A R T I C L E

INFANT TEMPERAMENT, PLEASURE IN PARENTING, AND MARITAL HAPPINESS IN ADOPTIVE FAMILIES

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ABSTRACT: Temperamental characteristics have been related to later externalizing and internalizing behavioral outcomes. To assess the relationship between temperament and the early family environment, we measured infant temperament, pleasure in parenting, and marital happiness via parent report in 99 families with a nonrelative adoptive infant. Perceptions of child temperament were assessed using two subscales of the Infant Behavior Questionnaire (IBQ; Rothbart, 1981). Mothers and fathers who rated their adoptive child as showing more Distress to Limitations (on the IBQ) reported less pleasure in routine parenting activities; this effect was mediated by marital happiness for fathers. Mothers reported less pleasure in parenting with infants perceived to be more temperamentally fearful (on the IBQ). The bidirectional relationship between temperamental characteristics and pleasure in parenting is discussed.

RESUMEN: Las características temperamentales han sido relacionadas con los resultados de tardías conductas de externalización e internalización. Para evaluar la relación entre el temperamento y el ambiente familiar de los primeros años, nosotros medimos el temperamento del infante, el placer de la crianza, así como la felicidad marital por medio de un reporte de los padres en 99 familias con un infante adoptivo que no fuera pariente de sangre de los padres. Las percepciones sobre el temperamento del infante se evaluaron usando dos subescalas del cuestionario de la conducta del infante (IBQ; Rothbart, 1981). Las madres y padres que evaluaron a su infante adoptivo como que mostraba más Angustia a las Limitaciones

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(en la IBQ) reportaron menos placer en la rutina de las actividades de crianza; este efecto fue mediado por una felicidad marital para los papás. Las madres reportaron menos placer en la crianza con infantes que se perciben como más temperamentalmente miedosos (IBQ). La relación bidireccional entre las características temperamentales y el placer en la crianza se discuten en este estudio.

RÉSUMÉ: Les caractériques du tempérament ont été liées à des résulats ultérieurs d'externalisation et d'internalisation du comportement. Afin d'évaluer la relation entre le tempérament et le milieu familial du nourrisson, nous avons mesuré le tempérament du nourrisson, le plaisir dans le parentage et le bonheur conjugal grâce à des rapports faits par les parents dans 99 familles avec un enfant adopté et non issu de la famille. Les perceptions du tempérament de l'enfant ont été évaluées en utilisant deux sous-échelles du Questionnaire du Comportement du Bébé (abrégé IBQ, an anglais, Rothbart, 1981). Les mères et les pères qui évaluèrent leur enfant adoptif comme faisant preuve de plus de désarroi envers les restrictions (sur le IBQ) firent état de moins de plaisir dans les activités routinières de parentage. Cet effet était influencé par le bonheur conjugal pour les pères. Les mères firent état de moins de plaisir dans le parentage avec les bébés perçus comme étant plus craintifs de tempérament (IBQ). La relation bi-directionnelle entre les caractéristiques du tempérament et le plaisir du parentage est discutée.

ZUSAMMENFASSUNG: Temperamentcharakteristika wurde zu einer späteren Entwicklung im Bereich des externalisierenden und internalisierenden Verhalten in Beziehung gesetzt. Um die Beziehung zwischen Temperament und der frühkindlichen Familienumwelt zu bestimmen, massen wir das Temperament des Kindes, die Freude an der Elternschaft und das eheliche Glück bei 99 Familien mit einem genetisch nicht verwandten Adoptivkind. Die Wahrnehmung des kindlichen Temperaments wurde mittels der zwei Subskalen des kindlichen Verhaltensfragebogens (IBQ, Rothbart, 1981) bestimmt. Mütter und Väter, die ihr Adoptivkind so einschätzten, daß es mehr Schwierigkeiten mit Grenzen hat (nach dem IBQ), berichteten weniger Freude bei den Routinen der Elternschaft; dieser Effekt wurde bei Vätern durch das eheliche Glück ausgeglichen. Mütter berichteten weniger Freude mit ihrer Mutterschaft bei Kindern, die temperamentmäßig als ängstlicher (IBQ) eingeschätzt wurden. Die gegenseitige Beeinflussung zwischen Temperamentcharakteristika und elterlicher Freude wird diskutiert.

抄録：気質的な特徴は、後の外在化型及び内在化型行動という結果と、関係付けられてきた。気質と早期の家族環境との関係を評価するために、われわれは、親戚ではない養子の乳児がいる９９家族で、親の報告を通して、乳児の気質と、子育ての喜び、そして婚姻関係の幸福度を測定した。子どもの気質の知覚は、乳幼児行動質問紙 Infant Behavior Questionnaire (IBQ; Rothbart,1981)の２つの下位尺度を用いて評価した。彼らの養子が(IBQで)「制限への苦痛」をより多く示すと評価した母親と父親は、日常の子育て活動の喜びの報告が少なかった。乳幼児の子育て喜びの報告の少ない母親は、気質的な恐れ(IBQ)を知覚していた。気質的特徴と子育ての喜びのあいだの、両方向性の関係性が論議される。

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Researchers have demonstrated that infants as young as a few days old vary on temperamental characteristics such as distress and rhythmicity. These temperamental differences have been related to such child behavioral outcomes as internalizing and externalizing behavior (Caspi, Henry, McGee, & Moffitt, 1995; McClowry, Giangrande, Tommasini, & Clinton, 1994; Shaw, Vondra, Hommerding, Keenan, & Dunn, 1994) and the internalization of rules (Kochanska, 1995) up to 10 years later (e.g., Cowen, Wyman, & Work, 1992). For example, in a sample of 82 low-income families, Shaw and colleagues found that "difficult" infant temperament, as measured by the Infant Characteristics Questionnaire (Bates, Freehand, & Lounsbury, 1979), related to internalizing problems for boys and to internalizing and externalizing prob-

lems for boys and girls 1 to 2 years later. Temperamental characteristics may also interact with environmental and family risk factors to produce marked increases in child adjustment problems, suggesting the need to consider temperament within a contextual framework (e.g., Lancaster, Prior, & Alder, 1989; Sanson, Oberklaid, Pedlow, & Prior, 1991; Stice & Gonzales, 1998). These links between early temperament and later child adjustment suggest the importance of temperament as a causal mechanism for influencing children's well-being.

Traditionally, infant temperament is assessed via parent-report measures, with the mother answering a series of questions about the infant's behavioral and emotional tendencies. Responses to these questions are then grouped into categories, such as surgency, inhibition, and persistence. Although parent-report measures can reliably measure children's temperamental characteristics (e.g., Bornstein, Gaughran, & Segui, 1991; Lemery, Goldsmith, Klinnert, & Mrazek, 1999), several limitations exist. One major limitation is that parents and children in biological families share the same genes; when parent-report measures are used, genetically mediated temperamental similarities between parent and child may be emphasized over temperamental dissimilarities. For example, parental temperament characteristics may correlate with child temperament characteristics (Cohen, Kasen, Brook, & Hartmark, 1998; Matheny, Wilson, & Thoben, 1987), and a mother may attune more to her child's shyness behaviors that parallel her own shyness behaviors. This results in uncertainty as to whether the parental ratings reflect an endogenous characteristic of infant temperament (e.g., Carey, 1983) or whether the parents are projecting shared temperament characteristics onto their ratings of their infants. This measurement issue becomes increasingly complicated when an attempt is made to correlate parent-reported child temperament characteristics with specific characteristics of the family environment (e.g., the marital relationship). It is unclear whether significant correlations develop from the genetic similarity of the parent and child or from a unique relationship between infant temperament and the family environment.

Observational studies (cf. Rothbart, 1986; Rothbart & Goldsmith, 1985) can alleviate some confounds that arise when parents rate their biological offspring. However, collecting observational data is costly and has its own methodologic limitations. For example, children may not display their underlying temperamental characteristics in a one- or two-time observational session. An alternative approach is to have a biologically unrelated person familiar with the child rate that child's temperament. Adoptive families are perfect candidates for this type of assessment. In contrast to biologically reared children, who share 50% of their genes with each parent, infants placed in nonrelative adoptive families do not share any segregated genes with their rearing parents. However, adoptive parents maintain an intimate parenting relationship with their child and are thus able to provide an adequate evaluation of their child's daily temperamental tendencies. In this study, we focused on adoptive families to collect a more accurate report of the relationship between infant temperament and family environment characteristics.

TEMPERAMENT AND FAMILY ENVIRONMENT IN BIOLOGICAL FAMILIES

Although most research linking family environment and child characteristics has focused on children's specific behavior problems (e.g., aggressive behavior, internalizing behavior, and peer relations), several researchers have examined the link between family environment and child temperament in biological families. This research often reports associations between child temperament and parenting and between child temperament and the marital relationship.

Considering the link between temperament and parenting in general, difficult child temperament correlates positively with decreased satisfaction and decreased self-efficacy in the

parenting role. For example, Sheeber and Johnson (1992) found that mother ratings of her child's difficult temperament were positively related to maternal discomfort in the role of parent. Similarly, the more difficult the child's temperament is perceived to be, the lower the mother's self-efficacy is (Gross, Conrad, Fogg, & Wothke, 1994). Temperamental difficulty is also related to a more strained parent–child relationship. For example, Stocker (1995) found that children with more emotional temperaments, when compared to their less emotional sibling, had a more conflictual, less intimate relationship with their parents. Additionally, Bezirganian and Cohen (1992) reported that children's difficult temperament was related to low father–daughter closeness and high mother–son punishment and control.

In addition to straining the parent–child relationship, a temperamentally difficult child may strain the marital relationship. Using a sample of 77 mothers and their 3- and 4-year-old children, Sheeber and Johnson (1992) found that mother ratings of her child's difficult temperament were positively related to poor spousal relationships. However, children's difficult temperament was not correlated with marital satisfaction or with observed marital interaction patterns in 4- and 5-year-olds ($N = 56$; Katz & Gottman, 1993). Unfortunately, few studies have examined the direct impact of child temperament on the quality of the marital relationship. Instead, studies have focused on the perceptual differences of mothers and fathers. That is, child temperamental characteristics may differentially influence how mothers and fathers respond to their child's demands.

There are some suggested mother to father differences in the ways that temperamental characteristics relate to family environment indices. Previous research has focused primarily on mothers, although there is evidence that mothers and fathers may respond and interact differently with their children (e.g., Siegal, 1987). For example, mothers tend to see their infants as more difficult in day-to-day activities but as more predictable than fathers see them (Greenbaum, Auerbach, & Guttman, 1989). Nelson and Simmerer (1984) assessed mother and father ratings of their preschool child's temperament and ratings of family environment. Children's temperament characteristics were related to father's involvement, limit setting, responsiveness, and intimacy; however, for mothers, these relationships were weak to nonexistent. Although the latter sample was relatively small ($N = 19$ parent pairs), the Greenbaum and the Nelson studies suggest differences between mothers' and fathers' perceptions of their children's difficult temperament. The present research examines adoptive mother–father differences in their ratings of child temperament and family environment.

GENETIC INFLUENCES ON TEMPERAMENT

Interpreting questionnaire-report studies of child temperament is difficult because previous studies have relied largely on samples of biologically reared children. However, the relationship between the family environment and child temperament may be confounded by the genetic similarity of the parent and child. Additionally, temperamental difficulty may have differential effects on the environment in adoptive as compared to biological families. Using genetically sensitive designs (primarily twin studies), researchers have shown that young children's temperamental characteristics are influenced by genetic factors (Emde et al., 1992; Goldsmith, Buss, & Lemery, 1997; Robinson, Reznick, Kagan, & Corley, 1992). Genetic contributions to temperament are found across multiple methods of assessment, including teacher ratings, staff ratings, and observation (Braungart, Plomin, DeFries, & Fulker, 1992; Emde et al., 1992; Schmitz, Saudino, Plomin, & Fulker, 1996). However, some research suggests that genetic effects may vary between samples and between measures. For example, Plomin and colleagues examined the temperamental characteristics of 245 adoptive children and 245 demographically matched, nonadoptive children, all between 1 and 4 years old (Plomin, Coon, Carey, & DeFries,

1991). In contrast to studies assessing twins, this study found little evidence for genetic influences on temperament. The significant genetic influence found in twin designs (and the lack thereof in adoption designs) may be related to the fact that biologically related persons are providing the temperament ratings in twin samples.

TEMPERAMENT RESEARCH WITH ADOPTIVE FAMILIES

In our review of the literature, we found two studies that have examined the relationship between family environment and child temperament in adoptive families. In one, no systematic relationship was found between infant difficult temperament and the home environment (Daniels, Plomin, & Greenhalgh, 1984). In the more recent study, which used a different methodologic approach with the same sample of families (The Colorado Adoption Project; DeFries, Plomin, & Fulker, 1994), the authors found overlap between temperamental characteristics and the home environment. In this sample of 101 nonadoptive and 92 adoptive sibling pairs, the siblings' temperament at 24 months of age related to the home environment using the Home Observation for Measurement of the Environment (HOME; Caldwell & Bradley, 1984) only for the genetically related sibling pairs (Saudino & Plomin, 1997). This suggests that genetic factors create the overlap between children's temperament and characteristics of the family environment such that this relationship may differ depending on whether family members are biologically related or not.

These two studies leave some speculation as to whether a similar relationship between temperament and family environment exists in adoptive families as it exists in biological families. The studies with biologic families reviewed earlier in this article suggested that child temperament might relate to the marital relationship. One limitation of the two Colorado Adoption Project studies is that they rely on the HOME as the measure of family environment, which does not tap the marital relationship domain. We hypothesize that the relationship between child temperaments and specific family environment characteristics is not merely a function of the children's genetic relatedness to their parents. To examine this hypothesis, we measured temperament and two indices of family environment hypothesized to have a relation with child temperament (pleasure in parenting and marital happiness) in a sample of adoptive families. We included mother report and father report of family characteristics and temperament to examine whether the hypothesized relationship holds for both parents. The first goal of this research was to examine whether adoptive mothers and fathers differed from one another in their ratings of child temperament and family environment. The second goal was to examine whether there was a significant relationship between child temperament and the mother's and the father's ratings of family environment characteristics in adoptive families.

METHOD

Participants

Ninety-nine families with a nonrelative adoptive infant (approximately 50% boys and 50% girls) participated in a questionnaire assessment of infant temperament and the family environment. In 54 families, the mother and father both participated; in 42 families, only the mother participated; and in 3 families only the father participated (n for mothers = 96; n for fathers = 57). The families were recruited from three regions in the United States, spanning divergent populations: the Pacific Northwest (n = 51), the Midwest (n = 32), and the Washington, DC,

area (n = 16). Families were recruited through adoption agencies (83%), through adoption lawyers (13%), and through adoption support groups (4%). Trained social workers approached the adoption agencies and lawyers and described the research study. The individual agencies and lawyers then presented the study information to prospective and recent adoptive parents. Social workers also described the study directly to the adoptive parents in adoption support groups. Participation was voluntary, and families were paid for participation. Of the participating adoptive families, 28% characterized their relationship with the birth parents as *very open*; 35% characterized the relationship as *open*; 23% characterized the relationship as *semiopen*; and 7% described the relationship as *closed* (6% of participants chose not to respond to this question). Even in families where the relationship with the birth parents was described as very open, the birth parents did not contribute directly to the parenting and rearing of the adoptive child, supporting the assumption of this work that adoptive parenting is not mediated through active parenting involvement from the birth parents.

The infants were adopted between the time of birth and 7 months of age, with the majority of families adopting at the time of birth. None of the adopting families were related to the adopted infant; 98% were two-parent families. At the time of assessment, the mean and the median age of the infants was 5 months (SD = 2.9 months). The adoptive families were primarily Caucasian, middle class families with a median gross annual income between $70,000 and $80,000. The adopted infants were also primarily Caucasian.

Measures

Infant temperament. Adoptive mothers and fathers individually completed the Distress to Limitations (DL) and the Fear (FE) subscales of the Infant Behavior Questionnaire (IBQ; Rothbart, 1981). The IBQ is a 94-item, caregiver-report measure of infant temperament, consisting of six subscales. The IBQ has demonstrated good internal consistency, discriminant validity, and convergent validity (e.g., Goldsmith, Rieser-Danner, & Briggs, 1991; Worobey & Blajda, 1989). The interscale coefficient alphas range from .80 to .84 for the FE scale and from .75 to .84 for the DL scale, depending on the age of the infant (Rothbart, 1981). In this sample, coefficient alphas for the DL scale were .85 for mothers and .75 for fathers; for the FE scale, coefficient alphas were .72 for mothers and .51 for fathers. The DL subscale (20 items) and the FE subscale (16 items) are rated on a 7-point Likert-type scale, ranging from *never* to *always.* The additional *does not apply* option was excluded in the present analyses. Parents were asked to report on their infant's behaviors during the previous week.

Scores were aggregated across items within each subscale, with higher scores indicating higher FE and DL levels. Parental endorsement of items such as "crying loudly while waiting for food or liquids," "fussing or crying immediately after waking from sleep," and "protesting while being put in a confining place" characterized the children who were rated high on the DL scale. Parental endorsement of items such as "rejecting new foods or liquids (by spitting them out or closing mouth)," "fussing or crying while getting his/her face washed," and "crying or showing distress at loud sounds" characterized the children who were rated high on the FE scale.

Marital happiness. Adoptive parents individually completed item 31 from the Dyadic Adjustment Scale (DAS; Spanier, 1976), which asks each marital partner to rate his or her degree of marital happiness on a 5-point Likert-type scale. Because of assessment time constraints, the full DAS could not be administered. Item 31 is part of the global marital satisfaction subscale of the DAS and has been shown to account for more variance than any other item on the DAS (Eddy, Heyman, & Weiss, 1991). Higher scores indicate greater marital happiness.

Pleasure in parenting. Adoptive mothers and fathers completed the 10-item Pleasure in Parenting questionnaire (Fagot, 1995), which assesses parental pleasure in performing common childcare responsibilities such as putting the child to bed, bathing the child, and changing dirty diapers. Items were rated on a 5-point Likert-type scale. A composite score was formed by aggregating across the 10-items; higher scores indicated greater pleasure in parenting. The intrascale coefficient alphas in this sample were .60 for mothers and .74 for fathers.

RESULTS

Parent Sex Differences

The first goal of this research was to investigate mother–father differences in their ratings of child temperament, marital happiness, and pleasure in parenting. A series of *t* tests was conducted on these measures. Means and standard deviations are presented in Table 1. The results suggested that mothers and fathers did not differ in their mean-level ratings of child temperament or marital happiness. However, mothers reported more pleasure in parenting than fathers, $t\,(150) = 2.88$, $p < .01$. We conducted a series of within-family analyses ($n = 54$ families) to test for mean-level differences on the temperament and family environment variables. Paired sample *t* tests revealed that mothers and fathers in the same family differed as to their self-reported pleasure in parenting, $t(52) = 3.11$, $p < .01$; the mother in the family reported greater pleasure in parenting than the father in the family. As in the between-family analyses, mothers and fathers did not differ significantly on any other measures.

The Relationship Between Temperament and Family Environment

To explore our second hypothesis—that temperamental characteristics are related to family environmental characteristics when genetic relatedness is controlled for—we examined the correlational pattern between child temperament and family environment for mothers and fathers. As shown in Table 2, there was a significant inverse relationship between mother ratings of her child's temperamental DL and her self-ratings of pleasure in parenting, $r = -.28$, $p < .01$, suggesting that greater DL relates to less pleasure in parenting. A similar negative relationship existed between mother ratings of her child's temperamental FE and her self-ratings of pleasure in parenting, $r = -.28$, $p < .01$. Similar to the mother ratings, father ratings of his child's temperamental DL were negatively related to his self-ratings of pleasure in parenting, $r = -.28$, $p < .05$. However, fathers who rated their child high on DL also rated their marital

TABLE 1. *Means and Standard Deviations for Temperament, Marital Happiness, and Pleasure in Parenting for Mothers and Fathers*

	Mean (SD)			
	Mothers (n = 96)		*Fathers (n = 57)*	
Distress to Limitations (DL)	3.0	(.71)	2.9	(.72)
Fear (FE)	2.1	(.68)	2.0	(.58)
Marital happiness	4.3	(1.0)	4.6	(.78)
Pleasure in parenting	3.5[a]	(.30)	3.3	(.38)

[a] The mother–father scores for this variable are significantly different at $p < .01$.

TABLE 2. *Correlations Between Temperament, Marital Happiness, and Pleasure in Parenting*

	1	*2*	*3*	*4*
1. Distress to Limitations (DL)	1.00	.20	.13	−.28**
2. Fear (FE)	.24	1.00	.11	−.28**
3. Marital happiness	−.40**	.00	1.00	.13
4. Pleasure in parenting	−.28*	−.03	.39**	1.00

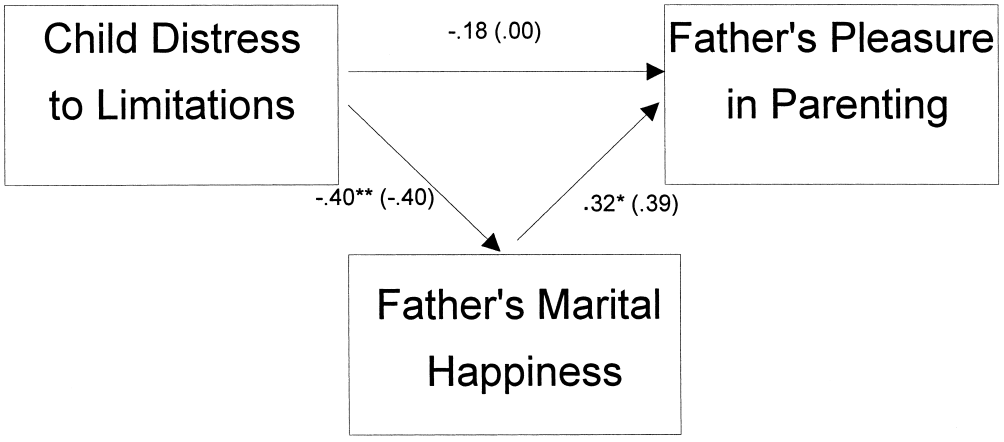
Note. Numbers above the diagonal indicate mother report; numbers below the diagonal are father report. Pairwise correlations were used in this correlation matrix. The small differences in the standardized regression coefficient and the correlation values are due to slightly different *n*s using pairwise deletion in this analysis.
* $p < .05$, ** $p < .01$.

happiness low, $r = -.40$, $p < .01$. There was no relationship between father ratings of FE and either family environment measure. Pleasure in parenting was positively related to father ratings of marital happiness, $r = .39$, $p < .01$. Finally, temperamental DL and FE were not significantly correlated for mothers or fathers, suggesting minimal overlap in the magnitude of the association of the temperament scores and the pleasure in parenting or marital happiness scores.

Because these correlations relied on a single agent (i.e., mother or father), we were concerned that some of the significant correlations resulted from methodological error. Using the subset of families for whom we had both mother and father data ($n = 54$), we examined the cross-agent correlations for the temperament, marital happiness, and pleasure in parenting variables (i.e., we correlated mother-reported temperament with father-reported marital happiness and father-reported pleasure in parenting). Importantly, not one of the 12 correlations in Table 2 changed significantly when the cross-agent correlations were conducted, suggesting that the correlations were not merely due to singular-agent reporting biases.

Mediated Models

To better understand the relationship between infant DL and parental pleasure in parenting, we tested a series of mediated models. We hypothesized that having an infant who is easily distressed by limitations may disrupt the marital relationship, indirectly lowering parental satisfaction in performing routine child caregiving responsibilities. When tested alone, the child's DL was negatively related to the father's reported pleasure in parenting, $\beta = -.31$, $t\,(50) = 2.32$, $p < .05$. However, introducing the father's marital happiness as a mediating variable eliminated the effect described above, $\beta = -.18$, $t\,(50) = 1.31$, *ns.* Instead, the child's DL was negatively related to marital happiness, $\beta = -.40$, $t\,(50) = 3.09$, $p < .01$, and marital happiness was positively related to the father's pleasure in parenting, $\beta = .32$, $t\,(49) = 2.26$, $p < .05$. In addition, using Amos (1997), a structural equation modeling package, we constrained the direct effect path. The test of model differences found that the constrained model fit similar to the full model, $\chi^2\,(1) = 1.72$, *ns.* Thus, in our data, the completely mediated model, with no direct effect between child temperament and the father's pleasure in parenting, provided the closest fit and the most parsimonious solution. This model is presented in Figure 1, with the values in parentheses describing the completely mediated model (i.e., the direct path between child temperament and father-reported pleasure in parenting is constrained to zero). No significant mediation effects were found in our mediated analysis of the mother-report data, suggesting a direct relationship between child temperament and mother-reported pleasure in parenting.



Note. Coefficients in parentheses indicate a purely mediated model, with the path between child distress to limitations and father's pleasure in parenting constrained to zero. *$p < .05$, **$p < .01$.

FIGURE 1. Mediational model testing the relationship between child distress to limitations, marital happiness, and father's pleasure in parenting.

DISCUSSION

The first goal of this study was to examine whether adoptive mothers and fathers differed in the extent to which they viewed their marital happiness, pleasure in parenting, and their child's temperamental DL and FE as high or low. We found no significant differences by parent sex in mean-level ratings of child temperament. This lack of a significant mother–father difference in temperamental ratings is consistent with data from biological families (Simons, McClusky, & Mullett, 1985). The only significant mother–father difference found was that mothers rated their enjoyment in performing routine child-rearing responsibilities as higher than fathers did. An examination of the means in a sample of biological families suggests a similar pattern of results (Fagot, 1995): The means for mother-reported pleasure in parenting were higher than the father means for 9 of the 10 items on the scale (though the statistical significance of this pattern was not tested). Previous research has suggested that mothers perform more of the daily child-rearing tasks than fathers do (Pleck, 1997), but ours is the first study that we are aware of to find mothers reporting greater enjoyment in routine childcare activities than fathers. It may be that the two are confounded — increased involvement in childcare activities is correlated with greater enjoyment of such activities. Further research is needed to examine this hypothesis and the direction of the effect (i.e., whether increased involvement leads to greater pleasure or greater pleasure causes mothers to seek out increased involvement).

A second goal of this study was to examine the nature of the relationship between child temperament, marital happiness, and pleasure in parenting for mothers and fathers in adoptive families. An examination of parental responses suggested a negative relationship between mothers' and fathers' pleasure in parenting and the infant's DL. Additionally, mother's pleasure in parenting was negatively correlated with infant FE. This consistency suggests that the relationship between temperament and pleasure in parenting is not driven by the genetic similarity of the parent and child. The correlations between temperament and pleasure in parenting are not the result of the sharing of genes between the parent and child; our sample consisted of biologically unrelated families. That is, the genetic similarity between parent and child was

not the source of the correlation between parent-reported child temperament and family environment. Data from a sample of biological families with 12-month-olds indicated similar relationships between maternal ratings of pleasure in parenting and parent reports of child difficulty, noncompliance, and nonpersistence from the Toddler Temperament Scale (Fullard, McDevitt, & Carey, 1984), with correlations ranging from .23 to .28 (Fagot, 1995).

One interpretation of our correlational findings is that an infant's temperamental FE and DL affect how enjoyable it is to parent that child. Given the demonstrated relationship between enjoyment in parenting and observed parental warmth or discipline (Fagot, 1995), perhaps children with difficult temperaments receive less warm parenting. Behavioral genetic research has shown that genetic influences can modify environmental effects such that children's genetic propensities may alter how the environment responds to a child. For example, Ge and colleagues (Ge et al., 1997) found that adopted children at genetic risk for antisocial behavior or for substance abuse or dependency elicited more negative parenting from their mothers and fathers than adoptive children not at genetic risk. Similarly, O'Connor, Deater-Deckard, Fulker, Rutter, and Plomin (1998) found that adopted children at genetic risk for antisocial behavior were consistently more likely to receive negative parenting than adopted children not at genetic risk. Ge's and O'Connor's findings each describe an evocative type of gene-by-environment correlation in which environmental and genetic factors are not independent. Given that child temperament has a genetic component (e.g., Goldsmith et al., 1997), children who are temperamentally difficult may elicit more negative responses from the environment. Our indicators of the relationship between temperament and family environment provided additional evidence for this.

A second possible interpretation of our findings is that parental pleasure in parenting exacerbates or modulates a child's temperamental qualities. For example, a parent who dislikes performing routine parenting activities may enhance their child's temperamental distress or fear. It is certainly plausible that marital distress could agitate a child (Hetherington & Stanley-Hagan, 1999; Hetherington, Stanley-Hagan, & Anderson, 1989; Ingoldsby, Shaw, Owens, & Winslow, 1999). Additionally, parent- and child-directed effects could be occurring simultaneously. There is a plethora of evidence suggesting bidirectional effects between parent and child behavior such that parenting characteristics modulate infant characteristics, which in turn modulate parenting characteristics through a process of reciprocal exchanges (e.g., Bell & Harper, 1977). A longitudinal design is needed to examine this hypothesis.

Further, it is plausible that the correlation between parent and child behavior is driven by methodological variance (e.g., Bank, Dishion, Skinner, & Patterson, 1990). In our study, the same parent reported on the marital relationship, the pleasure in parenting, and the child's temperament. A negative or positive reporting bias might result in the appearance of a relation between environmental factors and child temperament, when this relationship is actually driven by skewed perceptions. Although the data collection efforts of this study did not permit such an examination, we were able to assess (using a subsample from our study) the extent to which the mother-reported pleasure in parenting and marital happiness related to the father-reported child temperament characteristics, and vice versa. These correlations lead some credence to the notion that methodological variance is not the causal component of the correlational pattern found in this study; none of the 12 correlations reported in Table 2 would be significantly changed if family environment measures from one parent were correlated with temperament variables from the other. To conduct a stronger test of these findings, a larger sample with longitudinal data and more methodological diversity is needed.

Our correlations also suggested that a father's marital happiness is positively related to his pleasure in parenting and negatively related to his child's DL. The mediated model examining the relationship between these three variables suggests that a temperamentally difficult child

may put stress on the marital relationship, which then decreases the father's pleasure in performing routine child-rearing activities. When the direct path from infant's DL to pleasure in parenting was set to zero, the model was as good a fit as the model freeing this path. We did not find evidence for a mediated model in our analyses of the mother data. A study of biological families failed to find a significant direct relationship between a father's ratings of his child's temperament and his pleasure in parenting but did find a significant relationship between his marital satisfaction and his pleasure in parenting (Fagot, 1995). The results from the present study suggest that similar processes may operate in biological and adoptive families: For fathers, difficult child temperament may adversely affect the marital relationship, which in turn may decrease pleasure in parenting. For mothers, difficult child temperament may directly affect the enjoyment of performing childcare activities.

Limitations and Future Directions

The current investigation contributes to our understanding of how temperament, marital happiness, and pleasure in parenting interrelate in families where the parent and child are not biologically related. The correlations between temperament and pleasure in parenting suggest that parents who are seeking advice on child-rearing may be best advised to learn about their child's temperamental characteristics; they may then tailor their parenting interactions to their child's temperamental tendencies. Past research suggests that interventions that teach parents specific responses or interaction styles based on their child's temperament are effective at enhancing parenting and improving child outcomes (Smith, 1994, van den Boom, 1994). More extensive research is needed to demonstrate whether or not these methods will also prevent the onset of the externalizing and internalizing behaviors that often follow temperamental difficulties.

However, several limitations in our project should be noted. First, the cross-sectional nature of our investigation did not permit a causal interpretation of the relationship between temperament and family environment. Second, all of our measures were parent reported, and it is possible that parent-report biases contributed to the correlational pattern. Future studies examining the relation between infant temperament and family environment should include multiple informants and longitudinal designs. Third, our measure of marital happiness was based on only one item. Although this item had the strongest loading on the full DAS, more reliable results might have been achieved by administering the full scale. Fourth, our study could not differentiate between effects that were due to parent gender and those that were due to parenting role (e.g., primary or secondary caregiver). It is likely that more mothers than fathers were primary caregivers in our study; our differing mother–father effects may have reflected primary–secondary caregiver effects. Subsequent research is needed to separate the influences of parent gender and of parenting role. Finally, a sample of different types of adoptive families (e.g., international adoptees, foster-children, and adoptive children with special-needs) may help clarify the role that biological relatedness plays in the complex relationship between temperament and family environment.

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