Emotional Resilience in Early Childhood

Developmental Antecedents and Relations to Behavior Problems

ANNE M. CONWAY[a] AND SUSAN C. McDONOUGH[b]

[a] *University of Pittsburg, Pittsburg, PA, USA*

[b] *School of Social Work, University of Michigan, Ann Arbor, Michigan, USA*

ABSTRACT: To test whether the development of emotional resilience is a function of sensitive caregiving and child negative affect, we tested the joint contributions of 7-month maternal sensitivity and infant negative affect to the prediction of 33-month emotional resilience across the first 3 years of life. The aims of this study were to examine whether maternal sensitivity and infant negative affect predict long-term emotional resilience and whether this was associated with preschool behavior problems. Using a sample of 181 mother–infant dyads, we found that (*a*) maternal sensitivity at 7 months, but not infant negative affect, longitudinally predicted emotional resilience during preschool and (*b*) emotional resilience was negatively associated with anxiety/depression in preschool.

KEYWORDS: emotional resilience; behavior problems; early childhood

INTRODUCTION

The ability to generate positive emotions and recover quickly from negative emotional experiences is known as emotional resilience.[1] Theorists identify resilience as the ability to display positive adaptation despite stress and adversity[2] and this component reflects positive emotional adaptation.[1,3] Based on the Broaden and Build Theory of positive emotions,[4] positive emotions following challenge are expected to (*a*) undo the effects of negative emotions and speed cardiovascular recovery from challenge and (*b*) promote long-term resources. This may include protection from the development of behavior problems.

Studies with adults demonstrate that positive emotions following challenge are associated with faster cardiovascular recovery following challenge,[5,6] low levels of depression during crisis,[7] and positive adaptation following loss. [8]

Address for correspondence: Anne M. Conway, University of Pittsburg, Western Psychiatric, Detre Hall/Room E718, Pittsbrug, PA 15213. Voice: 412-246-5826; fax: 412-246-5880.
e-mail: conwayam@upmc.edu

Ann. N.Y. Acad. Sci. 1094: 272–277 (2006).
doi: 10.1196/annals.1376.033

However, few studies have examined relations between emotional resilience and children's behavior adaptation. This study seeks to address this gap by assessing relations between emotional resilience and behavior problems in childhood and examining the developmental antecedents.

Theories suggest that maternal sensitivity and infant negative reactivity predict the development of emotion regulation.[9] This may also extend to emotional resilience—ability to recover and express positive emotions following challenge. Indeed, sensitive and responsive maternal behaviors have been found to be concurrently associated with infants' ability to recover and express positive emotions following stressful interactions with parents (e.g., still-face paradigm).[10–12] Few studies, however, have examined these relations longitudinally.

The purpose of this study was to address this gap by (*a*) examining whether maternal sensitivity and infant negative affect longitudinally predict emotional resilience during preschool and (*b*) investigating whether emotional resilience predicts preschool behavior problems.

METHOD

One hundred eighty-one children and their mothers participated in a series of free play and problem-solving interactions in our laboratory.[13,14] Episodes were videotaped by research assistants behind a one-way mirror. The behavior and affect of mothers and infants were coded globally on a scale from 0

TABLE 1. Code Descriptions

Study measures	Description
Maternal sensitivity	Gentle, soothing, infant focused and responsive behaviors (e.g., attending to the infant's emotional state and exploration) were rated on a scale from 0 (no sensitivity) to 3 (high sensitivity) (Weighted kappa = 0.71)[15]
Infant negative affect	Fussing and crying were rated on a scale from 0 (no negative affect) to 3 (high negative affect) (Weighted kappa = 0.87)[15]
Child behavior problems	Maternal ratings of child internalizing (e.g., anxiety/depression, withdrawn), externalizing (e.g., aggression, destructive), sleep problems, somatic, and total problem 0 (none) to 3 (always) (Child Behavior Checklist 2–3; Achenbach, 1992)
Emotional resilience	Total number of seconds until children expressed joy following the anger tasks[a]

[a] Trained undergraduate research assistants coded children's emotional expression at 33 months during the four emotion induction tasks. Facial action and voice quality cues developed by Cole, Barrett, and Zahn-Waxler[20] were used to determine the presence of anger, sadness, and joy and were coded on a second by second basis and ranged from 0 to 3 (none, low, medium, and high). Angry tones consisted of harsh, insistent voices; sad voices included low, resigned voices and crying; joy was based on light-lifting voices or laughing and giggling. Percent agreements ranged from 0.71 to 0.99. Latencies to joy expression in the bubble and bunny tasks were summed and a log transformation was used to correct skewness. This transformed variable was also multiplied by –1 to put the dependent variable in the positive direction.

(none) to 3 (very high) for each task.[15] Codes included maternal sensitivity and infant negative affect (see TABLE 1). These were coded during (a) free play, (b) teaching task 1, and (3) high-chair free play of the still face. Infant negative affect was coded during the (1) teaching task 1, (2) teaching task 2, and (3) the still face.

When the children were 33 months old, they participated in four tasks used to induce joy or anger in children modified from the Preschool Laboratory Assessment Battery (Lab-TAB)[16]: (a) popping bubbles, (b) locked toy in container, and (3) draw a perfect circle. An additional task, "Tickle the Bunny," where children were asked to tickle a bunny puppet, was used to induce joy.[17] The anger–joy tasks were presented to children in pairs allowing for an assessment of individual differences in the latency to joy expressions following anger. Children were videotaped while participating in these tasks and tapes were subsequently coded by trained undergraduate research assistants. Results confirmed that the emotion tasks were successful in inducing the expected emotions for both boys and girls.[18] Groups were combined across gender and the total sample was used for all subsequent analyses.

RESULTS

Testing the Measurement Model

Structural equation modeling was used in the major analyses. Before testing the full-hypothesized model, the measurement model for the latent constructs—maternal sensitivity and infant negative affect—was tested using confirmatory factor analysis. Based on our conceptual model, a three-factor model was specified and tested. The two latent factors were: (*a*) maternal sensitivity, expressed during the free play, teaching, and high-chair tasks and (*b*) infant negative affect, expressed during teaching task 1 and 2, and the still face. The latent factors were allowed to correlate. The measurement model, which was evaluated with maximum-likelihood path estimation using AMOS,[19] was a good fit, χ^2 (8, $N = 181$) = 8.446, $P = 0.391$, with a TLI of 0.987, a CFI of 0.995, and a RMSEA measure of 0.018. All loadings for the indicators were significant.

Fit of the Models

Antecedents of Emotional Resilience

The model predicting to emotional resilience was a good fit, χ^2 (12, $N = 181$) = 9.012, $P = 0.702$, with a TLI of 1.00, a CFI of 1.00, and a RMSEA measure of 0.000 (see FIG. 1). In the model, the direct path from

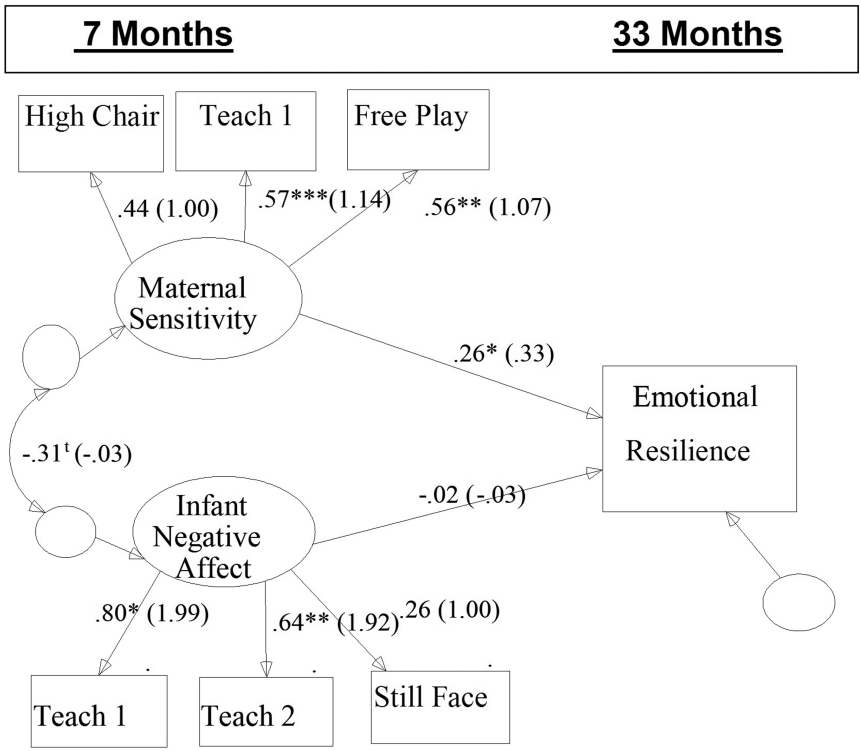

FIGURE 1. Relations of maternal sensitivity and infant negative affect to emotional resilience.

maternal sensitivity to emotional resilience was significant and positive, but infant negative affect was not.

Relations between Emotional Resilience and Behavior Problems

Correlational analyses were used to examine the relations between emotional resilience and child behavior problems. Results were that emotional resilience was not associated with children's aggressive and externalizing behavior, but was negatively correlated with low levels of parent-reported child anxiety-depression ($r = -0.16$, $P < 0.05$).

DISCUSSION

This study contributed to the literature by documenting that maternal sensitivity during infancy significantly predicted children's emotional

resilience during preschool—the ability to quickly recover and generate positive emotions despite challenge. We also found that emotional resilience during preschool predicted low levels of concurrent anxiety and depression in early childhood.

Future research is needed to identify the mechanisms underlying the relations between early care giving experiences and children's emotional resilience to inform interventions designed to promote positive emotions in children. Indeed, the ability to quickly recover and express positive emotions despite challenge may also have long-term implications. Specifically, emotional resilience in early childhood may protect children from the development of affective disorders in later years or facilitate recovery from pediatric affective illness.

ACKNOWLEDGMENTS

This study was supported by NIMH Grant MH54322 to S.C.M.

REFERENCES

1. DAVIDSON, R.J. 2000. Affective style, psychopathology, and resilience: brain mechanisms and plasticity. Am. Psych. **55:** 1196–1214.
2. MASTEN, A.S., K.M. BEST & N. GARMEZY. 1990. Resilience and development: contributions from the study of children who overcome adversity. Dev. Psychopath. **2:** 425–444.
3. CURTIS, W.J. & D. CICCHETTI. 2003. Moving research on resilience into the 21st century: theoretical and methodological considerations in examining the biological contributors to resilience. Dev. Psychopath. **15:** 773–810.
4. FREDRICKSON, B.L. 2001. The role of positive emotions in positive psychology: the broaden and build theory of positive emotions. Am. Psych. **56:** 218–226.
5. FREDRICKSON, B.L. & R.W. LEVENSON. 1998. Positive emotions speed recovery from the cardiovascular sequelae of negative emotions. Cog. Emot. **12:** 191–220.
6. FREDRICKSON, B.L., R.A. MANCUSO, C. BRANIGAN & M.M. TUGADE. 2000. The undoing effect of positive emotions. Motiv. Emot. **24:** 237–258.
7. FREDRICKSON, B.L., M.M. TUGADE, C.E. WAUGH & G.R. LARKIN. 2003. What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. J. Person. Social Psych. **84:** 365–376.
8. BONANNO, G.A. & D. KELTNER. 1997. Facial expressions of emotion and the course of conjugal bereavement. J. Abnor. Psych. **106:** 126–137.
9. CALKINS, S.D. 1994. Origins and outcomes of individual differences in emotion regulation. *In* The Development of Emotion Regulation: Behavioral and Biological Considerations. N.A. Fox, Ed.: Vol. 59, 53–72. Chicago: University of Chicago.
10. BRAUNGART-RIEKER, J.M., M.M. GARWOOD, B.P. POWERS & P.C. NOTARO. 1998. Infant affect and affect-regulation during the still-face paradigm with mothers and fathers: the role of infant characteristics and parental sensitivity. Dev. Psych. **34:** 1428–1437.

11. KOGAN, N. & A.S. CARTER. 1996. Mother-infant reengagement following the still-face: the role of maternal emotional availability in infant affect regulation. Infant Behav. Dev. **19:** 359–370.
12. ROSENBLUM, K., S. MCDONOUGH, M. MUZIK, et al. 2002. Maternal representations of the infant: associations with infant response to the still face. Child Dev. **73:** 999–1015.
13. CROWELL, J.A. & S.S. FELDMAN. 1988. Mother's internal working models of relationships and children's behavioral and developmental status: a study of mother-child interaction. Child Dev. **59:** 1273–1285.
14. TRONICK, E.Z. & M.K. WEINBERG. 1992, November. Manual for the Face-to-Face Still-Face Paradigm. Boston Children's Hospital Harvard University Medical School.
15. MILLER, A., S. MCDONOUGH, K. ROSENBLUM & A. SAMEROFF. 2002. Emotion regulation in context: situational effects on infant and caregiver behavior. Infancy **3:** 403–433.
16. GOLDSMITH, H.H., J. REILLY, S. LEMERY, *et al*. 1999. The Laboratory Temperament Assessment Battery: Preschool Version. Unpublished manuscript.
17. CONWAY, A. 1999. Elicitors of Positive Emotions in Young Children: The tickle the bunny task. University of Michigan, Ann Arbor, Michigan.
18. CONWAY, A.M. 2005. The Development of Emotion Regulation: The role of effortful control and positive affect. Ph.D. thesis, University of Michigan, Ann Arbor, Michigan.
19. ARBUCKLE, J.L. 2003. Amos (Version 5.0). Small Waters Corporation, Chicago.
20. COLE, P.M., K.C. BARRETT & C. ZAHN-WAXLER. 1992. Emotion displays in two-year-olds during mishaps. Child Dev. **63:** 314–324.