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When a Child Dies: The Sociobiology of Bereavement

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According to modern evolutionary theory, the fitness of individuals consists of both their personal reproductive success and the reproductive success of those with whom they share genes in common. It follows that one of the most biologically costly events possible is the death of a child. This study investigated the grief intensity of bereaved parents and their immediate families using ratings made by 263 bereaved parents. Predictions were derived from sociobiological tenets relating to (a) parental investment, (b) paternal uncertainty, and (c) the propagation potential of both parents and children. Consequently, it was found that (a) mothers grieved more than fathers, (b) healthy children were grieved for more than unhealthy children; (c) male children were grieved for more than female children; (d) health of child and sex of child interacted such that the pattern of grief intensity obtained was healthy male > healthy female = unhealthy female = unhealthy male; (e) similar children were grieved for more than dissimilar children; (f) maternal grandmothers grieved more than either maternal grandfathers or paternal grandmothers, who in turn grieved more than paternal grandfathers; and (g) mothers' siblings grieved more than fathers' siblings.

Sociobiology, a potentially unifying paradigm for the behavioral sciences, is defined as "the systematic study of the biological basis of all social behavior" (Wilson, 1975, p. 4). Its central tenet is that individual organisms behave so as to maximize their inclusive fitness by propagating as many of their genes as possible into the next generation. This is achieved via the production of offspring by both themselves and by those with whom they share genes (e.g., relatives). This new perspective, that "the organism is only DNA's way of making more DNA" (Wilson, 1975, p. 3), represents a conceptual advance over Darwin's idea of the survival of the fittest individual, for it is now DNA, not the individual, that is fit. Accordingly, an individual organism is viewed as only a vehicle, part of an elaborate device that ensures the survival and replication of genes with the least possible biochemical alteration. Thus an appropriate unit of analysis for understanding natural selection and a variety of behavior patterns is the gene. Any means by which a pool of genes, in a group of individuals, can be transmitted more effectively to the next generation will be adopted (Hamilton, 1964). Here, it is suggested, are the origins and mainstays of parental behavior, social organization, aggression, cooperation, and self-sacrificial altruism. All these phenomena are means by which genes can be more readily transmitted. Dawkins (1976) captured this idea perfectly in the title of his book *The Selfish Gene.*

By analyzing social behaviors in the way biologists have previously approached physical structures, that is, as adaptations that contribute to genetic fitness, sociobiologists have helped order an immense amount of disparate data, provided a theoretical framework for unrelated disciplines, and offered insights into the human condition (Barash, 1982; Daly & Wilson, 1983; Freedman, 1979; Lumsden & Wilson, 1981). Several personality psychologists have recently argued for the usefulness of adding an evolutionary perspective to the traditional approaches to their field (Buss, 1984a; Hogan, 1982; Kenrick, Montello, & MacFarlane, 1985; Rushton, 1984). Discussion has focused on the potential benefits for comprehending, among other things, the origins and structure of human nature, individual differences, social relationships, and human adjustment. This article concerns predictions that can be derived from the sociobiology of social relationships, an important perspective from which to analyze personality processes (Hogan, 1982).

There have been many criticisms of sociobiology, however, from several different viewpoints (e.g., Lewontin, Rose, & Kamin, 1984). Perhaps the most telling criticism is that sociobiological theorizing is too often reconstructionistic; that is, imaginative stories are invented to explain post hoc the origin of human social traits by natural selection. Clearly, it is essential to derive and test novel a priori predictions from sociobiological theorizing. We report here, in the context of bereavement, an attempt to do this.

The death of a child is one of the most grievous of losses, significantly greater, on average, than that of a parent or spouse (Sanders, 1980). Children are not only important as objects of love; from a sociobiological perspective, they are the vehicles through which DNA is propagated into the next generation. It was for this reason that Barash (1979) proposed that in the despair of bereavement we are "hearing the wail of frustrated genes" (p. 99). Thus, from the mechanistic viewpoint of the selfish gene, the degree of both genetic investment and loss should be proportional to the propagation potential of each child. It was expected, therefore, that despite the intensity of the

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grief reaction following the death of a child, some children would be grieved for more than other children, and some family members would grieve more than other family members. In this article, we will attempt to explain this variance, deriving predictions from central tenets of sociobiology to do so.

We are aware that other theoretical perspectives will make some of the same predictions that we do and will be able to explain others after the fact. Only from sociobiology, however, can all of the predictions presented here be derived directly. Indeed, some hypotheses, such as those dealing with grandparental grief, are not immediately obvious and may be somewhat more difficult to explain from a nonsociobiological framework. Thus we believe the advantage of our approach lies in its parsimonious a priori explanatory power. The issue of alternative explanations is one to which we will return in discussion. The following are our hypotheses and the rationale behind them.

Hypothesis 1: Mothers will grieve more intensely than fathers. Because women possess a finite number of ova, have a more limited reproductive potential than men, and bear the physical burden of reproduction, it follows that each offspring is potentially more important to the female parent as a vehicle for her genes than it is to the male parent (Symons, 1979). In addition, men are always less certain of their paternity than women are of their maternity, an issue that continues to be salient even among modern North American families (Daly & Wilson, 1982). For these reasons men and women have evolved different strategies of parental investment, with women typically assuming primary child care responsibilities and men assuming a more indirect, provider role (Barash, 1982; Daly & Wilson, 1983). Thus it is expected that, on average, mothers will grieve the loss of a child more intensely than will fathers.

Hypothesis 2: Healthy children will be grieved for more intensely than unhealthy children. Assuming that healthier children are likely to be more reproductively successful, on average, than unhealthy children, this prediction follows directly.

Hypothesis 3: Male children will be grieved for more intensely than female children. The ethnographic record reveals an overwhelming preference for male children. For example, when infanticide occurs, it is almost exclusively female. The tendency to dispose of daughters is most marked among upper class families in highly stratified cultures (e.g., India), but it is also present in smaller, nonstratified societies such as the Eskimo (Dickemann, 1979). Biases in favor of males are similarly evidenced when the inheritance of wealth is used as the index (Barash, 1982). The almost universal preference for sons is not readily explainable from a sociobiological perspective when one considers that the total number of children produced by each sex must ultimately be equivalent. A male advantage does lie, however, in gamete production and reproductive lifespan. Under maximal conditions, individual men have a greater reproductive potential than individual women. While, as we shall shortly observe, male success is more variable than that of females, parents behave as if any male child they produce will be maximally reproductively successful. Thus it is expected that parents would grieve more intensely for the loss of a male child than for the loss of a female child.

Hypothesis 4: Sex of child and health of child are expected to interact such that the rank ordering of grief intensity is as follows: *healthy male child* > *healthy female child* > *unhealthy female child* > unhealthy male child. Although the total number of children produced by each sex must ultimately be equivalent, both anthropological and comparative data demonstrate that men are more variable in the number of offspring they produce than are women (Bateman, 1948; Symons, 1979). Part of the variance in this success is accounted for by male–male competition. Male competition for women often occurs through territoriality and/or dominance hierarchies—for example, tribal chiefs and millionaire businessmen traditionally produce more offspring than do other men (Daly & Wilson, 1983; although see Vining, 1986). It is, therefore, more desirable, from the gene's "point of view," to produce a dominant healthy male offspring than an unhealthy male offspring, whereas both healthy and unhealthy female offspring fall in between these two male types. Evidence for this patterning comes from both animal and human studies: Generally speaking, sex ratios favoring male offspring increase with nutrition and maternal health (Barash, 1982; Daly & Wilson, 1983; Trivers & Willard, 1973).

Hypothesis 5: Similar children will be grieved for more intensely than dissimilar children. Genetic similarity theory, which was recently proposed, postulates that people are able to detect the degree of genetic similarity between themselves and others in order to proffer preferential treatment to those most similar (Rushton, Russell, & Wells, 1984). This theory helps to explain the phenomenon of assortative mating, in which spouses tend to resemble each other on genetically influenced traits (Buss, 1984b; Rushton & Russell, 1985; Thiessen & Gregg, 1980). One consequence of assortative mating is that some children will be genetically more similar to one parent than to the other, a phenomenon that can be illustrated as follows: If a father gives his child 50% of his genes, 10% of which are shared with the mother, and the mother gives the child 50% of her genes, 20% of which are shared with the father, the child would be 60% similar to the mother and 70% similar to the father (Rushton et al., 1984). Genetic similarity theory predicts that more similar children will be grieved for more intensely than less similar ones. That perceived similarity may be partly due to an increased genetic endowment from one side of the family, rather than only to environmental causation, is supported by behavior genetic studies of siblings in which there is a positive correlation between perceived similarity and similarity measured by blood tests (Scarr & Grajeck, 1982).

Hypothesis 6: Older children will be grieved for more intensely than younger children. Because older children have generally had more time and energy invested in them than younger ones, their demise should represent a greater loss.

Hypothesis 7: Older parents will grieve more intensely than younger parents. Because reproductive potential decreases with age, older parents are less likely than younger parents to replicate their DNA through future children. Thus the death of a child should have greater impact on older parents than on younger ones.

Hypothesis 8: Parents with fewer additional children will grieve more intensely than parents with more additional children. Because a greater number of children represents a greater reproductive potential, the loss of any one child is expected to be lessened by the presence of surviving others.

Hypothesis 9: The rank ordering of grandparental grief will be as follows: *maternal grandmother* > *maternal grandfather* =

paternal grandmother > paternal grandfather. Both degree of certainty with regard to genetic relatedness and sex differences in reproductive potential predict differential grief on the part of grandparents. For example, maternal grandmothers, certain of their genetic relatedness to both their daughters and their daughter's children, are expected to grieve most. Paternal grandfathers, certain of their genetic relatedness to neither their sons nor their son's children, are expected to grieve least. The remaining two groups, each with one generation of parental uncertainty, are expected to grieve equivalently between the two extremes. Smith (1981) found some support for differential grandparental investment, using time spent with grandchildren as his measure. For example, he found that maternal grandparents spent more time with grandchildren than paternal grandparents, even controlling for distance in living arrangements.

Hypothesis 10: Mothers' siblings will grieve more intensely than fathers' siblings. The reasoning for this prediction is essentially the same as that for Hypotheses 1 and 9.

Method

Participants

Participation was sought through organizations of bereaved parents operating in the area of Toronto, Canada, in particular, the Bereaved Families of Ontario, a self-help organization of parents who have lost a child through death. Members of this organization were first introduced to the study through a letter that accompanied a monthly newsletter. They were told that a study of parental grief was being undertaken and that they would be receiving a questionnaire through the mail within the next few weeks. Questionnaires were subsequently sent to 430 individuals. One week after the mailing of the questionnaire, a reminder postcard was sent to all members, again requesting their participation in the study. Two weeks after the mailing of the postcard, another questionnaire was sent to all members who had not returned the first questionnaire. Additional participants were recruited during meetings of the organizations.

Questionnaire

A several-hundred-item Bereavement Questionnaire (Littlefield, 1984) obtained the following data: retrospective assessment of the respondent's grief intensity through a 97-item amended version of the Grief Experience Inventory (Sanders, Mauger, & Strong, 1979); information about the deceased child, including the cause of death, the child's health, and his or her similarity to the parents; the respondent's judgment of the grief intensity of themselves and other family members as rated on 7-point scales that ranged from *no grief* (1) to *total devastation (suicide point)* (7); marital satisfaction; desire for future children; attributions of causality and blame for the child's death; ability to cope; and respondent's current health status.

The focus of this article is on the 7-point ratings, made by the respondent, concerning the intensity of grief felt by the different family members. The respondent was asked to "give your best *estimate* [on the 7-point scales] of the grief intensity of each person listed below for the *three months* following your child's death" (Littlefield, 1984, p. 105). The 19 categories of relative that followed included: "Myself," "My spouse," "My mother," "My father," "My brother(s)," "My sister(s)," "Spouse's mother," "Spouse's father," "Spouse's brother(s)," "Spouse's sister(s)," and "Other."

Results

Parents returned 263 completed questionnaires, of which 227 came from the Bereaved Families of Ontario and 36 from other organizations and word of mouth. The respondents ranged in age from 22 to 73, with a mean age of 45, and were predominantly white middle class. Sixty-seven percent were female, and 81% were either married or living with a partner. The 263 respondents consisted of 74 couples and 115 individuals. The age of the deceased child ranged from 0 (stillbirth) to 45, with a mean age of 14. Forty-three percent of the children died as a result of an accident, 32% as the result of an illness, 10% as the result of a congenital defect, 8% from suicide, 5% from homicide, and 2% from birth or surgical complications. Sixty-four percent of the deceased children were male.

The time since the child's death ranged from 3 months to 13 years (M = 2.2 years; SD = 1.8 years). The distribution was skewed toward the lower end, with the median falling at 1.6 years and 94% of the deaths occurring within the previous 5 years. Time since death was not related to grief intensity, and computing the results while controlling for this variable did not alter them.

To test the reliability of the rating scales, we examined that part of the sample for which we had responses from both partners in a couple (n = 74 couples). In this subsample, respondents' rating of their own grief correlated .50 ($df = 72$, $p < .01$) with their spouse's rating of their grief. The between-spouse correlations for the ratings of other family members ranged from .32 to .72, with a mean of .52. For example, there was a correlation of .66 ($df = 41$, $p < .01$) between spouses' ratings of the grief intensity of the child's maternal grandmother; .72 ($df = 29$, $p < .01$) between spouses' ratings of the child's maternal grandfather; .32 ($df = 34$, $p < .05$) between spouses' ratings of the child's paternal grandmother; and .61 ($df = 23$, $p < .01$) between spouses' ratings of the child's paternal grandfather. Evidence for the validity of the respondents' self-ratings was provided by the finding that for the total sample, the respondents' rating of their own grief on the 7-point scale correlated .52 ($df = 260$, $p < .001$) with their total score on the Sanders et al.'s (1979) 97-item Grief Experience Inventory. In light of these data, it would seem that the ratings were both sufficiently reliable and valid to test the predictions.

The mean grief intensity ratings of all family members is presented in Table 1. This table reports male and female respondents' estimates of grief intensity both separately and in combination. We note that sex differences occur in the replicability of some findings such that the female ratings more reliably supported our hypotheses. However, in no case were the male ratings in an opposite direction to prediction. We chose to combine the ratings, thus aggregating over the maximum number of data points. The combined means were calculated using averaged male and female ratings of each family member (e.g., the combined mean for maternal grandmothers was based on female ratings of their mothers' grief intensity combined with male ratings of their mother-in-laws' grief intensity). Subsequent analyses of family members' grief intensity used these combined ratings.

Hypothesis 1 predicted that mothers would grieve more intensely than fathers for the loss of a child. As can be seen in Table 1, the mean grief intensity for mothers was higher than that for fathers, according to both male and female estimates. In other words, both parents rated mothers' grief as being more intense than fathers' grief. Table 2 presents the results of a 2 ×

Table 1
Mean Grief Intensity of Family Members Estimated by Deceased Child's Father and Mother Separately and in Combination

Deceased child's family member	Grief intensity								
	Father			Mother			Both		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Mother	83	5.86	0.81	176	5.89	0.87	259	5.88	0.85
Father	84	5.29	0.96	153	5.26	1.23	237	5.27	1.14
Maternal grandmother	57	4.40	1.10	118	4.55	1.34	175	4.50	1.26
Maternal grandfather	42	4.24	1.27	89	4.38	1.29	131	4.34	1.28
Paternal grandmother	45	4.27	1.18	89	4.15	1.37	134	4.19	1.31
Paternal grandfather	34	4.24	1.18	70	3.79	1.49	104	3.93	1.41
Maternal aunts and uncles	67	3.71	1.20	143	3.96	1.27	210	3.88	1.25
Paternal aunts and uncles	60	3.71	1.20	127	3.26	1.22	187	3.40	1.23
Total family	84	4.47	0.77	177	4.50	0.87	262	4.49	0.84

$2 \times 2 \times 2$ analysis of variance (ANOVA), which is a test of the first five hypotheses. As shown in this table, the main effect for sex of parent was statistically significant, $F(1, 194) = 14.45$, $p < .001$.

Hypothesis 2 predicted that healthy children would be grieved for more intensely than unhealthy children. The health variable was calculated from questions that asked if the child had had a long-term or chronic illness, a physical disability, or a mental handicap. Respondents were dichotomized into those who answered *yes* to one or more of the questions (36%) versus those who answered *no* to all of the questions (64%). As can be seen in Table 2, there was a marginally significant main effect for health of child, $F(1, 194) = 2.66$, $p < .07$, with healthy children grieved for more intensely than unhealthy children. This finding was not accounted for by cause of death per se (i.e., sudden death through accident, homicide, or suicide vs. illness), because in an ANOVA of respondents' grief intensity there was no significant main effect for cause as so defined, $F(2, 259) = 1.39$, *ns*.

Table 2
Analysis of Variance of Respondents' Grief Intensity According to Sex of Parent, Sex of Child, Health of Child, and Similarity of Child to Parent

Source	Sum of squares	*df*	*M* square	*F*	*p*
Main Effects	29.32	4	7.33	9.94	.001
Sex of parent	14.45	1	14.45	18.70	.001
Sex of child	3.87	1	3.87	5.01	.03
Health	2.66	1	2.66	3.45	.07
Similarity	5.93	1	5.93	7.67	.01
2-way interactions	7.14	6	1.19	1.54	*ns*
Sex P × Sex C	0.03	1	0.03	0.04	*ns*
Sex P × Health	0.03	1	0.03	0.04	*ns*
Sex P × Similarity	0.13	1	0.13	0.17	*ns*
Sex C × Health	3.01	1	3.01	3.89	.05
Sex C × Similarity	4.13	1	4.13	5.35	.02
Health × Similarity	0.47	1	0.47	0.61	*ns*
3-way interactions	2.97	4	0.74	0.96	*ns*
4-way interactions	0.18	1	0.18	0.24	*ns*
Explained	39.61	15	2.64	3.42	.001
Residual	138.31	179	0.77		
Total	177.92	194	0.92		

Note. P = parent, C = child.

Hypothesis 3 predicted that male children would be grieved for more intensely than female children. As can be seen in Table 2, there was a significant main effect for sex of child, $F(1, 194) = 3.87$, $p < .03$, with males grieved for more intensely than females.

Hypothesis 4 predicted that health of child and sex of child would interact so that the pattern of grief intensity would be as follows: healthy male child > healthy female child > unhealthy female child > unhealthy male child. As shown in Table 2, the predicted interaction between sex of child and health of child was obtained, $F(1, 194) = 3.89$ $p < .05$. Contrast of main effects analyses indicated that healthy male children were grieved for significantly more intensely than both unhealthy males and all females. There was no difference in grief intensity among unhealthy males, healthy females, and unhealthy females. Thus the pattern of grief intensity obtained according to both sex and health of child was: healthy male > healthy female = unhealthy female = unhealthy male.

Hypothesis 5 predicted that the genetically more similar the child was to the parent, the greater would be the intensity of the grief experience. This hypothesis was tested by a forced choice question that asked respondents which side of the family the child "took after" the most, their own or their spouse's. Spouses agreed 74% of the time on this item. As can be seen in Table 2, there was a main effect due to similarity, $F(1, 194) = 7.67$, $p < .01$. Parents grieved most for children they perceived as resembling their side of the family.

Hypotheses 6, 7, and 8 predicted that parents' grief intensity would be positively correlated with child's age and parent's age and that it would be negatively correlated with number of living children. These hypotheses were not supported. In order to test whether mediating variables might be obscuring otherwise significant findings, partial correlations were calculated. When age of parent was controlled, the correlation between parent's grief and child's age became significant ($r = .11$, $p < .05$). Similarly, when age of child was controlled, the correlation between parent's grief and parent's age became significant ($r = -.12$, $p < .05$). The direction of the latter correlation was contrary to pre-

Table 3
Multiple Comparisons of the Four Grandparent Groups on Grief Intensity Using Paired t *tests*

Comparison	*n*	*M*	*SD*	*t*	*p*, one-tailed
Maternal grandmothers	116	4.65	1.19	2.92	.002
Maternal grandfathers	116	4.40	1.22		
Maternal grandfathers	85	4.35	1.23	1.01	*ns*
Paternal grandmothers	85	4.19	1.26		
Paternal grandmothers	78	4.19	1.34	0.73	*ns*
Paternal grandfathers	78	4.09	1.35		
Maternal grandmothers	143	4.60	1.22	3.30	.001
Maternal grandfathers and paternal grandmothers	143	4.29	1.22		
Maternal grandfathers and paternal grandmothers	95	4.14	1.21	1.56	.06
Paternal grandfathers	95	3.94	1.41		

diction, however. The relation between grief and number of other living children remained nonsignificant.

Hypothesis 9 predicted that the rank ordering of grandparental grief would be as follows: maternal grandmothers > maternal grandfathers = paternal grandmothers > paternal grandfathers. Examination of the combined means for each of the grandparent groups in Table 1 indicates that the means did in fact follow the predicted pattern. Paired *t* tests were performed to determine whether the observed means were statistically different from one another. Results of these analyses are presented in Table 3.

The estimated grief intensity of maternal grandmothers was significantly higher than that of maternal grandfathers, $t(116) = 2.92$, $p < .002$. Maternal grandfathers did not differ significantly from paternal grandmothers. However, contrary to prediction, the mean for paternal grandmothers was not significantly different from the mean for paternal grandfathers. Because, as predicted, there was no significant difference between the maternal grandfather and paternal grandmother groups, these two groups were combined. This combined variable was then contrasted with maternal grandmothers and paternal grandfathers, respectively. When the combined mean of maternal grandfathers and paternal grandmothers was compared with the remaining two grandparent groups, it was found, as predicted, to be significantly lower than that of maternal grandmothers, $t(143) = 3.30$, $p < .001$, and significantly higher than that of paternal grandfathers, $t(95) = 1.56$, $p < .06$.

Hypothesis 10 predicted that mothers' siblings would grieve more intensely than fathers' siblings. The mean rating for maternal siblings was indeed significantly higher than that for paternal siblings according to a paired *t* test, $t(165) = 5.11$, $p < .001$.

Discussion

Deriving predictions from sociobiological theories for the bereavement experience following the death of a child, we found the following: (a) mothers grieved more than fathers; (b) healthy children were grieved for more than unhealthy children; (c) male children were grieved for more than female children; (d) health of child and sex of child interacted such that the pattern of grief intensity obtained was healthy male > healthy female = unhealthy female = unhealthy male; (d) similar children were grieved for more than dissimilar children; (e) maternal grandmothers grieved more than either maternal grandfathers or paternal grandmothers, who in turn grieved more than paternal grandfathers; and (f) mothers' siblings grieved more than fathers' siblings. These results provide support for the validity of the sociobiological perspective. However, other predictions failed to be supported. Thus, for example, we did not find that older parents grieved more than younger ones, nor, surprisingly, that the number of other children mitigated the loss, and the predicted relation between parents' grief and age of child was only marginal. Taken as a whole, however, clear support was found for predictions derived from the sociobiological perspective.

Alternative theories are able to account for many of our findings. Consider attachment theories, for example, which specify the conditions under which love and caring develop (Perry & Bussey, 1984). Presumably, the greater the attachment, the greater will be the subsequent loss of the child. Differential attachments could thus explain why mothers and their relatives grieved more intensely than fathers and their relatives and why chronically ill or disabled children were grieved for less intensely than healthy children. Another set of alternative theories is concerned with cultural norms. Thus grief reactions might be due to learned standards of behavior, with the manifestation of grief varying from one family role to another and from culture to culture.

The alternative theories order the data in a post hoc manner. They are not incompatible with sociobiology. Formulations from evolutionary biology are generated from a *distal* level of explanation and provide an a priori and parsimonious ordering of not only the data sets in our study but also the alternative *proximate* explanations. Thus if, on average, mothers are more attached to children than fathers, this can be viewed as the distal "purpose" of the genes being mediated via the proximal mechanisms of affective attachment (MacDonald, 1984; Porter & Laney, 1980). In the future it may be possible to tighten the alternative formulations to make differential predictions. In animal research, for example, it has been shown that full siblings interact more frequently with each other than half siblings, who in turn interact more frequently than nonrelated peers (Holmes & Sherman, 1983; Suomi, 1982). Only inclusive fitness theory would predict the first distinction.

An issue that reflects on the validity of this study concerns the accuracy of the respondents' estimates of grief intensity. Judges' ratings have been mistrusted of late in the psychological literature owing to the belief that they have little predictive utility (Mischel, 1968). Recent reviews, however, have demonstrated that this assessment is inaccurate (Epstein, 1980; Rushton, Brainerd, & Pressley, 1983). Numerous studies have shown that, when due consideration is given to the issue of reliability, for example by aggregating across several judges, ratings have substantial utility for predicting both nonsocial (e.g., weights, temperature) and social criteria (e.g., beauty, personality). In

the current study we aggregated over judges ranging in number from 104 to 259 and demonstrated significant reliabilities and convergent validities.

Aspects of this research undoubtedly could have been improved by using a fuller design. One limitation concerns the restriction on range in the ratings. Respondents were asked to estimate their grief intensity for the three months following the child's death, a period during which grief intensity is normally maximal. It may be the case that if we had asked for repeated ratings over a greater length of time or from a wider range of family members stronger results would have been obtained. For example, the expected mitigating effects of age of child and number of other offspring may have materialized. A limitation noted earlier was the nonreplicability of all the hypotheses across male and female respondents. It would clearly be of value for future studies to examine this issue further.

Many questions, of course, remain outstanding. For example: What is the adaptive significance of grief? This is of particular interest from an evolutionary perspective and, although some preliminary formulations have been advanced (Kenrick et al., 1985), no clear predictive models have been developed. On the basis of the results of the present study, it seems reasonable to assume that modern evolutionary theorizing will be of value in helping to understand the ultimate significance of this and other human emotions.

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