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Parents of infants served in Neonatal Intensive Care Units (NICU) often experience extreme levels of stress that might be associated with elevated symptoms of depression and posttraumatic stress. We examined the effect of a brief journal writing exercise on the depressive and posttraumatic stress symptoms of mothers of NICU graduates using an experimental group-comparison design. Participants were 38 women who had an infant hospitalized in an NICU in the previous 2 to 14 months. Dependent measures were a measure of depression, the Symptom Checklist 90 Revised (SCL-90-R; Derogatis, 1977) and a measure of posttraumatic stress, the Impact of Events Scale Revised (IES-R; Weiss, 1996). We found statistically significant differences between the treatment and control groups at posttest.

Admission to the Neonatal Intensive Care Unit (NICU) is an increasingly common pathway to early intervention services for children and their families (Guralnick, 2000; McNab, 1998). Many early intervention programs that follow a NICU hospitalization have incorporated family-centered approaches for providing services (Dunst, Johanson, Trivette, & Hamby, 1991; Malone, 2000). Programs using a family-centered approach might offer services such as access to information, parent education, and parent training (Dunst et al., 1991; Malone, 2000). Primary topics of parental education and training programs after the NICU are promotion of responsive interaction between parents and infants and caregiving skills of parents (Mahoney, 1999; Nurcombe, 1984; Spiker, Furguson, & Brooks-Gunn, 1993). Typically, individuals trained in early child development provide these services through brief home visits (Powell, 1993).

Family-centered care in medical treatment and early intervention in hospital settings are important and contribute to improved outcomes for NICU graduates (Als et al., 1994; Hostler, 1994). These services, however, often fail to address a major component of the larger social issue of family-centered care. Most early intervention programs do not address the potential psychological distress parents of infants hospitalized in the NICU experience and the long-term effects of that distress on family and child outcomes (Benfield, Leib, & Reuter, 1976).

The NICU experience leads some mothers to an emotional crisis that exceeds symptoms of postpartum depression mothers of normal term or birth weight babies experience (Doering, Moser, & Dracup, 1999; Oehler, Hannan, & Catlett, 1993; Thompson, Oehler, Catlett, & Johndrow, 1993). Normal postpartum depression occurs in 6% to 13% of childbearing women (O'Hara & Swain, 1996; Stuart & O'Hara, 1993). Low birth weight (LBW) is typically categorized by weight into three categories: LBW (< 2,500 grams), very low birth weight (VLBW; < 1,500 grams), and extremely low birth weight (ELBW; < 1,000 grams). Thompson et al. (1993) reported depression rates ranging from 33% to 48% in mothers of VLBW infants, depending on the time of measurement. For some parents, the

NICU experience is so intensely stressful that they suffer symptoms similar to individuals who experience posttraumatic stress disorder (PTSD; deMier, Hynan, Harris, & Manniello, 1996; Hynan, 1987; Wilson, 1989).

The Diagnostic and Statistical Manual of Mental Disorders defines traumatic life events as "...witnessing an event that involves death, injury, or threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member..." (American Psychiatric Association, 1994, p. 424). Having an infant hospitalized in an intensive care unit is, by definition, a traumatic life event for parents.

Infants who survive the NICU are at elevated risk for later complications (McNab, 1998). One study (Hack et al., 1994) reported that 30% of VLBW infants and 12% of LBW infants in their study were diagnosed with mental retardation at school age (IQ $<$ 70). More than 70% of VLBW infants have medical complications associated with early birth (Landry, Chapieski, Richardson, Palmer, & Hall, 1990). These later complications might remind parents of the original NICU experience, and it is likely that they add to the greater anxiety and depressive symptoms some parents experience (Taylor, Klein, Minich, & Hack, 2001).

The risks that NICU graduates face are exacerbated when their parents experience depression (Warner, 1995). Children raised by parents who experience major clinical depression are at greater risk for experiencing major clinical depression (Downey & Coyne, 1990; Warner, 1995; Wickramatratne & Weissman, 1998), medical problems (McLennan, 2000), conduct disorder (Wickramatratne & Weissman), and difficulty in learning (Kaplan, Bachorowski, & Zarlengo-Strouse, 1999). Parents who experience depression might fail to practice disease prevention with their young children and are less likely to use safety precautions such as car seats (McLennan, 2000). In addition, individuals who experience depression often suffer from memory loss (Lauer, Giordani, Boivin, & Halle, 1994; Reidy & Richards, 1997) and deficits in cognitive ability (Austin, Ross, Murray, & O'Carroll, 1992). Parents who experience depression are more likely to have difficulty learning or recalling information from parent training provided through established early intervention programs.

Families need an effective, theoretically based, psychological intervention, available within the limited resources of follow-up and early intervention programs. The largest obstacle for implementing early intervention services is cost (Beckman, 1996). Effective implementation of an intervention requires that the intervention be inexpensive and cost effective. In addition, a brief intervention is needed as it becomes increasingly difficult to provide long-term psychological therapy because of the limits in insurance policies. A brief intervention would also benefit mothers of infants because mothers are often so preoccupied with their baby's health that little time remains for their own personal well being (Miles, Carlson, & Funk, 1996).

James Pennebaker (1985) developed a theory of inhibition that relates confiding traumatic events to health outcomes. The basic premise of the theory is that failing to confide or share traumatic personal experiences is a type of inhibition (Pennebaker, 1988; Pennebaker & Beall, 1986). Individuals who fail to share traumatic events must restrain themselves from sharing their thoughts and feelings (Pennebaker, 1988; Pennebaker & O'Heeron, 1984). This effort expended for restricting communication requires physiological work, which has short-term and long-term health outcomes (Pennebaker, 1988; Pennebaker & Beall, 1986).

Pennebaker (1988) proposed that traumatic events that are highly emotionally charged or associated with feelings of guilt are more likely to be inhibited. People might avoid sharing these kinds of experiences with others. The NICU falls into this category of experiences that are unlikely to be shared. Mothers typically describe the NICU as highly emotionally charged. Many mothers express feelings of guilt over what has happened to their infant, and some parents describe the pain of losing their "ideal" child (Affleck, Tennen, & Rowe,

1991). Mothers who experience the NICU report social isolation, disconnection from family and community, and a reluctance to talk about the experience (Lindsay et al., 1993). Feeling social isolation, guilt, and believing that others do not understand makes it unlikely that these mothers have the opportunity to disclose their experience.

Researchers have found both health and psychological benefits from journal writing in college students (Donnelly & Murray, 1991; Pennebaker, Kiecolt-Glaser, & Glaser, 1988; Smyth, 1998). In Pennebaker's research, health benefits were found when college students were required to either write or talk about a previously experienced traumatic event for a few minutes at a time over several days (Pennebaker, 1988; Pennebaker et al., 1988). In this research, participants were not talking or writing to anyone in particular. They wrote in confidential journals or spoke into an audio recorder in privacy. This research indicates that the cognitive and health benefits of confiding are attainable for individuals without the social interaction assumed necessary in traditional therapy.

Other researchers have established psychological benefits of writing about personal experiences (Donnelly & Murray, 1991; Smyth, 1998). Smyth completed a meta-analysis of nine studies using a writing intervention that also considered psychological measures. Smyth reported an effect size of $d = 0.66$. Other researchers compared journal writing to one-on-one therapy and found equivalent self-reported benefits when the two groups receiving treatment were compared (Donnelly & Murray, 1991). The process of changing information into a written or oral form might provide temporal organization, increased understanding, and sequencing of thoughts and feelings (Pennebaker & Francis, 1996). Journal writing about traumatic life events has also been associated with decreased intrusive thoughts of the event, decreased physical stress, and decreased long-term stress-related illness (Pennebaker, 1988; Pennebaker & Beall, 1986).

It is unknown for whom and in what situations journal writing might be warranted. The preponderance of research thus far has focused on participants with no particular selection criteria. These studies imply that journal writing might be beneficial to anyone who experiences traumatic life events, particularly for those who have not disclosed the event previously. The present study aims to further this research by applying journal writing to a particular homogenous group selected for a particular traumatic experience.

Writing about traumatic experiences might be accomplished at minimal financial cost. Journal writing about the NICU experience could be administered with little effort as part of discharge planning, in early intervention programs, or in follow-up clinics. To address the need for a theoretically-based, psychological intervention in early intervention that can be implemented within the limitations of these programs, this study evaluated the effects of a brief journal writing intervention on the psychological distress experienced by mothers of infants previously hospitalized in an NICU.

METHOD

Participants

Thirty-eight women participated in the study. To participate in the study, participants (a) had to be mothers of infants who were hospitalized in an NICU for at least one week in the past 14 months, (b) had self-reported that they were able to express their thoughts in written English, (c) had to be over 18 years of age, and (d) indicated they were not attending counseling or psychotherapy. Three hundred notification letters were sent to women who met the above criteria 2 to 14 months post discharge. Sixty-four women (21%) returned postcards indicating interest in the study. Thirty-eight women or 59% of those interested completed the protocol within the given time frame. Participants received a $25 stipend prorated in three payments.

Setting and Materials

Participants completed dependent measures and wrote in journals at the location of their choice. Participants received and returned all correspondence through the U.S. postal ser-

vice. Envelopes and postage were provided to participants. Journals were 4 × 6 inch hardcover bound books with lined pages.

Design

The design was an experimental 2 × 2 × 2 analysis; two groups (between: treatment and waiting list control) measured at two times (within: pretest and posttest) using two dependent measures. The treatment and waiting list or control groups were randomly assigned and comprised of 19 participants each. Measures where administered prior to intervention (pretest) and 4 weeks after intervention (posttest) for both groups. The dependent measures, described in the next section, were the Symptom Check List 90 Revised (SCL-90-R) and the Impact of Events Scale Revised (IES-R). These measures assess psychological distress and symptoms of posttraumatic stress disorder, respectively.

Measures

Symptom Check List-90-R (SCL-90-R). The Symptom Check List-90-R (Derogatis, 1977) is a 90-item self-report measure of psychological distress symptoms. Participants report the degree to which they have experienced each symptom over the previous 7 days. The Global Symptom Index of the scale was used in this study because it has been successful in the past in measuring psychological symptoms of mothers who have had infants hospitalized in a NICU (Meyer et al., 1995; Oehler et al., 1993; Thompson et al., 1993). Previous studies have established a clinical cutoff score as one or more of the following; a Global Symptom Index *t* score greater than 62 or any two subscales having a *t* score greater than 62.

Impact of Events Scale-Revised (IES-R). The IES-R (Weiss, 1996) is a brief self-report of intrusion, avoidance, and hyper-arousal, which are symptoms of traumatic stress. The IES-R targets levels of symptoms in the past 7 days. Responses are scored on a 4-point scale with anchors ranging from 1 (*not at all*) to 4 (*often*). The IES-R has successfully measured changes in the trauma response over time ranging from 1 week (Manuel & Anderson, 1993) to 18 months follow-up (Sugden, 1998).

The scale is designed to measure three broad domains of response to trauma. Intrusion is the reoccurrence of memories of or memories related to the trauma. Avoidance is numbness in the absence of thoughts or feelings about the traumatic experience or numbness with the intention to not have any thought or feeling about the traumatic experience. Hyper-arousal consists of the physiological states associated with the trauma response, including lack of sleep, difficulty concentrating, anger, and more. The scale has been used widely in populations experiencing posttraumatic stress disorder including survivors of combat, rape, and natural disasters (Keane, Fairbank, Caddell, Zimering, & Bender, 1985). It has also been successful in discriminating between groups of trauma victims and no trauma victims (Leskin, Kaloupek, & Keane, 1998).

Procedure

Two hospitals in the southwestern United States equipped with Level 3 neonatal intensive care units participated in this study. Each hospital served approximately 300 infants annually. Staff at the two participating hospitals sent a letter to 300 mothers who spoke English, were over 18 years of age, and who had an infant hospitalized in the NICU for at least one week in the previous 2 to 14 months. The letter briefly described the purpose of the study and asked interested mothers to return a provided postcard to the hospital. These returned postcards formed a contact list that was then given to the experimenters. Experimenters called the mothers on the contact list to explain the study and sent out the pretests, an informed consent form, and a demographic questionnaire. Those who wished to participate were asked to return the completed forms in a provided stamped envelope.

Upon receiving the completed pretests, the participants were rank ordered and matched in pairs by their level of psychological distress as indicated by their score on the SCL-90-R. Participants in each matched pair were then randomly assigned to either the waiting list or

to the treatment group using a coin toss. The treatment group received written instructions and a numbered journal. The control group was sent a letter of their control group status. In addition, all participants received a telephone call to explain the study and answer any questions. Four weeks after the journals were returned, posttests were sent to all participants.

Written instructions. All participants in the study received the following written instructions:

> This study requires that you write in this journal for at least thirty-minutes a day on four-days in a row. You may write for at least thirty-minutes at any time during each day that is easy for you. Try to write while you are alone, in a quiet and relaxed place. During each of the four writing days, we want you to write about the most emotional and upsetting experiences of the NICU. These experiences may include any experience or event beginning with your pregnancy until the present day. You may write on different experiences each day or the same experience on every day. Tell us your story. Questions to help you start writing:
>
> 1. What were the most emotional or troubling experiences during your infants [*sic*] stay at the NICU? Describe what these experiences were and write about your deepest thoughts and feelings about those experiences in great detail.
> 2. What happened exactly and in what order?
> 3. When and where did the experience take place?
> 4. Who was there?
> 5. How did you feel then, at the time of the experience?
> 6. How do you feel now about the experience?
> 7. Why do you believe the experience happened?
> 8. Have you learned anything as a result of the experience? If so, what have you learned from the experience?
> 9. Has the experience helped you in any way? If so, how has it helped you?

Analysis

Equivalence of comparison groups at pretest. One-way ANOVA was used to establish the equivalence of the two groups at pretest for each dependent measure. *T*-test comparisons were computed to establish equivalence of the two groups on demographic variables.

Main analysis. A MANCOVA of the global scales of each measure at posttest with group as a fixed variable and pretest as a covariate was performed. Effect sizes were used in addition to traditional probability statistics. The *d* coefficient is an index of the standardized difference of means between groups at posttest (Thompson, 1999).

Clinical significance. To demonstrate the clinical significance of the treatment effect, the treatment group and the control group were analyzed by using the proportions of those experiencing clinical symptom levels of psychological distress at pretest to those experiencing clinical symptom levels of psychological distress at posttest as indicated by scores on the SCL-90-R. In addition to this comparison, the individual participant scores on the pretest and posttest of the SCL-90-R were then displayed using a scatterplot to illustrate the reduction of symptom levels for individual participants in each comparison group.

RESULTS

Demographic Information

Demographic information is summarized in Table 1. Equivalence of the two groups on demographic variables was established using independent sample *t*-tests. No statistically significant differences in demographic variables were found between the two groups at a $p < .05$ level.

Equivalence of Comparison Groups At Pretest

The design of this study employed random assignment to treatment and control groups based on matched pairs at pretest. A one-way ANOVA of pretest scores yielded an $F(1, 37) = .331$, $p = .569$. This statistically nonsignificant *F* score indicates that there were no statistically significant differences between the comparison groups at pretest on the assessment of psychological distress. A one-way ANOVA of the scores of posttraumatic stress at pretest yielded an $F(1,37) = .033$, $p = .856$. Again, this statistically nonsignificant *F* score indicates that the two groups were equivalent on the dependent measures at pre-

Table 1.
Summary of Demographic Variables

	Treatment (n = 19)		Control (n = 19)	
Demographic variable	*M*	*SD*	*M*	*SD*
Maternal age	32.79	5.99	32.95	7.00
Paternal age	33.68	5.11	36.11	10.38
Household income	$52,600.00	$16,900.00	$49,700.00	$19,301.00
Number of children	2.00	.67	2.16	1.01
Birth weight in grams	2428.47	832.00	228.68	97.56
Infant hospital stay	19.21	18.23	23.95	22.29
	f		*f*	
Current medical problems	4		6	
Married	17		17	
Divorced	2		2	
Ethnicity	Maternal	Paternal	Maternal	Paternal
African American	1	1	1	2
Anglo-Caucasian	14	16	13	15
Latino	4	2	3	2
Native American	0	0	1	0
Korean	0	0	1	0

test. In addition, multivariate tests were conducted on all subscales of the two dependent measures. There were no statistically significant differences between the two groups on any subscales at pretest, $p < .10$. It is important to note the high variability in the data that contributes to the statistically nonsignificant differences found at pretest.

Preliminary Analysis

Analysis of clinical scores at pretest of the 38 women who participated in the study indicates that 14 women, 37% of participants, reported symptoms beyond the clinical cutoff score for psychological distress as measured by the global symptom index of the SCL-90-R. Seven women experiencing these symptoms were in the treatment group and 7 were in the control group. Analysis of the subscales of the SCL-90-R indicates that an additional 5 women reported symptoms qualifying as clinically symptomatic by reporting clinical levels on at least two of the nine subscales. Three of these women were in the control group and 2 were in the treatment group. Including these 5 women with the 14 women assessed by the global symptom index produces a 50% rate of clinical scores for psychological distress at pretest.

Main Analysis

A MANCOVA with group as a fixed variable and pretest scores of the two dependent measures as covariates, produced an omnibus F (2, 33) = 14.952, p = .000, Cohen's d = 1.25. The SCL-90-R produced an F (1, 37) = 26.164, p = .000 and the IES-R produced an F (1, 37) = 17.817, p = .000. The means and standard deviations of the two dependent measures at pre and posttest are presented in Table 2. The effect sizes, Cohen's d, of the differences between groups at posttest are also provided in Table 2.

Subsequent analyses were completed on the subscales of the IES-R. The means and standard deviations of the scales by group at posttest are displayed in Table 2. A MANCOVA of the three subscales with pretest as a covariate produced an omnibus F (3, 31) = 6.134, p = .002, Cohen's d = .803. The subsequent univariate analysis for each subscale found that the intrusion scale of the IES-R at posttest produced an F = 12.453, p = .001. The avoidance scale of the IES-R at posttest pro-

Table 2.
Mean (SD) Pretest and Posttest Scores on Dependent Measures for Treatment and Comparison Groups

Measure	Group	Pretest		Posttest		Cohen's
		M	*SD*	*M*	*SD*	*d*
SCL-R-90	Treatment	.511	.441	.336	.399	.805
	Control	.599	.497	.688	.472	
IES-R	Treatment	32.316	27.338	19.263	20.909	.766
	Control	30.842	22.119	36.368	23.677	
Intrusion	Treatment	15.368	10.558	8.947	7.692	.615
	Control	12.684	7.839	13.737	7.880	
Avoidance	Treatment	8.737	10.159	6.474	8.382	.537
	Control	9.263	7.950	11.158	9.039	
Hyper-arousal	Treatment	8.211	8.973	3.842	5.776	1.019
	Control	8.895	8.472	11.474	8.878	

Note. Treatment and control groups were comprised of $n = 19$ participants each.

duced an $F = 5.332$, $p = .027$. The hyper-arousal subscale of the IES-R produced an $F = 19.192$, $p = .000$ (see Table 2 for effect sizes).

Clinical Significance

An additional measure of the treatment effect and its clinical significance was computed by comparing the proportions of those who were exhibiting clinical levels of distress at pretest compared to those exhibiting clinical levels at posttest as measured by the SCL-90-R. In the treatment group there were 7 out of 19 people (37%) at pretest exhibiting clinical levels of psychological distress. At posttest in the treatment group 3 out of 19 people (16%) were exhibiting clinical levels of distress. The control group remained constant between pre- and posttest with 7 out of 19 (37%) reporting clinical levels of psychological distress.

A comparison of SCL-90-R raw scores at pre- and posttest is displayed in Figure 1 as a scatter plot with pretest on the x-axis, posttest on the y-axis and cases labeled by group. The standardized clinical cutoff score of 62 is equivalent to a raw score of 0.74 in the figure. The graph demonstrates that the treatment group falls below the line of one-to-one correlation, indicating improvement or a decrease in symptom levels over time. Meanwhile, the control group predominately falls above the one-to-one correlation line indicating increasing symptom levels at posttest.

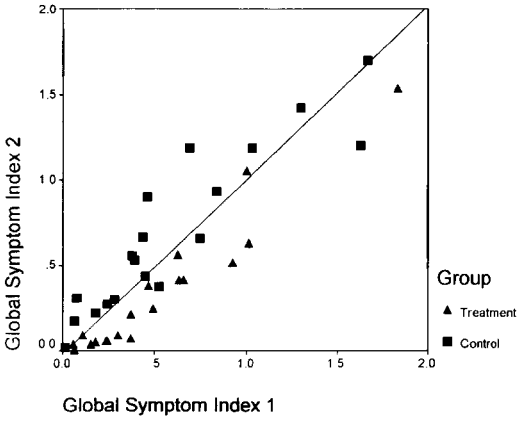

Figure 1.
Scatter plot of individual scores on the global symptom index of the SCL-90-R at Time 1 by Time 2 for all participants.

Fidelity Indicators

The 38 participants completed all assessment and demographic information. Nineteen participants wrote in journals and returned them. Adherence to journal writing directions was assessed by looking for four separate journal entries per journal. All 19 participants who wrote in journals and returned them answered four self-report questions indicating they had

finished 30 minutes of writing at these four different times. It is unknown if these writing days were actually consecutive. Seventeen of the journals indicated each new day of writing by showing a date, a new page, or writing "day 1," and so forth. Participants wrote on average approximately 2,446 words in their journals. The 2 participants who did not indicate new days in their journals wrote approximately the same number of words as those who did indicate new days. All journal writing consisted of NICU-related experiences. This indicates that the participants complied with the study's requests for participation.

DISCUSSION

The results of this study support the prediction that a brief journal writing intervention can reduce the psychological distress of some mothers who have experienced having a child in the NICU. Follow-up psychological care is rarely provided for families in early intervention hospital settings because of cost. In this study, brief journal writing for 30 minutes a day on 4 consecutive days reduced psychological distress for mothers of NICU graduates. These mothers wrote about the most intensely stressful events regarding their infants NICU stay. The results of this study are consistent with the growing body of literature demonstrating the psychological benefits of journal writing (Smyth, 1998). This study contributes an extension of the literature by applying a journal writing exercise in an applied setting with participants selected for a common traumatic experience.

The researchers conceptualized the NICU as an acute traumatic event. For some mothers, however, their infants continue to experience difficulty to thrive, suffer from chronic lung disease, or experience lifelong disabilities (Taylor et al., 2001). The difference between acute trauma and chronic traumatic experiences needs further exploration. Future research directions include the application of the treatment in this study to individuals who experience chronic traumatic life events or chronic illness in comparison to those who experience acute traumatic experiences. In addition, the intervention presented here might also be beneficial for individuals who experience acute traumas other than the NICU.

A potential limitation of the findings is the effect of a social interaction between the researcher and participants. It is unknown what part of the intervention procedure might have influenced the results because of the nonequivalent comparison of a treatment group who received the entire protocol and a control group who received less interaction. The participants wrote in journals following direct instructions and guided questions and then returned their journal to a researcher. It is unknown if the treatment effect is altered when journals are written with the anticipation of sharing them versus keeping the journals private. Future research might include a comparison of participants who write in journals that are later shared and participants who write in journals that are kept private. Implications for early intervention include the need to incorporate sharing the journal with someone else as part of the journal writing treatment assessed in this study.

The results of this study provide further support for previous research establishing the benefits of disclosure (Pennebaker, 1985). In this study, mothers who disclosed their NICU experience through journal writing showed reduced psychological and posttraumatic stress symptoms. In previous research, reductions of stress-related illness have also been demonstrated (Pennebaker et al., 1988). These benefits support Pennebaker's prediction that keeping traumatic life events private takes effort that is detrimental to an individual's psychological and physical health.

Implications for practice reach beyond the NICU. Other populations who experience traumatic life events might benefit from disclosure through journal writing. Generalization of findings implies that individuals who have not previously disclosed a personal traumatic experience might gain the most benefit from disclosure through journal writing.

Participants in this study were selected in part by their ability to read and write fluently. This has important implications to consider

prior to implementation. Individuals who are not fluent in a written language will clearly not experience benefits from journal writing. Early intervention practitioners should be aware of the possible limitations of this intervention for individuals who are unable to write fluently. In addition, culturally diverse groups might value writing differently and will experience benefits accordingly. Future research directions might focus on cultural and linguistic diversity and the benefits of journal writing after traumatic experiences.

The findings in this study were considerably stronger than those found in most previous research analyzing the benefits of journal writing, with the exception of a study Donnelly and Murray (1991) conducted. It is likely that the difference in findings is related to the specific sampling used in this study; increasing the power of the analysis by increasing the homogeneity of the sample. Previous research on journal writing has predominately used college students in introductory psychology classes as participants. The participants had not been selected for specific traumatic experiences but wrote about whatever happened to be stressful for them. The participants in this study were selected from a population who share an intensely stressful experience. In addition, this sample was matched on pretest scores before they were randomly assigned to treatment or control groups. These sampling and assignment procedures increase the homogeneity of the group, and thereby increase the power of the analyses. Furthermore, the participants in this study experienced the stressful event in a relatively contained period. Previous studies analyzing journal writing have not selected for time differences so that in any given study one person might write about a childhood trauma, whereas another person might write about an event from the previous month. Also, the participants in this study chose to participate in a journal writing study that was presented to them as an experimental treatment. These participants sought out a therapy-like experience. By contrast, some participants in previous research participated in studies as a requirement for a class. The participants in this study might have exhibited a higher treatment effect because they were seeking help.

Benefits of journal writing were found across most participants regardless of their distress level at pretest as illustrated in Figure 1. The intervention not only helped mothers who were experiencing severe symptoms of psychological distress, but also helped mothers who would otherwise have gone untreated. It is possible that many mothers who appear to be doing fine could benefit from a brief journal writing intervention. Implications for early intervention practice also include the need for an awareness of the traumatic nature of the NICU experience for mothers and an awareness of the psychological benefits of disclosing traumatic life events (Pennebaker, 1985).

The authors wish to be clear that further research is needed before suggesting that journal writing might be a substitute for brief counseling. Rather, it is proposed that journal writing is a cost-effective means of reducing psychological distress some mothers' experience. It is so cost effective that it could be suggested to mothers who have an infant discharged from an NICU, or a child admitted to early intervention programs or related services. This intervention might benefit many mothers who at this point receive no help in their psychological adjustment to the stressful life experience of the NICU. Finally, the intervention assessed in this study provides a possible means of expanding early intervention services to families.

REFERENCES

Affleck, G., Tennen, H., & Rowe, J. (1991). *Infants in crisis: How parents cope with newborn intensive care and its aftermath.* New York: Springer-Verlag.

Als, H., Lawhon, G., Duffy, F. H., McAnulty, G. B., Gibes-Grossman, R., & Blickman, J. G. (1994). Individualized developmental care for the very low-birth-weight preterm infant: Medical and neurofunctional effects. *Journal of the American Medical Association, 272,* 853–858.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of metal disorders* (4th ed.). Washington, DC: Author.

Austin, M. P., Ross, M., Murray, C., & O'Carroll,

R. E. (1992). Cognitive function in major depression. *Journal of Affective Disorders, 25,* 21–29.

Beckman, P. J. (1996). *Strategies for working with families of young children with disablitities.* Baltimore: Paul H. Brooks.

Benfield, D. G., Leib, S. A., & Reuter, J. (1976). Grief responses of parents after referral of their critically ill new born to a regional center. *New England Journal of Medicine, 294,* 975–978.

DeMier, R. L., Hynan, M. T., Harris, H. B., & Manniello, R. L. (1996). Perinatal stressors as predictors of symptoms of posttraumatic stress in mothers of infants at high-risk. *Journal of Perinatology, 16,* 276–280.

Derogatis, L. R. (1977). *SCL-90-R Administration, scoring & procedures manual—II.* Towson, MD: Clinical Psychometric Research.

Doering, L. V., Moser, D. K., & Dracup, K. (1999). Correlates of anxiety, hostility, depression, and psychosocial adjustment in parents of NICU infants. *Neonatal Network, 19* (1), 15–23.

Donnelly, D. A., & Murray, E. J. (1991). Cognitive and emotional changes in written essays and therapy interviews. *Journal of Social and Clinical Psychology, 10,* 334–350.

Downey, C. J., & Coyne, J. C. (1990). Children of depressed parents: An integrative review. *Psychological Bulletin, 108,* 50–76.

Dunst, C. J., Johanson, C., Trivette, C. M., & Hamby, D. (1991). Family-oriented early intervention policies and practices: Family-centered or not? *Exceptional Children, 58,* 115–127.

Guralnick, M. J. (2000). Early childhood intervention: Evolution of a system. *Focus on Autism and Other Developmental Disabilities, 15,* 68–85.

Hack, M., Taylor, G., Klein, N., Eiben, R., Schatschneider, C., & Mercuri-Minich, N. (1994). School-age outcomes in children with birth weights under 750 grams. *New England Journal of Medicine, 331,* 753–803.

Hostler, S. L. (1994). *Family Centered Care: An approach to implementation.* Charlottesville, VA: University of Virginia Health Services Center.

Hynan, M. T. (1987). *The pain of premature parents: A psychological guide for coping.* Lanham, MD: University Press of America.

Kaplan, P. S., Bachorowski, J., & Zarlengo-Strouse, P. (1999). Child-directed speech produced by mothers with symptoms of depression fails to promote associative learning in 4-month-old infants. *Child Development, 70,* 560.

Keane, T. M., Fairbank, J. A., Caddell, J. M., Zimering, R. T., & Bender, M. E. (1985). A behavioral approach to assessing and treating Post-traumatic Stress Disorder in Vietnam Veterans. In C. R. Figley (Ed.), *Trauma and its wake v. 1* (pp. 257–297). New York: Brunner/Mazel.

Lauer, R. E., Giordani, B., Boivin, M. J., & Halle, N. (1994). Effects of depression on memory performance and metamemory in children. *Journal of the American Academy of Child & Adolescent Psychiatry, 33,* 679–685.

Landry, S. H., Chapieski, M. L., Richardson, M., Palmer, J., & Hall, S. (1990). The social competence of children born prematurely: Effects of medical complications and parent behaviors. *Child Development, 61,* 1605–1616.

Leskin, G. A., Kaloupek, D. G., & Keane, T. M. (1998). Treatment for traumatic memories: Review and recommendations. *Clinical Psychology Review, 18,* 983–1002.

Lindsay, J., Roman, L., DeWys, M., Eager, M., Levick, J., & Quinn, M. (1993). Creative caring in the NICU: Parent to Parent Support. *Neonatal Network, 12* (4), 37–44.

Mahoney, G. (1999). Parent education in early intervention: A call for a renewed focus. *Topics in Early Childhood Special Education, 19,* 131–145.

Malone, M. D. (2000). Social work early intervention for young children with developmental disabilities. *Health and Social Work, 25,* 169–183.

Manuel, G. M., & Anderson, K. M. (1993). Stress and coping: The Loma Prieta earthquake. *Current Psychology: Developmental, Learning, Personality, Social, 12,* 130–141.

McLennan, J. D. (2000). Parental prevention practices for young children in the context of maternal depression. *Pediatrics, 105,* 1090–1100.

McNab, T. C. (1998). Medical complications of the critically ill newborn: A review for early intervention professionals. *Topics in Early Childhood Special Education, 18,* 197–210.

Meyer, E. C., Coll, C. T., Seifer, R., Ramos, A., Kilis, E., & Oh, W. (1995). Psychological distress in mothers of preterm infants. *Journal of Developmental and Behavioral Pediatrics, 16,* 412–417.

Miles, M., Carlson, J., & Funk, S. (1996). Sources of support reported by mothers and fathers of infants hospitalized in a neonatal intensive care unit. *Neonatal Network, 15* (3), 45–52.

Nurcombe, B. (1984). An intervention program for mothers of low-birth weight infants: Preliminary results. *Journal of the American Academy of Child Psychiatry, 23,* 319–325.

Oehler, J., Hannan, T., & Catlett, A. (1993). Maternal views of preterm infants' responsiveness to

social interaction. *Neonatal Network, 12* (6), 67–74.

O'Hara, M. W., & Swain, A. M. (1996). Rates and risk of postpartum depression: A meta-analysis. *International Review of Psychiatry, 8,* 37–54.

Pennebaker, J. W. (1985). Traumatic experience and psychosomatic disease: Exploring the roles of behavioral inhibition, obsession, and confiding. *Canadian Psychology, 26,* 82–95.

Pennebaker, J. W. (1988). Confiding traumatic experiences and health. In S. Fisher & J. Reason (Eds.), *Handbook of Life Stress, Cognition, and Health* (pp. 669–681). New York: John Wiley & Sons Ltd.

Pennebaker, J. W., & Beall, S. K. (1986). Confronting a traumatic event: Toward and understanding of inhibition and disease. *Journal of Abnormal Psychology, 95,* 274–281.

Pennebaker, J. W., & Francis, M. E. (1996). Cognitive, emotional, and language processes in disclosure. *Cognition and Emotion, 10,* 601–626.

Pennebaker, J. W., Kiecolt-Glaser, J. K., & Glaser, R. (1988). Disclosure of traumas and immune function: Health implications for psychotherapy. *Journal of Consulting and Clinical Psychology, 56,* 239–245.

Pennebaker, J. W., & O'Heeron, R. C. (1984). Confiding in others and illness rate among spouses of suicide and accidental-death victims. *Journal of Abnormal Psychology, 93,* 473–476.

Powell, D. R. (1993). Inside home visiting programs. *The Future of Children, 3*(3), 23–38.

Reidy, J., & Richards, A. (1997). Anxiety and memory: A recall bias for threatening words in high anxiety. *Behaviour Research and Therapy, 35,* 531–543.

Smyth, J. M. (1998). Written emotional expression: Effect sizes, outcome types, and moderating variables. *Journal of Consulting and Clinical Psychology, 66,* 174–184.

Spiker, D., Furguson, J., & Brooks-Gunn, J. (1993). Enhancing maternal interactive behavior and child social competence in LBW premature infants. *Child Development, 64,* 754–768.

Stuart, S., & O'Hara, M. W. (1993). *Interpersonal psychotherapy for postpartum depression.* Iowa City, IA: University of Iowa.

Sugden, L. M. (1998). Evaluating outcome: Exposure therapy and crime-related posttraumatic stress disorder (Doctoral dissertation, Pepperdine University, 1998). *Dissertation Abstracts International: Section B: The Sciences & Engineering, 58* (8-B), 4475.

Taylor, G. H., Klein, N., Minich, N. M., & Hack, M. (2001). Long-term family outcomes for children with very low birth weights. *Archives of Pediatrics & Adolescent Medicine, 155,* 155–161.

Thompson, B. (1999). Improving research clarity and usefulness with effect size indices as supplements to statistical significance tests. *Exceptional Children, 65,* 329–337.

Thompson, R., Oehler, J., Catlett, A., & Johndrow, D. (1993). Maternal psychological adjustment to the birth of an infant weighing 1,500 grams or less. *Infant Behavior and Development, 16,* 471–485.

Warner, V. (1995). Offspring at high and low risk for depression and anxiety: Mechanisms of psychiatric disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 34,* 786–798.

Weiss, D. (1996). Psychometric review of the Impact of Event Scale—Revised. In B. H. Stamm (Ed.), *Measurement of stress, trauma, and adaptation* (pp. 186–187). Lutherville, MD: Sidran Press.

Wickramatratne, P. J., & Weissman, M. M. (1998). Onset of psychopathology in offspring by developmental phase and parental depression. *Journal of the American Academy of Child and Adolescent Psychiatry, 37,* 933–943.

Wilson, J. P. (1989). *Trauma, transformation and healing.* New York: Brunner/Mazel.

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