Hope, Social Support, and Postpartum Depression: Disentangling the Mediating Effects of Negative Affectivity

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We examined the potentially mediating effects of negative affectivity (NA) on the hope–depression relationship among a sample of postpartum women. We also assessed the social support reported by these women and examined the possible mediating effects of NA on the social support–postpartum depression relationship. Correlational analyses of data obtained from women ($N = 98$) who had given birth in the previous 6 months revealed that NA did not mediate either hope or social support in the prediction of postpartum depression. Hope accounted for a significant degree of variance in postpartum depression. These data suggest that hope has palliative effects among women following childbirth and these effects are not nullified or explained by emotional predispositions.

KEY WORDS: hope; postpartum; depression; negative affectivity; social support.

The surging interest in positive psychology has ushered in a greater appreciation for personal assets that may be related to optimal adjustment. One variable of considerable interest associated with the positive psychology literature is hope. Hope is construed as a belief system characterized by goal-directed thinking under routine and stressful circumstances (Snyder, 1994, 2002). People who are high in hope are more likely to interpret stressful situations as challenges and exude confidence, happiness, and friendliness (Snyder, Cheavens, & Michael, 1999; Snyder et al., 1991; Snyder, Sympson, Michael, & Cheavens, 2000).

A growing body of literature indicates that hope is related to several indicators of adjustment. Many of these studies have demonstrated that hope is an important concept among persons with different health-related conditions. Higher hope has been associated with lower levels of distress among children with sickle cell disease (Lewis & Kliewer, 1996) and burns (Barnum, Snyder, Rapoff, Mani, & Thompson, 1998), and with less distress among persons with spinal cord injuries (SCI; Elliott, Witty, Herrick, & Hoffman, 1991) and fibromyalgia (Affleck & Tennen, 1996). Hope is also predictive of more functional abilities among persons with visual impairments (Jackson, Taylor, Palmatier, Elliott, & Elliott, 1998) and with greater psychosocial mobility among persons with spinal cord injuries, regardless of level and extent of paralysis (Elliott et al., 1991). Persons with high hope seem to be more likely to have more information about and express greater intention to practice health promotion than low hope people (Snyder, Feldman, Taylor, Schroeder, & Adams, 2000).

Despite evidence linking hope with different aspects of adjustment, there are concerns about the nature of these associations. Much of this work has relied on self-report outcome measures, and individuals who are predisposed to experience negative affect often report more distress than persons who do not share this disposition (Watson & Pennebaker, 1989). This characteristic is often described as trait negative affectivity (Watson & Clark, 1984) and it is also subsumed

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under the personality construct of neuroticism (Costa & McCrae, 1987). Similar questions concerning the possible correlation between hope and stress have been examined in tests of mediation: hope remains a significant predictor of adjustment after partialing out the variance unique to stress (among mothers of children with disabilities; Horton & Wallander, 2001). Mediation is suspected in correlational research when similar patterns of significance are found (Baron & Kenny, 1986) and this is a particular concern in clinic research involving self-report measures (Holmbeck, 1997).

The beneficial aspects of hope pertain to the emotional experience of women following childbirth. Many women report problems with postpartum depression and several psychological and social processes have been implicated in its development (Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; O'Hara, 1994). From the theoretical perspective of hope, women who have high hope would experience childbirth as a positive event and they would have active, ongoing goals to pursue in the months following childbirth. In contrast, it is probable that women with low hope would be more likely to experience childbirth as a stressful event that could tax their personal and social resources for coping, and thus be susceptible to postpartum depression.

However, previous research has demonstrated that trait negative affectivity (NA) is a powerful predictor of postpartum depression (Elliott, Shewchuk, Richeson, Pickelman, & Franklin, 1996). We do not know the degree to which NA may mediate the hope–depression relationship, but there is impressive evidence that similar social-cognitive constructs (such as optimism; Smith, Pope, Rhodewalt, & Poulton, 1989) are contaminated by the predisposition to complain, express pessimism, and experience negative moods. Once the confounding effects of NA are statistically taken into account, significant correlations have been obviated, and in some situations, reversed (Smith et al., 1989).

This is a particularly cogent issue with respect to postpartum depression: there is a long-standing recognition that neuroticism—an important variable that is considered to be a NA construct (Costa & McCrae, 1987)—has been positively associated with postpartum depression (Boyce, 1994; Pitt, 1968). Furthermore, it is conceivable that NA might also mediate the beneficial relationships documented between social support and postpartum depression (Cutrona, 1984). NA can adversely affect the perceived quality of personal relationships, and women

high in NA would likely report negative perceptions of their significant relationships and their distress might contribute to a negative interpersonal context (Rhodewalt & Zone, 1989). Subjective measures of social support might be especially sensitive to the confounding effects of NA (Bolger & Eckenrode, 1991).

We examined these issues in a cross-sectional study of hope, social support, and postpartum depression among women who had given birth within 6 months of assessment. We conducted tests of mediation to determine if either hope or social support would retain a unique and significant association with postpartum depression after controlling for the variance unique to NA. In this manner, we could gain insight into the associations between hope and depression experienced by these women, taking into account their trait levels of negative affectivity.

METHOD

Participants

The majority of cases of postpartum depression begin within 6 months of childbirth (Boyce, 2003; Holden, 1994). The study was advertized in several clinics, hospitals, and infant-welfare agencies in Auckland, New Zealand, and all women who had given birth within the previous 6 months were invited to participate. Ninety-eight usable responses were obtained. The average age of the women was 31.12 years ($SD = 5.29$, range 17–43 years of age). The average age at the time of last formal education was 16.78 years ($SD = .94$). The sample was predominately of European descent ($N = 86$); 12 participants were Maori or Pacific Islanders. The average age of the baby was 2.02 months ($SD = 1.31$, range .4–5.97 months). Seventy-seven of the women were married at the time of assessment; 17 were single ("de facto"), and 4 were unmarried.

Seventy of the women had not experienced a prior birth, 27 women had one prior birth, 5 had two prior births, 1 had four prior births, and another had six prior births.

Measures

Hope

Hope was measured with the State Hope scale (Snyder et al., 1996) which measures connectedness to goals and, more importantly, self-efficacy in relation

to those goals. Recently refined from the earlier versions by Snyder et al., this 6-item scale has shown predictive and discriminative ability when tested against verbal learning tasks, and has also demonstrated high internal consistency and construct validity. It asks questions such as: "If I should find myself in a jam, I could think of many ways to get out of it." Responses on an 8-point Likert scale ranged from 1 = *definitely false* to 7 = *definitely true*.

Social Support

Social support was measured with the Actual Support subscale of the Significant Others scale (Power, Champion, & Aris, 1988). The full 20-item scale assesses the actual and idealized level of 10 aspects of social support as they relate to a particular individual in the respondent's life. The Actual Support subscale was used to assess the level of emotional and practical support (e.g., "*To what extent can you count on this person . . . to trust, talk frankly, share feelings with?*"). Responses are made on a 7-point Likert scale (0 = *never* to 6 = *always*). The scale has evidenced good psychometric qualities in past research (Power et al., 1988).

Negative Affectivity

The Neuroticism scale from the short form of the Eysenck Personality Inventory (EPQ-R-Short; Eysenck & Eysenck, 1991) was used to assess trait negative affectivity. The 12-item Neuroticism scale of the EPI-R-Short asks questions about how the individual usually behaves, feels, and acts; for example: "Are you an irritable person?" Each item has a dichotomous *Yes*/*No* response format. Test–retest reliabilities for the 24-item scale are around .89, and internal consistency is around .84 (Eysenck & Eysenck, 1968). The parallel-form reliability is approximately .82 (Eysenck & Eysenck, 1968).

Postpartum Depression

The 10-item Edinburgh Post-Natal Depression scale (EPDS; Cox, Holden, & Sagovsky, 1987) was used to assess depression. This scale has been used widely in postpartum-depression research and has performed better than traditional screening instruments for depression. The instrument takes less than 5 min to complete, and has also achieved good results when sent by mail (Cox, 1994). The items ask about the last 7 days; for example: "I have been able to laugh and see the funny side of things?" There are four response choices for each item, indicating how much the participant agrees with the statement, with a score range of 0–3. The validation of the scale was established by comparing the mean EPDS scores with RDC diagnosis at 3 months postpartum. A score of 13 or more was found to identify all women with an RDC diagnosis of Definite Major Depressive illness. The sensitivity of the EPDS (the proportion of RDC depressed women who were true positives) was 86%, and the specificity (proportion of nondepressed women who were true negatives) was 78% (Cox, 1994, p. 121). Split half reliability was .88 and the standardized alpha coefficient .87.

In an Australian study (Boyce, Hickie, & Parker, 1991), the authors noted that the scale is "well-accepted by clinicians, researchers, and mothers" and they found that the 12/13 score cut-off was associated with the highest probability of being a DSM-III-R case. In predicting DSM-III-R Major Depression, this cut-off had a sensitivity of 100%, a specificity of 96%, and a positive predictive value of 67% (O'Hara, 1994). In prior research literature, the cut-off scores used for discriminating depressed individuals varied from 9/10 to 12/13, but predominantly it appears that 12/13 is used most often, and therefore, following precedent and theory, and in order to enhance discriminant analyses, the cut-off for depressed individuals was defined as 12/13 in this study.

Data Analysis

Correlational and regression techniques are required to test for mediating effects between variables (Baron & Kenny, 1986). Three conditions must be met to determine whether statistical mediation occurs between the predictor (i.e., neuroticism and hope) and the criterion (depression) variables (Evans & Lepore, 1997). First, the two predictor variables must be significantly correlated with each criterion variable. Second, the predictor variables must be significantly correlated with each other. These conditions can be determined by examining correlations between the variables.

The final condition can be examined with partial correlation coefficients or with hierarchical multiple regression equations. Partial correlations between the two variables may be computed after controlling the associations with the third and suspected mediating variable. The multiple regression technique requires one predictor variable entered at the first step of the equation to predict the criterion variable. The second

predictor variable is then entered in the next step. This procedure reveals the degree of variance in the criterion variable unique to the second predictor variable. If the variance is not statistically significant, the association between the variable entered at the second step and the criterion variable is mediated by and dependent on the predictor variable entered in the first step. Partial mediation occurs when the relationship between the predictor variable at the second step and the criterion variable is less pronounced but remains significant after the predictor variable in the first step of the equation has been controlled.

For our purposes, we first examined the correlations between NA, hope, social support, and postpartum depression; we expected these correlations to be statistically significant. The significance level for all tests was set at $p < .05$.

RESULTS

Descriptive and Zero-Order Correlations

Table I contains the means, standard deviations, and correlations for the hope, social support, NA, and depression variables. Inspection of these correlations revealed significant associations between NA, hope, and depression in expected directions. Social support was inversely correlated with depression $(-.24)$, but it did not have a significant association with NA. Therefore, NA could not be considered a potential mediator of the social support–depression relationship.

Further tests were then conducted to examine the possible mediating effects of NA on the hope–depression relationship. An examination of partial correlation coefficients, controlling for NA, revealed that a significant association remained between hope and depression, $pr = -.35$. Higher levels of hope were associated with lower postpartum depression scores after controlling for the relations with NA.

A hierarchical multiple linear regression equation was then computed. NA was entered at the first

step of the equation, and as expected, contributed significantly to the prediction of postpartum depression, $F(1, 96) = 65.90$, $R = 2.41$. Hope, entered at the second step, significantly augmented the equation, $F_{inc}(1, 95) = 17.53$, $R^2_{inc} = .09$. Hope accounted for an additional 9% of the variance in postpartum depression after taking into account the relationship between NA and postpartum depression.

Prediction of Depressed and Non-Depressed Women

Table II reveals the characteristics of the women who had scores >12 on the depression measure ($N = 20$) and those who did not. A series of one-way ANOVAs indicated that depressed women left school at a significantly younger age, had higher levels of NA and lower levels of hope and social support. A forward-entry stepwise logistic regression analysis was conducted with 95% confidence intervals for estimated odds ratio and a classification cutoff of 20% was calculated. This analysis selected NA as the single best predictor of depression status, $b = .51$, Wald $= 15.42$, $p < .001$ (see Table III). Not surprisingly, higher NA

Table I. Means, Standard Deviations, and Correlations for Variables Used in Mediation Analyses

Variable	1	2	3	4	M	SD
Hope	—	.20	−.47***	−.34**	37.12	7.96
Social support		—	−.24*	.13	62.10	11.58
Depression			—	.64***	7.03	5.06
NA				—	5.20	3.15

*$p < .05$. **$p < .01$. ***$p < .001$.

Table II. Means and Standard Deviations for Self-Report Variables and Demographic Characteristics for Depressed ($N = 20$) and Non-Depressed Mothers ($N = 78$)

	Depressed	Non-depressed
Age		
M	29.47	31.54
SD	5.77	5.12
Age of leaving school*		
M	16.30	16.90
SD	.92	.91
Number of children		
M	1.60	1.41
SD	.50	.95
Age of baby (months)		
M	2.23	1.96
SD	1.42	1.29
Hope***		
M	30.10	39.39
SD	8.07	5.58
NA***		
M	8.80	4.28
SD	2.09	2.68
Social support**		
M	55.50	63.80
SD	14.23	10.24

*$p < .05$. **$p < .01$. ***$p < .001$.

Table III. Predictive Model for Depression Status

Variable	Coefficient	Wald	Odds ratio	95% confidence limits
NA	.51	15.42***	1.66	1.25–2.12
Hope	−.15	7.98**	.86	.77–.96

** $p < .01$. *** $p < .001$.

was associated with depression. Hope was selected at the second step of the equation, $b = -.15$, Wald = 7.98 $p < .01$. Lower levels of hope were associated with depression. Social support was not selected as a significant predictor. The final model correctly classified 87% of women in the non-depressed category and 91% of the women in the depressed category, $\chi^2(4) = 47.19$, $p < .001$.

Post Hoc Analyses

There is some concern that responses from women who were less than 1 month postpartum might have been adversely contaminated by strong hormonal influences during their first month following childbirth. Therefore, we eliminated women who were in the first month postpartum and reanalyzed the data with the reduced sample ($N = 78$). The results were practically identical to those obtained with the larger sample. Hope retained a significant partial correlation with depression after controlling for NA, $pr = -.31$, $p < .01$. Hope also remained a significant predictor of depression after controlling for NA in a multiple regression equation. However, with the reduced sample, social support was not significantly correlated with depression ($-.16$).

DISCUSSION

The relationship of hope to postpartum depression was not mediated by NA, despite the strong association between the measure of NA used in this study (neuroticism) and postpartum depression. The significant association between hope and depression was also evident in the reduced sample and in the logistic equation computed to predict depression status. In all of these analyses, hope emerged as a significant correlate under rigorous, conservative statistical procedures.

NA has long been construed as a stable, enduring personality trait that can often confound our measurement and interpretation of distress and ad-

justment, especially when self-report inventories are used in clinical settings (Costa & McCrae, 1987). Although NA is associated with elevated emotional and somatic complaints, it does not complicate more objective, functional evaluations of disease states and processes (Costa & McCrae, 1987; Watson & Pennebaker, 1989). NA may be confounded by existing psychopathology, generally, and measures of NA and depression tap similar domains (negative self-perceptions, somatization, etc.; Ben-Porath & Waller, 1992; Widiger & Trull, 1992).

Furthermore, there is accumulating evidence that NA does not obviate important relations between certain constructs and indices of distress. In the present study, NA did not mediate the social support–depression association in the larger sample. Earlier research has documented similar results among undergraduates (which may lack generalizability to clinical samples; Elliott, Marmarosh, & Pickelman, 1994). Prospective research has demonstrated that NA exerts an influence on social-cognitive appraisals and coping in times of subjective duress, but stress appraisals maintain a unique and salient influence on subsequent coping efforts despite this effect (Shewchuk, Elliott, MacNair, & Harkins, 1999).

The relationship of social support to depression in the present study varied as a function of sample size, and it did not emerge as a significant predictor of depression status in the logistic regression equation. The measure of support in this study asked specific questions about the quality of a significant relationship important to the respondent; this may have provided a more objective indicator of social support and as such may have been more robust to the contaminating effects of NA (Bolger & Eckenrode, 1991). Women lacking in this type of support are typically considered at risk for postpartum depression (Boyce, 2003). Yet, our data indicate that the type of social support measured in this study was not an important correlate of postpartum depression.

In contrast, the beneficial properties of hope were apparently important in the adjustment process following childbirth. Higher levels of hope were uniquely associated with less depression, and this variable was characteristic of women who were not depressed. Hope appears to exert palliative, buffering effects under times of stress (Horton & Wallander, 2001); presumably, the sense of meaning, pursuit of personal goals, and beliefs in a personal ability to achieve goals encompassed in the hope construct are important factors in times of personal transition. These elements may be instrumental in the process

through which mothers evaluate the stress and challenges that accompany childbirth and the activities that follow in its wake. Women who lack a sense of hope, for example, may be less likely to find a sense of meaning or have difficulty pursuing goals (or maintaining a sense of energy in the pursuit of these goals). These are active, vibrant, social-cognitive mechanisms that can operate independently of trait affectivity.

Several limitations of this study should be considered. All data were measured in a cross-sectional design. A better understanding of the relations between hope, social support, NA, and postpartum depression should be studied prospectively and longitudinally. However, the cross-sectional nature of this study would heighten the presumed mediational effects of NA on the other self-report variables; this, in turn, provides a more conservative test of the hope–depression relationship. All variables were assessed with self-report measures. More objective evaluations may have been informative. For example, clinical interviews to assess depression status may have provided more accurate evaluations of clinical syndromes of depression. It is possible that anxiety-related symptoms could have inflated our measurement of depression. Finally, the data were collected from a sample of women who responded to advertisements to participate in this study; it is unknown how these results would generalize to the general population.

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