

**Pregnancy after Postpartum Depression – Could Postpartum Depression be a
Growing Experience?**

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Statement of Originality

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Structured Abstract

Scope

Postpartum depression (PPD) is a serious condition that affects one in five women and can have negative ramifications for the infant, the mother, mother-infant attachment, child development and the family. The experience of PPD is traumatic and stressful, and can persist for several years and impact on future pregnancies and family planning. Research has mainly focused upon the negative outcomes of PPD, however little is known of the positive outcomes of PPD. Positive changes following stressful events, or stress-related growth (SRG), can occur as a result of the person struggling with adversity.

Purpose

There is a knowledge gap in the current literature regarding growth following PPD and prospective studies exploring women's psychological responses through the peripartum period and through subsequent pregnancies and postpartum periods. The purpose of this study was to explore the psychological outcomes across two indexed pregnancies of two groups of women – women who were diagnosed by their GP as having PPD ('PPD group') and women who were not diagnosed with PPD ('not-PPD group'). The aim was to investigate whether these groups differed in their coping styles, marital satisfaction and stress-related growth, and whether these factors mediated their experience of depressive symptoms from one postpartum period to the next. It also aimed to assess whether stress-related growth was evident in the postpartum period of the subsequent pregnancy, and to identify specific predictors of stress-related growth.

Methodology

Participants in this study were sourced from a pool of participants involved in a larger, longitudinal study in the United Kingdom that was examining psychological responses to pregnancy and pregnancy failure. A sample of 75 primiparous women diagnosed with PPD agreed to participate in this study. They were matched to a random sample of 75 primiparous women who did not have a diagnosis of PPD to act as a control. The women were aged between 18 to 38 years ($M = 27.5$, $SD = 5.5$). They completed the Beck Depression Inventory (BDI), the Index of Marital Satisfaction (IMS), the Coping Response Inventory (CRI), the Revised Stress-Related Growth Scale (RSRGS), and a demographics survey over three time points: *T1*: during pregnancy (3rd trimester of the first pregnancy), *T2*: the initial postpartum period (6 months after the birth from the first pregnancy), and *T3*: the subsequent postpartum period following the subsequent pregnancy (6 months after the birth of the second child). A number of women dropped out of the study over the three time points, leaving 52 women in the PPD group and 64 women in the not-PPD group completing the entire study. A repeated measures analysis of variance was conducted to examine the differences between the two groups on these measures, and a hierarchical multiple regression analysis was used to examine the strength of the relationships between the variables and stress-related growth.

Results

Results indicated that growth can act as a mediator in the reduction of depressive symptoms in subsequent postpartum periods, with women in the PPD group reporting a reduction in depressive symptoms across the time points and significantly greater stress-related growth than women in the not-PPD group in the subsequent postpartum period. Women's marital satisfaction during pregnancy, maternal depression in the postpartum periods, and behavioural approach coping strategies employed during pregnancy and

cognitive avoidance coping strategies in the initial postpartum period were found to predict stress-related growth in the subsequent postpartum period.

Conclusions and Implications

This study highlights that positive outcomes can occur following PPD such as personal growth and improved marital relationships, and certain factors can reduce the risk of recurrence of PPD in subsequent pregnancies. This study has clinical value, whereby these results can offer encouragement to women who have a prior history of PPD or a psychiatric history and reduce their distress at the prospect of future pregnancies. This study can also assist in clinicians providing a more holistic intervention for PPD that includes both reducing negative outcomes of PPD as well as targeting the positive change that can arise from PPD, such as personal growth, greater connections with others, and improvements in self-understanding, belonging, personal strength, emotional regulation, treatment of others and spirituality.

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Literature Review

Becoming a mother is often described as a life changing experience. However, for some women the transition into motherhood can include the experience of postpartum depression (PPD).

PPD is defined as an episode of major depressive disorder that occurs during pregnancy or in the first 4 weeks postpartum, and can also include symptoms of severe anxiety and panic attacks (American Psychiatric Association, 2013). Increasingly, research is finding that a large proportion of “postpartum” depressive episodes actually began prior to delivery. A large national survey (n = 28,600) examining breastfeeding practices and PPD found that 73% of the women surveyed reported being diagnosed with depression prior to being pregnant, 4% of women reported being diagnosed during pregnancy, and 19% reported being diagnosed in the first year postpartum (Australian Institute of Health and Welfare, 2012). This growing evidence has led to an expansion of the DSM-5 diagnostic criteria to include the pregnancy period and renaming the specifier to “*with peripartum onset*” (American Psychiatric Association, 2013).

Whilst there are numerous studies on screening for PPD (Boyd, Le, & Somberg, 2005; Ji et al., 2011), predictors of PPD (Beck, 1996; Milgrom et al., 2008; O'Hara & Swain, 1996; Robertson, Grace, Wallington, & Stewart, 2004), and the negative ramifications of PPD on the mother-infant relationship (Beck, 1995; Murray, Fiori-Cowley, Hooper, & Cooper, 1996), infant attachment styles (Lefkovic, Baji, & Rigó, 2014; Martins & Gaffan, 2000), child development (Beck, 1998; Grace, Evindar, & Stewart, 2003; Murray & Cooper, 1996), the partner, the marital relationship, and other children within the family (Boath,

Pryce, & Cox, 1998), little research has been conducted into the positive outcomes of PPD, such as it being a time for personal growth. Furthermore, despite it being well documented that women with a history of PPD have a greater risk of relapse in subsequent pregnancies (Cooper & Murray, 1995; Johnstone, Boyce, Hickey, Morris-Yates, & Harris, 2001), there has been little research on women's experience of PPD in subsequent postpartum periods and the factors that influence, or buffer the woman from, the recurrence of PPD. We know of only one study that prospectively examined PPD across two pregnancies and possible mediators of recurrent PPD (Dunkel-Schetter, Saxbe, Cheadle, & Guardino, 2016).

Living with PPD and its impact on subsequent peripartum periods

The estimated prevalence rates of PPD range from 13% to 20% (Gavin et al., 2005; Leigh & Milgrom, 2008; O'Hara & Swain, 1996; Seimyr, Welles-Nyström, & Nissen, 2013). The prognosis for women with PPD is that symptoms can persist for several years postpartum, becoming a chronic condition that can continue through more than one pregnancy (Cooper & Murray, 1995; Giallo, Cooklin, & Nicholson, 2014; Wang, Wu, Anderson, & Florence, 2011). For example, Horowitz and Goodman (2004) found that 30.6% of the women in their study continued to experience symptoms of depression 2 years postpartum. Moreover, Giallo et al. (2014) conducted a large scale (n = 4879) study across a period of 7 years postpartum and found that 7.4% of the women presented in the symptomatic range at 2-3 years postpartum. At 4-5 years postpartum the proportion of women that remained symptomatic was 7.6%, and at 6-7 years postpartum the proportion of women who continued to experience persistent symptoms was 8.6%.

Studies of women's lived experience of PPD have described the experience as traumatic, fraught with feelings of terror and loss (Beck, 1992, 1993; Karraa, 2013; Røseth, Binder, & Malt, 2011). The initial onset of PPD is characterised by a feeling of losing control (of emotions, thoughts and actions), debilitating anxiety, obsessive and distorted thinking, impaired concentration, and consuming shame. This is then followed by 'loss of self', characterised by intense feelings of loneliness and self-isolation, a fear that life will never be normal again, coupled with a sense of unrealness and feelings of apathy, anhedonia and disillusionment with motherhood. Previously held beliefs about themselves and motherhood are shattered.

Women describe the experience of PPD as one of the hardest life events they have experienced (Karraa, 2013), and research have found a high degree of comorbidity between PPD and postpartum PTSD (Lemola, Stadlmayr, & Grob, 2007; White, Matthey, Boyd, & Barnett, 2006). White et al. (2006) examined women's scores on measures of postpartum distress (Posttraumatic Stress Symptoms Scale – Self-report version (PSS-SR)), and measures of PPD (Edinburgh Postnatal Depression Scale (EPDS)) over a 12 month period. They found consistently strong correlations between women's scores at 6 weeks postpartum ($r = 0.63$), at 6 months postpartum ($r = 0.7$), and at 12 months postpartum ($r = 0.7$), and they recommended that screening and interventions for postpartum distress should consider both PPD and PTSD given their high comorbidity.

Beck (1992) noted that even after women have regained a sense of control following recovering from the PPD episode, they still feel vulnerable to PPD recurring and fear its return in future pregnancies (Beck, 1993; Kleiman, 2005). An increase in anxiety and distress at the thought of future pregnancies, and throughout subsequent pregnancies, has been

reported in the literature (Kleiman, 2005). This fear of PPD recurring can have an influence on women's decision to have another child. Peindl, Zolnik, Wisner, and Hanusa (1995) examined the association between PPD and subsequent family planning and found that 32% of the women who had experienced PPD changed their family plans (i.e. they took actions to prevent further pregnancies) due to fears of it recurring and the consequences that the illness had. Similarly, Di Florio et al. (2014) studied women who had a history of bipolar disorder and recurrent major depression and found an association between the psychiatric outcome of the first pregnancy and the percentage of women who went on to have further children. They found that women who experienced a postpartum psychiatric episode following their first pregnancy were 2 to 2.5 times less likely to have further children than women who did not experience a postpartum episode in their first pregnancy.

Increased risk of postnatal depression for women with a psychiatric history

There is a large body of research that suggests that women who have a history of PPD, or have a prior history of psychiatric illness, antenatal anxiety and/or depression, are at greater risk of experiencing a depressive episode in the postpartum period, or experiencing a recurrence of their pre-existing psychiatric illness in the postpartum period (e.g. Beck, 2001; Cooper & Murray, 1995; Leigh & Milgrom, 2008; O'Hara & Swain, 1996; Robertson et al., 2004).

Milgrom et al. (2008) conducted a large prospective study ($n = 22,968$) examining the antenatal risk factors for PPD and found that the strongest predictors of elevated postnatal EPDS scores (i.e. $EPDS \geq 12$) were: *elevated antenatal EPDS scores* (OR = 7.52, $p < 0.001$), *antenatal emotional problems* (in particular antenatal depression with anxiety (OR = 9.73, $p < 0.001$)), and *previous psychiatric condition* (in particularly a prior history of depression

with anxiety (OR = 6.13, $p < 0.001$). Giallo et al. (2014) found similar results in their longitudinal study ($n = 4879$), where they found that women with a past history of depression had 5 times higher odds of persistent depression postnatally than women without a history of depression (OR = 4.67, $p < 0.001$).

Furthermore, studies have suggested that once a woman has experienced PPD, the risk of recurrence in subsequent pregnancies increases (Cooper & Murray, 1995; Johnstone et al., 2001). For instance, Johnstone et al. (2001) found that women who experienced PPD after their initial birth were four times more likely to experience PPD symptoms again after subsequent births. Likewise, Cooper and Murray (1995) examined primiparous women who presented with PPD and divided these women into two subcategories – women for whom this was their first depressive episode ('first onset PPD' group), and women for whom the depressive episode was a recurrence of a pre-existing mood disorder ('subsequent onset PPD' group). They followed these women through subsequent pregnancies and found that women in the 'first onset PPD' group demonstrated higher rates of recurrence of depression in subsequent postpartum periods (41%) than the women in the 'subsequent onset PPD' group (18%). However, in contrast, the women in the 'subsequent onset PPD' group experienced higher rates of recurrence of depressive episodes occurring *outside* of the postpartum period ('non-postpartum depression') (62%) than the women in the 'first onset PPD' group (38%). From their results they proposed that PPD has distinct features from other forms of depression and it may warrant being classified as its own disease as opposed to its current DSM-V classification as a major depressive disorder with peripartum onset.

However many of these studies are limited by methodological issues, such as relying upon retrospective, self-reports of psychiatric history and thus being vulnerable to

retrospective bias (e.g. Eberhard-Gran, Eskild, Tambs, Samuelsen, & Opjordsmoen, 2002); basing determination of ‘postpartum depression’ on self-report screening tools (like EPDS) rather than diagnostic interview (e.g. Johnstone et al., 2001; Milgrom et al., 2008); or varying quality of depression symptom measures (e.g. Beck, 2001; Giallo et al., 2014). It has been argued that due to these methodological issues, the studies conducted to date do not offer sufficient systematic evidence to conclusively assert that once a woman has experienced PPD symptoms following one pregnancy they are at risk of recurrence in subsequent pregnancies, nor can they state whether PPD symptoms in subsequent pregnancies is actually related to depressive symptoms from previous postpartum periods (Dunkel-Schetter et al., 2016).

Furthermore, there are a few studies that have found contrary results, whereby PPD symptoms remained stable or even decreased from one postpartum period to the next. For instance, La Porte, Kim, Adams, Du, and Silver (2012) conducted a large-scale study (n=2116) examining patterns of depression in women over successive pregnancies. They found that 1.7% of the women in their study scored a ‘positive/positive’ result (i.e. they screened as ‘positive’ for depression in their first pregnancy (i.e. EPDS \geq 12), and ‘positive’ for depression in the subsequent pregnancy). However, a higher proportion of women (5.9%) in their study scored a ‘positive/negative’ result (i.e. they scored ‘positive’ for depression in the first pregnancy, but ‘negative’ for depression in the subsequent pregnancy). Likewise, Dunkel-Schetter et al. (2016) in their prospective study (n = 228) of PPD following two pregnancies, found that 76% of the women in their study demonstrated negligible change in depressive scores (i.e. less than 5 points difference on the EPDS) from one postpartum period to the next, and when they examined the overall patterns of depressive symptoms across the postpartum periods, they observed an overall trend of depressive symptoms decreasing slightly from one postpartum period to the next. Di Florio et al. (2014) also found

contradictory results in their study that examined the rates of perinatal mood episodes in women (n = 1667) across first, second and subsequent pregnancies for a range of mood disorders: Bipolar Disorder-I (BP-I), Bipolar Disorder-II (BP-II) and Recurrent Major Depression (RMD). They observed a decrease in occurrence of depressive episodes for women with a history of RMD across their first, second and subsequent pregnancies (48.1%, 37.3% and 27.4-33.5%, respectively). They also found a decrease in rates of depression for women with a history of BP-II across their first and second pregnancies (46.0% and 33.0%, respectively). And they noted a drop in the proportion of mania/psychotic depression episodes for women with a history of BP-I across their first, second and subsequent pregnancies (35.0%, 20.5% and 14.6-14.8%, respectively).

Collectively, these studies highlight that for some women, having a history of PPD or a psychiatric history does not necessarily mean they will experience a recurrence of PPD, and suggest that there are mediating factors that can reduce the risk of PPD recurrence in subsequent pregnancies.

Mediating factors in the development of PPD

Systematic reviews examining predictors of PPD have found strong to moderate associations between PPD and several variables including: prior history of psychiatric illness, antenatal depression and/or anxiety, life stress, low self-esteem, low social support, poor marital relationship and low marital satisfaction, and childcare stress (Beck, 1996, 2001; O'Hara & Swain, 1996; Robertson et al., 2004). Other risk factors that have been found to have lesser (but still significant) associations with PPD include: low socioeconomic status (SES), difficult infant temperament, neuroticism, marital status (being single),

unplanned/unwanted pregnancy, birth trauma, obstetric factors, and coping styles (e.g. negative cognitive attributional style).

There is considerable research on coping and its mediating effects between stressful events (e.g. childbirth trauma and transition to motherhood) and PPD. *Coping* is defined as a person's constantly changing cognitive and behavioural efforts to handle specific demands (both internal and external) that the person perceives as being taxing, or exceeding, their resources (Lazarus & Folkman, 1984). Studies have found that passive and avoidant coping strategies (e.g. denial, blaming, resignation, venting, ruminating, self-distraction, substance use, catastrophising, emotional discharge) are associated with increased risk of PPD and higher depression scores (Gutiérrez-Zotes, Labad, Martín-Santos, García-Esteve, Gelabert, Jover, Guillamat, Mayoral, Gornemann, Canellas, et al., 2015; Haga et al., 2012; Honey, Morgan, & Bennett, 2003), whereas active coping strategies (e.g. planning, humour, acceptance seeking support, positive reinterpretation) have been associated with lower depression scores and lower risk of developing PPD (Razurel, Kaiser, Sellenet, & Epiney, 2013; Terry, Mayocchi, & Hynes, 1996).

Partner support and its association with PPD

One area of coping which has been well investigated is *social support*. Social support refers to the belief that “*one is loved and cared for by others, esteemed and valued as part of a social network of mutual assistance*” (Gutiérrez-Zotes, et al., 2015, p702) There is extensive research that shows that social support can serve as a buffer to depression through influencing how the individual copes with stress. Indeed, meta-analyses and studies examining predictors of PPD have identified that, second to maternal psychiatric history, social support and poor marital relationship are one of the strongest predictors of PPD (Beck,

1996, 2001; Micali, Simonoff, & Treasure, 2011; O'Hara & Swain, 1996; Wylie, Hollins Martin, Marland, Martin, & Rankin, 2011). In the coping literature, 'social support' is a general term used to describe support from a range of people (e.g. partner, family, friends, medical and mental health professionals, community and support groups). For the purpose of this study, we limited our focus upon partner support and women's satisfaction with their partner relationship as studies have suggested that one the most important, and main, sources of support for postpartum women is their partner, and partner support has been found to be a protective factor against PPD (Dennis & Ross, 2006; Marshall & Thompson, 2014; Milgrom et al., 2008; O'Hara & Swain, 1996; Razurel et al., 2013)

Studies examining the effects of partner support found women who reported greater dissatisfaction with their relationship with their partner (due to factors such as greater conflict with their partner, viewing their relationship more negatively, having a low perception of partner support) during pregnancy or in the postpartum period showed increased risk of PPD, persistent depression and posttraumatic stress (Giallo et al., 2014; Iles, Slade, & Spiby, 2011; O'Hara & Swain, 1996; Robertson et al., 2004). Whereas women who held more positive appraisals of their partners and their relationship, and felt confident they had their partner's support - both emotional support (e.g. being able to discuss concerns, feeling accepted and not criticised, relationship solidarity, reciprocity, partner's emotional commitment) and practical support (e.g. workload balance, shared baby-care) – reported less depressive symptoms, less postpartum stress, lower levels of postpartum trauma symptoms and better adjustments to motherhood (Buultjens & Liamputtong, 2007; Lemola et al., 2007; Marshall & Thompson, 2014; Millar, 2012; Misri, Kostaras, Fox, & Kostaras, 2000).

Marks and her colleagues have conducted a number of studies examining the recurrence of mental illness following childbirth in women who have a history of depressive and affective disorders, and the influence of partner's emotional support, expressed emotion and positive thinking towards the woman (Marks, Wieck, Checkley, & Kumar, 1996; Marks, Wieck, Seymour, Checkley, & Kumar, 1992) They found that women whose partners expressed more positive comments about them and less critical comments did not relapse, whereas women whose partners expressed more critical comments and little positive comments experienced a relapse rate of 43% and 50%. The highest proportion of women who relapsed were those whose partners appeared to be disengaged (i.e. offered neither positive nor critical comments), with 78% and 69% of these women relapsing (Marks et al., 1996; Marks et al., 1992). Marks et al. (1996) found that partners' critical comments were negatively correlated with women's satisfaction with their marriage, and they found that the women who relapsed were less satisfied with their pregnancy and the prospect of being a mother. Furthermore, Giallo et al. (2014) conducted a longitudinal study (n = 4879) of the progression of women's depression over the first seven years postpartum and the risk factors associated with persistent PPD. They found that the women who reported 'high-quality relationships' (as defined by good communication, low conflict, and emotional support) exhibited lower odds of persistent PPD symptoms (OR = 0.94, p<0.001), and they proposed that high-quality relationships buffered the women from some of the pressures associated with the postnatal period.

Other ways of coping and their association with PPD

As noted previously, coping has been associated (both positively and negatively) with PPD – depending upon the coping strategies employed. The challenge with interpreting the research on coping is a lack of concordance regarding the dimensions of coping and an

inconsistency in the categorisation of coping strategies between studies - with some studies referring to macro-strategies whereas others examined subcategories (De Ridder, 1997; Razurel et al., 2013). Even studies that utilise the same coping measure categorise the strategies differently. For example, Gutiérrez-Zotes, et al. (2015) categorised the 14 coping scales of the Brief COPE (Carver, 1997) into two groups: ‘*passive/avoidance*’ strategies and ‘*active/approach*’ strategies, whereas Honey et al. (2003) proposed the same 14 coping scales formed four factors: ‘*problem-focused coping*’, ‘*support seeking coping*’, ‘*venting coping*’, and ‘*avoidance coping*’.

Nevertheless, a pattern can be seen in the research - whereby avoidant coping styles are correlated with higher EPDS scores and higher chance of developing PPD symptoms, whereas positive reappraisal coping styles (e.g. ‘positive reframing’, ‘positive reinterpretation’, ‘cognitive problem-focused coping’) are associated with lower EPDS scores and lower risk of developing PPD symptoms. Gutiérrez-Zotes, and colleagues (2015) assessed women’s coping strategies and their relationship with PPD symptoms 8 weeks and 32 weeks postpartum. They found ‘passive/avoidance’ strategies were positively associated with PPD symptoms at 8 weeks ($r = 0.61, p < 0.05$) and at 32 weeks ($r = 0.30, p < 0.05$), whereas ‘active/approach’ strategies were negatively associated with PPD symptoms at 8 weeks ($r = -0.10, p < 0.05$). Similar results were found by Honey et al. (2003) who examined women’s coping styles and their relationship to mood following childbirth. Of the four coping factors (‘problem-focused coping’, ‘support seeking coping’, ‘venting coping’, ‘avoidance coping’), the most significant predictors of high EPDS scores were *avoidance coping* and *venting coping*.

Faisal-Cury, Tedesco, Kahhale, Menezes, and Zugaib (2004) examined the relationship between women's coping patterns and levels of postpartum depressive symptoms and found that women who scored high on the coping scales: *distancing*, *escape avoidance*, *self-control* and *confronting*, had a higher incidence of PPD. In particular, they found that high scores on *distancing* (a form of coping that entails the person not focusing on the problematic situation) were associated with higher odds of PPD. The other types of coping they measured (i.e. *positive reappraisal*, *support seeking*, *problem solving* and *accepting responsibility*) showed no statistically significant association with PPD; however, this may be a product of their methodology as they assessed postpartum distress at 10 days postpartum. Given the early administration of their measures, it is possible that there was not a sufficient passage of time to be able to capture the effects of these particular coping styles on PPD. Other researchers who have assessed coping over a longer period of time have found associations between these particular coping styles and PPD. For example, Terry et al. (1996) found a negative relationship between cognitive problem focused coping (which incorporated cognitive reappraisal and problem solving strategies) and PPD.

Park, Cohen, and Murch (1996) observed that people who utilised 'positive reappraisal' coping (i.e. positive reinterpretation) when dealing with a stressful event reported greater positive change from that stressful event. They propose that individuals who employ positive reappraisal coping want to learn something, and grow, from the stressful experience, and they found that positive reappraisal was highly correlated with stress-related growth ($b = .42, p < 0.001$). They propose that positive reinterpretation coping is, in essence, stress-related growth.

Growth: Could PPD be a growing experience?

Over the last two decades, there has been increasing interest – from both researchers and clinicians alike - to move away from focusing upon the negative outcomes of stressful life events, trauma and adversity, and instead move towards examining the potential positive outcomes that can arise from people’s efforts to cope with the stressful or traumatic experience – such as people’s ability to grow from these stressful experiences (Joseph & Linley, 2006; Park, 1998; Park et al., 1996; Richard G. Tedeschi, Calhoun, & Cann, 2007). This concept of positive change following adversity, or *growth*, has been referred to in the literature by different names, such as ‘posttraumatic growth’ (Tedeschi & Calhoun, 1996), ‘benefit-finding’ (Affleck & Tennen, 1996), ‘adversarial growth’ (Linley & Joseph, 2004), and ‘stress-related growth’ (Park et al., 1996), and each theorist offering different definitions and assessment tools to describe and measure this phenomenon. Park (1998) offers a simple and broad definition of growth, whereby ‘growth’ refers to any positive changes a person experiences (e.g. changes in relationships, values, coping skills, life philosophies, goals) following stressful events.

Historically, studies on growth have mainly focused upon stressful events that are considered traumatic (e.g. accidents, disasters, bereavement, cancer, HIV infection and AIDS, sexual abuse, war, chronic health conditions). However recently, growth research has broadened to areas not traditionally seen as traumatic, such as the transition to motherhood, childbirth, multiple births and preterm births - arguing that these stressful life events have the potential to promote growth (e.g. (Beck & Watson, 2010; Marshall & Thompson, 2014; Millar, 2012; Sawyer & Ayers, 2009; Sawyer, Ayers, Young, Bradley, & Smith, 2012; Taubman-Ben-Ari, Shlomo, Sivan, & Dolizki, 2009; Taubman–Ben-Ari, 2012; Taubman–Ben-Ari, Findler, & Sharon, 2011)). However there is a dearth of research into growth

following PPD, despite PPD being identified as a traumatic and stressful life event (Beck, 1993; Lemola et al., 2007). A review of the studies on growth and PPD yielded only one study (Karraa, 2013) that specifically examined the concept of PPD as being a transformation experience that can result in personal growth, however that study used retrospective reports of PPD with a small, purposive sample of women (n=20) who self-identified as having experienced PPD and being transformed from that experience. Nevertheless, the women in that study reported having grown (i.e. increased self-confidence, compassion for others, better self-care, enhanced relationships, being more authentic) as a result of experiencing PPD.

Karraa identified four thematic categories of transformation through PPD: (a) *'Before/I was unprepared'*; (b) *'During/I was shattered'*; (c) *'After/I am a different person'*; (d) *'Beyond/I was meant to have PPD'*. From the results of her study, Karraa defined transformation from PPD as the *"recognition of new behaviours and beliefs about the world and the achievement of new roles in the world after the experience of PPD"* (Karraa, 2013, p141). Within each of Karraa's categories, she identified a number of underlying processes that characterised those core categories. For example, in the first stage of transformation, *'Before/I was unprepared'*, Karraa reported that women's experiences of this stage was dominated by a feeling of unpreparedness – that is, unprepared for the symptoms of PPD. She observed that within this period, women grappled with a discord between previously held constructs of motherhood and their lived experience of motherhood, and a shattering of the assumption that nothing like PPD could happen to them. Karraa noted that for women to get better and to move to later stages of transformation (*'After PPD/I'm a different person'* stage), they needed to adopt new "modes of understanding" - whereby they needed to reconstruct their beliefs of motherhood and integrate their experience of PPD, and the

suffering they had been through, with these new constructs. This is akin to Janoff-Bulman (2004) model of coping with trauma, whereby rebuilding assumptions forms the heart of her model. She notes that *“traumatic life events shatter our fundamental assumptions about ourselves and our world.... coping involves the arduous task of reconstructing an assumptive world, a task that requires a delicate balance between confronting and avoiding trauma-related thoughts, feelings, and images. Over time, with the help of personally meaningful cognitive reappraisals and genuine support from close, caring others, most trauma victims manage to rebuild their inner world. They can move on with their lives, which no longer seem to be wholly defined by their victimization. Victims become survivors”* (Janoff-Bulman, 1992, p. 169). This model highlights the importance of good social supports and the person’s coping approach (specifically cognitive reappraisal, approach/avoidance coping styles) in moving from ‘victim’ to ‘survivor’ - that is, growing from the traumatic experience.

Researchers examining the factors that promote and impede growth have found that a person’s coping style and the quality of social support may determine the extent to which people experience growth (e.g. (Linley & Joseph, 2004; Park & Fenster, 2004; Tedeschi & Calhoun, 2004). Indeed, one study found that coping is one of the most significant predictors of stress-related growth, and accounted for 46% of the variance in stress-related growth (Park & Fenster, 2004). Specifically, coping processes such as ‘problem-solving’, ‘positive reinterpretation’, ‘venting’, ‘humour’, ‘perceiving stress as challenging’, ‘acceptance’, ‘seeking guidance’, ‘religion’, and ‘utilising social supports’ are strongly correlated with stress-related growth (Park, 1998; Park et al., 1996; Sawyer & Ayers, 2009; Taubman-Ben-Ari et al., 2009). The mechanism in which social support influences an individuals’ growth following adversity has been debated in the literature. Some have argued that social relationships provide the individual with the opportunity to discuss and ruminate on the event

and offer new perspectives on the situation, which can lead to the revision of previously held schemas and assumptions and assist with finding positive meaning from the event – which are key to growth (Park, 1998; Sawyer et al., 2012; Tedeschi & Calhoun, 2004).

More specifically, researchers have found that social support in itself was not associated with growth, but rather the person's *satisfaction* with their social support (Linley & Joseph, 2004; Park, 1998; Park et al., 1996; Sawyer et al., 2012). With partners being one of the most crucial supports for mothers (Marshall & Thompson, 2014; Milgrom et al., 2008; Taubman-Ben-Ari et al., 2009), women who reported better partner relationships experienced better mental health outcomes following the transition to motherhood and higher levels of personal growth (Taubman-Ben-Ari et al., 2009).

There has been some contradictions in the literature about the relationship between growth and psychological outcomes (like depression and post-traumatic distress), with some studies reporting a positive relationship, whilst others report a negative relationship (refer to Linley & Joseph, 2004; Zoellner & Maercker, 2006), however most studies have found no relationship between growth and psychological outcomes (e.g. Linley & Joseph, 2004; Park & Fenster, 2004; Sawyer & Ayers, 2009). One possible explanation for these conflicting findings is the varied way that psychological outcomes like depression and distress are defined and categorised. The difficulty with interpreting studies examining depression and distress is that these concepts can be operationalised as either global measures or in terms of their psychopathological symptoms. For example, studies examining growth and posttraumatic distress may measure distress in terms of symptoms of PTSD, or may use a general measure of distress (e.g. IES)), and it has been criticised that these different ways of measuring distress are likely to relate to growth in different ways (Sawyer et al., 2012).

Furthermore, the concept of growth itself has been challenged in the literature; as often growth is self reported, and not substantiated by objective measures.

Aims of this study

A knowledge gap identified from this literature review was that there is an absence of research into growth following PPD. In addition, there is a scarcity of prospective studies exploring women's psychological responses through the peripartum period (i.e. from pregnancy, to being diagnosed with PPD and through the initial postpartum period) and through subsequent pregnancies and postpartum periods. These are areas that we need to investigate further as it has important implications for both theory and clinical practice. From a clinical perspective, studying women's experience of PPD over subsequent births, and investigating the possible positive psychological outcomes (such as growth) and the variables that can influence positive outcomes, allows for a more complete picture of the psychological experience of PPD - which can assist with the development of more holistic clinical interventions, inform both prenatal and postnatal screenings, and provide information to families who are concerned about recurrence of PPD and aid them with their decisions about family planning. From a theoretical perspective, many of the studies of PPD and growth to date are retrospective, however studying growth following being diagnosed with PPD and through subsequent births provides us with an opportunity to understand the changing experience of PPD and the development of growth prospectively.

One aim of this study was to explore the psychological outcomes across two indexed pregnancies of two groups of women – women who were diagnosed with PPD ('PPD group') and women who were not diagnosed with PPD ('not-PPD group'), and investigate whether these groups differ in their coping styles, marital satisfaction and stress-related growth, and

whether these factors mediate their experience of depressive symptoms from one postpartum period to the next. The second aim was to assess whether stress-related growth was evident in the postpartum period of the subsequent pregnancy, and to identify specific predictors of stress-related growth.

Based on the reviewed literature, it is hypothesised that women who are in the PPD group will score higher on measures of depression and distress, will report less marital satisfaction than the women in the not-PPD group, and there will be a difference in the way the two groups cope. It is also hypothesised that for women in the PPD group, their scores on measures of depression and distress will deteriorate between administration at pregnancy and the postpartum periods. Furthermore, it is hypothesised that greater levels of growth in the postpartum period would be predicted by greater social support (i.e. greater marital satisfaction) and approach-based coping styles being more dominant coping style.

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Manuscript

RUNNING TITLE: Growth following Postpartum Depression

Manuscript for the Journal of Women's Health

**Pregnancy after Postpartum Depression – Could Postpartum Depression
be a Growing Experience?**

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Abstract

Background: Numerous studies have examined screening for PPD, predictors of PPD, and the negative ramifications of PPD. However there is little research on the positive outcomes of PPD, such as personal growth, or women's experience of PPD in subsequent postpartum periods and the factors that buffer women from PPD recurring.

Methods: A prospective case-control study screened primiparous women who were diagnosed with PPD (*PPD group*, n=52), and their matched controls (*not-PPD group*, n=64), for maternal depression, marital satisfaction, coping, and stress-related growth, across three time-points: pregnancy, the initial postpartum period, and the postpartum period following the subsequent pregnancy. Repeated measures ANOVA and hierarchical multiple regression analyses were used to examine differences between groups and predictors of growth.

Results: PPD group reported more depressive symptoms and less marital satisfaction during pregnancy and the initial postpartum period, however there was no significant difference between the groups in the subsequent postpartum period. The PPD group showed a significant reduction in depressive scores in the subsequent postpartum period – and were less than the scores at pregnancy and the initial postpartum period. The PPD group scored higher than women in the not-PPD group on measures of growth in the subsequent postpartum period. The main predictors of growth were marital satisfaction during pregnancy, maternal depression in the postpartum periods, and coping strategies employed during pregnancy and the initial postpartum period.

Conclusions: Positive outcomes can occur from PPD. Women who experienced more postpartum depression reported more growth. Marital satisfaction and coping styles can influence growth following PPD.

Keywords: postpartum depression; stress-related growth; subsequent pregnancy; marital satisfaction; coping

Pregnancy after Postpartum Depression – Could Postpartum Depression be a Growing Experience?

Postpartum depression (PPD) is an episode of major depressive disorder occurring during pregnancy or in the first 4 weeks postpartum, which can include symptoms of severe anxiety and panic attacks¹. Research is finding that the majority of women present with PPD symptoms either prior to becoming pregnant, or during pregnancy².

Whilst there are numerous studies on screening for PPD^{3,4}, predictors of PPD⁵⁻⁸ and negative ramifications of PPD on mother-infant interaction^{9,10}, child development¹¹⁻¹³ and the family¹⁴, little research has been conducted into the positive outcomes of PPD, such as it being a time for personal growth. Furthermore, despite it being well documented that women with a history of PPD have a greater risk of recurrence in subsequent peripartum periods^{15,16}, there has been little research on women's experience of PPD in subsequent postpartum periods and the factors that can buffer the woman from PPD recurring. We know of only one study that prospectively examined PPD across two pregnancies and possible mediators of recurrent PPD¹⁷.

Living with PPD and its impact on subsequent peripartum periods

Prevalence estimates for PPD range from 13% to 20%^{6,18-20} with symptoms persisting for several years and can continue through more than one pregnancy^{15,21-23}.

Studies of women's lived experience of PPD have described the experience as traumatic, fraught with feelings of terror, loss of self, and loss of control²⁴⁻²⁷, and a high degree of comorbidity between PPD and trauma symptoms^{28,29}. In the long term, women feel

vulnerable to PPD recurring^{25,30}, influencing their decision to have another child. Women with a history of PPD are more likely to change their family plans³¹ and are 2 to 2.5 times less likely to have further children³².

Numerous studies have found that a history of PPD increases the risk of depression in subsequent pregnancies^{15,16,21}. However a few studies that have found contrary results, whereby PPD symptoms remain stable and even decrease from one postpartum period to the next^{17,32,33}. These studies suggest that there are mediating factors that can reduce the risk of PPD recurrence in subsequent pregnancies.

Mediating factors in the development of PPD

Systematic reviews examining predictors of PPD have found strong to moderate associations between PPD and several variables including: low social support, poor marital relationships and low marital satisfaction^{5-7,34}. One of the main sources of support for postpartum women is their partner and partner support has been found to be a protective factor against PPD^{6,8,35-37}. Women who reported greater dissatisfaction with their partner and/or relationship during pregnancy or in the postpartum period showed increased risk of PPD, persistent depression and posttraumatic stress^{6,7,21,38}.

Women's coping style has also been found to be significantly associated with PPD, whereby passive/avoidant coping strategies (e.g. denial, blaming, resignation, venting, ruminating, self-distraction, substance use, catastrophising, emotional discharge) being associated with increased risk of PPD and higher depression scores³⁹⁻⁴¹, and active/approach coping strategies (e.g. planning, humour, acceptance, seeking support, positive

reinterpretation) being associated with lower depression scores and lower risk of developing PPD^{36,39,41,42}.

Growth: Could PPD be a growing experience?

‘Growth’ refers to positive changes a person experiences (e.g. changes in relationships, values, coping skills, life philosophies, goals) following stressful events⁴³. There is a dearth of research into growth following PPD, despite PPD being identified as a traumatic and stressful life event^{25,29}. To our knowledge, only one other study has specifically examined the concept of PPD as being a transformation experience that can result in personal growth²⁶, however that study used retrospective reports of PPD with a small, purposive sample of women (n=20) who self-identified as having experienced PPD and being transformed from that experience. Nevertheless, the women in that study reported having grown (i.e. increased self-confidence, compassion for others, better self-care, enhanced relationships, being more authentic) as a result of experiencing PPD.

Researchers examining the factors that promote and impede growth have found that a person’s coping style and the quality of social support may determine the extent to which people experience growth⁴⁴⁻⁴⁶. Specifically, coping processes such as ‘problem solving’, ‘positive reinterpretation’, ‘venting’, ‘humour’, ‘perceiving stress as challenging’, ‘acceptance’, ‘seeking guidance’, ‘religion’, and ‘utilising social supports’ are strongly correlated with stress-related growth^{43,45,47-49}, and coping styles account for 46% of the variance in stress-related growth⁴⁵. Social support was found to be the biggest predictor of stress-related growth⁴⁵. However researchers have found that social support in itself was not associated with growth, but rather the person’s *satisfaction* with their social support^{43,44,47,50}. With partners being one of the most crucial supports for mothers^{8,35,49}, women who report

better partner relationships experience better mental health outcomes following the transition to motherhood and higher levels of personal growth⁴⁹.

The aim of this study was to explore the psychological outcomes across two indexed pregnancies of two groups of women – those with, and without, a diagnosis of PPD. We wished to investigate whether these groups differed in their coping styles, marital satisfaction and stress-related growth, and whether these factors mediated their experience of depressive symptoms from one postpartum period to the next. The second aim was to assess whether stress-related growth was evident in the postpartum period of the subsequent pregnancy, and to identify specific predictors of stress-related growth.

Materials and Method

Participants and procedures

A prospective, case-control study design was adopted to examine women's psychological outcomes across three time points: *T1*: during pregnancy (3rd trimester of the first pregnancy); *T2*: the initial postpartum period (6 months after the birth from the first pregnancy); and *T3*: the subsequent postpartum period following the subsequent pregnancy (6 months after the birth of the second child). These time points were chosen to be consistent with the psychological literature exploring reproductive outcomes.

Participants were sourced from a pool of participants involved in a larger, longitudinal study that aimed to explore psychological responses to pregnancy and pregnancy failure in the United Kingdom⁵¹. The original study recruited 801 women from 20 general practices in the UK. From this group, 75 primiparous women who were diagnosed by their GP as having PPD were identified ("PPD group"). These were matched on age, length of

time trying to conceive and parity, against a random sample of 75 primiparous women who were not diagnosed with PPD to act as a control (“not-PPD group”). A number of women dropped out of the study over the three time points. Useful data at each time interval was therefore collected from $n=52$ in the PPD group and $n=64$ in the not-PPD group.

Letters of introduction outlining the research were given to pregnant women attending the practices, or women who presented themselves at the practices for pregnancy testing and received a positive result. Questionnaires assessing demographic variables, depression, coping, marital satisfaction and stress-related growth were mailed to the participants during their pregnancy and they were requested to complete and return these to the research team. The questionnaires were presented in a random order. For women who reported having PPD their GP provided information confirming diagnosis.

Measures

Depression. The Beck Depression Inventory (BDI)⁵² is a 21-item measure of the intensity of depression symptoms. The BDI has demonstrated high internal consistency ($\alpha=0.86$ for psychiatric patients, and $\alpha=0.81$ for non-psychiatric subjects), good test-retest reliability ($>.60$) and high concurrent validity⁵³.

Marital Satisfaction. The Index of Marital Satisfaction (IMS)^{54,55} is a 25-item scale that measures a person’s satisfaction with their relationship and the magnitude of marital discord. Higher scores indicate greater marital discord. A score below 30 indicates satisfaction with the relationship, and scores above 30 indicate dissatisfaction. The IMS has excellent reliability (.96) and good validity (.82)⁵⁵.

Coping. The Coping Response Inventory (CRI)⁵⁶ is a 48-item measure of cognitive and behavioural responses that the person uses to cope with a particular stressful situation. Higher scores indicate the person's dominant coping strategies. The scale has eight subscales that are combined to produce four coping styles: '*behavioural approach*', '*behavioural avoidance*', '*cognitive approach*' and '*cognitive avoidance*'. The CRI has excellent internal consistency (0.95) and reliability (0.78) with postpartum women⁵⁷.

Stress-related Growth. the Revised Stress-Related Growth Scale (RSRGS)⁵⁸ is 43 items of the Stress-Related Growth Scale (SRGS)⁴⁷, which measures the extent that a person experiences positive change following a particular stressful life event. The RSRGS entails eight subscales: Affect Regulation, Religiousness, Treatment of Others, Self-Understanding, Belongingness, Personal Strength, Optimism and Life Satisfaction. Higher scores on this scale indicate greater stress-related growth.

Statistical analyses

Repeated measures analysis of variance (ANOVA) was conducted to examine the differences between the PPD group and the not-PPD group with respect to depression, marital satisfaction, coping and stress-related growth at each time point of assessment. Pearson correlation coefficients were computed to examine the relations between demographic variables, marital satisfaction and coping with depression and stress-related growth. In order to examine the strength of these relationships and the predictive importance of these variables on stress-related growth at T3, a four-stage, blocked hierarchical multiple regression analysis was performed with stress-related growth at T3 (SRG-T3) as the dependent variable. Variables were entered into the regression analyses using the 'Enter' method. The demographic variables (*age, years married, months trying for index pregnancy* and

diagnosed PPD) were entered at stage one of the regression. The outcome measures administered at T1 (BDI-T1, IMS-T1, CRI-T1) was entered at stage two, followed by the outcome measures administered at T2 (BDI-T2, IMS-T2, CRI-T2) at stage three, and then the outcome measures administered at T3 (BDI-T3, IMS-T3, CRI-T3) were entered at stage four.

Results

Participant information

The women were aged from 18 to 38 years ($M=27.5$, $SD=5.5$). The majority of women were married (78.4%) or in a de-facto relationship (12.2%). 79.3% of women considered the first index pregnancy to be planned, with the mean length of time trying to fall pregnant being 10.5 months ($SD = 12.6$).

Differences between groups

Table 1 summaries the means and standard deviations for each group's outcome measures at each time point of assessment. Overall, the PPD group reported more depressive symptoms and less marital satisfaction at T1 and T2 than the not-PPD group, however by T3 there was no significant difference between the two groups in terms of depressive symptoms or marital satisfaction. There were no significant differences between the groups stress-related growth scores at T2, however there were significant differences between the two groups at T3, with the PPD group reporting more growth than the not-PPD group.

Maternal depression

Significant differences were found between the groups at T1 ($F(1,114) = 26.40$, $p<.001$), with the PPD group reporting more severe depression symptoms compared to the not-PPD group. There continued to be significant differences between the groups at T2

($F(1,114) = 285.41, p < .001$), with the PPD group reporting considerably more severe depression symptoms. However there were no significant differences between the groups at T3 ($F(1,114) = 2.92, p > .05$).

Examining the BDI scores for the PPD over time revealed that there was a significant difference at all time points ($F(1,51) = 89.35, p < .001$) (See Table 2). Post-hoc tests identified an increase between T1 and T2, indicating a greater intensity of depressive symptoms in the initial postpartum period; a decrease in BDI scores between T2 and T3, indicating a decrease in depressive symptoms in the subsequent postpartum period; and that BDI scores at T3 were less than the BDI scores at T1 indicating improved depressive symptoms compared to pregnancy (all differences were significant at $p < .001$, see Table 3).

Marital satisfaction

Both groups indicated a general satisfaction with their marital relationship across all three time points. Significant differences were found between the groups at T1 ($F(1,114) = 9.54, p < .05$), with the PPD group reporting less marital satisfaction than the not-PPD group. Both groups experienced a decrease in marital satisfaction at T2. Significant differences between the groups continued during T2 ($F(1,114) = 13.72, p < .05$), with the PPD group reporting less marital satisfaction. However, there were no significant differences between the groups' scores at T3.

Coping

No significant differences were found between the PPD group and the not-PPD group for any of the four coping styles at any of the time points (See Table 1). Both groups remained consistent with the coping styles they used across the time points, with both groups

predominantly using cognitive approach styles and employing behavioural avoidance strategies the least.

Stress-Related Growth

No significant difference were found between the two groups on any of the subscales or the total score at T2. However at T3, a significant difference was observed between the two groups' total scores ($F(1,114) = 58.71, p < .001$), and each of the subscales scores (Life satisfaction ($F(1,114) = 8.77, p < .005$); Treatment of others ($F(1,114) = 28.68, p < .001$); Religiousness ($F(1,114) = 28.98, p < .001$); Personal strength ($F(1,114) = 47.07, p < .001$); Belonging ($F(1,114) = 16.91, p < .001$); Affect regulation ($F(1,114) = 36.86, p < .001$); Self-understanding ($F(1,114) = 13.58, p < .001$); Optimism ($F(1,114) = 5.64, p < .005$)), with the PPD group consistently reporting higher scores on every subscale compared to the not-PPD group. In terms of positive change, both groups showed increased scores (indicating greater growth) from T2 to T3 in the subscales: 'treatment of others', 'religiousness', 'personal strength', 'belonging', 'affect regulation' and 'self-understanding'. However, both groups reported decreased scores in the subscales: 'life satisfaction' and 'optimism' (See Table 1).

Factors associated with growth in the subsequent postpartum period

Table 4 shows the regression statistics. Controlling initially for demographic variables, produced a significant model ($F(4,86) = 13.1, p < .001$); however only PPD diagnosis significantly contributed to that model, accounting for 38% of the variance. After including the outcome measures from T1, a significant model was produced ($F(11,79) = 7.24, p < .001$), accounting for an additional 12.3% of the variation in stress-related growth. Two variables that significantly contributed to the model were: PPD diagnosis and depression

scores during pregnancy (BDI-T1). When the outcome measures from T2 were included another significant model resulted ($F(19,71) = 8.42, p < .001$), explaining a further 19.1% of the variance in stress-related growth. Six variables contributed significantly to Model 3 namely: depression during pregnancy (BDI-T1), depression during the initial postpartum period (BDI-T2), marital satisfaction during pregnancy (IMS-T1), and coping (specifically 'cognitive avoidance' (CRI-CAv-T1) and 'behavioural approach' strategies (CRI-BAp-T1) during pregnancy and 'cognitive avoidance' at T2 (CRI-CAv-T2)). Finally, including the addition of all of the T3 outcome measures produced a final significant model ($F(26,64) = 6.75, p < .001$) explaining a further 0.04% of the variability, with five variables significantly contributing to the final model: marital satisfaction during pregnancy (IMS-T1), depression in the postpartum periods (BDI-T2, BDI-T3), and coping (specifically 'behavioural approach' (CRI-BAp-T1) and 'cognitive avoidance' (CRI-CAv-T2)). Consequently, the final model accounted for 61.8% of the total variance in stress-related growth at T3.

Discussion

Our results show that there was a significant difference in psychopathology between women diagnosed with PPD and women not diagnosed with PPD, differences were present during pregnancy and continued into the initial postpartum period (with women in the PPD group scoring higher on the depression measure and reporting less marital satisfaction), however these differences did not continue into the subsequent postpartum period (with no significant differences between the groups on measures of depression, marital satisfaction or coping).

Furthermore, our results did not support the notion that women with a history of PPD are more vulnerable to relapse, or worsening of depression in subsequent postpartum

periods. Instead we found that the women in the PPD group showed a significant reduction in depression scores in the subsequent postpartum period - to the extent that their depression scores were less than what they were at both pregnancy and in the initial postpartum period, and they were not significantly different to women who had not been diagnosed with PPD.

Moreover, our results suggested that growth may have been a factor in the observed reduction in depression symptoms in the subsequent postpartum period for the PPD group, as the women in the PPD group consistently scoring higher than women in the not-PPD group on measures of growth and all its subscales. In our study, the main predictors of growth were: marital satisfaction during pregnancy, maternal depression in the postpartum periods, and behavioural approach coping strategies employed during pregnancy and cognitive avoidance coping strategies in the initial postpartum period.

Differences between women diagnosed with PPD and women not diagnosed with PPD

The two groups came from the same sample of a much larger group of pregnant women, and were demographically matched, and therefore it was expected that they should score similarly on the outcome measures at T1 as the only difference between the two groups was the diagnosis of PPD, and this was given in the days and weeks into T2. However, we found a significant difference in psychopathology between the two groups of women at T1. The PPD group reported depressive symptoms in the moderate range whereas the not-PPD group reported minimal depressive symptoms. This finding, along with the significant correlations found between depressive symptoms across the three time points, lends support to previous studies that argue that PPD is in fact a continuation of pre-existing depression, and the event of pregnancy and childbirth serves as a stressor that leads to symptoms continuing through pregnancy and into the postpartum period^{16,17,59}.

Both groups experienced a decrease in marital satisfaction during T2. This is consistent with other studies that have found that the transition to new parenthood is challenging upon relationships and can have a negative effect on marital satisfaction^{60,61}. The PPD group reporting less marital satisfaction than the not-PPD group at T2, however interestingly, the not-PPD group reported further decrease in marital satisfaction at T3, whereas the PPD group showed improved marital satisfaction at T3 – to the extent that their scores were better than their scores at T1. A possible explanation for the improvement in marital satisfaction for the PPD group could be that this is a product of growth. Studies have found that individuals who report experiencing growth after adversity also report that their relationships are enhanced in some way, such as a greater sense of closeness, relating more with others, or more meaningful relationships^{46,48}.

We found no significant differences between the two groups for any of the four coping styles at any of the time points - with both groups favouring cognitive approach styles the most, and employing behavioural avoidance strategies the least. A possible theory as to why this is is that this is a result of modern motherhood and the pressure to be a 'perfect mother' or 'super mum'. Studies examining women's expectations of motherhood found new mothers held expectations that they needed to be the 'perfect mother' and cater to the baby's every need; believed that motherhood requires significant and personal sacrifice and less importance placed on self-care; compared themselves against their perceptions of what other mothers are; believed that their infant reflected the quality of their mothering; and expected they should have everything under control⁶²⁻⁶⁴. The cognitive-approach coping scales reflect similar themes to these expectations of motherhood (e.g. *"Try to anticipate the new demands that will be placed on you"*; *"Think about how you are much better off than other people with*

similar problems”), whereas the behavioural-avoidance items on the ‘emotional discharge’ (characterised by actions such as: taking emotions out on other people; taking a chance and doing something risky; yelling or shouting to let off steam) and ‘seeking alternative rewards’ (characterised by actions such as: getting involved in new activities; spending more time doing recreational activities) would conflict with these expectations of motherhood and themselves as good mothers.

Another important finding was the significant difference observed between the two groups’ scores on the measure of stress-related growth at T3 - with the PPD group consistently reporting higher scores on each of the subscales as well as the total score, compared to the not-PPD group. We found that both the PPD and not-PPD groups showed improvements in the same areas of growth from one postpartum period to the next (i.e. ‘treatment of others’, ‘religiousness’, ‘personal strength’, ‘belonging’, ‘affect regulation’, and ‘self-understanding’). The growth observed in both groups from one postpartum period to the next adds to the existing literature that suggest that motherhood in general can be a growing experience^{49, 65}, and the greater growth seen in the PPD group contributes to the limited research that has found that PPD can have positive outcomes and can be a period of transformation and growth²⁶. Both groups experienced a decrease in scores on the ‘life satisfaction’ and ‘optimism’ subscales from one postpartum period to the next. This supports other research findings that women who entered motherhood reported a decrease in optimism and life satisfaction⁶⁶, and that women’s satisfaction with life is negatively correlated with fatigue that arises from carrying out multiple roles and having a lack of ‘me time’ or self-care⁶⁷. Thus, the decreased life satisfaction and optimism in subsequent postpartum periods we observed in our study may be related an increase in fatigue due to the increase in number

of children to care for and the corresponding increase in tasks and roles to perform, and a decrease in time for oneself.

Factors associated with maternal depression and psychological outcomes in subsequent pregnancy for women with a history of PPD

In terms of PPD risk in subsequent postpartum periods, our findings contradict previous research, whereby we found no significant difference between the PPD group and the not-PPD groups' depression scores at T3, and instead we found the PPD group reported a significant reduction in depression scores from one postpartum period to the next – to the extent that their depression scores were less than what they were at pregnancy. These results offer a valuable contribution to the limited literature we have so far that highlight that women's experience of PPD can improve across subsequent postpartum periods^{32,33}. As noted previously, growth may have been a factor in the observed reduction in depression symptoms in the subsequent postpartum period for the PPD group.

Factors associated with growth in the subsequent postpartum period

We found that growth was associated with social support (whereby women who reported greater marital satisfaction during pregnancy reported more growth) which is in accordance with previous studies⁴⁵. Interestingly, we found growth to be associated with behavioural approach coping styles utilised in pregnancy (i.e. 'seeking guidance and support', 'problem-solving') and cognitive avoidance styles employed in the initial postpartum period (i.e. 'acceptance or resignation', 'cognitive avoidance'). That seemingly opposing coping strategies (i.e. behavioural approach and cognitive avoidance) can coexist and predict growth seems counterintuitive, however this could be explained by Stroebe's⁶⁸ *Dual Model of Coping*, which suggests that adaptive coping is a dynamic process that involves drawing

upon, and oscillating between, a range of differing coping strategies. Thus, strategies from behavioural approach and cognitive avoidance styles may complement each other towards achieving growth (e.g. “*Knowing what has to be done and try hard to make things work*” (behavioural approach) and “*try not to think about the problem*” (cognitive avoidance) may work together to allow the person to focus upon the solution not the problem).

We also found that depression in the postpartum periods were predictors of stress-related growth, and a moderate, positive association was found between growth and depression in the initial postpartum period. Our findings suggest that the women who reported experiencing more depression in the postpartum periods reported more growth, and indeed, as noted previously, the women in the PPD group consistently scored higher than the women in the not-PPD group on the measure of growth and all of its subscales. This is a very encouraging finding for women who have a psychiatric history or have experienced PPD following a previous pregnancy, and our findings contradict previous research which found a negative relationship between depression and growth^{44,69}. The disparity between our results and previous findings could possibly be explained by the difference in the predictability and sense of control over the stressful event. Park, Cohen & Murch⁴⁷ found that stress-related growth was positively associated with people’s awareness, and the perceived controllability, of the negative event’s occurrence and they proposed that growth was more likely when the person felt in control during the stressful event, and when they could anticipate and feel they could influence the outcomes of the stressful event by their actions. Thus it is possible that women with a history of PPD enter subsequent pregnancies with greater awareness of the ‘negative event’s occurrence’ (i.e. aware of the signs and symptoms of PPD) and are likely to have engaged in some preparation to increase their sense of control or influence over the recurrence of PPD.

Strengths and limitations

As noted previously, there is a scarcity of prospective studies that explore women's psychological response from pregnancy, to being diagnosed with PPD, through the postpartum period and across subsequent pregnancies. The prospective design of our study is a strength, allowing us to examine the progression of depressive symptoms from pregnancy, and across two postpartum periods, and also allow us to study the development of growth following PPD prospectively. Another strength of this study is that we investigated both the negative and positive outcomes of PPD which allowed us to gain a more complete picture of the psychological experience of PPD.

However, there are a few study limitations. Firstly, we utilised a self-report screening tool (BDI) to measure maternal depression rather than a diagnostic interview and the BDI was not specifically designed for the postpartum population. However the BDI was chosen over other PPD screening tools (e.g. Edinburgh Postnatal Depression Scale: EPDS) because the BDI has been well-validated for use with pregnant and postpartum women^{70,71}, and is a more robust measure of depressive symptoms than the EPDS in terms of positive predictive value, higher sensitivity and better internal consistency with postpartum populations^{3,4}. Secondly, our sample consisted solely of women in relationships, thus our results may not be representative of single mothers. Studies have found that women who were sole-parenting had higher rates of depression, more life stresses and less social supports than women who were in partnered relationships⁷².

Conclusions, future clinical implications, and further research needed

By studying both the negative and positive outcomes women experience following PPD, we have been able to gain a more complete picture of PPD. Our results offer encouraging news to women who have a prior psychiatric history or who have experienced PPD previously. We found that positive outcomes can occur after PPD, such as improved marital relationships and personal growth, and certain factors can reduce the risk of recurrence in subsequent pregnancies. Given that women with a history of PPD experience increased anxiety and distress at the prospect of future pregnancies, fear PPD recurring, and were less likely to go on to have further children because of this, it befits us to share these results to help women with their family planning decisions and to assist with reducing their distress at the prospect of future pregnancies.

Our results show that PPD risk is evident in pregnancy, but may even be present before conception. As such, a valuable intervention in PPD management would be to conduct pre-conception and antenatal screenings that includes assessment of relationship satisfaction, quality of social support and coping style, and provide women who are identified at risk with interventions targeted at strengthening relationship satisfaction and social supports, enhancing coping resources (e.g. encouraging mothers to seek guidance and support, assisting mothers with reinterpreting the negative experiences that were associated with previous PPD experiences, building problem-solving skills, reducing cognitive avoidance), challenging unhelpful expectations of motherhood, valuing self-care, and finding time for oneself.

The complex and multifaceted nature of PPD and personal growth means that it cannot be easily captured and represented by a battery of questionnaires. Future research orientated towards more qualitative methods may better capture the process of growth

through PPD. To date, only one qualitative study has been conducted that examines growth from PPD²⁶. Future research may also like explore the process of PPD and personal growth in fathers, and examine whether the results of this study are mother-specific, or whether they can be generalised to parenthood. Also, research specifically exploring the experience of PPD and personal growth for single-mothers would also be beneficial.

There is clinical value in considering PPD through a growth lens. For too long we have focused upon the negative outcomes of PPD, however it is important to shift clinicians' focus to the possibilities of positive outcomes of PPD. By doing so, clinicians can begin to provide a more holistic intervention for PPD that includes both reducing negative outcomes of PPD as well as targeting the positive change that can arise from PPD, such as personal growth, greater connections with others, and improvements in self-understanding, belonging, personal strength, emotion-regulation, treatment of others and spirituality.

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Table 1: Means (SDs) and *F* values for all measures at each of the three time points of assessment according to PPD status.

	Pregnancy (T1)				Initial postpartum period (T2)				Subsequent postpartum period (T3)			
	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>
BDI	21.71 (13.72)	11.75 (6.53)	26.40	.000	35.40 (3.93)	10.78 (9.89)	285.41	.000	14.38 (8.94)	11.88 (6.88)	2.92	ns
IMS	26.75 (13.19)	20.37 (8.88)	9.54	.003	28.52 (12.33)	20.47 (11.05)	13.72	.000	23.27 (7.55)	25.76 (13.90)	1.34	ns
IES-Int	20.42 (4.17)	16.59 (6.63)	13.12	.000	19.38 (3.03)	17.81 (4.34)	4.89	.029	20.69 (7.34)	14.13 (7.38)	22.85	.000
IES-Av	11.35 (7.23)	10.44 (8.19)	0.39	ns	9.35 (4.08)	7.92 (5.09)	2.67	ns	13.35 (8.40)	10.86 (7.20)	2.94	ns
IES-Tot	31.77 (11.34)	27.03 (11.07)	5.14	.025	28.73 (6.99)	25.73 (6.09)	6.09	.015	34.04 (15.68)	24.98 (10.95)	13.34	.000
CRI-CAp	16.53 (5.47)	17.02 (5.75)	0.22	ns	16.58 (7.59)	16.50 (7.81)	.00	ns	16.71 (5.46)	16.93 (5.08)	.05	Ns
CRI-CAv	14.04 (5.23)	13.30 (5.55)	0.53	ns	14.77 (5.41)	13.86 (5.71)	.76	ns	13.11 (5.85)	12.55 (5.24)	.30	ns
CRI-BAp	12.80 (5.30)	13.32 (5.76)	0.25	ns	12.44 (5.75)	12.33 (6.44)	.01	ns	12.98 (5.85)	14.47 (4.41)	2.44	ns
CRI-BAv	8.59 (4.70)	9.47 (5.94)	0.75	ns	7.17 (4.27)	6.72 (5.07)	.27	ns	8.83 (6.19)	10.22 (5.08)	1.78	ns

Table 1 (cont): Means (SDs) and *F* values for all measures at each of the three time points of assessment according to PPD status.

	Pregnancy (T1)				Initial postpartum period (T2)				Subsequent postpartum period (T3)			
	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>
SRG-LS	-	-			12.25 (1.89)	12.73 (2.14)	1.63	ns	1.73 (0.93)	1.25 (0.80)	8.77	.004
SRG-TO	-	-			11.98 (2.51)	11.88 (3.30)	0.04	ns	15.50 (2.32)	13.67 (1.30)	28.68	.000
SRG-Rel	-	-			12.42 (2.55)	12.56 (2.25)	0.10	ns	15.25 (1.03)	13.38 (2.33)	28.98	.000
SRG-PS	-	-			12.12 (2.37)	12.14 (2.49)	0.00	ns	16.71 (2.31)	13.50 (2.65)	47.07	.000
SRG-Bel	-	-			8.33 (1.59)	8.39 (1.86)	0.04	ns	15.42 (2.17)	13.70 (2.29)	16.91	.000
SRG-AR	-	-			7.88 (1.73)	7.78 (1.79)	0.10	ns	12.46 (2.32)	10.06 (1.93)	36.86	.000
SRG-SU	-	-			3.38 (0.93)	3.47 (0.98)	.22	ns	10.98 (2.03)	9.84 (1.26)	13.58	.000
SRG-Op	-	-			10.98 (2.11)	11.45 (2.01)	.24	ns	5.25 (1.67)	4.48 (1.77)	5.64	.019
SRG-Tot					79.35 (10.68)	80.41 (12.24)	1.52	ns	93.31 (12.76)	79.83 (5.37)	58.71	.000

Note: T1 = 3rd trimester of 1st pregnancy; T2 = 6 months after 1st pregnancy birth; T3 = 6 months after 2nd pregnancy birth; BDI = Beck Depression Inventory; IMS = Index of Marital Satisfaction; CRI-BAP, CRI-BAV, CRI-CAP, CRI-CAV = Coping Response Inventory-Behavioural Approach, Behavioural Avoidance, Cognitive Approach, Cognitive Avoidance subscales respectively; SRG-LS, SRG-TO, SRG-Rel, SRG-PS, SRG-Bel, SRG-AR, SRG-SU, SRG-Op, SRG-Tot = Revised Stress-Related Growth Scale-Life satisfaction, Treatment of Others, Religiousness, Personal Strength, Belonging, Affect Regulation, Self-understanding, Optimism, Total Growth subscales respectively.

Table 2. Repeated measures ANOVA for depression (BDI) scores for the PPD group over the three time points

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>
Contrast	1395.78	1	1395.78	89.35**
Error	796.72	51	15.62	

** $p < 0.001$

Table 3. Paired sample *t*-test for depression (BDI) scores for the PPD group across the three time points ($N=52$)

Test	Pair	M	SD	<i>t</i>	<i>p</i>
1	BDI(T1) - BDI(T2)	-13.69	10.05	-9.82	0.000
2	BDI(T1) - BDI(T3)	7.33	5.59	9.45	0.000
3	BDI(T2) - BDI(T3)	21.02	5.44	27.85	0.000

Table 4: Summary of hierarchical multiple regression analysis on stress-related growth at six months following second pregnancy

<i>Variable</i>	<i>B</i>	<i>T</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>
Step 1			0.62	0.35	0.38	13.09***
Diagnosed PPD	-0.61	-7.09***				
Step 2			0.71	0.43	0.12	7.24***
Diagnosed PPD	-0.76	-8.07***				
BDI (T1)	-0.24	-2.58*				
Step 3			0.83	0.61	0.19	8.42***
BDI (T1)	-0.67	-5.97***				
IMS (T1)	-0.28	-2.21*				
CRI-CA _v (T1)	0.23	2.06*				
CRI-BA _p (T1)	-0.32	-2.14*				
BDI (T2)	0.94	5.21***				
CRI-CA _v (T2)	-0.32	-2.74**				
Step 4			0.86	0.62	0.04	6.75***
IMS (T1)	-0.31	-2.23*				
CRI-BA _p (T1)	-0.42	-2.60*				
BDI (T2)	1.43	5.83***				
CRI-CA _v (T2)	-0.27	-2.20*				
BDI (T3)	-0.82	-2.79**				
Step 5			0.86	0.62	0.00	6.40***
IMS (T1)	-0.30	-2.17*				
CRI-BA _p (T1)	-0.42	-2.59*				
BDI (T2)	1.43	5.77***				
CRI-CA _v (T2)	-0.27	-2.18*				
BDI (T3)	-0.82	-2.75**				

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only significant predictor variables shown. All R^2 values are adjusted. All beta values are standardised.

Note: T1 = 3rd trimester of 1st pregnancy; T2 = 6 months after 1st pregnancy birth; T3 = 6 months after 2nd pregnancy birth; BDI = Beck Depression Inventory; IMS = Index of Marital Satisfaction; CRI-BAp, CRI-BAv, CRI-CAp, CRI-CAv = Coping Response Inventory-Behavioural Approach, Behavioural Avoidance, Cognitive Approach, Cognitive Avoidance subscales respectively; SRG-LS, SRG-TO, SRG-Rel, SRG-PS, SRG-Bel, SRG-AR, SRG-SU, SRG-Op, SRG-Tot = Revised Stress-Related Growth Scale-Life satisfaction, Treatment of Others, Religiousness, Personal Strength, Belonging, Affect Regulation, Self-understanding, Optimism, Total Growth subscales respectively.

Appendix A

Excluded analyses from the manuscript

Due to the word limit restrictions for the manuscript (<4000 words), analyses relating to maternal distress (measured using the Impact of Events Scale (IES)) was excluded in the manuscript as our analyses found that, whilst there were significant differences between the two groups (women diagnosed with PPD and women who were not) on the IES, this measure did not predict maternal depression or stress-related growth. Included below is the analyses and discussion relating to maternal distress that was excluded from the manuscript.

Measure

Maternal distress was assessed using the Impact of Events Scale (IES) (Horowitz, 1979), a 15-item, self-report measure which assesses the subjective impact of a particular stressor. The scale has two components, '*intrusion*' (the degree to which the stressor produced involuntary cognitions) and '*avoidance*' (the extent to which the person avoids thinking about the stressor). The severity of the traumatic symptoms are based upon the total of the subscale scores, with scores 0-8 suggesting *low* symptoms, 9-19 rated as *moderate*, and 20+ is considered *severe*. (Horowitz, 1979). Using these cut-offs to diagnose clinical PTSD results in a sensitivity of 94% and a specificity of 0.33% (Horowitz, 1982).

Results

Both groups reported experiencing distress in the 'severe' range (i.e. IES-Tot \geq 20) across all three time points. A significant difference was found between the two groups' total scores across all three time points (T1 ($F(1,114) = 5.14, p < .05$); T2 ($F(1,114) = 6.09, p < .005$);

T3 ($F(1,114) = 13.34, p < .001$)), with the PPD group consistently reporting more severe distress than the not-PPD group. A significant difference was also found between the two groups' scores on the 'intrusion' subscale across all three time points (T1 ($F(1,114) = 13.12, p < .001$); T2 ($F(1,114) = 4.89, p < .05$); T3 ($F(1,114) = 22.85, p < .001$)), with the PPD group reporting more involuntary cognitions than the not-PPD group. However there were no significant differences found between the two groups' scores on the 'avoidance' subscale at any of the three time points.

Discussion

Significant differences were found between the two groups' scores on the measure of maternal distress (i.e. IES), for both the total score and the 'intrusion' subscale, across all three time points - with the PPD group reporting more severe distress and a higher degree of involuntary cognitions compared to the not-PPD group. Our findings support other studies that found PPD to be characterised by obsessive thinking and a relationship between high scores on measures of PPD and ruminating thinking style (Beck, 1992; Haga et al., 2012; Karraa, 2013; Røseth et al., 2011). Karraa (2013) found that for women to work through PPD and get to later stages of transformation, they needed to make sense of the PPD experience and resolve the discord between their previously held beliefs of motherhood and their lived experience of PPD and adopt a new 'mode of understanding'. Thus, it is plausible that for women going through PPD, they may experience more intrusive thoughts in their attempts to resolve the discord and arrive at a more integrated understanding of their PPD experience.

Another important finding was the significant difference observed between the two groups' scores on the measure of stress-related growth at T3 - with the PPD group consistently reporting higher scores on each of the subscales as well as the total score, compared to the not-PPD

group. This was despite the PPD group reporting significantly more depressive symptoms, more distress and more marital dissatisfaction than the not-PPD group at T1 and T2. Tedeschi & Calhoun (2004) argue that growth can coexist with distress and having one does not negate the other, and they argue that a certain level of distress is necessary for growth. Other researchers have also identified that growth is often accompanied by high scores on measures of distress (Park, 2004).

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Table 5: Means (SDs) and *F* values for all measures at each of the three time points of assessment according to PPD status (including IES)

	T1				T2				T3			
	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>	PPD (<i>n</i> =52)	Not PPD (<i>n</i> =64)	<i>F</i>	<i>p</i>
BDI	21.71 (13.72)	11.75 (6.53)	26.40	.000	35.40 (3.93)	10.78 (9.89)	285.41	.000	14.38 (8.94)	11.88 (6.88)	2.92	ns
IMS	26.75 (13.19)	20.37 (8.88)	9.54	.003	28.52 (12.33)	20.47 (11.05)	13.72	.000	23.27 (7.55)	25.76 (13.90)	1.34	ns
IES-Int	20.42 (4.17)	16.59 (6.63)	13.12	.000	19.38 (3.03)	17.81 (4.34)	4.89	.029	20.69 (7.34)	14.13 (7.38)	22.85	.000
IES-Av	11.35 (7.23)	10.44 (8.19)	0.39	ns	9.35 (4.08)	7.92 (5.09)	2.67	ns	13.35 (8.40)	10.86 (7.20)	2.94	ns
IES-Tot	31.77 (11.34)	27.03 (11.07)	5.14	.025	28.73 (6.99)	25.73 (6.09)	6.09	.015	34.04 (15.68)	24.98 (10.95)	13.34	.000
CRI-CAp	16.53 (5.47)	17.02 (5.75)	0.22	ns	16.58 (7.59)	16.50 (7.81)	.00	ns	16.71 (5.46)	16.93 (5.08)	.05	Ns
CRI-CAv	14.04 (5.23)	13.30 (5.55)	0.53	ns	14.77 (5.41)	13.86 (5.71)	.76	ns	13.11 (5.85)	12.55 (5.24)	.30	ns
CRI-BAp	12.80 (5.30)	13.32 (5.76)	0.25	ns	12.44 (5.75)	12.33 (6.44)	.01	ns	12.98 (5.85)	14.47 (4.41)	2.44	ns
CRI-BAv	8.59 (4.70)	9.47 (5.94)	0.75	ns	7.17 (4.27)	6.72 (5.07)	.27	ns	8.83 (6.19)	10.22 (5.08)	1.78	ns
SRG-LS	-	-			12.25 (1.89)	12.73 (2.14)	1.63	ns	1.73 (0.93)	1.25 (0.80)	8.77	.004
SRG-TO	-	-			11.98 (2.51)	11.88 (3.30)	0.04	ns	15.50 (2.32)	13.67 (1.30)	28.68	.000
SRG-Rel	-	-			12.42 (2.55)	12.56 (2.25)	0.10	ns	15.25 (1.03)	13.38 (2.33)	28.98	.000
SRG-PS	-	-			12.12 (2.37)	12.14 (2.49)	0.00	ns	16.71 (2.31)	13.50 (2.65)	47.07	.000
SRG-Bel	-	-			8.33 (1.59)	8.39 (1.86)	0.04	ns	15.42 (2.17)	13.70 (2.29)	16.91	.000
SRG-AR	-	-			7.88 (1.73)	7.78 (1.79)	0.10	ns	12.46 (2.32)	10.06 (1.93)	36.86	.000
SRG-SU	-	-			3.38 (0.93)	3.47 (0.98)	.22	ns	10.98 (2.03)	9.84 (1.26)	13.58	.000
SRG-Op	-	-			10.98 (2.11)	11.45 (2.01)	.24	ns	5.25 (1.67)	4.48 (1.77)	5.64	.019
SRG-Tot					79.35 (10.68)	80.41 (12.24)	1.52	ns	93.31 (12.76)	79.83 (5.37)	58.71	.000

Note: IES-Int, IES-Av, IES-Tot = Impact of Event Scale-Intrusion, Avoidance, Total subscales respectively; For other abbreviations, see Table 1.

Table 6: Pearson's correlations coefficients (including IES)

Subscale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1. PPD	---																								
<i>T1 - Pregnancy</i>																									
2. BDI	-.488	---																							
3. IMS	-.208	.249	---																						
4. IES-Tot	-.116	.140	.760	---																					
5. CRI-CAp	-.005	.186	.195	.160	---																				
6. CRI-CAv	-.102	.092	.115	.106	.424	---																			
7. CRI-BAp	.009	.177	.193	.136	.715	.338	---																		
8. CRI-BAv	.000	.143	.135	.049	.505	.548	.585	---																	
<i>T2 - Initial postpartum period</i>																									
9. BDI	-.830	.732	.214	.061	.057	.044	-.013	-.037	---																
10. IMS	-.314	.121	.155	.083	.237	.039	.175	.204	.205	---															
11. IES-Tot	-.137	.262	.720	.742	.109	.036	.031	-.030	.196	.070	---														
12. CRI-CAp	-.007	.036	.107	.105	.595	.028	.402	-.130	.034	.024	.051	---													
13. CRI-CAv	-.099	.032	.029	.094	.339	.506	.132	.035	.071	-.109	.024	.498	---												
14. CRI-BAp	-.005	.058	.167	.120	.460	.092	.655	.155	-.008	.034	-.012	.723	.403	---											
15. CRI-BAv	-.042	.096	.138	.117	.289	.385	.503	.460	-.010	-.015	-.061	.313	.475	.683	---										
16. SRG-Tot	.245	-.082	-.174	-.251	-.059	.035	.000	-.013	-.190	-.049	-.325	.001	.018	-.028	-.026	---									
<i>T3 - Subsequent postpartum period</i>																									
17. BDI	-.215	.905	.203	.093	.164	.043	.096	.077	.616	.023	.270	.033	.042	.014	.048	-.013	---								
18. CRI-CAp	.030	.274	.015	.025	.020	.012	.018	-.010	.095	.079	.122	-.063	.081	-.076	-.027	.122	.326	---							
19. CRI-CAv	-.020	.238	-.181	-.148	-.121	-.068	.053	-.010	.081	-.069	-.077	-.079	-.023	-.030	.072	-.026	.221	.483	---						
20. CRI-BAp	.126	.214	.063	.052	-.024	-.130	.037	-.068	.009	.017	.084	-.083	-.117	-.109	-.154	.038	.282	.727	.454	---					
21. CRI-BAv	.112	.175	.012	.129	-.054	-.093	-.083	-.099	-.016	-.150	.171	-.047	.036	-.104	-.146	-.028	.210	.472	.523	.538	---				
22. IES-Tot	-.222	.268	.771	.758	.219	.099	.178	.115	.204	.096	.750	.101	.075	.113	.118	-.365	.218	.011	-.115	.032	.035	---			
23. IMS	.075	-.167	.183	.242	-.111	-.030	-.089	-.010	-.175	-.123	.184	-.105	.028	-.048	.111	-.150	-.161	-.020	-.179	-.105	-.066	.282	---		
24. SRG-Tot	-.601	.107	-.077	-.166	.046	.100	-.072	.045	.578	.290	-.052	.003	-.017	-.036	-.032	-.154	-.025	-.144	-.084	-.232	-.253	-.047	-.107	---	
25. BDI-1/3	-.900	.296	.129	.012	-.042	.026	-.083	-.100	.836	.243	.060	.020	.060	-.019	-.047	-.230	.082	-.107	-.052	-.185	-.167	.106	-.109	.748	

Significant correlations ($p \leq 0.001$) highlighted in bold

Note: T1 = 3rd trimester of 1st pregnancy; T2 = 6 months after 1st pregnancy birth (initial postpartum period); T3 = 6 months after 2nd pregnancy birth (subsequent postpartum period); PPD = Diagnosed with PPD; BDI = Beck Depression Inventory; IMS = Index of Marital Satisfaction; IES-Tot = Impact of Event Scale- Total score; CRI-BAp, CRI-BAv, CRI-CAp, CRI-CAv = Coping Response Inventory-Behavioural Approach, Behavioural Avoidance, Cognitive Approach, Cognitive Avoidance subscales respectively; SRG-Tot = Revised Stress Related Growth – Total score; BDI-1/3 = Change in BDI from T1 to T3.