

Rescuing the Baby From the Bathwater: How Gender and Temperament (May) Influence How Child Care Affects Child Development

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Children's temperament and gender, combined with type, quality, and amount of care, likely influence differences in development and should not be overlooked in studies of child care effects. Research is consistent with this view, although definitive studies have not been carried out. Most notable, children's stress responses to full-time, center-based child care differ, and these differences are associated with emotional tendencies that may precede their entry into care. Changes in full time, center-based child care are needed to reduce stress experienced by some children and their providers, using information about what is happening at home and in family day care settings, where typically cortisol-linked stress does not increase during the day, to guide efforts.

Advances in understanding effects of child care on development focus attention on the quality of the caregiving environment and demonstrate both main effects of care quality and a buffering effect of high-quality care on potentially negative outcomes associated with less adequate parental care. Thus, efforts to improve the quality of care infants and young children receive in these contexts should contribute to their adjustment and adaptation to school. This is important information for parents and policy makers, but not the whole story. Characteristics of individual children (temperament and gender) and the amount of time they spend in child care during infancy and early childhood, perhaps in combination, predict and likely contribute to differences in development as well.

Data from the National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network's report (this issue) indicate that the amount of time in child care is associated with differences in child aggression and social competence, independent of the quality of caregiving at home and in child care. This may mean that longer hours in child care during infancy and early childhood adversely affect development even when quality of care is high, but as the interactive effect of amount and quality of care was not tested, we cannot be certain that this is the case. However, given that most of the variance in child behavior that is associated with amount of care is shared with quality and type of care (compare conservative and liberal effect sizes in Table 4 in NICHD Early Child Care Research Network, this issue, p. 976–1005), it

appears that negative effects occur primarily when children spend long hours in poor-quality, center-based care. Moreover, the relatively small effect size of amount of care as a predictor of externalizing behavior and social competence is compatible with the view that only some children are negatively affected by longer hours in child care.

Watamura, Donzella, Alwin, and Gunnar (this issue) presented stronger evidence that not all infants and toddlers are similarly affected by the amount of time they spend in nonparental care. Although infants and toddlers in full-time, center-based child care showed increased cortisol during the day, some children did not demonstrate the increase, consistent with a possible moderating effect of child characteristics. Evidence that teacher-reported social fearfulness was associated with larger cortisol increases provided further support for the thesis. To the extent that social fear reflects a temperamental propensity, it may be argued that temperamentally fearful children show greater stress responses to full-time, center-based child care in which social play is ongoing and replete with opportunities for stress to occur. Alternatively, the link between social fearfulness and increases in cortisol in full-time child care may reflect the effect of those increases on children's withdrawal (and thus teacher-rated fearfulness), rather than the reverse, as Watamura et al. pointed out. Dettling, Parker, Lane, Sebanc, and Gunnar's (2000) finding that cortisol increased more over the day when quality of care was low suggests further that aspects of child care quality could explain, or partially explain, differences in children's cortisol responses to full-time child care in Watamura et al.

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Taken together, the NICHD Early Child Care Research Network (this issue) and Watamura et al. (this issue) demonstrate the complex interplay of the amount, type, and quality of child care that in conjunction with children's temperamental characteristics predict differences in physiological stress and behavioral problems among young children who experience child care before age 5. Although there is insufficient evidence based on these studies to conclude that children's characteristics, in combination with other aspects of the child care experience, increase or reduce the risk of negative child outcomes, other data lend credence to this possibility.

Not surprising in view of an extensive literature on male vulnerability to stress (Zaslow & Haynes, 1986), when gender differences in children's reactions to child care are identified, it is boys who show more negative behaviors. Howes and Olenick (1986) found that boys were more adversely affected by lower quality daycare than were girls after controlling for a number of other predictors. The NICHD Early Child Care Research Network (1997) reported similarly that boys were more likely than girls who experienced more than 30 hr a week of nonparental care to be insecurely attached at 15 months, although analyses at later ages failed to replicate this finding. However, Tout, de Haan, Kipp-Campbell, and Gunnar (1998) found that cortisol reactivity was associated with externalizing behavior and increases in cortisol during the child care day were associated with internalizing behavior only for boys. That these associations were apparent in the context of full-time, center-based child care indicates once again that the negative effects of child care on children occur in specific child care contexts, defined in this instance by type and amount of care. Quality of care in participating centers was high in this study, suggesting that something else about long hours in center-based child care may have contributed to the observed rise in children's cortisol levels.

Evidence that infant temperament moderates child care effects is considerably more limited than data on gender, one reason Watamura et al. (this issue) merits special comment. However, in an earlier study, Dettling et al. (2000) reported that increases in cortisol production from morning to afternoon at child care were greater for more emotionally negative children, for those with lower self-control, and for children in lower quality care, as noted previously. In contrast, the NICHD researchers have been unable to identify interactions between 6-month difficult temperament and any aspect of child care (i.e., quality, amount, type),

despite their expectation of doing so (NICHD Early Child Care Research Network, 1997; 1998). Possibly the lack of temperament interactions in that carefully controlled study results from testing interactions between temperament and aspects of child care (amount, type, quality) one at a time rather than interactively with two or more aspects, as proposed in the previous discussion. Keep in mind that, to date, researchers have reported possible moderating effects of temperament on child care outcomes only when care was full-time and center based.

Also, Dettling et al. (2000), Tout et al. (1998), and Watamura et al. (this issue) used cortisol as the primary measure of temperament, in contrast to the global measure of infant difficulty employed by the NICHD researchers. By using global reports of infant difficulty at 6 months as the sole measure of temperament, the NICHD researchers may have restricted their ability to detect interactive effects of infant temperament and child care characteristics on behavioral development. From the vantage point of what we know now about fear and anger being linked to different sides of the brain (e.g., Dawson, 1994), specific measures of infant negative reactivity (i.e., distress to novelty, distress to limits) should predict specific child behaviors (e.g., fearfulness, aggression) better than global measures of difficulty that do not distinguish between types of negative emotion. Data linking maternal ratings and laboratory assessments of specific aspects of infant temperament with specific child behaviors (i.e., distress to limitations with externalizing, distress to novelty with anxiety and depression; Calkins, Fox, & Marshall, 1996; Calkins & Williford, 2003; Crockenberg & Leerkes, 2003a; Fox, Henderson, Rubin, Calkins, & Schmidt, 2001; Kagan & Snidman, 1991, 1999) are congruent with this expectation.

Moreover, it is generally accepted that temperament includes both reactive and regulatory components and that the ability to self-regulate increases during the second half of the first year of life as infants develop secure attachments with caregivers and acquire the capacity to direct their attention away from distressing stimuli (Rothbart & Bates, 1998). In view of these changes, we expect a temperament measure that includes both reactive and regulating components to predict child behavior and moderate child care effects better than a simple measure of early negative reactivity. In her dissertation, Kipp (1995) provided preliminary support for this proposition. Children rated as more negative by researchers on arrival at child care centers and more temperamentally active by teachers on a standard toddler temperament assessment had higher cortisol

responses 90 min later and engaged in more negative behavior toward peers and adults during intervening observations. From other data linking infant negative reactivity combined with either high activity or low attention control to later behavior inhibition and anxiety (Calkins et al., 1996; Crockenberg & Leerkes, 2003a; Fox et al., 2001; Kagan & Snidman, 1991, 1999), it is reasonable to consider those infant behaviors markers for inadequate regulation of negative emotion. It is possible also that gender differences in regulation explain why cortisol predicted externalizing and internalizing behavior only for boys in the Tout et al. (1998) study, given the absence of gender differences in cortisol reactivity or cortisol change. By the middle of the first year, girls are better able to regulate negative arousal than boys (Weinberg, Tronick, Cohn, & Olson, 1999), which may allow them to behave more competently when they are stressed.

It makes sense that children who respond negatively and intensely to novel or frustrating events will become increasingly stressed during long days in center-based care. It makes sense also that when such children lack adequate regulatory skills, they are more likely to experience intense conflicts with peers or withdraw from social interaction, which in turn contributes to their stress. The patterns of behavior children display may depend on their preferred regulation strategies (e.g., withdrawal is well established by 14 months or earlier), the type and range of activities available as the day progresses, the composition of the group that may alter opportunities for both conflict and quiet play (Harper & Huie, 1998), and the availability and skill of child care personnel to help children modulate arousal. Ironically, as the day proceeds and children show increasing signs of stress, child care providers may be increasingly stressed, as well, and less able to respond as effectively as they might have earlier in the day.

Additional research is needed to test the proposition that child temperament and gender increase the likelihood of physiological arousal and undesirable behavioral outcomes predominantly under conditions of multiple child care risk (e.g., long hours in center-based care). That the unexpected rise in cortisol during the day occurs more in center-based than in family-based child care (Dettling et al., 2000) is consistent with this proposition, but it fails to distinguish whether these differences are solely a function of context or reflect the interaction of child care context and child characteristics. Evidence that infants who are negatively reactive and poorly regulated before beginning child care

show greater increases in cortisol during the day than other children in center-based child care, but not in other types of child care, would support the interactive effect.

We need to understand also how differences in child care quality fit into the equation. Although we expect a high child-to-staff ratio and less positive caregiver-child interactions to exacerbate the effect of long hours in center-based care on negatively reactive children, the effect occurs even when care quality is reasonably high (Tout et al., 1998). This could simply reflect the inadequacy of current quality measures for assessing whether child care environments are appropriate for infants and young children who are easily stressed and lack the capacity to calm themselves.

In the meantime, professionals have an obligation to inform parents and child care providers that males and reactive children who lack adequate regulatory abilities may be adversely affected when they spend long hours in certain types of nonparental care. To do less is to deny parents information that may help them make better decisions for the family as a whole. Child characteristics are not the only factor parents will take into account in making a decision likely to affect the entire family. Nevertheless, in my view there are sufficient data to recommend that parents include child temperament and gender in their deliberations about child care when they have the financial resources and job flexibility to do so. However, as such choices are limited to those whose economic resources allow them to locate or create the type of child care they desire, or to decide that one parent stays home or works part-time, this perspective must also inform practice.

It should come as no surprise that caring all day for young children who get upset easily and recover slowly could be wearing, even for loving parents. Indeed, there is evidence that often negatively reactive, difficult-to-soothe infants elicit less sensitive caregiving from parents than do other infants (Crockenberg & Leerkes, 2003b), and their effect on child care staff is likely similar. But this potentially negative effect is not inevitable in either context. Understanding that differences in negative reactivity are biologically based may help caregivers remain positively inclined to such children, despite the demands they place on staff resources. Recognition that caring for reactive infants or toddlers is draining can serve as a signal to caregivers to alternate responsibility for them to maintain positive interactions and prevent burn out. Learning how to foster emotion regulation should allow caregivers to

experience greater efficacy in caring for reactive children (Leerkes & Crockenberg, 2002) and over time to reduce the amount of assistance they provide as children become better able to regulate themselves.

Unlike most parents, child care staff are responsible for meeting the needs of a large number of children of approximately the same age, at virtually the same time, limiting their ability to respond sensitively to children who require extensive attention. Thus, other changes are needed in child care environments to alter the reactions of negatively reactive children in full-time, center-based care and their providers. Creating less stressful child care center environments is a reasonable place to begin, using data about what is happening at home and in family day care settings, where cortisol does not increase during the day to guide efforts. Watamura, Sebanc, and Gunnar (2002) found that differences in napping were not associated with rises in cortisol among children in child care, indicating that more research is needed on what constitutes a less stressful child care environment. One idea that comes to mind based on informal observations of center-based child care is to reduce activities involving competition for scarce and highly desirable resources or learning complex skills as the day progresses. Having identified a potentially stress-reducing change, researchers and care providers could combine their talents to implement it and to assess its effects on both children and caregivers.

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