Peritraumatic Dissociation and Emotions as Predictors of PTSD Symptoms Following Childbirth

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ABSTRACT. The current study investigated the contributive role of perinatal dissociative and perinatal emotional responses to the development of PTSD symptoms following childbirth. Method: Using a prospective, longitudinal design, 140 women were studied who were followed from the first week after delivery to three months postpartum. Results: Three women (2.1%) met criteria for PTSD and 21.4% reported a traumatic childbirth experience. Both perinatal negative emotional reactions and perinatal dissociative reactions were the predictors of PTSD symptoms at three months postpartum. The effect of perinatal dissociation, however, was partially mediated by perinatal emotional reactions. Conclusion: Posttraumatic stress disorder can be a consequence of the experience of childbirth. Women who reported high levels of negative emotions during and shortly after childbirth were more likely to develop

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PTSD symptoms than women who did not. Women who experienced an instrumental delivery and also reported higher levels of psychoform perinatal dissociation, were at higher risk than women who reported higher levels of perinatal dissociation during a spontaneous delivery. These findings add to the growing body of literature regarding traumatic childbirth and indicate that perinatal dissociative and emotional phenomena are associated with posttraumatic stress.

KEYWORDS. Peritraumatic dissociation, posttraumatic stress, childbirth, emotional responses

Recent studies have indicated that for some women childbirth may be a traumatic experience leading to the development of posttraumatic stress disorder (PTSD) and related disturbances. Between 2.8 and 5.6% of women suffer from PTSD as a consequence of childbirth at six weeks postpartum (Ayers & Pickering, 2001; Creedy, Shochet, & Horsfall, 2000; Czarnocka & Slade, 2000; Wijma, Soderquist, & Wijma, 1997). At approximately 6 months postpartum PTSD prevalence rates decrease to a level of around 1.5% (Ayers & Pickering, 2001; Wijma et al., 1997). Several studies investigated factors that may predict the development of childbirth-related PTSD and posttraumatic stress symptoms (Creedy et al., 2000; Soet, Brack, & Dilorio, 2003; Wijma et al., 1997). Personality traits, level of obstetric intervention, intense perinatal emotional reactions, negative contact with staff, and lack of social support have been found to be related to PTSD and posttraumatic stress symptoms. Similar factors have also been identified in studies focusing on other types of stressors (Brewin, Andrews, & Rose, 2000; Ozer, Best, Lipsey, & Weiss, 2003).

In recent years, much attention has been paid to the predictive role of psychological phenomena that occur during or directly after various traumatic incidents. Immediate reactions experienced at the time of the trauma, such as dissociation, extreme anxiety, panic, and negative emotions, may be important predictors of subsequent PTSD symptoms (Bernat, Ronfeldt, Calhoun, & Arias, 1998). One of the most important predictors appears to be peritraumatic dissociation. According to Marmar, Weiss, and Metzler (1998), peritraumatic dissociation is the occurrence of dissociative symptoms during or shortly after exposure to extreme

events involving acute alterations in cognitive and perceptual functioning at the time of a traumatic event. Traumatized patients frequently report alterations in the experience of time, place and person, which lead to a sense of unreality as the event is occurring (Marmar et al., 1998).

Nijenhuis, Van Engen, Kusters, and Van der Hart (2001) suggested that peritraumatic dissociation-involving both psychoform and somatoform phenomena-is a manifestation of acute integrative failure, which sets the stage for the failure to synthesize and personify the traumatic experience in the long run. Psychoform phenomena of dissociation refer to dissociative amnesia and identity fragmentation and may involve depersonalization and derealization. Somatoform dissociation designates dissociative symptoms that phenomenologically involve the body. The adjective "somatoform" indicates that the physical symptoms suggest, but cannot be explained by a physical condition or by the direct effect of a substance (Nijenhuis & Van der Hart, 1999). Somatoform dissociative phenomena include the inability to move and speak, anesthesia of various perceptual modalities, such as lack of pain perception (analgesia), tunnel vision, and bodily numbing (tactile and kinesthetic anesthesia; Nijenhuis, et al., 2001).

Ozer et al. (2003) performed a meta-analysis on predictors of PTSD and related symptoms following different forms of trauma (not including childbirth). Peritraumatic dissociation was found to be the strongest predictor for PTSD as compared to prior trauma, prior psychological adjustment, family history of psychopathology, perceived life threat during trauma, posttrauma social support, and peritraumatic emotional responses. Measures of peritraumatic dissociation have been found to predict PTSD and posttraumatic stress symptoms beyond the level of stress exposure, general dissociative tendencies, locus of control, and social support (Marmar et al., 1999; Shalev, Peri, Canetti, & Schreiber, 1996; Tichenor, Marmar, Weiss, Metzler, & Ronfeldt, 1996). Peritraumatic dissociation was also predictive in various groups of victims of trauma: Vietnam combat veterans (Kaufman et al., 2002; Tichenor et al., 1996), motor vehicle accident victims (Delahanty, Royer, Raimonde, & Spoonster, 2003; Fullerton et al., 2001; Ursano et al., 1999), victims of natural disasters (Koopman, Classen, & Spiegel, 1994), emergency service personnel (Marmar et al., 1999), and survivors of crime and assault (Freedman, Brandes, Peri, & Shalev, 1999; Shalev et al., 1996). A study on posttraumatic stress after pregnancy loss reported a relation between peritraumatic dissociation and PTSD (Engelhard, Van den Hout, Kindt, Arntz, & Schouten, 2003). Peritraumatic dissociation was predicted by lower emotional control. In the field of childbirth-related PTSD, the

role of peritraumatic dissociation has been noted (Moleman, Van der Hart, & Van der Kolk, 1992) but has been scarcely empirically studied (Van Son, Verkerk, Van der Hart, Komproe, & Pop, 2004).

Nevertheless, in the general trauma field the predictive role of peritraumatic dissociation has not been confirmed in several other studies. Marshall and Schell (2002) examined the link between peritraumatic dissociation and symptoms of PTSD in a sample of survivors of community violence. Although peritraumatic dissociation at baseline correlated with subsequent PTSD symptom severity, it was not an independent predictor of chronic PTSD symptoms. In a study on motor vehicle accident victims (Holeva & Tarrier, 2001) peritraumatic dissociation was not found to be predictive of PTSD. According to Gershuny, Cloitre, and Otto (2003), little attention has been paid to possible mediating relationships between peritraumatic emotions and peritraumatic dissociation. These authors found in their study that the effect of peritraumatic dissociation was eliminated when controlling for peritraumatic emotions such as fear and loss of control. These studies indicate that the predictive role of peritraumatic dissociation is still indistinct.

PERITRAUMATIC EMOTIONS AND PERITRAUMATIC DISSOCIATION

The occurrence of negative emotional responses during or directly after the traumatic event has also been found to be predictive of PTSD and posttraumatic stress symptoms. Brewin et al. (2000) reported that intense levels of fear, helplessness and horror strongly predicted PTSD six months post-trauma. In their meta-analysis Ozer et al. (2003) found that peritraumatic emotional responses were the second strongest predictor of posttraumatic stress symptoms or current PTSD, after peritraumatic dissociation. Vehement emotional reactions during or shortly after the trauma such as intense fear, helplessness, loss of control and horror were found to be related to PTSD and posttraumatic stress symptoms in various groups of victims of potentially traumatizing experiences such as serious accidents and natural disasters (Bernat et al., 1998), violent crime (Brewin et al., 2000), motor vehicle accidents (Ehlers, Mayou, & Bryant, 1998), and terrorist attacks (Simeon, Greenberg, Knutelska, Schmeidler, & Hollander, 2003). With regard to childbirth-related PTSD, various studies reported associations between the occurrence of negative emotions and the development of

PTSD (Czarnocka & Slade, 2000; Keogh, Ayers, & Francis, 2002; Lyons, 1998).

The occurrence of negative emotions such as fear and panic has been associated with perinatal dissociative reactions, as dissociation may be regarded as a mechanism to handle the extreme emotions associated with traumatic events (Creedy et al., 2000; Moleman et al., 1992). Moleman et al. (1992) reported that women who panicked during delivery went into a dissociative state on order to escape the emotional event. Although this report was based on three case studies, it clearly illustrates how women may react during the course of delivery in anticipation of negative outcomes. Other studies have also suggested that dissociation is a response to overwhelming emotional and physiological arousal (Bernat et al., 1998; Van der Kolk & Van der Hart, 1989). Peritraumatic dissociation has been found to be related to greater perceived threat and greater externality in locus of control (Marmar, Weiss, Metzler, & Delucchi, 1996), loss of control, helplessness and anger (Simeon et al., 2003), and hyperarousal and anxiety (Sterlini & Bryant, 2002). Bernat et al. (1998) reported that the relationship between acute fear and peritraumatic dissociation was mediated by acute panic symptoms, and that peritraumatic dissociation is the proximal outcome of overwhelming traumatic fear and attendant physiological responding. According to Gershuny et al. (2003), peritraumatic dissociation could be conceptualized as part of a panic process. These authors suggested that fears about death and loss of control are cognitive components of panic. The cognitive appraisal of the traumatic event as unmanageable, as reflected by fears of death and losing control, may help elicit dissociation. In addition, fears of death and losing control mediated the relationship between peritraumatic dissociation and PTSD (Gershuny et al., 2003).

In a prospective study on soldiers in Army survival training, Morgan et al. (2001) found that a majority reported peritraumatic dissociation under stress, and that dissociative symptoms were common in healthy humans experiencing acute, highly intense stress. The authors reported that fearing for one's life significantly influenced the degree to which subjects experienced symptoms of dissociation. Morgan et al. (2001) stated that the causal link between peritraumatic dissociation and PTSD must be viewed with caution as acute stress-induced symptoms of dissociation were found to be very common among their subjects.

The current study aimed to prospectively test whether perinatal negative emotions and perinatal dissociation are associated with the development of posttraumatic stress symptoms related to childbirth. We

prefer to use the term *perinatal* because childbirth is generally not considered a traumatic experience. On the basis of prior general trauma studies we hypothesized that both perinatal negative emotions and perinatal dissociation would be positively correlated to PTSD symptoms. Based on earlier findings (Bernat et al., 1998; Moleman et al., 1992; Morgan et al., 2001), we assumed that negative perinatal emotions precede the occurrence of perinatal dissociation. Finally, we expected that both perinatal emotional reactions as well as perinatal dissociative reactions independently contributed to level of PTSD symptoms.

METHODS

Participants

Participants (N = 140) were pregnant Dutch women who lived in a suburban region in the southern part of the Netherlands. All participants were clients of midwives' practices in the region of the town of Veldhoven. Data were collected between September 2001 and December 2002 as part of a larger study on the effects of thyroid hormone level on the delivery, conducted by two of the authors (VP & HW). Of the 344 women who were asked to participate, 229 (66.6%) entered the study. Ten women (4.4%) were excluded from the study because of premature birth (birth before the 37th week of pregnancy). As this is a report of an ongoing longitudinal study we used data from those women who had completed all assessments, therefore 79 (34.5%) women could not enter the study. The demographics of the remaining 140 (61.1%) women were similar to those of the group as a whole, except that women participating in the current study (N = 140, M = 31.5, SD = 3.3) were significantly older compared to women with incomplete data (N = 89, M = 30.5, SD = 3.4) as was found using a t-test ($df = 227$; $t = -2.2$; $p < .05$). No differences were found on level of education and number of deliveries. The average age of participants was 31.5 years (SD = 3.3, range = 22.0-40.1). For 41% of the sample this was their first delivery (primiparous). All women were currently married or living together with their partner. A large majority were employed (90%). This sample is representative for the Dutch population of pregnant women with regard to age, employment and education (Centraal Bureau voor de Statistiek, 2003).

Procedure

A longitudinal design makes it possible to investigate the development of PTSD symptoms and PTSD. Women were approached and informed about the study during their pregnancy by the midwife (HW) at their first visit at the midwife practice. Informed consent was required before they were included in the study. There were two moments of assessment: in the first week postpartum and at three months postpartum. In the first week postpartum, participants filled out a self-report questionnaire that was given to them by their midwife during the last birth control at 36 weeks in pregnancy. The midwife collected the questionnaires during a visit at eight days postpartum. During the first assessment, peritraumatic risk factors were measured. These factors consisted of peritraumatic psychoform and somatoform dissociation, peritraumatic emotions, acute stress symptoms and depressive symptoms during the first week postpartum. At three months postpartum a self-report questionnaire was sent to the participants' home address by mail, which they could send back by using the return envelope. PTSD symptoms were measured at this time point.

Instruments

Characteristics of the delivery-mode of delivery, duration and other specific birth related aspects-were assessed by a *standardized form* that is regularly used by midwives and gynecologists in the Netherlands. The following possibilities of delivering a baby can be discriminated in the Netherlands: spontaneously at home with the aid of a midwife or GP, or in hospital (spontaneously, after induction vaginally, after forceps/vacuum extraction vaginally or by Caesarean section). Those deliveries that are not spontaneous will be labelled instrumental in the current study. Up to 90% of the women who deliver in hospital stay there for less than 24 hours. During the first postpartum week at home, all women are visited by the midwife to look after the mother and the baby. Moreover, the woman receives care during eight hours per day of a special trained "lying-in" nurse (this is part of health insurance care in the Netherlands). A lying-in-nurse is a maternity caretaker who visits the mother during the first eight days after delivery, teaches the parents of the newborn child how to take care of the baby and carries out simple household tasks.

Psychoform perinatal dissociation was assessed by the Dutch version of the *Peritraumatic Dissociative Experiences Questionnaire-Self-Re-*

port Version (PDEQ-SRV) (Marmar, Weiss, & Metzler, 1998; Dutch version: Kleber & Van der Hart, 1998), a ten-item self-report questionnaire for assessing subjects' recall of experiences during the trauma which are characterized as psychoform dissociation. In the current study, the delivery was set as the critical event. Items include derealization, amnesia, out-of-body experiences and altered time perception, and are rated on a scale from 1 to 5. Phenomena assumed to be dissociative are related to constructs of depersonalization, derealization, altered sense of time, and altered sense of body image. Internal consistency for the PDEQ in the present sample was good (Cronbach's alpha = .85).

Perinatal somatoform dissociation was assessed by the *Somatoform Dissociation Questionnaire-Peritraumatic* (SDQ-P; Nijenhuis & Van der Hart, 1998). The SDQ-P is a self-report questionnaire that evaluates somatoform manifestations of dissociation during or immediately following an overwhelming event. The items were derived from clinical observations, clinical reports in the literature and from the SDQ-20 (Nijenhuis, Spinhoven, Van Dyck, Van der Hart, & Vanderlinden 1996), which assesses the severity of current somatoform dissociation. Examples of items are: "It was like my body, or a part of it was paralyzed," and "It was like my body, or a part of it had disappeared." The SDQ-P has good internal consistency and convergent validity as it is strongly associated with the PDEQ (Nijenhuis et al., 2001). Internal consistency in the current study was satisfactory (Cronbach's alpha = .62)

Negative emotions were assessed using the *Peritraumatic Emotions List* (PEL; Van der Velden, Van der Burg, Steinmetz, & Van den Bout, 1992), a standardized list with 10 emotions that can be scored on a five-point Likert scale. Participants were asked to report which emotions they had experienced during a defined shocking event, for example, fear, powerlessness, horror and guilt. Childbirth is characterized by an ambiguous set of emotions. During delivery women may experience huge amounts of pain, fear and loss of control. Afterwards, feelings of happiness and pride may be experienced when they hold their baby in their arms. Therefore, we distinguished between emotions experienced during and emotions experienced shortly after delivery. Internal consistencies of the PEL during and after were satisfactory with Cronbach's alphas of .79 and .71, respectively.

The Dutch version of the *PTSD Symptom Scale-Self Report version* (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993; Dutch version: Arntz, 1993) was used to assess the frequency of the 17 PTSD symptoms according to the *DSM-IV* criteria for PTSD and to indicate whether

women were fully symptomatic (i.e., reporting symptoms of intrusion, avoidance and hyperarousal, or not, at three months postpartum). The instrument has a four-point scale (0 = "not at all" to 3 = "five or more times a week/almost always"). The range of possible scores is 0 to 51, with higher scores indicating higher levels of PTSD symptoms. Internal consistency for the PSS-SR in the present sample was good (Cronbach's alpha = .81). The PSS-SR provides reliable and valid information of both PTSD diagnosis and symptom severity. In the current study the same method for assessing PTSD with this inventory was used as Dunmore, Clark, and Ehlers (1999) applied. Besides fulfilling the symptom criteria of one intrusion symptom, three avoidance symptoms, and two hyperarousal symptoms, they suggested a more conservative scoring method of a sum score of at least 18 on frequency of symptoms in order to assess a certain amount of symptom severity. Additionally, in order to meet the *DSM-IV* PTSD stressor (A) criterion, participants had to report feelings of fear, powerlessness or disgust, and they had to hold the idea that their or their baby's life was threatened, or that they or their baby were being harmed during childbirth.

Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 11.5, personal computer version. The psychometric properties of the PDEQ, SDQ-P, PEL, and the PSS-SR were assessed using Cronbach's alpha for reliability. To determine the incidence and severity of PTSD symptoms, total scores on the PSS-SR were calculated. To determine the relationship between demographic variables, obstetric characteristics, perinatal dissociative and emotional responses, Pearson correlations were undertaken. In addition a hierarchical multiple regression analysis was conducted to analyze the predictive role of mode of delivery, perinatal dissociation and emotions in the development of PTSD symptoms. An alpha level of .05 was used for Pearson correlations. One-tailed correlations were assessed when the direction of the relation was also expected. In these cases an alpha level of .10 was used.

RESULTS

Incidence of Posttraumatic Stress Disorder

From the total sample of 140, 22 women (15.7%) reported no symptoms on the PSS-SR, 44 (31.4%) reported symptoms on one of the clus-

ters of PTSD, 59 (42.1%) reported symptoms on two clusters of PTSD, and 15 women (10.7%) reported symptoms on all three clusters of PTSD. Symptoms of hyperarousal were most frequently reported. A total of 30 women (21.4%) of the total sample met the A-criterion. Three of the 15 fully symptomatic women fulfilled the criteria for PTSD at three months postpartum as they also met the A-criterion, which indicates a prevalence of 2.1% of PTSD in the total sample. A majority of women (67.1%) had a spontaneous delivery, whether at home or in the hospital (see Table 1). A t-test was performed to assess differences between instrumental and normal deliveries on PTSD symptom severity. No differences were found between the groups on the outcome variable (PSS-SR normal delivery: $M = 4.2$, SD = 0.4, PSS-SR instrumental delivery $M = 5.0$, $SD = 0.8$; df = 134; t = −.9; p > .05).

Perinatal Emotional and Dissociative Reactions as Predictors of PTSD Symptom Severity

In order to investigate whether negative emotional reactions during and shortly after delivery and perinatal dissociation were related to PTSD symptom severity, we examined whether their mutual correlations and the correlations between both constructs with PTSD symptoms were significant. We investigated Pearson correlation coefficients between emotional reactions during and shortly after delivery, perinatal dissociative reactions, and PTSD symptom severity. Both perinatal psychoform and somatoform dissociation correlated with negative emotional responses during delivery and with negative emotional responses shortly after delivery. As shown in Table 2, perinatal psychoform and somatoform dissociation were significantly related to PSS-SR scores.

TABLE 1. Characteristics of Mode of Delivery

Mode of delivery	N	%
Spontaneous home	66	47.1
Spontaneous hospital	28	20.0
After induction	16	11.4
Vacuum	15	10.7
EmCs*	8	2.1
ElCs**	3	5.7

Note: EmCs = Emergency Cesarean Section; ElCs = Elective Cesarean Section.

TABLE 2. Correlations (Pearson's r) Between Perinatal Dissociative Symptoms and Emotions and PTSD Reactions at Three Months Postpartum

	Perin somf diss	Neg emot during	Neg emot after	PTS sympt PSS-SR
Perin psychof diss	0.37**	0.31**	0.52**	0.31**
Perin somf diss		0.25**	0.18*	0.33**
Neg emot during			0.48**	0.32**
Neg emot after				0.28**

Note: Perin psychof diss = perinatal psychoform dissociation; Perin somf diss = perinatal somatoform dissociation; Neg emot during = negative emotions during delivery; Neg emot after = negative emotions shortly after delivery; PTS sympt = PTSD symptoms.
* $p < .05$ (2-tailed)
** $p < .01$ (2-tailed)

Negative emotions during and shortly after delivery also correlated significantly with PSS-SR scores (Table 2).

We computed a hierarchical multiple regression analysis in order to examine which factors contributed significantly to the variance on PTSD symptom severity (Table 3). In the first step we included four demographic factors: age, education, parity, and duration of delivery explaining 1.5% of the variance, which was not significant (see for all steps Table 3). In the second step we controlled for mode of delivery (spontaneous or instrumental). Mode of delivery did not significantly contribute to PTSD symptom severity. In step 3 negative emotional reactions during delivery were entered. Perinatal negative emotions accounted for significant increments in the change of variance in PSS-SR scores. Furthermore, negative emotions during delivery predicted PTSD symptom severity. Then perinatal psychoform and somatoform reactions were entered in the fourth step. We did not specify an order in which psychoform or somatoform dissociation would occur, therefore they were both entered in the fourth step of the model. Perinatal psychoform and somatoform dissociative reactions both significantly predicted level of PTSD symptoms and contributed significantly to the explained variance above and beyond age, education, parity, and duration and mode of delivery. Perinatal somatoform dissociative reactions significantly contributed to scores on the PSS-SR. Perinatal psychoform dissociation did significantly contribute to the explained variance. In step 5 negative emotional reactions shortly after delivery were entered. Negative emotional reactions shortly after delivery did not significantly contribute to the explained variance. The total model explained

21.0 % of the variance in PTSD symptoms. Perinatal negative emotional reactions during delivery and somatoform and psychoform dissociation were significant predictors of PTSD symptoms in the final model (Table 3).

DISCUSSION

The results of this study confirm that women may experience childbirth as a traumatic experience and subsequently develop PTSD symptoms (Ayers & Pickering, 2001; Creedy et al., 2000; Czarnocka & Slade, 2000; Wijma et al., 1997). In this study 2.1% of women developed all the symptoms needed for PTSD except the F-criterion. In order to assess symptom severity, we used a total score of 18 following Dunmore et al. (1999). The prevalence found in the current study at three months postpartum is quite similar to the findings of Ayers and Pickering (2001) who found an incidence rate of 2.8% at 6 weeks and 1.5% at six months. On the other hand, the prevalence is lower compared to findings of Creedy et al. (2000; 5.6% at 4 to 6 weeks postpartum) who used the same instrument, but did not apply the Dunmore et al. (1999) method of scoring higher than 18 on the PSS. Nevertheless, we should

TABLE 3. Hierarchical Multiple Regression Analyses Perinatal Variables Predicting Scores on the IES-R and the PSS-SR (N = 140)

Predictor	R^2	ΔR^2	B	SEB	b
Model 1	0.21**				
Step 1		0.02			
Age			0.12	0.15	0.09
Education			−0.23	0.30	−0.07
Parity			−0.38	0.49	−0.09
Duration			0.01	0.01	0.08
Step 2		< 0.01			
Mode			0.57	0.97	0.06
Step 3		0.10**			
Neg em du			0.30*	0.08*	0.31*
Step 4		0.10**			
Psych Diss			0.12*	0.06*	0.18*
Som Diss			0.32*	0.13*	0.23*

Note: Regression coefficients were taken from the last step of the model. Neg em du = negative emotions during delivery; Psych Diss, psychoform dissociation; Som Diss, somatoform dissociation.

* p < .05

** p <. 01 (one-tailed)

be careful interpreting the prevalence of PTSD, as we did not assess the F-criterion according to *DSM-IV*. These prevalence rates are all within that found in the general population for PTSD prevalence.

To our knowledge, the present study is the first longitudinal study that prospectively examined the role of perinatal emotions and perinatal dissociation as risk factors for PTSD symptoms after childbirth. Women who reported higher levels of perinatal psychoform and perinatal somatoform dissociation subsequently also reported higher levels of PTSD symptoms. This relationship has been found in other posttraumatic stress studies using psychoform dissociation only (Freedman et al., 1999; Marshall & Schell, 2002; Shalev et al., 1996). A higher level of negative perinatal emotions was also related to higher levels of PTSD symptoms. This finding is consistent with studies on other populations (Bernat et al., 1998; Brewin et al., 2000; Gershuny et al., 2003). Women in our study who reported higher levels of negative perinatal emotions also reported higher levels of perinatal psychoform and perinatal somatoform dissociation. This finding is comparable with other studies reporting associations between symptoms of hyperarousal, negative emotions, loss of control and the occurrence of peritraumatic psychoform dissociation (Bernat et al., 1998; Gershuny et al., 2003; Morgan et al., 2002; Sterlini & Bryant, 2002).

Negative emotions during delivery and perinatal psychoform and somatoform dissociation predicted PTSD symptom severity above parity, age, and duration and mode of delivery. Although both emotional reactions *during* delivery as well as emotional reactions shortly *after* delivery were significantly correlated with PTSD symptoms, negative emotional reactions shortly *after* delivery did not predict PTSD symptoms. This finding might indicate that emotional reactions during the event play a larger role in the development of PTSD symptoms. Regarding PTSD symptom severity, perinatal somatoform and psychoform dissociation, and negative emotions during delivery were the strongest predictors of PTSD symptom severity. This finding is in contrast with the findings of Gershuny et al. (2003), who reported that the effect of peritraumatic dissociation (also assessed with the PDEQ) on posttraumatic stress symptoms was mediated by fear about death and loss of control. This difference may be due to the fact that Gershuny et al. (2003) investigated a more specific emotional response (fear of death and loss of control) whereas we investigated a larger variety of emotional responses (e.g., fear, panic, sadness, and shame). In addition, emotional responses during delivery were associated with dissociative

responses, possibly indicating that negative emotional responses may elicit dissociative responses.

The results of this study with regard to peritraumatic psychoform dissociation are consistent with those of other studies in the general traumatic stress field that peritraumatic psychoform dissociation is a main predictor of PTSD symptom severity. However, a limitation in other studies is the weak conceptual base of the dissociation construct (Marshall, Spitzer, & Liebowitz, 1999; Nijenhuis, Van der Hart, & Steele, 2002; Van der Hart, Nijenhuis, Steele, & Brown, 2004). While this construct essentially refers to a division of doubling of consciousness or personality (Van der Hart et al., 2004), many scholars have subsumed under this heading phenomena such as absorption and imaginary involvement, and momentary confusion. Thus, the PDEQ used to measure psychoform peritraumatic dissociation includes items measuring changed sense of time and confusion, while it is questionable whether these phenomena should be regarded as dissociative in nature (Van der Hart et al., 2004). Given the central predictive role of peritraumatic dissociation, studies that critically examine the nature of this construct and involve operationalisations true to the basic understanding of dissociation and its relations to emotions are urgently needed.

Study Limitations

This study has several limitations, suggesting caution with regard to the generalizations of our results. First, we studied an experience that should not be regarded as a very shocking event for the majority of women. However, this study as well as others, firmly showed that a minority of women may develop childbirth-related PTSD, and that a larger group develops PTSD symptoms. Second, we studied an event that can only be experienced by women, so generalizations to other groups than childbearing women is difficult. Third, we did not use standardized clinical interviews to assess PTSD, although the PSS-SR has been shown a useful tool for screening and assessing current PTSD (Foa et al., 1993). The findings of the prevalence of PTSD in the current study should also be regarded with caution, as we did not assess the F-criterion of PTSD. Fourth, perinatal dissociative and negative emotional responses were associated with each other, but due to the assessment procedure it is not possible to conclude that negative emotional responses precipitate perinatal dissociation. Nevertheless, the strong relation found between perinatal psychoform dissociation and negative emotions during and after delivery is similar to the findings of Marmar

et al. (1996), Simeon et al. (2003) and Sterlini and Bryant (2002) with regard to other trauma populations. Finally, although we assessed perinatal dissociative and perinatal emotional reactions in the first week after delivery, there is still a gap of a few days between the experience and the assessment of perinatal responses. These data therefore have a slightly retrospective character.

CONCLUSION

The results of this study add to the findings of previous studies that for some women childbirth may indeed be a traumatic experience leading to the development of PTSD symptoms. We have focused on two peritraumatic risk factors. Perinatal negative emotions predicted the development of childbirth-related PTSD symptoms. In addition, the strong relation with perinatal negative emotions indicates that dissociative reactions might be part of a traumatic stress response. Future studies should examine relationships with other known predictors of childbirth-related PTSD symptoms, such as social support by partners and support of the medical staff. In addition, future studies should also differentiate between the kinds of emotional responses, whether these responses pertain to anger, helplessness, or shame and guilt, or a combination of any of them, in order to examine which combination of factors channels mostly on those individuals at risk.

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