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REVIEW
Intergenerational Transmission of Parenting: A Review of Studies in Nonclinical Populations

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In this review, intergenerational transmission of parenting is defined as the process through which purposively or unintendedly an earlier generation psychologically influences parenting attitudes and behavior of the next generation. A model of intergenerational transmission of parenting is outlined, in which genetic and contextual continuity is taken into account as well as grandparenting. Through PsychLit, relevant studies on nonclinical populations have been collected, and a narrative review is presented in which strengths and weaknesses of pertinent studies are discussed. It is concluded that the traditional cross-sectional studies on the basis of questionnaires have failed to reach their goals. Observational research and studies based on the Adult Attachment Interview should be regarded as promising. These studies revealed substantial intergenerational transmission of parenting styles, but their designs preclude definite causal interpretations of the variance shared between different generations.

INTRODUCTION

Intergenerational transmission of parenting indicates the influence of parents' own experiences as a child on their childrearing practices and attitudes. Intergenerational transmission is part of the socialization of the "socializer," and the concept concerns the origin of parenting behavior and attitudes in the earlier generation (Feldman & Goldsmith, 1986). Intergenerational influences on parenting may include genetic factors. The transmission of genes from one generation to the next may shape the next generation's predispositions and proclivities toward experiencing the social and physical environment, and therefore its parenting style. Here, we propose to differentiate between intergenerational transmission and genetically determined continuity of parenting by defining intergenerational transmission as the process through which purposively or unintendedly an earlier generation psychologically influences parenting attitudes and

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behavior of the next generation. This definition also excludes contextual continuity from the intergenerational transmission of parenting. If grandparents and parents have been rearing their children in about the same physical and social circumstances, their childrearing behavior and attitudes may be more alike, but the earlier generation may not have exerted any direct, psychological influence on the next generation's parenting (Quinton & Rutter, 1984).

Models of Intergenerational Transmission of Parenting

Intergenerational transmission of parenting at least implies three generations: grandparents, parents, and their children. Because parenting is at issue, not only parents but also their (possibly imaginary) children are involved, and because transmission of parenting is at issue, grandparental influences on parents have to be taken into account. Indicating the three generations with g1 (grandparents), g2 (parents), and g3 (children), the most simple model of intergenerational transmission can be outlined as in Fig. 1a.

This model makes clear that the direct influences of grandparents on children (Radin, Oyserman, & Benn, 1989) cannot be included in the model. The interaction between g1 and g3 has to be defined as "grandparenting," and it is thus a part of the socialization process in which the child is immersed (see Fig. 1b). However, it is not part of the process of socializing the "socializer," i.e., the transmission of parenting, because g3 does not participate in childrearing, at least not as a caregiver (but see Crittenden, 1984).

In fact, we restrict the concept of intergenerational transmission of parenting to the investigation of (dis-)continuities between different generations, i.e., grandparents, parents, and grandchildren, in parenting attitudes and behavior displayed at about the same chronological or social age, to prevent our topic from being confused with grandparenting or childrearing in general (Quinton, 1988), and with grandparental support of the parents in specific (Radin et al., 1989; Cherlin & Furstenberg, 1986; Tinsley & Parke, 1987).

Our model should also differentiate between genetic and contextual transmission of factors influencing childrearing, and the proper intergenerational transmission of parenting. Continuity of parenting may be stimulated by sharing of genes between generations, but also by sharing the same physical and social circumstances. Living in the same neighborhood, and even in the same family house may constitute factors stimulating intergenerational continuity. This is an example of cumulative continuity in which an individual's environment reinforces a certain interac-

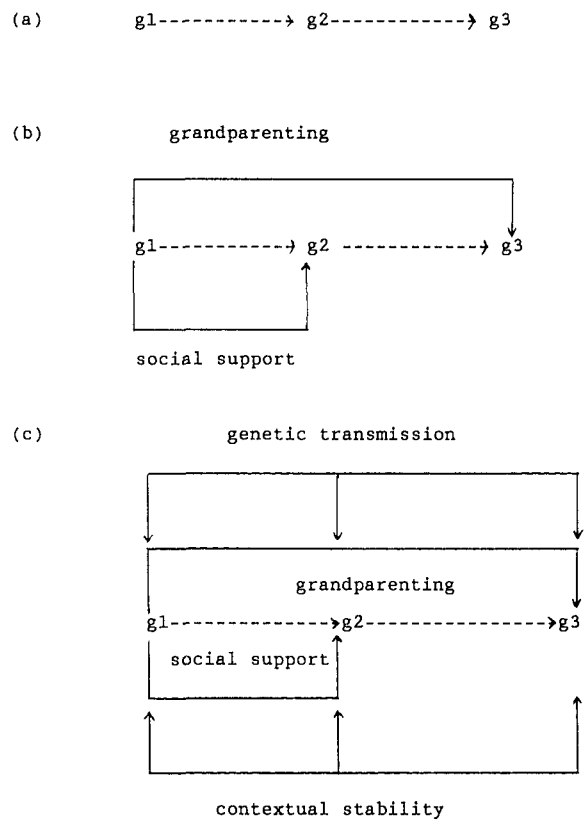

FIG. 1. A model of intergenerational transmission of parenting.

tional style, thereby sustaining the behavior pattern across the life course, and maybe even across generations (Caspi, Bem, & Elder, 1989). Therefore, the strength of intergenerational transmission of parenting will be inflated if genetic transmission of parenting determinants and contextual stability influencing the continuity of parenting attitudes and behaviors are not taken into account. We will show, however, that most studies on intergenerational transmission do not attempt to differentiate genetic, contextual, and psychological transmission of parenting. Furthermore, in describing intergenerational transmission of parenting it is important to search for the lineage effect, that is the intrafamilial transmission of values and behaviors (Bengtson, 1975). Against this background, lumping together representatives of the same generation, and comparing this group with a former or next generation, as is done in some studies, is irrelevant to the issue of intergenerational transmission of parenting, al-

though this approach may shed some light on the cohort or period effect (Bengtson, 1975).

The Mechanism of Transmission

Transmission of parenting is supposed to be based on one or more learning mechanisms (Quinton, 1988). Simonton (1983), for example, refers to the role-modeling hypothesis as some type of social learning or identification process through which the child initiates or emulates parenting behavior, and he found evidence to support the idea that the modeling process is more powerful than genetic transfer in shaping parenting-related characteristics like morality and leadership abilities.

Crittenden (1984) mentions three transmission models. The first is modeling based on observational learning of a parent interacting with other children; the second consists of the child's past experiences of interacting with the parent; and the third transmission model implies parental coaching of the child during interaction with another child. Crittenden (1984) contends that hard data in favor of any of the three models is not available, but anecdotical evidence would support the idea of coaching as a transmission mechanism. In a study comparing nonabusive and abusive parents, she found that responsive, nonabusive parents indeed coached their child to be responsive to its sibling, whereas the abusive parents in her sample attempted to get the children to gear all their behavior toward the infant, that is, to overstimulate the infant and therefore to be unresponsive. Maternal coaching was harshly given, and mothers' orders were largely resisted or ignored.

Lastly, in the theory on adult attachment relationships, it is supposed that the parents' experiences with grandparental responsiveness, rejection, or ambivalence lead to an internal representation of the grandparent as (un-)responsive to the parental needs, and it is hypothesized that this internal representation will influence the degree of responsiveness the parents are able to show toward their children (Bowlby, 1988; Main, Kaplan, & Cassidy, 1985). Parents who experienced a high degree of responsiveness in childhood are supposed to be more open to signals and needs of their infants than rejected or ambivalently treated parents, because former parents are more able to take their children's perspective and to not feel threathened by signs of anxiety in their children (Main et al., 1985). Latter parents may, however, restructure their internal representation on the basis of attachment experiences after childhood. The internal representation of past attachment experiences can be considered to be the result of complicated autobiographical memory processes, in which later experiences influence the perception of earlier ones. It may be restructured for example through therapy or through a secure partner relationship, but it is hypothesized to be rather resistant to change

through normal learning processes such as coaching or modeling (Bowlby, 1988). Bowlby (1988), however, presented only clinical evidence to support this hypothesis.

In this review, studies on intergenerational transmission of parenting in its broadest sense are being discussed. Parenting includes not only behavior toward children intended to change the course of their development but also attitudes toward childrearing that may influence children's development. In fact, a series of studies carried out on basis of questionnaires measuring parenting attitudes will be discussed. These studies do not rest on a strong theoretical foundation, and we will therefore focus on empirical results and methodological problems. Furthermore, a series of studies will be discussed that measure parents' internal representation, state of mind, or internal working model of their own childhood experiences and its relation to the interaction with and development of the third generation (Main et al., 1985; Main & Goldwyn, in press).[1] These studies represent a recent trend in attachment theory to pay more attention to the parental contribution to the infant–parent attachment relationship (Ainsworth, Blehar, Waters, & Wall, 1978). The attachment studies include intergenerational transmission of parenting in that they try to show how parents' own childrearing experiences influence their infants' development through the filter of the parental working model of attachment, that is, the internal representation of their affective relationship to their parents (i.e., g1).

METHOD

Pertinent studies were selected through PsychLit. The literature search was carried out using the terms "intergenerational," "transgenerational," "grandparent(s)," and "transmission," each successively and in combination, for the years 1977–1989. More than 300 items were collected, most of which did not appear to be focused on intergenerational transmission of parenting. Papers had to conform the following criteria: they should present empirical research; they should contain information about at least three generations; they should at least focus on parenting values, attitudes, and/or behaviors, and not only on the transmission of

[1] The concepts of "internal representation," "state of mind," and "internal working model" of attachment are used interchangeably. Bowlby (1969) introduced the concept of internal working model into attachment theory, indicating the dynamic and at the same time self-perpetuating characteristics of internal representations of attachment experiences. Bretherton (1985) and Main, Kaplan, and Cassidy (1985) tried to define this concept in more detail. Currently, Main (Main & Goldwyn, in press) prefers the concept of "state of mind" to emphasize that internal working models of attachment relationships provide rules and rule systems for the direction of behavior, the felt appraisal of experience, and the direction and organization of attention and memory.

values in general; they should describe transmission of parenting in "normal" families, and not in at risk populations such as abusive subjects (see Kaufman and Zigler, 1987, for a review of transmission of abuse). Clinical case studies were excluded. Besides the studies selected through computer searches, we included studies pertinent to our topic but not (yet) abstracted in PsychLit, especially in the domain of transmission of attachment patterns which is a relatively new field of research not yet completely covered by PsychLit.

We decided not to carry out a meta-analysis but a more traditional narrative review. Our reasons for this decision are that studies in this field strongly diverge in quality of design and analytic strategies. Furthermore, quite a few studies are not well reported and many published papers contain only few indicators of relevant effect sizes, implying a very cumbersome procedure to recover all necessary information from the authors, especially in the case of studies published more than 10 years ago. Lastly, a meta-analysis would be biased to an unknown degree because of unreported studies that did not find significant relations between grandparental, parental and possibly children's childrearing attitudes and behaviors. Because of the rather modest effect sizes found in quite a few published studies, it is expected that more than the usual number of unreported studies without a significant outcome will exist in this field.

RESULTS AND DISCUSSION

In Tables 1 and 2 an overview of the selected studies can be found. First, results of studies on intergenerational transmission of parenting behavior and attitudes will be described (Table 1), and second, the relevant attachment research will be reviewed (Table 2).

Parenting Behavior and Attitudes

One of the first researchers to empirically study the intergenerational transmission of parenting in a large sample was Itkin (1952) In this cross-sectional study on 400 junior college students and their parents, Itkin administered Likert-type attitude scales on parenting style. Average correlation between students' and their parents' scores on the scales was .37, indicating that the two generations share about 14% of the variance in parenting attitudes. Because the validity and reliability of the scales could not be established in a satisfactory way, Itkin (1952) stated that definite conclusions could not be drawn. During the three decades after this pioneering study, at least four studies were carried out with the same type of parenting scales for which no reliability nor validity figures were presented (Hill, Foote, Aldous, Carlson, & MacDonald, 1970; Cherlin & Fürstenberg, 1986; Cohler & Grunebaum, 1981; Gelso, Birk, & Powers,

TABLE 1
STUDIES ON INTERNATIONAL TRANSMISSION OF PARENTING

Study	N[a]	SES	Age[b]	Topic	Design[c]	Measure	Quality[d]	Subjects[e]
Hill et al (1970)	312	Lower middle class	21–30 years	Parenting attitudes	c	Developmental Traditional Conceptions of Parenting	–	g1g2g3
Itkin (1952)	>400	Representing Chicago	—	Preparental intrafamily attitudes	c	Likert-type attitude scales	–	g1g2
Cherlin & Furstenberg (1986)	697	National	Adolescent sample	Traditional vs modern family values	c	Traditional Modern Scales	–	g1g2g3
Tinsley & Parke (1987)	30	Middle class	7 months	Parental play behavior	c	Global ratings time sampling free-play observations	+	g1g2g3
Cohler & Grunebaum (1981)	90	Lower middle class	<5 years	Childcare attitudes	c	Maternal Attitudes Scale (MAS)	±	g1g2
Fu, Hinkle, & Hanna (1986)	150	Middle class	8–14 year	Parenting attitudes	c	Parenting Attitudes Research Instrument (PARI)	±	g1g2
Lefkowitz, Huesmann, & Eron (1978)	427	Middle class	8 year	Parental punishment style	l	Punishment Scale	±	g1g2
Hanson & Mullis (1986)	97	Rural area	—	Parental punishment empathy role reversal expectations	c	Adult Adolescent Parenting Inventory	±	g1g2
Gelso, Birk, & Powers (1978)	88	Middle class	?	Parenting attitudes	c	Maryland Parent Attitudes Survey (MPAS)	–	g2
Ho & Kang (1984)	20	Lower middle class Hong Kong	?	Parental training style, view of child	c	Child Training Scale/Filial Piety Scale	±	g1g2

[a] Number of families participating in the study
[b] Age of third generation participants
[c] c, cross-sectional design, l, longitudinal design
[d] +, established validity and reliability of measures, ±, established reliability of the measures, –, absence of quantitative information about reliability and validity
[e] Subjects involved are indicated according to their generation

TABLE 2
ADULT ATTACHMENT CLASSIFICATION DISTRIBUTIONS AND CORRESPONDENCES BETWEEN PARENTAL AND INFANT ATTACHMENT

Studies	AAI classifications			Correspondence between AAI Strange situation (%)
	Autonomous *N* (%)	Dismissive *N* (%)	Preoccupied *N* (%)	
Main & Goldwyn (in press)				
Mothers	13 (41)	13 (41)	6 (19)	75
[Fathers	19 (54)	13 (37)	3 (9)	69]
Ainsworth & Eichberg (in press)	29 (64)	9 (20)	7 (16)	80
Haft & Slade (1989)	3 (21)	6 (43)	5 (36)	—
Crowell & Feldman (1988)	10 (45)	7 (32)	5 (23)	—
Grossmann et al. (1988)				
Bielefeld	5 (25)	15 (75)		85
Regensburg	26 (58)	19 (42)		78
Total (without fathers)	86 (48)	92 (52)		79.5

1978). The results of these studies, therefore, are difficult to interpret: the quite modest correlations that were found between the parenting attitudes of two or more generations may be biased to an unknown degree because of the reliability and validity of the central measures.

In three other studies carried out with questionnaires, at least a satisfactory reliability of the parenting measures was reported (Fu, Hinkle, & Hanna, 1986; Lefkowitz, Huesmann, & Eron, 1978; Hanson & Mullis, 1986). In the study by Fu et al. (1986), three generations participated, but the second generation consisted of daughters and daughters-in-law (33%). Because daughters-in-law have not been raised by the grandmothers participating in this study, the results cannot be interpreted in terms of intergenerational transmission of parenting as defined in the introduction to this paper. Hanson and Mullis (1986) assessed parenting and childrearing attitudes of 97 female college students along with their parents. Most students (93%) did not have children. The authors found a very modest correlation (.29) between mothers and students' childrearing empathy scores. The interpretation of this result is, however, difficult because of the cross-sectional design. This design does not allow for differentiating cohort effects from other factors influencing adults' attitudes. In particular, using students who are not parents yet themselves implies comparing attitudes of two generations in radically different phases of their life span. It is not clear, for example, whether the birth of a baby would

change the students' attitudes to children and to childrearing more into the grandparental direction.

Considering the problems with interpreting cross-sectional designs, remarkably few longitudinal studies have been carried out. Therefore, the longitudinal study by Lefkowitz, Huesmann, and Eron (1978) on grandparents and parents (211 male and 216 female subjects) is of special interest. In the first wave, second generation subjects were still third graders; the second wave of data collection occurred 10 years later, and the second generation subjects were not yet parents themselves. The longitudinal design has the advantage of controlling for the cohort effect (Bengtson, 1975), because both first and second generation respond to the parenting attitude scale at about the same point in their life span. However, an important experiential difference remains in that actually having to raise children may change the parenting attitude of the second generation, and lead to more overlap between parental and grandparental attitudes. The very low degree of transmission across generations found in this study (3% shared variance) may therefore underestimate the future correspondence of parental and grandparental childrearing attitudes, when the third generation is born. The study of Ho and Kang (1984) on 20 pairs of grandfathers and ("real") fathers living in Hong Kong, however, did not show much shared variance either (mean correlation: .22; not significant), indicating that neither design nor selection of subjects are decisive factors in explaining the disappointing results of this series of studies: the validity of the instruments used to measure parenting style and attitudes may even be more important.

The cross-sectional study by Tinsley and Parke (1987) on 30 seven-month-old infants ($N = 30$) shows that more impressive results can be produced by using observational measures instead of questionnaires. Observations of parents and grandparents during a 5-min play session with the infant, revealed that only grandfathers and their children showed significant relations between their styles of interaction with the infant, while correspondences between grandmaternal and parental interactive styles were absent. The correlations for grandpaternal and parental style of interaction during play were, indeed, quite strong (mean correlation for grandfather–father agreement was .61; and for grandfather–mother, .72). Although the study was very carefully conducted, it showed some restrictions inherent to its design. First, the selection of the sample required the grandparents to live close to the parents; this may restrict the generalizability of the results. Second, the artificially short duration of the play session may have reduced the ecological validity of the parenting style variables. Third, the cross-sectional design of the study does not allow for rejecting the hypothesis that the infants stimulate their parents and grandfathers to similar play behavior. If infants would completely determine

grandparental play behavior, however, one would have expected to find the same effect on grandmothers as on grandfathers. Lastly, parents and grandparents have not been observed playing with their own infants at the same point in their lift span. Nevertheless, the study of Tinsley and Parke (1987) is one of the very few studies to have used observational measures and to present evidence that even on the behavioral level some continuity between grandfathers' and parents' parenting style exists (see Table 1).

Intergenerational Transmission of Attachment

Measuring attachment: Strange Situation and Adult Attachment Interview. In recent years, the intergenerational transmission of attachment relationships has become an important focus of research. The central issue is whether the quality of the attachment relationship between parents and their parents (g1–g2) would be reflected in the attachment relationship established between parents and their infants (g2–g3). To address this issue, parents' attachment relationships to their infant as well as to their parents have to be measured.

Parent–infant attachment is usually observed in the well-known Strange Situation procedure (Ainsworth et al., 1978), in which parent–infant interaction during a series of increasingly stressful episodes is supposed to indicate the quality of their attachment relationship. Infant's behavior during reunion with the parent after a short separation is classified into four main categories of attachment. The securely attached group (B) shows minimal resistant and avoidant behavior; these children are somewhat upset when their caregiver has left, but his or her return has a calming effect. Avoidant children (A) do not seek proximity or contact to their returning caregiver, but instead show avoidant behavior. Resistant or ambivalent children (C) seek contact but resist the caregiver at the same time; some resistant children are unable to settle within the 3-min reunion episodes. Disorganized children (D) show momentary absence of any particular strategy to deal with the separation stress and with the return of the potential protective caregiver: they show inconsistent behavior patterns (e.g., avoidant as well as resistant behavior) or odd behaviors (see Main & Solomon, 1986, for details).

To measure parental views of their own attachment history the Adult Attachment Interview (AAI) has been designed (Main & Goldwyn, in press). The AAI is a semi-structured interview to probe alternately for descriptions of relationships, specific supportive or contradictory memories, and descriptions of current relationships with the parents. The AAI transcripts are rated for security of attachment history as it is presently being discussed by the subject. Coding of the AAI yields four main attachment categories. Autonomous adults (F) tend to value attachment relationships, and to regard them as influential on personality, and yet are

able to describe them coherently, whether or not attachment-related experiences were negative (e.g. loss, rejection) or positive. They lack idealization of their parents, and do not feel angry about their past experiences. Dismissive adults (D) tend to devalue the importance and impact of attachment relationships for their own life, and tend to idealize their parents without being able to illustrate their positive evaluations with concrete examples of secure interactions. Preoccupied or enmeshed (E) adults are not able to describe their attachment history in a coherent way, still being very much involved and preoccupied with the past. Some degree of anger may be present in discussing current views on their parents. Through their discussion of experiences of loss of attachment figures, the disoriented adults (U) show that they did not yet resolve their conflicted feelings and complete their mourning process (see for details Main & Goldwyn, in press).

In the adult attachment theory, it is hypothesized that secure infants would have autonomous parents; avoidant children, dismissive parents; resistant children, preoccupied parents; and disorganized infants, disoriented parents. Infants and parents would use basically the same strategies to deal with attachment figures in stressful situations (Main & Goldwyn, in press).

Concordances between parent's and infant's attachment. Strong concordances between the parent's view on his/her attachment biography and his/her attachment relationship to the infant have been established in four studies (Main et al., 1985; Main & Goldwyn, in press; Ainsworth & Eichberg, in press; Grossmann, Fremmer-Bombik, Rudolph, & Grossmann, 1988); the study by Ricks (1985) is excluded here because it was not carried out with the AAI, and it was not described in much detail.

Main et al. (1985) describe the results of a pioneering study on 40 mothers, fathers, and their 6-year-old children. The subjects were selected from a larger, white, upper-middle class sample of San Francisco Bay Area families. Each family had been seen in the Strange Situation procedure in the second year of the children's life. The principal criterion of selection of the subsample was infant–mother attachment classification. The researchers tried to include an equal number of securely, avoidantly, and disorganized attached dyads. At Age 6 the children were seen in the laboratory with their parents, and the parents were individually interviewed about their childhood experiences.

Using the AAI, Main et al. (1985) were able to report very promising significant correlations between early infant attachment security and security of maternal (.62) and paternal (.37) internal working models of attachment. Although no agreements between infant and parent classification were presented in Main et al. (1985), the correlations indicate a high degree of correspondence especially between infant and mother at-

tachments. However, the selected (sub-)sample used in this exploratory study may have led to some inflation of correlations, and their generalizability to unselected samples should not be taken for granted. Furthermore, the design is retrodictive in two respects: the grandparental generation is only indirectly included through the eyes of the parents; and the AAIs were conducted 5 years after the infant attachment measurement, thereby precluding any causal interpretation of the data.

A more complete report on the Main et al. (1985) study concerning adult attachment can be found in Main and Goldwyn (in press). In this paper data on the same Bay Area sample are presented in much more detail. The design is basically the same: In 1977 mothers and fathers had been seen with their infant in the Strange Situation (infants' age 12 and 18 months); in 1982, a follow-up study was carried out in which the AAI was applied to 33 mothers and 35 fathers. The sample included 45 different children (22 children with both their parents). Girls were underrepresented. The construction of the AAI was kept separate from exploring the correspondences between infant and parent attachment: The transcripts ($N = 36$) on which the AAI had been developed were excluded from the larger sample of 103 subjects. The overlap of subjects between this study and the Main et al. (1985) study is not complete: instead of 40 children, now 45 (different?) children are involved; furthermore, all infant classifications were forced into the ABC format, and the D-classifications were not separately described. Main and Goldwyn (in press) reported satisfactory intercoder reliabilities for the AAI rating scales (from .74 to .87), and a satisfactory intercoder agreement for the AAI classifications (81%; $N = 32$). We focus here on the classifications. The distribution of AAI classifications for the mothers was rather skewed: Anxious attachment classifications outnumbered the secure classifications (see Table 2 and the section on conclusions). The correspondence between mother's state of mind with respect to attachment and her infant's attachment classification based upon the Strange Situation assessment 5 years previously was 75% ($\kappa = .61$; $p < .001$). For the fathers this figure was 69% ($\kappa = .41$; $p = .002$). Even without taking into account the disorganized/disoriented categories the match is impressive. Discongruencies were especially prevalent in the A2 versus B1/B2 range, and may concern mainly marginal and/or difficult-to-classify children.

Some of the comments made earlier with regard to the Main et al. (1985) study are not valid in this case. For example, the current sample seems less selective in terms of infant attachment classification distribution, although the mother–infant attachment distribution remains rather skewed. Furthermore, detailed information about the intercoder reliability of the measures and about the correspondences between adult and infant attachment is being presented. The distribution of the sexes in the

sample however is skewed, and may impair the generalizability of the results. Furthermore, as Main and Goldwyn (in press) themselves state, the retrodictive design does not exclude the alternative interpretation of the adult to infant match as being caused by the infant's influence on the parent. The study is unique in its inclusion of the paternal attachments.

Strong support for Main's hypothesis of intergenerational transmission of attachment comes from Ainsworth and Eichberg (in press). They studied the relation between infant quality of attachment as assessed by the Strange Situation and maternal state of mind regarding attachment as assessed by the AAI in a sample of 45 white, middle class infants and their mothers. Ainsworth and Eichberg were especially interested in the extent to which infant disorganization (D) is associated with mother's unresolved mourning for a lost attachment figure or other unresolved traumata (cf. Main & Hesse, in press). Age of the infants during the Strange Situation assessment was between 12 and 18 months. Within 2 to 6 months after this assessment the mothers were interviewed with the AAI.

Ainsworth and Eichberg (in press) found very high percentages of agreement between Strange Situation classifications and maternal working model of attachment as measured a few months later. On the level of the three main categories 80% of correspondence was registered, and when the D and U classifications were taken into account, this percentage was even higher: 82%. With regards to the issue of loss, Ainsworth and Eichberg (in press) found that 30 mothers had experienced loss of an attachment figure through death, and that 20 of them were judged to have resolved their mourning. Only 2 out of 20 were dismissively attached, the rest was considered autonomous. Most importantly, current state of mind about loss was predictive of infant attachment, whereas actual past experiences of loss did not contribute to the prediction. Those parents who resolved their mourning process had felt supported by a strong family solidarity, and/or had been taking responsibility for the other members of the family during the mourning period. These conditions, therefore, seem to mitigate the intergenerational transmission of negative effects of unresolved mourning. But when such mitigating factors were absent, the transmission was perfect: all of those whose mourning was judged to be unresolved ($N = 10$) had babies who were disorganized in their attachment to their mothers.

This study has to be considered an important replication of the exploratory study on adult attachment by Main and her associates (see above). The results indeed strongly support the hypothesis that a nearly perfect intergenerational transmission of attachment can be observed if we take the current internal representation of the caregiver's attachment experiences into account, and thereby the contextual influences mitigating or strenghtening the links between earlier experiences and their present in-

ternal representation. Because of the cross-sectional design, in which adult attachments have been measured a few months after the infant attachments, it is not possible to causally interpret the relation between the two variables. Furthermore, the distribution of attachment classifications in this sample is quite skewed compared to what may be expected (Ainsworth et al., 1978). Although normative data on the ABCD and DEFU distributions are not yet available, it seems unlikely that the percentage of about 50% anxiously attached infants will be close to the average across several different random samples in the USA (Van IJzendoorn & Kroonenberg, 1988). Therefore, the generalizability of the results of this study may be restricted to a population in which quite a few infants are anxiously attached, and specifically are displaying disorganized behavior. Nevertheless, this first independent replication of the original Main et al. (1985) study shows how fruitful the adult attachment perspective is.

The first study on the relation between adult and infant attachment outside of the United States has been carried out by the German researchers Grossmann et al. (1988). The authors applied the AAI in the context of their Bielefeld and Regensburg longitudinal studies. In Bielefeld, 49 infants were seen in the Strange Situation with their mother and father, at 12 and 18 months of age, respectively. During the first year of the infants' life, many tests, home observations, and interviews were carried out. At 6 years of age, the children and their parents were again involved in a follow up. Forty-four mothers and 41 fathers participated in the AAI. The Grossmann et al. (1988) paper only discusses the results of 20 interviews with mothers, and it remains unclear how this subsample was selected. In Regensburg, the infants were seen with their mothers in the Strange Situation at 12 months of age. Four years later, 45 mothers were interviewed with the AAI. The results of this second study are not reported upon in much detail, and the reader is referred to Wartner and Grossmann (in preparation). A new coding system was constructed for the AAI, because "an exchange of interviews for reliability training was not possible because of the language barrier" (p. 243). The new coding system is based on assigning the interview sentences to preestablished criteria and counting them. The absolute values of the criteria are then transformed into indices for high, medium, and low regard for attachment, and four patterns of adult attachment representations are discerned. (I) Positive attachment representation: subjects describe at least one supportive attachment figure, and many attachment related experiences; (II) Nondefensive attachment representation: subjects do not describe a supportive attachment figure, but they are very open about attachment issues, and regret the lack of closeness to their parents; (III) Idealizing and incoherent attachment representation: the subjects in this category idealize their par-

ents in an undifferentiated way, and tried to avoid attachment related issues; (IV) Repressive attachment representation: the subjects seem to dislike the whole interview, recalling or reporting very few attachment relevant experiences, either idealizing or disparaging their parents. Compared to the Main and Goldwyn (in press) classification system, patterns I and II are most similar to the autonomous category; pattern III most clearly resembles the dismissive category; and pattern IV seems to be a mixture of dismissive and preoccupied elements. The intercoderreliability for the sentences was 87%; for the classification no interrater agreement was given.

The concordance between adult and infant attachment was considerable: If the positive and nondefensive patterns are considered secure representations of attachment, and the idealizing and repressive patterns are seen as anxious states of mind, the concordance for the Bielefeld study was 85%, and the concordance for the Regensburg study was 78%. We computed κs for both the Bielefeld and the Regensburg study: .62 and .54, respectively (both $p < .05$). It has to be kept in mind that percentages of agreement for dichotomous variables contain somewhat more chance agreement than those for trichotomous variables. Nevertheless, the figures indicate an impressive relation between parents' and infants' attachment.

The Grossmann et al. (1988) study is unique in its orientation toward internal replication of results in two different longitudinal projects. The study's design however precludes causal interpretations of the concordances and correlations. Furthermore, the selection of the Bielefeld subsample remains unclear, and its size restricts the generalizability of the results. It is also unclear why a new coding system was developed (the language barrier does not seem to be insurmountable, because translations of interviews may be made), and how it converges with the Main and Goldwyn system. Grossmann et al. (1988) do not make clear whether the coding system was constructed in an independent (sub-)sample.

Mechanism of intergenerational transmission of attachment. Main and Goldwyn (in press) offer some hypotheses as to the mechanism of the transmission of attachment quality across generations. They suggest that the secure adult is able to perceive and understand infant signals without distortions, even if they seem to be threatening to the current state of mind with regard to attachment, whereas the insecure adult has to ignore or alter some of the infant's signals because they tend to destabilize the current mental organization of past attachment experiences. Simpler interpretations would be that different adult attachments are connected to different philosophies of childrearing, or that the infant may imitate parental response patterns (Main & Goldwyn, in press). A common element in these interpretations is the search for behavioral links between adult

and infant attachment, with parental responsiveness being considered a good candidate to fill the gap.

The relation between adult attachment and responsiveness has been documented in three studies (Haft & Slade, 1989; Crowell & Feldman, 1988, 1989; Grossmann et al., 1988). Grossmann et al. (1988) found that in the Bielefeld subsample the securely attached mothers were more responsive toward their infants during the first year than anxiously attached mothers. The securely attached mothers also tended to be more accepting of the individuality of their infants, especially at the 10-month home visit. In addition, at the 24-month home visit they showed more understanding for the developmental problems and for the individuality of their toddlers, and they reported themselves as being more willing to adjust the family routine to the special needs of the 2 year old. Thus, a secure attachment representation appears to be reflected in a different behavioral style toward the infants; Main and Goldwyn's (in press) suggestion that specifically parental responsiveness would be effected by the parental state of mind with regard to attachment is supported by these data, although causal interpretations of the retrodictive correlations are not allowed.

Haft and Slade (in press) explored the relation between adult attachment and maternal attunement to the infant's signals in a small sample of 14 middle class families. Attunement implies that the parent matches an affect state to the baby's state, rather than behavior, and matches certain qualities of that state, namely contour, intensity, and temporal features (Stern, 1985). Attunement may be considered to be a specific kind of responsiveness (Ainsworth, Bell, & Stayton, 1974). To measure mothers' internal working model of attachment, the AAI was used. The Affect Attunement Scale assessed maternal attuning behaviors. The degree of sharedness was assessed by rating whether the mother combined her desire to share in the baby's affective experience with an intention to teach (this was called a low-order attunement), or whether she intended to purely share in the baby's affective experience (a higher-order attunement). During a free play period adult attachment groups differed significantly in mothers' average level of attunement. Securely attached mothers appeared more attuned to their babies and used more high-order attunements than insecurely attached mothers. Dismissive mothers tended not to attune to negative affect, whereas preoccupied mothers randomly attuned to both positive and negative affect states. During a reunion episode, dismissive mothers used low-order attunements less often than those who were preoccupied. Interpretation of the findings is somewhat restricted because of the very small sample size, and the selective sampling process leading to a very skewed adult attachment distribution (see Table 2).

Although Crowell and Feldman's (1988; 1989) study included children

with behavior problems, their research is relevant to our topic because they also studied a nonclinic comparison group ($N = 24$), and they reported separate analyses for this group. Of interest to us is their search for relations between maternal attachment and mothers' help and support, and quality of assistance during a problem-solving session with the children. These variables can be considered to represent maternal responsiveness, especially in the cognitive domain. Mothers' help and support was a composite variable based on a scale for supportive presence and quality of assistance. Mothers' style of assistance on the most difficult task was assessed by classifying mothers in three categories: Promotion of autonomy; Confusing or chaotic; Directive or controlling. The AAI was used to assess maternal internal working models of attachment (see Table 2). Securely and dismissively attached mothers appeared to differ significantly in help and support, securely attached mothers being more helpful and supportive. In the total group ($N = 64$), relations between adult attachment and maternal problem-solving support were even more clear cut: Mothers in both the preoccupied and dismissive groups were significantly less supportive and helpful in assisting the children than securely attached mothers; no differences were found between the two insecurely attached groups. Furthermore, 62% of the securely attached mothers had a style that promoted learning and self-discovery; the preoccupied mothers showed both confusing (60%) or controlling (35%) styles; most dismissive mothers were directive or controlling with the child (78%), and 10% was confusing. Crowell and Feldman's study clearly illustrates the adult attachment approach to the issue of the mechanism of intergenerational transmission of parenting. Because of its cross-sectional design, however, the study cannot exclude alternative hypotheses concerning the causal interpretation of the findings. Parents may be dismissive (partly) because their children behave and develop in certain ways; and parents' help and assistance of their children during a problem-solving session may also be (partly) determined by child characteristics. Alternatively, a third variable such as marital problems may affect both mothers' internal representation of attachment, and their children's functioning in a problem-solving session. The small size of the nonclinic group underlines the exploratory nature of the study.

CONCLUSIONS

Very few studies have come close to a design ideally suited for the issue of intergenerational transmission of parenting. Such a design would have to fit our model of intergenerational transmission, in which two or three generations of parents at the same point in their life span would have to be studied with comparable, valid parenting measures. Furthermore, this design would have to allow for causal conclusions. J. S. Mill (in Cook &

Campbell, 1979) proposed three conditions to be necessary for detecting cause–effect relations: Causes have to precede effects in time; causes and effects have to be related; and alternative explanations of cause–effect relations have to be excluded. Because most studies on intergenerational transmission of parenting are cross-sectionally designed, they only test the condition of a relation between cause and effect without taking the other two conditions into account. Some studies are carried out longitudinally, and would therefore in principle allow for a test of the condition that a cause has to precede an effect in time. In some cases, however, the focus is on "retrodiction"; that is, earlier child development characteristics are being predicted on the basis of later parenting characteristics. In most studies, multivariate analyses to control for contextual transmission of parenting are absent; therefore, alternative explanations of alleged cause–effect relations such as a third variable causing both "cause" and "effect" remain plausible. Simple bivariate correlations or percentages of correspondence prevail, although these seemingly straightforward indicators of intergenerational transmission often reflect the confounding effects of cohort, lineage, and context. The causal interpretation of bivariate correlations or percentages is usually not warranted, because they may be dependent on a third variable not measured or accounted for. Although several authors are inclined to interpret bivariate correlations and percentages as reflecting an influence from parents on their children, it may also be that at least as much influence is being exerted by children on their parents (Bell & Harper, 1977). Cross-sectional studies that represent the majority of the studies reviewed here cannot imply definite conclusions with respect to the direction of influences between the different generations, nor to the complex issue of a third variable explaining the dependence of the alleged cause and effect.

Our review shows that the effect sizes indicating the amount of intergenerational transmission differ strongly between different research programs. The traditional research program using rather large samples and quite global questionnaire measures does not yield much evidence for a relation between parenting across generations. Effect sizes are somewhere between 3 and 15% of explained variance, and even these figures may well be inflated because of lack of control for contextual continuity. The observational study of Tinsley and Parke (1987) yielded more promising results. Impressive effect sizes for intergenerational continuity were found on the fundamental level of grandparental and parental interaction style with the third generation. Although this approach has not yet been applied in a way that g1 and g2 are really comparable as to their age at the moment of measurement, we believe that a longitudinal study using basically the same observational measures in somewhat more "natural"

interaction sessions may convincingly show how similar parenting in the first and second generation will be.

The adult attachment paradigm presents an entirely new outlook on the issue of intergenerational transmission of parenting, which is the reason why we will elaborate its strengths and weaknesses in more detail. First, it is not supposed that childhood experiences (g1g2) translate literally into childrearing style (g2g3), but it is emphasized that the current internal representation of the past is essential to the transmission process. The quite mechanistic hypothesis of rejected parents rejecting their own children is being replaced by a much more dynamic interpretation in which change through external influences and conscious reworking of past experiences have their legitimate role (Main & Goldwyn, 1984). Second, Main and her associates constructed an instrument for measuring adult attachment that incorporates recent developments in cognitive science, especially in (autobiographical) memory theory (Rubin, 1987). It is based upon the distinction between semantic and episodic memory processes to probe for incoherences in the subjects' thinking about their past. Although much discussion has been going on about the boundaries between semantic and episodic memory processes, and about procedural memory as another variation on the memory theme (Squire, 1987), distinguishing between semantic and episodic memory cues in the AAI serves a useful heuristic function. Third, the instrument cannot be criticized because of its lack of reliable descriptions of the past (Yarrow, Campbell, & Burton, 1970): Not the exact reconstruction of the past but its current representation is emphasized. Although predictive validity and stability of the AAI have not yet been established in a completely satisfying way, its construct validity has to be considered very high. Its construction has been guided by recent developments in attachment theory and the cognitive sciences, and elaborates the issue of intergenerational transmission much more intensively than relatively simple questionnaires that have been used in the studies described earlier.

The figures for the correspondence between infant and parent attachment classification (about 80%) are impressive, especially if we take the maximum agreement between two imperfectly measured categorical variables into account. The intercoder and test–retest reliabilities of the Strange Situation classification are not perfect (on average about 90% intercoder reliability has been reported in several different studies, and if we include the D category, this figure will be somewhat lower; see Main and Solomon, 1986). The intercoder reliability of the AAI will in general not be higher than 85% because the coding system is very complex. Out of every 100 cases, therefore, at least about 10 infant attachments may have been coded wrongly, as well as about 15 adult attachments. If these

25 cases are not identical by chance, maximum agreement would be about 75%. If it is supposed that, in case of disagreements about classification, the main coder is at least right in half of the cases, maximum agreement may be higher (about 88%). It is possible, of course, that all misclassified cases by chance are coded into the same direction, and only in that implausible situation, 100% agreement may be reached.

The distributions of adult attachment qualities in the studies reviewed here are quite unexpected. From the global distribution (Van IJzendoorn & Kroonenberg, 1988) and Ainsworth et al.'s (1978) original USA distribution, it may be derived that about 65% of the infants are securely attached to their mother, 25% avoidantly, and 10% resistantly attached. Normative data on the number of disoriented/disorganized infants are not yet available, but the introduction of this category could change the standard distribution, especially because some secure infants may have to be reclassified as disoriented. If there is a high correspondence between infant and adult attachment, we may expect a distribution of about 65% F, 25% D, and 10% E. Combining the maternal attachment distributions of the studies reviewed here, however, we find a distribution of 31% D; 20% E; and 49% F, without taking the German samples into account, because of the diverging classification system. Including these samples leads to a distribution of 52% anxious adult attachments, and 48% secure adult attachment classifications. Inclusion of the U category would increase the percentage of anxious attachments even more, because some secure classifications would turn into U. The overall distribution implies either a selective sampling procedure characteristic of the early studies on adult attachment or a quite dramatic change in our idea of autonomous attachment as normative in a numerical sense, and maybe even in terms of mental health.

Remarkably little is known about the mechanism of intergenerational transmission of parenting. Learning to be a parent and to acquire a certain patenting style may be the outcome of modeling, coaching, or other cognitive processes, and we are not able to derive from the studies reviewed here which (combination of) learning process(es) is most supported by the empirical evidence. Most studies are restricted to just showing that a relation between infant and adult characteristics exists, and do not give insight into the causal mechanism. The adult attachment paradigm has tried to shed some light on the causal mechanism by indicating how responsive parenting might be translated in an internal working model of attachment that in its turn might determine the degree of responsiveness to the third generation. The anecdotical evidence presented by Ainsworth and Eichberg (in press) about the mitigating circumstances that lead to a different perspective on loss of an attachment figure may especially be important in this respect. Support from family members or acting as an

alternative caregiver appear to be common aspects in the life of those subjects whose mourning process was resolved in a positive way, and who achieved an autonomous internal working model of attachment. These subjects were therefore able to be optimally responsive to their infants, with whom they had a secure attachment relationship. These anecdotical suggestions should be systematically studied, not only in relation to loss but also to other childrearing experiences such as unresponsive (rejecting or ambivalent) parenting.

Although adult attachment research has not yet been carried out using a design ideally fitted to the issue of intergenerational transmission of parenting, the outcome of the present studies at least make plausible that adult and infant attachment indeed are related (Mill's second condition for causality). It would now be important to test the condition that causes precede effects in time (Mill's first condition). Simultaneous measurement of parents' and infants' attachment cannot solve the problem of the causal direction between parental and infant characteristics. It would be important to know, for example, whether grandparents and parents have the same internal working model of attachment at the same point in their life span (and preferably before birth of a child), and whether they both are related to the corresponding infant attachment. Such studies may (partly) be carried out at those research centers in which the same samples of infant–parent dyads have been studied from the beginning of the seventies, and include former infant subjects who are now becoming parents themselves (Berkeley, Minneapolis, Regensburg). To test Mill's third condition, however, even prospective longitudinal studies may not be adequate. If these studies would show that preoccupied parents have children who themselves have to be classified as preoccupied, and their babies as ambivalently attached, the alternative interpretation, for example, of (grand-)parental depression affecting (grand-)parental as well as infant's attachment classification would not be excluded. Careful specification of structural models and measurement of potentially important third variables may reduce the risk of falsely inferring cause–effect relations from prospective longitudinal studies, but even in that case causal inferences require additional evidence (Breckler, 1990). The ultimate test of causality implies the manipulation of a putative cause resulting in an expected change of an effect (Cook & Campbell, 1979). Longitudinal intervention studies (cf. Lieberman, Weston, & Pawl, 1989; Van den Boom, 1988) have therefore to be considered the most powerful way to get insight into the causal mechanism underlying the intergenerational transmission of internal working models of attachment. In such studies not only the influence of adult attachment on parenting, i.e., responsiveness (Crowell & Feldman, 1988) or on infant attachment (Main & Goldwyn, in press; Ainsworth & Eichberg, in press) should be described sep-

arately, but they should focus on the simultaneous relations between adult attachment, parental responsiveness, and infant attachment, to get more insight into the mechanism of intergenerational transmission of parenting.

In sum, the studies on intergenerational transmission of parenting reviewed here, show that transmission of parenting across generations may exist. Because the studies do not yet address the issue in a methodologically adequate way, however, we do not know how large the shared variance of parenting between generations in fact will be, using an adequate research design. Most promising are studies using observational measures for parenting style, and studies using the sophisticated AAI to operationalize current internal representation of childrearing experiences in the past. These studies should now begin to incorporate designs fitted to the goal of describing intergenerational transmission of parenting: longitudinal studies should be carried out, measuring parenting with comparable instruments at comparable times across the life span. Furthermore, contextual factors should be taken into account because the transmission may be stronger or weaker depending upon the influence of these contextual factors on two or three generations. Lastly, longitudinal intervention experiments and detailed description of individual cases may throw more light on the causal mechanism of parents influencing their children's parenting abilities.

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