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Emergency C-section, maternal satisfaction and emotion regulation strategies:

Effects on PTSD and postpartum depression symptoms

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Abstract

Objective: This cross-sectional study aimed to investigate the relationship between a mother's current emotion regulation strategy (antecedent-focused vs. response-focused), her satisfaction with childbirth, and posttraumatic and/or depressive symptoms after unplanned C-section.

Background: The mother's and baby's health is considered a priority during childbirth. As a result, situations in which an unplanned C-section is required may not allow mothers to express their needs and emotions. This may lead to feelings of dissatisfaction regarding the childbirth experience.

Methods: Fifty French participants aged 18-35 ($M = 27.10$; $S.D. = 3.99$) who had a C-section were recruited on social networking groups and completed four self-report measures online, up to two years after childbirth. These measures assessed emotion regulation strategies currently used, birth satisfaction, postpartum depression symptoms and PTSD symptoms.

Results: Main results indicate (1) Mothers who use expressive suppression, a response-focused strategy, are less satisfied with childbirth. (2) Emotion regulation, when combined with maternal satisfaction, shows a negative association with posttraumatic stress score and depression score.

Conclusion: This study provides interesting data for further research. Follow-up studies about emotion regulation, postpartum depression and posttraumatic stress symptoms should be conducted in the future in order to provide clinical recommendations.

Keywords: C-section; emotion regulation; satisfaction; childbirth

**Emergency C-section, maternal satisfaction and emotion regulation strategies:
Effects on PTSD and postpartum depression symptoms**

Introduction

Caesarean section is a surgical operation which consists of extracting the foetus by incision of the abdominal wall and the uterus, when birth is unsafe by vaginal delivery. The rates of this intervention are high across the world. In France, the C-section rate is approximately 21% since 2003 (INSERM, 2010). The World Health Organization recommends a caesarean section rate of 10 to 15% in each country, in order to decrease the percentage.

Subsequent mental health difficulties

Unplanned C-section may place women at risk of greater mental health difficulties, such as PTSD and postpartum depression.

As defined by the Diagnostic and Statistical Manual of Mental Disorders criteria (DSM-5, American Psychiatric Association, 2013), posttraumatic stress symptoms include re-experiencing the trauma through intrusive and distressing recollections of the event, but also flashbacks, nightmares, emotional numbness and avoidance of places, people and activities that are reminders of the trauma. Arousal is increased, which causes difficulty sleeping and concentrating, feeling jumpy, and being easily irritated and angered.

Between 24 and 33% of women who had an emergency C-section experience intrusive posttraumatic stress symptoms such as flashbacks and nightmares 6 months after childbirth, and 1.5 to 3% of them actually experience PTSD (Ryding, Wijma, & Wijma, 1997 ; Ayers, 2007). These authors argue that women with posttraumatic stress symptoms relate more panic, anger, thoughts of death, and even dissociation during childbirth. They are less focused on the present, and have more painful and intrusive memories than women without posttraumatic stress symptoms. It is likely that flashbacks and nightmares indirectly affect the infant too, as some mothers feel unable to enjoy the present with their baby due to these symptoms (Beck, 1995). Some women may feel the need to avoid contact with their child: this may lead to continuing problems in mother-infant attachment (Ballard, Stanley, & Brockington, 1995). Indeed, women with PTSD may feel emotionally detached from their partners and babies (Allen, 1998) and their sex life may trigger important flashbacks (Beck, 1995).

Mothers may experience postpartum depression symptoms (10 to 15%), which according to DSM-5, include depressed mood (subjective or observed); loss of interest or pleasure most of the day; change in weight or appetite; insomnia or hypersomnia; psychomotor retardation or agitation (observed); loss of energy or fatigue; worthlessness or guilt; impaired concentration or indecisiveness, and recurrent thoughts of death or suicidal ideation or attempt.

Studies exploring the link between unplanned C-section and postpartum depression are still inconsistent: some find an association between delivery method and depressed mood; others do not (Fisher, Astbury, & Smith, 1997; Durik, Hyde, & Clark, 2000; Lobel & DeLuca, 2007). Lobel & DeLuca (2007) suggest the existence of unmeasured factors that may moderate the impact of delivery method on postpartum emotional state, such as dispositional characteristics that influence stress, coping, and emotions. Nonetheless, the actual literature

suggests that emergency C-section and instrumental deliveries generate more distress and fear of subsequent childbirths than vaginal delivery (Ryding, Wijma, & Wijma, 1998). In most of the studies reported above, women's satisfaction regarding childbirth was affected (Fisher, Astbury, & Smith, 1997; Durik, Hyde, & Clark, 2000; Clement, 2001; Chalmers et al., 2010).

Satisfaction with childbirth

Satisfaction is a multidimensional concept, implying a positive attitude towards an experience, and a cognitive evaluation of the response (Hodnett, 2002). According to Simkin (1991), women who are satisfied with labour and delivery are more likely to have vivid memories up to 20 years after childbirth. They may have a more positive perception of subsequent childbirths (Waldenström, Borg, Olsson, Sköld, & Wall, 1996). In contrast, a negative experience may generate anger, fear and sadness towards childbirth.

Waldenström et al. (1996) observe that three factors are more frequently associated to a positive experience of childbirth: low pain, participation in the birth process and social support. In their study, women who had an emergency C-section rated their experience as positive less often. In general, these women are less satisfied with childbirth (Chalmers et al., 2010; Clement, 2001; DiMatteo et al., 1996; Ryding et al., 1998). As the baby's health is a priority when it comes to emergency C-section, it is likely that these mothers have fewer opportunities to express their emotions (Lipson, 1982). The number of interventions during childbirth also decreases satisfaction (Hodnett, 2002). Regardless of the mode of delivery, the quality of support by the birth attendants seems to be beneficial for coping and to increase self-esteem. Spaich et al. (2013) suggest that midwives and obstetricians may contribute in providing a positive, encouraging and supportive environment as well as antepartum education that could help women feel more secure about decision-making and control during labour. In their study, women who had an emergency C-section had a mostly positive perception of childbirth (89%) because of their good relationship with the practitioner or the

midwife. This relationship was rated ‘good’ or ‘very good’ in most of the cases (respectively 88.9% and 87.5%). Thus, interpersonal factors may moderate the impact of delivery mode on postpartum satisfaction. It was suggested earlier that personal characteristics may also shape the perception of a complicated delivery (Lobel & DeLuca, 2007). For instance, coping strategies have been shown to influence postpartum depression (Gutiérrez-Zotes et al., 2016). If stress-regulation strategies have a role to play in this perception, it is very likely that emotion regulation strategies can shape it as well. This study will focus on two of these strategies.

Description of two emotion regulation strategies

Emotions can be considered as adaptive physiological and behavioural responses in reaction to significant situations (James, 1884). In fact, emotional response tendencies arise with an individual’s evaluation of the situation. In order to seem socially acceptable, these responses often need to be modulated. To Boyatzis, Goleman, and Rhee (2000), emotional competence is when ‘*a person demonstrates the competencies that constitute self-awareness, self-management, social awareness, and social skills at appropriate times and ways in sufficient frequency to be effective in the situation*’ (p.3). Emotional competence skills are learnt through interpreting the emotion-eliciting environment, focusing on social interactions (Lau & Wu, 2012; Saarni, 1999).

Emotion regulation refers to systematic changes associated with the activation of emotions. Gross (1998) defines emotion regulation as ‘*processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions*’. It includes changes in the emotion itself, for example its intensity or duration (Thompson, 1994) or other processes such as memory or social interactions.

Emotion regulation difficulties are associated with many disorders, such as generalised anxiety disorder and major depressive episode (D’Avanzato, Joormann, Siemer & Gotlib,

2013). Therefore, we are aiming to investigate the relationship between these emotion regulation difficulties, dissatisfaction with emergency C-section, posttraumatic stress and postpartum depression symptoms.

Amongst all existing emotion regulation strategies, this study will focus on the most representative ones from two main categories described by Gross (1998): antecedent-focused strategies (cognitive reappraisal), and response-focused strategies (expressive suppression). This choice was made in accordance with recent research, and because of their compatibility with the two main objectives of emotion regulation: emotional experience and expression (Gross, Richards, & John, 2006; Haga, Kraft, & Corby, 2009). Studying these two well-defined strategies would make an interesting addition to the existing literature about posttraumatic stress and postpartum depression, as cognitive reappraisal and expressive suppression are two opposite modes of emotion regulation that may be commonly used by mothers.

Cognitive reappraisal

Cognitive reappraisal consists of selecting a way of seeing a situation, in order to experience more or less emotions (Gross, 1998). Thus, cognitive reappraisal can lead to a reduction of the experience and expression of negative emotions, such as anger and sadness after difficult labour and delivery. In general, individuals who use reappraisal have higher levels of environment mastery, personal growth, self-acceptance, a clearer purpose in life, a greater sense of autonomy and better relationships with others. They also tend to be more optimistic and happy with their life (Garnefski, Kraaij, & Spinhoven, 2001; John & Gross, 2004). Mothers who use this strategy are at lower risk for negative outcomes: it seems to be a protective factor. Moreover, this strategy has a low cognitive cost. According to Brooks (1998), self-reflection and insight, two metacognitive processes, increase the use of reappraisal. From a social point of view, cognitive reappraisal users tend to respond

appropriately to others. Mothers who use this strategy may receive more social support, and have emotionally close relationships.

Expressive suppression

Expressive suppression consists of inhibiting the expression of emotions in order not to communicate information about one's emotional state (Gross, 1998). According to Gross & John (2003), this strategy is effective in decreasing the behavioral expression of negative emotion. Nevertheless, it may also have the unintended effect to decrease the expression and experience of positive emotions as well, and to increase anxiety and depression levels.

D'Avanzato et al. (2013) emphasise that expressive suppression is often used by subjects with generalised anxiety disorder or major depressive episode. This strategy encourages rumination instead of action, which leads to long periods of negative emotion (Nolen-Hoeksema, Morrow, & Fredrickson, 1993). Mothers who habitually use expressive suppression may have a feeling of inauthenticity, due to their tendency to present themselves in a way which is discrepant to their inner selves. In the long term, expressive suppression may lead to a more depressive mood, a lower life satisfaction, and less self-esteem (Gross & John, 2003).

Expressive suppression occurs later in the emotion generative process and modifies mainly the behavioural aspect, without decreasing the experience of the negative emotion itself. From the cognitive point of view, it tends to impact memory while the individual is regulating: this strategy has a high cognitive cost. It is also associated with lower performances in verbal tasks, as the individual has to make more efforts to inhibit the response tendencies which occur constantly (Richards & Gross, 2000). These efforts tend to consume the cognitive resources which could be used in the social context. As a consequence, a higher use of expressive suppression is mostly linked to lower social support. According to Butler et al.

(2003), expressive suppression is a costly strategy for each of the partners of an exchange: it causes a loss of concentration towards the conversation. Furthermore, even if some degree of intimacy is to be established, these individuals' behaviour tends to decrease same sex individuals' motivation to become close, which implies that expressive suppression may possibly limit access to new relationships. However, the authors assume that the consequences of expressive suppression are expected to vary across the contexts.

Although initial studies focused on a sample of undergraduate students, Moore, Zoellner, and Mollenholt (2008) linked expressive suppression to PTSD, anxiety, and depression symptoms in a trauma-exposed community sample. Ehring and Quack (2010) also found a correlation between emotion regulation difficulties and PTSD symptom severity.

Based on literature, our study aims to apply this knowledge about expressive suppression to the context of childbirth, examining its relationship with postpartum depression and posttraumatic stress symptoms.

To our knowledge, no scientific study has applied Gross's (1998) model to childbirth: our aim is to determine whether cognitive reappraisal and expressive suppression, combined with a mother's satisfaction towards childbirth, have an influence on PTSD and postpartum depression symptoms. As negative events are perceived more negatively after two years (Rijnders et al., 2008), and as the mother-child relationship is changing, this study will focus on women whose childbirth occurred less than two years ago.

Aims and objectives

This cross-sectional study centres on maternal satisfaction towards emergency C-section, which is a highly emotional experience. The aim of this study is to determine whether maternal satisfaction and emotion regulation are associated with psychosocial outcomes.

It examines the combined effect of two variables (emotion regulation and maternal satisfaction) on posttraumatic stress and postpartum depression symptoms.

There are four general hypotheses for this study:

Regarding maternal satisfaction, we hypothesized that (1) mothers who habitually use cognitive reappraisal would have a higher satisfaction towards unplanned C-section, whereas (2) mothers who habitually use expressive suppression would have a lower satisfaction towards unplanned C-section.

Regarding maternal symptoms of posttraumatic stress and postpartum depression, we hypothesized that (3) the use of cognitive reappraisal and a high satisfaction towards childbirth would be associated with lower posttraumatic stress and postpartum depression symptoms, whereas (4) the use of expressive suppression and a low satisfaction towards childbirth would be associated with higher posttraumatic stress and postpartum depression symptoms.

Methods

Participants

To be included, participants had to be aged at least 18, and to understand the French language. Participants whose childbirth occurred 2 years ago or more, or who had a C-section under general anaesthesia were excluded.

The actual sample included 50 women, as this number reached statistical significance for the tests we wanted to conduct. Participants were aged 18-35 ($M = 27.10$; $S.D. = 3.99$). 76% of them were primiparas. All of them had an unplanned C-section under local anaesthesia, 90% had other interventions, and 84% had drugs during labour prior to the C-section. All participants were recruited by placing ads on several French social networking groups about C-section on Facebook, such as “*Association Césarine*”, “*Mamans Césarienne*” and “*Nés de mon ventre*”. Fifty-seven women were recruited between March and July of 2016 (4 months), and seven were excluded as they gave birth more than two years ago. The main characteristics

of the sample are summarised in Table 1. The whole study was conducted in accordance with the Declaration of Helsinki and was approved by our universities.

Measurements

The materials for this study consist of four scales.

Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire (Gross & John, 2003; French validation by Christophe, Antoine, Leroy, & Delelis, 2009) includes 10 items which require ranking from 1 to 7 (1 = strongly disagree, 7 = strongly agree). The French version of this questionnaire, which was used for this study, has been shown to have good internal consistency (reliability and validity) ($\alpha = 0.76$ for cognitive reappraisal, and $\alpha = 0.72$ for expressive suppression).

The factor ‘cognitive reappraisal’, which explains 28% of the variance, is measured by items 1, 3, 5, 7, 8 and 10. The factor ‘expressive suppression’, which explains 22% of the variance, is measured by items 2, 4, 6 and 9. The measurement of these two strategies is valid and representative.

Questionnaire Measuring Attitudes About Labour and Delivery (QMAALD)

The QMAALD (Marut & Mercer, 1979) is a 29-item attitude questionnaire which requires ranking from 1 to 5 (1 = not at all, 5 = extremely).

Eleven items assess the delivery itself (for example, breathing). Twelve items assess childbirth itself (for example, perceived control), two items assess the combination delivery-childbirth (satisfaction with expectations), and three items assess the initial contact with the new-born. As there is no French validation for this questionnaire as yet, the QMAALD was translated into French and corrected. This translation has shown to have good internal consistency (reliability and validity) ($\alpha = 0.812$). The higher the obtained score, the higher is the satisfaction with childbirth.

Edinburgh Postnatal Depression Scale (EPDS)

The EPDS (Cox, Holden, & Sagovsky, 1987; French version from Guedeney & Fermanian, 1998) was used to assess postpartum depression symptoms. It is a 10-item questionnaire which requires ranking from 0 to 3 depending on the frequency of postpartum depression symptoms. This scale has shown to have good internal consistency (reliability and validity) ($\alpha = 0.76$ for the French version). A mother is experiencing a high degree of depression symptoms when the score is over 12.5 (Cox et al., 1987).

Post-Traumatic Checklist Scale (PCLS)

The PCLS (Ventureyra, Yao, Cottraux, Note, & De Mey-Guillard, 2002) was used to assess posttraumatic stress symptoms. It is a 17-item scale which requires ranking from 1 to 5 depending on the frequency of the symptoms (1 = not at all, 5 = very often). Items 1-5 measure re-experiencing, items 6-12 measure avoidance, and items 13-17 measure increased arousal. This questionnaire has shown to have good reliability and validity ($\alpha = 0.83$ for the French version). The individual is considered as having PTSD when the score is over 44. Although the PCL-5 (Ashbaugh, Houle-Johnson, Herbert, El-Hage, & Brunet, 2016) has been created in accordance with the DSM-5 criteria for PTSD, this new version doesn't provide a threshold yet: this is why the PCLS is still used in this study.

General information questionnaire

In order to control the effect of many extrinsic variables on maternal satisfaction, in particular the available support during childbirth, a short additional questionnaire about childbirth was created. For instance, it assessed whether the partner was present or not, the lapse of time between delivery and the first contact with the child, and the amount of information given by the health care team about C-section.

Mean and standard deviations for the sample are summarised in Table 2.

Procedure

The participants completed the questionnaires online, in the following order: ERQ, QMAALD, EPDS, PCLS and general information questionnaire. Completion took about fifteen minutes.

In accordance with the Helsinki declaration, an informed consent form was submitted before the participants completed the questionnaires. The consent form assured the participants that their answers would remain anonymous, and that they had the possibility to withdraw their participation whenever they wanted to.

Statistical analyses

The relationships between emotion regulation strategies and childbirth satisfaction were measured using Pearson correlations. Multiple regression analyses were also conducted, in order to determine the factors associated with posttraumatic stress and postpartum depression after C-section. The tested factors were the emotion regulation strategy used and maternal satisfaction. The significance threshold was 5% ($p < 0.05$) and the statistical analyses were conducted using SPSS 20.

Results

Information from the General Information Questionnaire

Participants gave birth between 1 and 24 months ago ($M=10$; $S.D.=5.38$). Maternal age, parity, education or attendance of childbirth preparation classes were not related to depression symptoms, posttraumatic stress, or maternal satisfaction.

The time lapse between delivery and meeting the baby was negatively related with postpartum depression symptoms ($r = -0.291$, $p < 0.05$) and strongly related to maternal satisfaction ($r = 0.459$, $p < 0.01$).

The time lapse between delivery and holding the baby for the first time was also strongly related to maternal satisfaction ($r = 0.375, p < 0.01$). In other words, a greater amount of time between the birth and the first contact with the baby resulted in significantly lower levels of depression and higher levels of maternal satisfaction about the birth.

Being supervised by a midwife during pregnancy was negatively related to posttraumatic stress symptoms ($r = -0.297, p < 0.05$).

Finally, the presence of a birthing partner was strongly related to maternal satisfaction ($r = 0.381, p < 0.001$).

Pearson correlation results

The scores on the EPDS indicated that our sample had a high degree of depression symptoms: the mean (15.26) is above the cut-off score of 12.5.

Results can be summarised as follows:

Contrary to the first hypothesis, cognitive reappraisal was not correlated to childbirth satisfaction ($r = 0.101, p = 0.487$).

In accordance with the second hypothesis, expressive suppression was moderately correlated (*i.e.* comprised between -0.5 and -0.3) with childbirth satisfaction ($r = -0.314, p < 0.05$).

Postpartum depression symptoms and maternal satisfaction were negatively related ($r = -0.368, p < 0.001$), whereas posttraumatic stress symptoms were not related to maternal satisfaction ($r = -0.262, p = 0.069$).

Results of multiple regression analyses

Two multiple regression analyses have been conducted in order to test emotion regulation strategies combined with maternal satisfaction on postpartum depression and posttraumatic stress symptoms.

Results are presented in Table 3. They can be summarised as follows:

Emotion regulation combined with maternal satisfaction was linked to the posttraumatic stress score. Expressive suppression and low maternal satisfaction were associated with more posttraumatic stress symptoms (Model 1: $R^2 = 0.151$, $p < 0.05$) and postpartum depression symptoms (Model 2: $R^2 = 0.201$, $p = 0.01$). These models explained respectively about 15% and 20% of the variance.

Discussion

Maternal age, parity, education or attendance of childbirth preparation classes were not related to depression symptoms, posttraumatic stress, or maternal satisfaction. This was consistent with previous work: studies of childbirth satisfaction have found little to no relation with demographic characteristics, but multiparous women are in general more satisfied with their childbirth experience (Hodnett, 2002).

The aim of the present study was to determine whether the emotion regulation strategy used and maternal satisfaction with unplanned C-section had a role to play in posttraumatic stress and postpartum depression symptoms. Several operational hypotheses have been tested.

First, maternal satisfaction with the experience of a C-section was expected to be positively related to mothers' use of cognitive reappraisal strategy : this hypothesis was not confirmed by the study, although cognitive reappraisal helps in considering a life event in the most positive way (Garnefski et al., 2001; Gross & John, 2003; Ryff, 1989).

According to our expectations, maternal satisfaction regarding the experience of a C-section was expected to be negatively correlated to mothers' use of expressive suppression strategy, which was consistent with previous literature about expressive suppression decreasing positive experience (Gross & John, 2003; Nolen-Hoeksema et al., 1993).

Also, it was expected that the emotion regulation strategy used by mothers and their satisfaction regarding the experience of a C-section would be related to depression symptoms.

This model was validated by the study. Maternal satisfaction itself was related to low postpartum depression symptoms in this study ($\beta = -0.277$, $p = 0.053$). Finally, as expected, the emotion regulation strategy used by mothers and maternal satisfaction regarding the experience of a C-section were related to posttraumatic stress symptoms. Once again, this model suggests that maternal satisfaction was the only significant factor related to the PTSD score. These results were consistent with previous work (Ayers, 2007), as mothers with PTSD symptoms tend to report a more negative experience of childbirth. These analyses imply that emotion regulation alone was not sufficient to influence maternal satisfaction or posttraumatic stress and depressive symptoms. Some studies showed that expressive suppression lead to more severe PTSD symptoms (Moore, Zoellner, & Mollenholt, 2008 ; Boden et al., 2013; Shepherd & Wild, 2014) but also to depression (Moore, Zoellner, & Mollenholt, 2008; Gross & John, 2003) by decreasing subjective well-being.

Perhaps one or many other variables are participating when expressive suppression is used as an emotion regulation strategy. From theoretical elements, we can suppose that the ‘suppressive’ mother expresses less expectations towards social support, therefore she receives less (Butler et al., 2003).

In our study, the presence of a birthing partner was a very important factor for maternal satisfaction, thus it should be controlled in the future.

An unexpected result is that being supervised by a midwife during pregnancy was associated to less posttraumatic stress symptoms. Midwives are indeed labour and delivery specialists, they know that strong emotions are common after childbirth (Olde et al., 2005), and therefore they may provide more reassurance and support during pregnancy.

Although the father of the baby was present in most of the cases, the communication distortion (Butler et al., 2003) in expressive suppression could possibly lead to a gap between the parturient’s expectations and her partner’s response, reducing the perceived social support

dimension. Perhaps seeking for social support motivated these women's participation in the exchange groups about C-section on social networking sites. Moreover, as highlighted by Gross and John (2003), the use of expressive suppression could impact the participants' self-esteem, and their feeling of being able to cope with difficulties. This would attenuate the feeling of perceived personal control, which is the second crucial element in childbirth satisfaction (Spaich et al., 2013).

Seventy-six percent of the participants scored over 12.5 in the Edinburgh Postnatal Depression Scale ($M = 15.26$, $S.D. = 6.141$), which was the threshold for postpartum depression symptoms. This result echoes with the study by Ryding et al. (1998) about psychological distress after C-section. These unusually high levels of depression may be due to unplanned C-section, but also to the fact that labour was generally very long (24.6% of women in our sample were in labour for more than 18 hours) and unsettling, as mothers were worrying for their child. They may have been thinking that they were "not able" to deliver vaginally, impacting their self-esteem. In fact, their presence on exchange groups about C-section may have been motivated by the necessity to cope with these depressive symptoms by sharing their experience and helping other mothers.

Almost all of the participants (90%) experienced other interventions, such as epidural anaesthesia, forceps or artificial rupture of the membranes, which may contribute to dissatisfaction about childbirth (Hodnett, 2002).

C-section itself could cause dissatisfaction and disappointment. It often conflicts with a mother's birth plans when she feels like she has not been involved in decision-taking. Having a C-section can also alter the way a mother feels about herself as a woman and about her body: she may feel like she "failed" giving birth, and like her body's boundaries were violated, which may lead to a lack of confidence in her body (Clement, 2001).

Also according to Clement (2001), the urgent nature of the delivery method is more likely to trigger posttraumatic stress than the method of delivery itself: it often gives little time to the mother to prepare mentally for the operation, who fears for their own safety and their baby's.

An interesting finding is that the time lapse between delivery and meeting the baby was negatively related to postpartum depression symptoms. In fact, the later the mother met and held their child, the more they felt satisfied with this contact. Indeed, during this time lapse, mothers may have felt anxious for their baby's health and safety. As they finally hold it in their arms, they may feel intense positive emotions, such as relief.

By using cognitive reappraisal, a mother may reevaluate her experience of childbirth in the most positive way: for example, she may think about how she gave birth to a healthy baby, how she was brave, and how her partner was supportive during labour and delivery. By using expressive suppression, a mother may try to suppress her feelings of sadness and anger towards her painful experience, and therefore stay "stuck" in the past, maintaining depression and posttraumatic stress symptoms.

It cannot be excluded that depression symptoms would momentarily influence emotion regulation because of some biases, such as the cognitive inhibition phenomenon, leading to more rumination (Joorman & Gotlib, 2010). As we mentioned earlier, the habitual use of cognitive reappraisal and expressive suppression is quite stable in time (Gross and John, 2003), so it is unlikely to change on the short-term. However, it would be interesting to determine whether participants who use expressive suppression had depressive symptoms before they gave birth, especially since the scores at the EPDS were very high in our sample.

Other limitations of the study and perspectives for future work

This study included participants up to two years after childbirth. Although this duration is not, according to the scientific literature, sufficient to affect the memory of childbirth, being an active member of an exchange group about C-section on social networking sites could lead

to a halo effect and some retrospective biases. Then, as always, we should remain critical about the size of the sample. A larger sample is necessary in the future, in order to have enough representatives for each emotion regulation strategy, and to test other models including social support and perceived personal control. The participants' ethnicity should also be considered in future studies.

Conclusion

The objective of this study was to investigate relationships between emotion regulation strategies, maternal satisfaction, posttraumatic stress and postpartum depression symptoms. It aimed to evaluate postpartum depression and posttraumatic stress symptoms among young mothers who were recovering from a C-section. Results indicate that low maternal satisfaction and expressive suppression emotion regulation strategy were associated to posttraumatic stress and postpartum depression symptoms. These results seem to suggest that maternal satisfaction and emotion regulation have an impact on psychosocial outcomes. However, since the measurements were made concurrently up to two years after childbirth, future follow-up studies are necessary in order to draw any conclusions and provide recommendations.

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