales	Race	.68	10.52 ⁴	-.42 ²	31	-.56 ²
		GF nurturance			.62 ³	37	.73 ³
Males (N=32)	Negative affect	Race	.23	4.26 ²	.25 ²	7	.26
		Amount of GF involvement			-.40 ²	16	-.41 ²

Note: GF refers to grandfather; beta wt refers to the standardized beta weight; % Var. expl. refers to the percentage of variance explained.

- ¹ $p < .06$.
² $p < .05$.
³ $p < .01$.
⁴ $p < .001$.

In Table 6.2 appear data about the regressions with significant beta weights for quantity or quality of grandfather participation in child-rearing, controlling for race of child. As the table indicates, for the total sample, the more nurturant the grandfather, the more compliant the child with the adolescent mother's requests. Table 6.2 also indicates that the greater the amount of grandfather involvement in child-care, the less negative the child's affect in the total group; race was also a significant predictor. When both race and quantity of grandfather involvement were entered into the equation, 22 per cent of the variance in negative affect was explained, 12 per cent by race of child and 10 per cent by amount of grandfather involvement. The least amount of negative affect was found for white children with a large amount of grandfather participation in child-rearing.

The pattern for 1-year-old children mirrored that of the total sample, except that more of the variance in negative affect was explained by amount of grandfather involvement. For 2-year-old children, a completely different pattern of relationships emerged. Here the quality of the grandfather's involvement was predictive of the youngster's mental development. Race also affected the MDI. When both race and quality of grandfather participation were entered into the regression equation, 68 per cent of the variance in the child's MDI score was explained, with race accounting for 31 per cent and grandfather nurturance explaining 37 per cent. The highest MDI scores were obtained for white children whose grandfathers were highly nurturant.

Table 6.2 also reflects the fact that there were no significant associations between quantity or quality of grandfather involvement and child outcomes for girls. For boys, however, the more the grandfather participation, the less negative the grandson's affect, with race also emerging as a significant predictor. Together, race and grandfather involvement accounted for 23 per cent of the variance in grandson's negative affect, with race accounting for about one-half of the amount of variance explained by the quantity of grandfather involvement. Again, the least amount of negative affect was found when the child was white and there was a large amount of participation by the grandfather in the care of the child.

Discussion

A cautionary note is needed before discussing the results. The adolescent mothers in this investigation were almost all involved in educational programmes and may be more competent than teenage mothers who drop out of school. Thus the findings should not be generalized beyond that population. Further, only 50 per cent of the eligible families agreed to participate. Whether families who refused were unique in some way, either more troubled or less troubled, cannot be determined at this point.

Overall, it can be said that grandfathers do appear to exert positive influence on the infants and toddlers of their adolescent daughters living at home; the hypothesis in general was supported. Fifty regression equations were computed, ten for the total group (two for each child outcome) and ten for each of the four

sub-groups. At the 5 per cent probability level, two and one-half significant findings would have emerged by chance alone. However, significant grandfather predictors were found in six regression equations and all in the direction predicted. In no case was a high level of quantity or quality of grandfather involvement associated with an undesirable child outcome.

Thus it appears that the positive association found in prior investigations between paternal behaviour and enhanced functioning of young children is replicated in the relationship between grandfather behaviour and the development of his grandchild. For both generations, the more nurturant the male behaviour, the better the child outcomes, and the more involved the male, the more socially competent the child. That the pattern of fathers had a stronger impact on boys than on girls was also replicated with grandfathers.

The finding that cognitive functioning was affected in 2-year-olds but not in 1-year-olds was not anticipated but is understandable. The wider range of domains tapped in the toddler assessment would be more sensitive to the effects of a stimulating environment than would the sensory-motor items comprising the assessment of the 1-year-old infant. The literature on father influence focuses almost entirely on children at the toddler age and older. Thus it is possible that the masculine style of interacting with children – that is, more physical and stimulating behaviour (Lamb 1981) – may elicit more responses from children who are mobile and able to interact actively with the environment. It is therefore possible that the ‘exciting’ quality of male behaviour with children to which the enhanced functioning of the children’s intellect has been attributed (Radin 1986) is operative primarily with youngsters who are capable of seeking aspects of the environment to explore.

The particular power of grandfather nurturance to enhance cognitive development can be understood in terms of the components of the nurturance score; one component was reinforcement and the second was consultation with the child. The use of reinforcement is likely to make the grandfather an attractive figure, and according to social learning theory (Bandura 1977), attractive role models are more likely to be emulated. Thus the nurturant grandfather’s verbal behaviours and problem-solving strategies had a greater probability of being modelled. Consultation, reflecting response to the child as a thinking human being, included asking questions of the child. It has been found that asking questions of children who are mildly retarded or of elderly persons enhances their memory (Ratner 1989; Rice and Meyer 1985). These findings suggest that encouraging those with somewhat limited mental ability to retrieve information has a stimulating effect on cognitive functioning. Grandfathers seeking information from the 2-year-old are likely to have a similar enhancing effect.

The third component of nurturance, sensitivity to the child, may help explain why there was greater compliance with the adolescent mother’s request when a nurturant grandfather was in the home. Sensitivity was operationalized as responding fully or partially to the explicit and implicit needs of the child. A nurturant grandfather therefore provides a role model for cooperation and

compliance with other individuals' needs and requests. The fact that the grandfather is also reinforcing would tend to increase the likelihood that he will be modelled. Hence the grandchildren of sensitive, reinforcing grandfathers are likely to be cooperative and compliant with other adults, including their young mothers.

Because of the strong negative relationship between relative nurturance and relative restrictiveness, the results of this study also suggest that greater restrictiveness by grandfathers has a detrimental impact on children's compliance with their mothers. This finding is concordant with those obtained by Crockenberg (1987), whose study of the 2-year-old children of teen mothers indicated that maternal punitiveness led to noncompliance by the child. This investigation suggests that punitiveness by any caregiver in the family yields the same outcome. The finding of a negative impact of grandfather restrictiveness on the intellectual development of young children is also concordant with prior research. Restrictive, punitive paternal behaviour has been shown to be associated with lower levels of cognitive functioning in preschoolers (Harrington *et al.* 1978; Radin 1981).

The study's data indicated that larger amounts of grandfather participation in child-care are associated with fewer displays of negative emotions by the child: less fear, less distress and less anger. This finding may be related to the theory espoused by Parsons (Parsons and Bales 1955) that fathers play the major instrumental role which is competence-directed and that it is primarily fathers who encourage their children to acquire competence necessary for adaptation to the task-oriented aspects of their future life (Lamb 1981). Perhaps this male instrumentality, particularly when expressed by highly involved males, helps to foster the child's sense of competence, especially in the case of boys, and enables the children to interact with the environment in a more confident, adaptive, less fearful manner. Modelling of the competence-directed, instrumental male figure may also be involved, resulting in a diminished tendency for the child to be distressed and fearful.

In conclusion, the results of this study suggest that one strategy for fostering the development of the young children of adolescent mothers is the promotion of greater nurturance and involvement by the fathers of the teens in rearing their infants and toddlers. The fact that the young children have not as yet demonstrated any deficits, that their attachment to their mothers appears to be secure and that their cognitive development is within the normal range, suggests that this is an ideal time for preventive intervention. Rather than focusing interventions solely on adolescent mothers, or on adolescent mothers and their mothers, it should be recognized that another potential resource exists within the family system, the teen's father, who warrants the attention of those concerned about promoting the welfare of the baby. At the time of writing there are few, if any, such programmes in existence; however, some interventions focused on teen mothers could readily be modified to make them applicable to grandfathers. For example, there are numerous projects in which local women who were chosen because they are good maternal role models are employed to visit adolescent mothers' homes on

a regular basis and assist the teens to adopt a loving, competent parental role. In much the same way, grandfathers from the community who are good role models could be hired to visit other men with young unmarried daughters at home with infants and assist these male neighbours to play a loving grandparent role. The comments of some of the grandfathers who participated in this study suggest that such male role models would not be too difficult to find. Particularly salient were the words of one grandfather, who said: 'The big factor is that we all show our affection and love for him. That's more important than anything.'

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