The relationship between social support and Posttraumatic Growth in mothers following childbirth.

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A thesis submitted for the degree of Doctorate in Clinical Psychology.

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April 2020

Acknowledgements

I would like to thank all of the mothers who participated in this research and helped contribute to our understanding of childbirth trauma and PTG. I would also like to thank my supervisors Leanne Andrews, Joanne Wilson and Danny Taggart; I couldn't have completed this project without your guidance and support.

Abstract

Posttraumatic Growth (PTG) refers to positive changes that occur in an individual's life following a traumatic experience, sometimes alongside distress and symptoms of Posttraumatic Stress Disorder (PTSD); this growth can occur on dimensions of Personal strength, New possibilities, Appreciation of life, Relating to others and Spiritual and existential change (Tedeschi, Cann, Taku, Senol-Durak & Calhoun, 2017). This research aims to assess whether certain dimensions of social support (frequency, satisfaction, type and source) influenced the development of PTG in mothers following childbirth; this is important as there is limited research in this area, despite 34 percent of mothers experiencing birth trauma (Soet, Brack & Dilorio, 2003). Mothers were recruited through social media and mother-and-baby groups to complete online versions of the Impact of Event Scale-Revised (IES-R) (Weiss & Marmar, 1996), Posttraumatic Growth Inventory-Expanded (PTGI-X) (Tedeschi et al., 2017) and Questionnaire on the Frequency of and Satisfaction with Social Support (QFSSS) (García-Martín, Hombrados-Mendieta & Gómez-Jacinto, 2016). Regression analysis revealed that Frequent Instrumental Support from Friends and Satisfactory Instrumental Support from Family tends to foster PTG, whilst Frequent Instrumental Support from Family tends to inhibit PTG. This is the first study to show that not all social support contributes to birth-related PTG and therefore provides valuable new information to inform theoretical models and future research. These findings also have important clinical implications as health professionals could encourage mothers to develop 'support plans' during pregnancy and meet other mothers in 'befriender services'.

CHAPTER ONE: INTRODUCTION

CHAPTER 2: METHODS CHAPTER

CHAPTER 3: RESULTS CHAPTER

CHAPTER ONE: INTRODUCTION

1.1 Chapter overview

This chapter begins by discussing the prevalence of childbirth-related trauma and the lack of research into potential positive effects of this trauma. It then goes on to introduce the concept of Posttraumatic Growth (PTG) and associated theoretical models. A systematic review is then conducted to explore previous research into PTG following childbirth. Potential gaps in the current literature are identified, including a lack of research into the effect of different dimensions of postnatal social support (frequency, satisfaction, type and source) on PTG following childbirth. Research questions will then be developed to address these issues and a rational will be provided regarding the potential implications of this research.

1.2 Understanding Posttraumatic Growth

1.2.1 Childbirth-related trauma

Around 34 percent of mothers report experiencing childbirth trauma (Soet, Brack & Dilorio, 2003), which can be defined as 'the emergence of a baby from its mother in a way that involves events or care which cause deep distress or psychological disturbance […] of an enduring nature' (Greenfield, Jomeen & Glover, 2016, p. 23). A third of these mothers go on to suffer Posttraumatic Stress Disorder (PTSD) symptoms (Menage, 1993). The Diagnostic and Statistical Manual V (DSM-V) (American Psychiatric Association, 2013) defines PTSD as (a) exposure to a stressor, (b) persistent re-experience of the event such as flashbacks, (c) persistent avoidance of stimuli associated with the trauma, (d) negative cognitions and mood and (e) persistent symptoms of increased arousal such as hypervigilance and irritability; these symptoms need to be present for more than one month and cause clinically significant distress or impairment in social, occupational or other important areas of functioning.

The DSM-V (APA, 2013) also includes a new diagnostic category of Complex PTSD (CPTSD). This category includes the typical PTSD symptoms of hyper-arousal, re-experiencing, avoidance and negative cognitions and mood as well as three additional clusters, which are distinct from PTSD; the presence of disturbances in emotions, self and relationships (World Health Organisation , 2018). Many individuals with CPTSD struggle to trust others due to previous experiences of authority figures failing to protect them and this

can make them vulnerable to feeling re-traumatised in healthcare settings (Elliott, Bjelajac, Fallot, Markoff & Reed, 2005; Muskett, 2014). It is possible that many mothers may be experiencing CPTSD following a traumatic childbirth; however, as this is a relatively new diagnostic category, there is no previous research regarding the prevalence rates of CPTSD following childbirth.

Postnatal PTSD symptoms can lead to detrimental changes in the mother's health, mood, behaviour and social interactions (Ayers, Eagle & Waring, 2006), as well as the mother-baby bond (Bailham & Joseph, 2003) and the child's subsequent development (Glasheen, Richardson & Fabio, 2010; O'Donnell, Glover, Barker & O'Connor, 2014; WHO, 2013). Perinatal mental health disorders also cost the United Kingdom around £8.1 billion a year, with 72 percent of these costs being due to the long term effects on the child (Bauer, Parsonage, Knapp, Iemmi & Adelaja, 2014).

1.2.2 Posttraumatic Growth

Whilst there is a large body of research highlighting the negative effects of childbirth trauma (Bailham, & Joseph, 2003), there has been limited research examining potential positive effects, such as Posttraumatic Growth (PTG). PTG is a term used to describe positive psychological changes following a traumatic experience; this can include growth on dimensions of Personal strength, New possibilities, Appreciation of life, Relating to others and Spiritual and existential change (Tedeschi, Cann, Taku, Senol-Durak & Calhoun, 2017).

PTG research does not disregard the negative effects of trauma but rather seeks to develop a better understanding of the entire experience. PTG has many dimensions, allowing for growth in some areas and deterioration or no change in others (Calhoun & Tedeschi, 1998). Studies suggest that reports of growth following trauma are more frequent than reports of psychiatric disorders following trauma (Quarantelli, 1985; Tedeschi, 1999).

Research suggests that distress and PTG can co-exist (Aftyka, et al., 2016; Teixeira & Pereira, 2013) and therefore may be separate dimensions rather than polar ends of a continuum. In fact, research suggests that there may be a curvilinear relationship between PTSD and PTG, where moderate levels of PTSD are associated with more PTG than low or high levels of PTSD (Frazier et al., 2001; Levine et al., 2008; Wu, Zhang, Liu, Zhou & Wei, 2015; Kleim & Ehlers, 2009; Butler et al., 2005; McCaslin et al., 2009).

1.2.3 Measures of PTG

There are several measures of PTG including Changes in Outlook Questionnaire (CiOQ) (Joseph, Williams & Yule, 1993), the Stress-Related Growth Scale (SRGS) (Park, Cohen & Murch, 1996), the Perceived Benefit Scales (PBS) (McMillen & Fisher, 1998), the Thriving Scale (TS) (Abraido-Lanza et al., 1998), the Psychological Well-Being – Post-Traumatic Change Questionnaire (PWB-PTCQ) (Joseph, et al., 2012) and the Posttraumatic Growth Inventory-Expanded (PTGI-X) (Tedeschi et al., 2017).

The measure most commonly used in childbirth-related PTG research is the PTGI-X (Tedeschi et al., 2017), which is a 25-item scale with 0-5 likert-type ratings (Appendix A). This tool measures changes in the individual's perceptions of themselves, others and events following a traumatic event. The sum of all of the ratings provides the Total PTG score. The sum of certain items provide ratings for growth on different dimensions. These dimensions include 'New Possibilities' (maximum score of 35), 'Relating to Others' (maximum score of 25), 'Personal Strength' (maximum score of 20), 'Spiritual Change' (maximum score of 30) and 'Appreciation of Life' (maximum score of 15). These five factors are supported by confirmatory factor analysis (Taku, Cann, Calhoun & Tedeschi, 2008); however, they do not include changes in authenticity, which other researchers have suggested may be an important dimension of PTG (Wood, Maltby, Stewart & Joseph, 2008). The concept of authenticity is included in other measures of PTG including the PWB-PTCQ measure (Joseph, et al., 2012).

Furthermore, it should be noted that the PTGI-X only measures perceived growth, which may not be the same as long term changes in perspective or actual changes in functioning. For example, Frazier, Tennen, Gavian, Park, Tomich & Tashiro (2009) created a 'current standing' version of the PTGI (C-PTGI), which captured participants' feelings about themselves and their lives and administered this two months apart, before and after a traumatic event; this revealed only a small relationship between perceived growth and changes on pre and post C-PTGI measures. McFarland & Alvaro (2000) argue that this discrepancy may be because perceived growth is a motivated positive illusion to help people cope with trauma. However, Fraiser et al., (2009) acknowledge that they may have administered measures too soon after the trauma and it is possible that PTG is a coping strategy soon after trauma, which then transforms into actual growth over time.

1.2.4 PTG theories

1.2.4.1 Functional Descriptive Model (Tedeschi, Park & Calhoun, 1995)

Tedeschi, Park and Calhoun (1995, 1998, 1999, 2004ab, 2014) proposed a model of PTG, known as the Functional Descriptive Model (FDM) (Figure 1). This model was developed following their research (Tedeschi et al., 1998), clinical experience (Calhoun &Tedeschi, 1999) and literature highlighting the importance of the appraisal process in response to trauma (Janoff-Bulman & McPherson Frantz, 1997).

FDM is based on the assumption that individuals actively construct a cognitive model of the world so that it seems meaningful and manageable (Kelly, 1955; Neimeyer, 1993). This model must be continually preserved in order for them to access the stored information (Greenwald, 1980). Trauma disrupts this process and exposes the individual to the upsetting thought that life is no longer as understandable as they thought (Tedeschi & Calhoun, 1995); for example, someone who had a set birth plan may find it difficult when they end up needing an emergency caesarean section and realise that childbirth is not as predictable or controllable as they expected.

Tedeschi & Calhoun (1996) also found that people can experience personal growth without being a trauma survivor; this may be a sign of a self-enhancing cognitive bias, which allows for continued self-improvement, or the result of maturational processes, as the sample were young adults. The authors suggest that personal growth may also be possible after positive life changes, if they are significant enough to challenge their schemas; however, they suggest this is likely to be at lower levels than the growth experienced following trauma. These findings mean that it may be difficult to determine the source of the individual's personal growth if they have had multiple positive and negative experiences, such as a very difficult pregnancy and then an experience of birth which was significantly better than expected.

In instances of trauma, individuals try to make sense of their experiences through rumination; repeatedly going over the event and questioning 'why did this happen to me?'. If they blame themselves, such as thinking that they were careless, they may be able to maintain their existing schema about the world (Tedeschi & Calhoun, 1995). However, other conclusions, such as 'bad things happen to good people', are likely to shatter their schema (Tedeschi & Calhoun, 1995).

According to this model, rumination is initially automatic and distressing, which is consistent with PTSD re-experiencing and avoidance symptoms (APA, 2013). These thoughts initially focus on wishing things could go back to the way they were; however, over time they realise they need to disengage from the beliefs, goals and activities that no longer make sense following the trauma (Joseph & Linley, 2006). Disengagement provides individuals with enough distance for a more deliberate process of rumination to begin (Tedeschi, et al., 1998). This transition may be aided by social support, which can help provide an opportunity for self-disclosure as well as reducing emotional distress (Tedeschi, et al., 1998).

Deliberate rumination involves considering alternatives to the previous beliefs, such as the possibility of life being better in some ways following the trauma, which may then lead to PTG (Tedeschi, et al., 1998). For example, a mother who experienced a traumatic birth may need to let go of her original birth plan goal before she can have space to consider and appreciate parts of her actual birth experience; this in turn may lead to PTG, such as developing a greater appreciation of life after realising that she nearly lost her child during birth.

As well as changes in beliefs and goals, individuals may develop new perceptions of themselves based on how they manage the trauma and what they learn in the process (Tedeschi, et al., 1998). For example, they may feel that the traumatic experience has revealed their strengths or a truer sense of themselves, which wouldn't have become apparent without facing such a challenge (Showers & Ryff, 1996). Having this new sense of identity may help them feel more confident in dealing with future difficulties (Tedeschi, et al., 1998), such as realising their strength as a mother and their ability to care for their child during a crisis. Alongside developments in their identity, the traumatic experience may lead to changes in their life narrative; they may view the trauma as a pivotal moment in their life which set the stage for their new perspective (McAdams, 1993; Tedeschi & Calhoun, 1995; Kelly, 1955; Neimeyer & Stewart, 1996; Weber & Harvey, 1994). In particular, a narrative where they frame themselves as a survivor rather than a victim of trauma may be an important part of developing PTG (Teigen & Jensen, 2010).

The rumination aspect of FDM is supported by research demonstrating that reflective rumination, characterised by deliberate and positive coping-related introspection, can facilitate the development of PTG (Wu, Zhang, Liu, Zhou & Wei, 2015). These findings suggest that cognitive behavioural interventions, which aim to help people build reflective

rumination, may be beneficial in helping individuals develop PTG (Chan et al., 2011; Rajandram et al., 2011).

Some individuals with PTG may still experience distress alongside elements of growth, but it is likely to be at a lower level than they experienced immediately after the trauma (Joseph & Linley, 2006). This co-existence of negative and positive changes following trauma can often seem paradoxical; however, Tedeschi & Calhoun (2015, p. 504) state that this is because 'their losses have produced gains'. For example, some people with PTG report a greater awareness of their vulnerability but also a greater sense of their ability to survive (Calhoun & Tedeschi, 1999).

There are many personal characteristics that appear to affect growth, including age, self-efficacy, locus of control, extraversion and optimism (Tedeschi, Park & Calhoun, 2014). Social support also seems to play an important role as it aids self-disclosure, encourages cognitive processing, and offers new perspectives for finding meaning (Tedeschi & Calhoun, 2004; Slavin-Spenny, Cohen, Oberleitner, & Lumley, 2011; Smyth, Hockemeyer, & Tulloch, 2008; Ullrich & Lutgendorf, 2002; Nenova, DuHamel, Zemon, Rini, & Redd, 2013; Pennebaker, 1995).

In terms of the nature of the trauma, Calhoun, Cann and Tedeschi (2010) explain that it is the disruption of an individual's assumptions, rather than the objective characteristics of the event itself, that initiates growth. However, different types of trauma are likely to lead to different changes in schema; for example, events that are attributed to the individuals own actions are more likely to result in growth in self-schema. In contrast, events attributed to the actions of others are less likely to result in growth; however, individuals may still experience growth if they then learn to assess others motives more carefully and develop strategies to avoid getting hurt again (Tedeschi & Calhoun, 1995). Trauma attributed to external events may lead to growth if it leads the person to reconsider their life properties (Tedeschi & Calhoun, 1995).

Tedeschi, Park and Calhoun (1998) suggest that individuals can experience PTG in a range of different ways including better interpersonal relationships, as they learn to express their feelings and reciprocate compassion, and changes in their philosophy of life, as they develop new priorities and they appreciate their life more after being given a second chance. They may also develop greater wisdom, as their understanding of themselves and others deepens through experience and they reconsider aspects of life that had previously only been considered superficially (Tedeschi, Park & Calhoun, 1998). Some may also experience

spiritual development, where they feel connected to something greater, in order to make sense of the trauma (Tedeschi, Park & Calhoun, 1998).

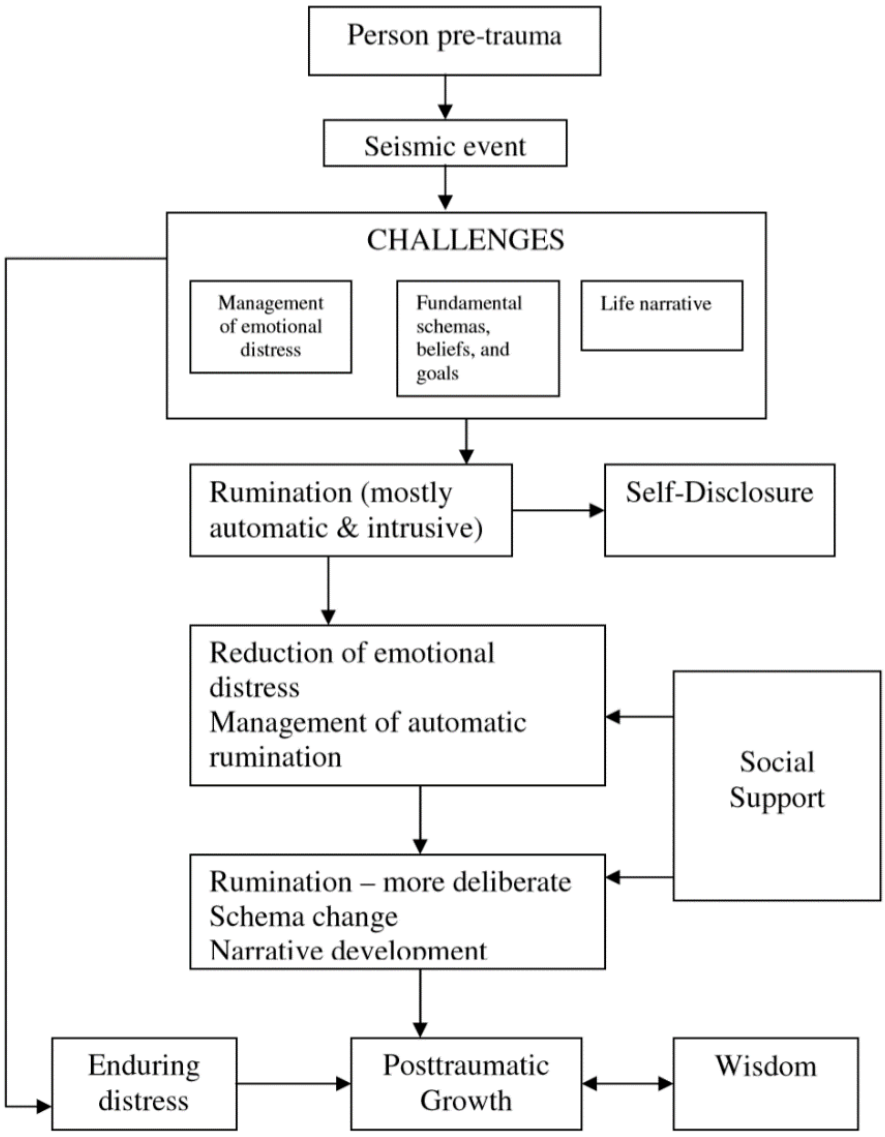


Figure 1. Functional Descriptive Model (Tedeschi & Calhoun, 1995, 2004, 2014)

Although this model describes the various dimensions of PTG that the individual may experience, it doesn't clearly outline why some people experience growth on certain dimensions. In fact, McMillen (2004) argues that each of these changes may emerge from processes that look very different. McMillen (2004) has also criticised FDM for relying too heavily on cognitive processing and understating the role of the larger environment, including social support and cultural factors. McMillen (2004) argues that social support plays a much bigger role than aiding rumination and that social support may in itself foster personal

strength in an individual. Furthermore, the role of culture has not been included, despite potentially affecting many components of their model; for example, cultural beliefs are likely to influence the schemas the individual holds, their life narrative and the type of social support they have available (McMillen, 2004).

1.2.4.2 Organismic Valuing Process (Joseph & Linley, 2005)

Joseph and Linley (2005) reviewed the FDM model (Tedeschi, Park & Calhoun, 1995) and noted that, although it was the most comprehensive PTG model to date, it did not explain why people would be motivated to move towards growth. Joseph and Linley (2005) therefore developed their own Organismic Valuing Process (OVP) theory (Joseph & Linley, 2005; 2008) (Figure 2), which provides a cohesive model of both PTSD and PTG. In this model, trigger events shatter the individual's sense of self and the world; they may feel like they are fragile, the future is uncertain or events can be random. For example, a mother who has to abandon her home birth plan for an emergency caesarean section may feel frightened and out of control, which could shatter her assumptions about birth being a natural and safe process, the world being predictable or her ability to control aspects of her life. Once trauma has shattered the individual's assumptions in this way, there is a 'completion tendency' (Joseph & Linley, 2005), where they need to modify existing models of the world in order to integrate the new trauma-related information.

In order to integrate their experience of trauma into their self-structure, the experience must be held and processed in active memory; this leads to intrusive states and heightened distress, which the individual then tries to defend against, leading to avoidant states. These oscillating intrusive and avoidant states are characteristic of PTSD and continue until the information is either accommodated or assimilated (Wu, Zhang, Liu, Zhou & Wei, 2015). Assimilation involves maintaining the individuals existing assumptions by attributing blame to themselves, whereas accommodation involves altering the existing assumptions in either a negative (e.g. hopelessness) or positive (e.g. appreciation) direction, based on the meaning they attribute to the event.

Positive accommodation results in personal growth. This does not necessarily mean that the individual will be happier, but they may be wiser (Alloy & Abramson, 1979; Linley, 2003), with closer relationships, greater self-acceptance, and deeper spirituality (Ryff & Singer, 1996; van Dierendonck, 2004). In order for positive accommodation to take place, the

individual needs a social environment which supports their psychological need for autonomy, competence and relatedness (Joseph & Linley, 2005).

Each individual will take different lengths of time to go through the stages of OVP, depending how much the new information contrasts their existing schema, how in touch the person is with their organismic valuing process and the nature of their social environment (Wu, et al., 2015). The greater the individuals level of social support, the more likely they are to experience growth (Ryan & Deci, 2001). Personality factors may also play a role; for example, someone with a flexible personality schema will be more likely to accommodate information that is contradictory to their existing schema (Joseph & Linley, 2008). OVP also suggests that the greater the discrepancy between the trauma and the existing assumptions, the greater the potential for growth.

This theory also suggests that people who have experienced sufficient levels of support during childhood and adolescence will have developed a generalised orientation towards their organismic valuing process s, and will therefore be more resilient against trauma as they can more easily accommodate trauma-related information (Joseph & Linley, 2005). If the person lacks social support, they are more likely to move towards negative accommodation. Alternatively, if they do not engage with the significance of the event and instead try to maintain their pre-trauma schema, they will move towards assimilation; this leaves their schemas fragile to future fragmentation and re-traumatisation (Joseph & Linley, 2005).

Some elements may be accommodated in a negative direction or assimilated, whilst others are accommodated in a positive direction, resulting in simultaneous distress and growth. For example, Joseph and Linley (2008) provide a case study of a woman made significant lifestyle changes that fit with her values, whilst continuing to feel guilty for surviving. This idea has been supported by research, demonstrating that assimilation and accommodation can co-occur (Block, 1982) and that PTSD and PTG can co-occur (Payne, Joseph, & Tudway, 2007; Linley & Joseph, 2004; Baillie, Sellwood & Wisely, 2014; Wu, Xu & Sui, 2016; Zieba, et al., 2019; Purc-Stephenson et al., 2015; Kroemeke et al., 2017), which suggests that they may be separate dimensions rather than opposite ends of a scale (Calhoun & Tedeschi, 1998).

Joseph and Linley (2008) suggest that the relationship between distress and growth may be curvilinear; they propose that moderate levels of distress are associated with higher levels of growth, whereas low or high levels of distress are either insufficient or too

overwhelming for growth to occur. This theory is supported by studies that have found a similar curvilinear pattern between distress and growth (Joseph & Linley, 2008; Butler et al., 2005; Kleim & Ehlers, 2009; McCaslin et al., 2009). However, many studies have only examined linear relationships between these variables, which has resulted in contradictory results.

OVP is based on the assumption that all individuals are innately motivated towards positive changes that will improve their wellbeing (Joseph & Linley, 2005), which is consistent with Carl Rogers' (1959, 1961) concepts of self-actualisation. OVP has also received support from other researchers and theorists (Maddi, 1996; Sheldon, Arndt & Houser-Marko, 2003; Wadey, Pdlog, Galli & Mellalieu, 2016; Bozarth, Zimring, &Tausch, 2002; Elliott, Greenberg, & Lietaer, 2003). However, this approach has also been criticised for being overly simplistic or optimistic and for not acknowledging the possibility that self-destructive urges may also exist (Quinn, 1993).

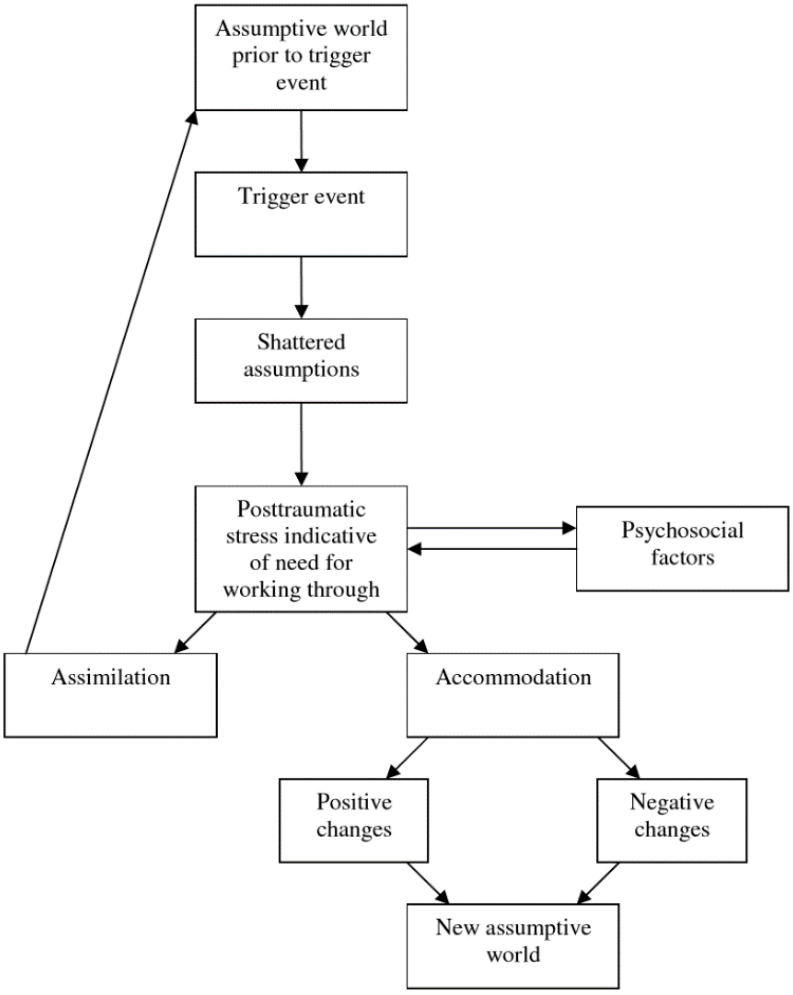


Figure 2. Organismic Valuing Process (Joseph & Linley, 2005)

1.2.4.3 Summary of models

Both FDM (Tedeschi & Calhoun, 1995, 2004, 2014) and OVP (Joseph & Linley, 2005) propose that traumatic events disrupt an individual's assumptions about the world, leading to a discrepancy between their pre and post-trauma schemas and significant distress. In an attempt to rebuild their assumptive world in a meaningful way, they alter their perceptions of themselves, their relationships and their priorities; these changes can then be conceptualised as PTG. Both of these models take into account the influence of personality structure, coping style and social support to varying degrees.

Although these are considered to be the two most comprehensive models of PTG, they have been criticised for being focused on cognitive elements and failing to take into account the role of culture, even though the self and culture are inseparable (McMillen, 2004; Splevins, Cohen, Bowley & Joseph, 2010); both models were developed in Western societies and therefore may not be universally applicable (McMillen, 2004; Stanton & Low, 2004).

1.2.5 PTG controversy

There is ongoing controversy regarding the existence of PTG. Both PTG and PTSD could both be viewed as socially constructed concepts (Summerfieled, 2001; Purtle, 2016), which are created through factors like language and policies and therefore influenced by cultural beliefs and political agendas. It is therefore unclear whether research is discovering an existing phenomenon or constructing a new concept (Hacking, 1995b).

As noted previously, it is also unclear if perceived PTG corresponds with actual growth (Frazier, et al., 2009) or whether it is an illusionary phenomenon. Illusionary models suggest that PTG is a motivated positive illusion to help the person cope with trauma and defend aspects of their identity such as self-esteem and perceived control (Albert, 1977; Taylor, 1983 McFarland & Alvaro, 2000; Sumalia, Ochoa & Blanco, 2009). Other researchers have attempted to combine models, suggesting that the illusionary aspect may be a short term cognitive avoidance coping strategy and that successful coping may eventually lead to the constructive element of PTG growing over time (Zoellner & Maercker, 2006; Wagner, Forstmeier, &Maercker, 2007).

1.2.6 Neuroscientific research into PTG and PTSD

Neuroscientific research has provided further support for the existence of PTG by highlighting neurological changes in both PTSD and PTG. PTSD symptomatic states have been associated with heightened amygdala responsivity, decreased medial prefrontal cortex responsivity and decreased hippocampus functioning and size (Shin, Rauch & Pitman, 2006). In contrast, PTGI total scores and Relating to others sub-scores were associated with increased regional grey matter volume in the right dorsolateral prefrontal cortex (DLPFC) on magnetic resonance imaging scans (Nakagawa, et al. 2016).

Research has identified that higher levels of PTG were associated with activation in the prefrontal cortex, which is involved in personality, decision making and planning complex cognitive behaviour (Fujisawa, et al., 2015). There was also activation in the superior parietal lobule (SPL) in the left central executive network, which is involved in spatial orientation and manipulating information in the working memory (Fujisawa, et al., 2015). Individuals with higher levels of PTG were also found to have stronger activation in prospective or working memory areas within the executive function network (Fujisawa, et al., 2015). Furthermore, there was stronger connectivity between the SPL and supramarginal gyrus (SMG), which is involved in mentalising (Fujisawa, et al., 2015). These findings suggest that people with higher levels of PTG may have stronger connections between memory functioning in the CEN and social functioning in the SMG; this may lead to better mentalisation and explain better relationships (Fujisawa, et al., 2015).

1.2.7 Clinical applications

Many researchers have started considering the clinical implications of PTG and potential interventions which may foster growth. Tedeschi and Calhoun (1995) note that clinicians should initially provide support to reduce emotional distress. Reducing distress may allow the client to then engage in deliberate rumination about the traumatic event, which could then lead to PTG (Tedeschi & Calhoun, 2004). Clinicians should provide clients with space to process their experiences in whatever framework they find helpful and without trying to solve the situation for them (Calhoun & Tedeschi, 1999). Reflective rumination may also be aided by cognitive behavioural interventions, which encourage clients to try and make sense of their thoughts, emotions and behaviour (Chan et al., 2011; Rajandram et al., 2011).

Calhoun and Tedeschi (1999) suggests that clinicians need to be aware of the potential for growth, so that they do not unintentionally dismiss it. However, they also need

to be mindful that not all trauma leads to PTG and careful when introducing this concept, as some clients may feel like a failure if they don't then experience growth (Calhoun & Tedeschi, 1999). Timing is likely to be particularly important, as introducing this concept too soon could seem insensitive; the concept of PTG should only be discussed after the client has had enough time to start adapting to the traumatic experience (Tedeschi & Calhoun, 2004). Furthermore, clinicians should explain that they are not suggesting that the trauma was positive in some way, but rather that something positive has arisen from their struggle; PTG originates from the client and not the trauma (Calhoun & Tedeschi, 1999).

Tedeschi, Calhoun and Groleau (2015) recommend that professionals should take an 'Expert Companion' approach, which emphasises that professional knowledge and human companionship are both important for facilitating growth (Calhoun & Tedeschi, 2013; Tedeschi & Calhoun, 2006). Calhoun and Tedeschi (2013) suggest that there are five elements of growth-oriented trauma therapy that expert companions can use: psychoeducation about how normal trauma responses can be precursors to growth, the development of emotion-regulation strategies to help the client engage in deliberate rumination, ways to constructively self-disclose in relationships, creating a new life narrative including elements of growth and developing beliefs that promote resilience.

Joseph (2012) describes the elements that clinician's should consider using the 'THRIVE' acronym; Taking stock, Harvesting hope, Re-authoring, Identifying change, Valuing change and Expressing change in action. 'Taking stock' involves initially helping the client manage their distress, so that they can cognitively engage in processing the trauma in a more deliberate way (Tedeschi & Calhoun, 1995). 'Harvesting hope' involves helping them feel hopeful about the future. 'Re-authoring' involves using expressive writing techniques with instructions or prompts to encourage new perspectives and develop narratives including growth (Tedeschi & Calhoun, 1995; Resick & Calhoun, 2001; Stanton, et al., 2002; Pennebaker & Chung, 2007); this approach has been found to support the development of PTG in some studies (Zheng, Lu & Gan, 2019) but only showed very small effect sizes in others (Pavlacic, Buchanan, Maxwell, Hopke & Schulenberg, 2019). 'Identifying change' involves noticing and labelling signs of PTG; for example, listening out for the client talking about meaningful change or using questionnaires or self-monitoring assignments (Tedeschi & Calhoun, 1995; Calhoun & Tedeschi, 1999; Tedeschi, Calhoun & Groleau, 2015). 'Valuing change' involves developing awareness of new priorities through gratitude exercises and

‘Expressing change in action’ involves making a plan of things that they can do over the next week to foster growth.

The THRIVE model and Expert Companion approach have not been assessed in terms of effectiveness and do not appear to be widely used in services at present. Further research is still needed to explore factors contributing to PTG and potential interventions in more detail. Furthermore, services may need to be made aware of PTG, as it is a relatively new concept, and they may not be aware of potential approaches that they can use to support clients.

1.2.8 Summary

This introduction has highlighted how, although there has been a great deal of research into the negative effects of childbirth trauma, there has been limited research into any potential positive psychological changes, known as ‘Posttraumatic Growth’. PTG can include dimensions of Personal strength, New possibilities, Appreciation of life, Relating to others and Spiritual and existential change (Tedeschi, et al., 2017). Two theoretical models of PTG were discussed, FDM (Tedeschi & Calhoun, 1995, 2004, 2014) and OVP (Joseph & Linley, 2005); both of these models suggest that trauma disrupts an individual’s assumptions about the world, leading to significant distress. In an attempt to rebuild their assumptive world in a meaningful way, they alter their perceptions of themselves, their relationships and their priorities and these changes can then be conceptualised as PTG. Both of these models note how certain factors, such as social support, can contribute to the development of PTG. However, the full range of factors and the extent to which they contribute to growth remains unclear. It was therefore important to complete a Systematic Review of existing research, to identify factors which may contribute to childbirth-related PTG, as well as dimensions of growth.

1.3 Systematic review of factors influencing childbirth-related PTG

1.3.1 Introduction

As well as exploring the theoretical models of PTG, it is important to establish an understanding of any existing findings in this area prior to conducting new research. There has been a great deal of research into PTG following a wide range of traumas; however, there are only a handful of studies examining PTG in relation to childbirth. A systematic review

was therefore completed to identify factors that may contribute to PTG following childbirth and any gaps in existing research that may need to be addressed in future. When completing this review it is important to note that the experience of pregnancy, birth and parenthood cannot be separated and therefore these experiences were not excluded from the systematic review.

1.3.2 Inclusion and exclusion criteria

Inclusion and exclusion criteria were defined prior to completing the literature search (Table 1). It was important to exclude studies involving other traumas as it would not be possible to determine how each trauma contributed to growth. Although premature deliveries could be seen as additional traumas, these were included to ensure that the full continuum of birth experiences were being explored.

Table 1

Inclusion and exclusion criteria

Include	Exclude
• Studies of PTG in parents, where data from mothers is presented separately from Fathers. • Data from all types of birth, including premature and multiple births. • Quantitative studies in peer review journal articles in English.	• Studies only exploring experiences of Fathers or Grandparents or studies of PTG in parents, where data from mothers cannot be separated. • Studies focusing on other traumatic experiences (e.g. violence, illness, disability, death or adoption). • Qualitative studies

1.3.3 Search Strategy

A search of existing literature revealed a list of synonyms for ‘Posttraumatic Growth’ and ‘Childbirth’. These were then combined using ‘and’ to funnel down the results to relevant articles (Table 2). The search term ‘Growth’ was not used as this revealed a large quantity of medical articles about physical growths.

Table 2

Combining Search Terms

Terms 'in Title'	Electronic database results 2/2/19	Google Scholar 2/2/19
1) A: "PTG" OR "Post-Traumatic Growth" OR "Posttraumatic Growth" OR "Post Traumatic Growth" OR "Personal growth" OR "Psychological Growth" OR "Benefit Finding" OR "Thriving" OR "Stress-related Growth" OR "Adversarial Growth"	7,998	259
2) B: "child birth" OR "birth" OR "childbirth" OR "motherhood" OR "mothers"	248,423	1,550
3) A AND B	80	52

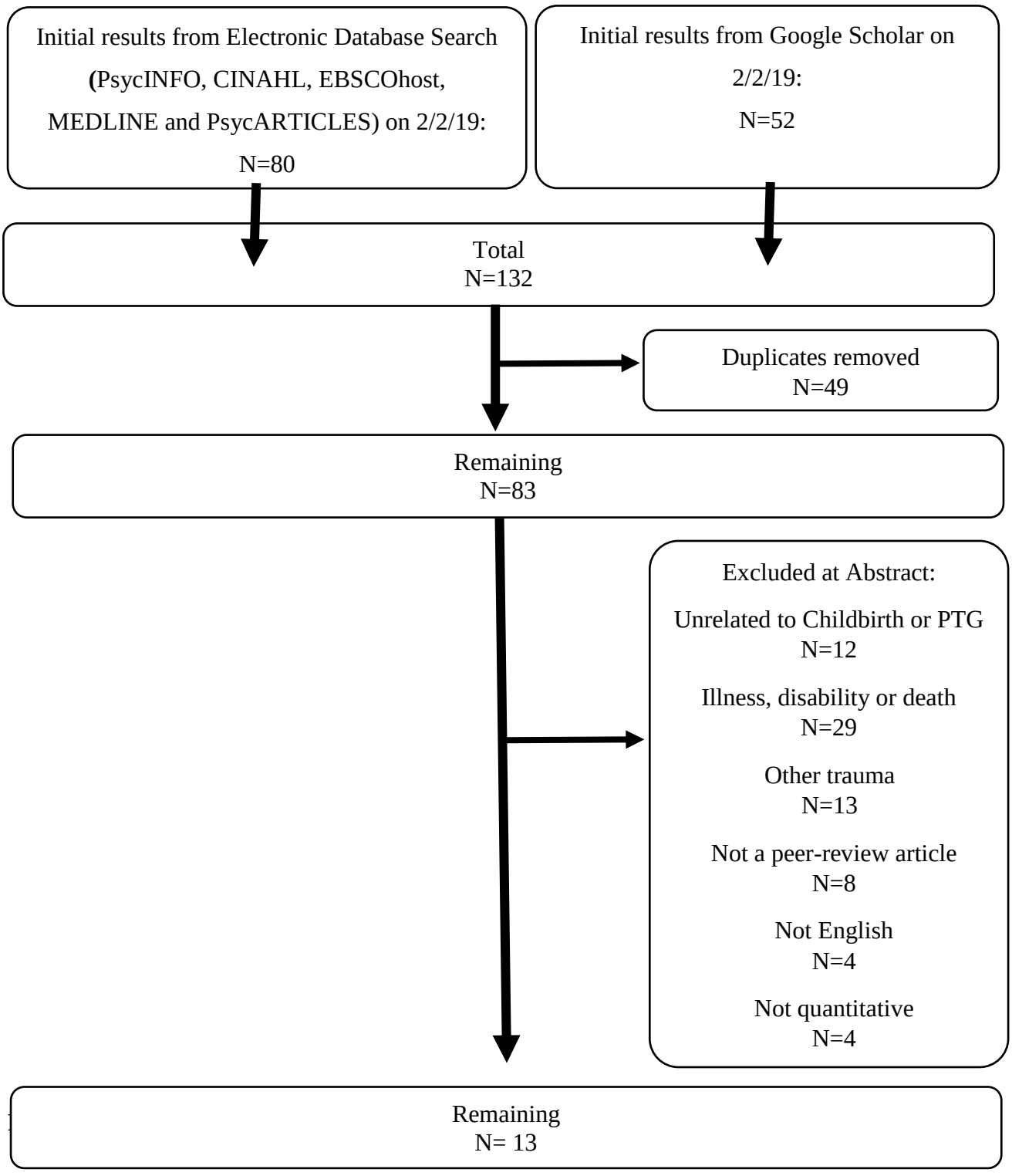


Figure 3. Flow chart of search process

1.3.4 Data extraction

The search results were recorded in a spreadsheet and sorted systematically. After the 49 duplicate titles were removed, the remaining 83 article titles were screened and 70 were removed as they did not fulfil the inclusion criteria (Figure 3). The references from each article were checked for any other relevant papers; however, these were either duplicates or did not fulfil the criteria. The number of participants, age range and mean age of participants, age range and mean age of children, recruitment method, number of drop-outs, design, method, measures, analysis, PTGI score, findings and limitations of each study were recorded for comparisons to be made (Table 3).

1.3.5 Data analysis

These studies used a range of designs, including prospective, longitudinal and cross-sectional. The data was reviewed using a Narrative Synthesis (Popay, et al., 2006) framework, which involved developing a theory, completing an initial synthesis of findings, exploring the relationships in the data and examining the robustness of the synthesis. The AXIS tool (Downes, Brennan, William & Dean, 2016) was used as a reference when assessing the methodological quality of quantitative studies with cross-sectional designs. The CASP cohort study checklist (CASP, 2018b) (Appendix L) was used for longitudinal studies and the Appraisal tool for Cross-Sectional Studies (AXIS) (Downes, Brennan, Williams & Dean, 2016) (Appendix M) was used for cross-sectional studies.

1.3.6 Results

The review revealed only 13 papers examining factors that may contribute to childbirth-related PTG (Sawyer & Ayers, 2009; Taubman-Ben-Ari, Findler & Kuint, 2010; Sawyer, Ayers, Young, Bradley & Smith, 2012; Taubman-Ben-Ari, Shlomo & Findler, 2012; Taubman-Ben-Ari & Spielman, 2014; Sawyer, Nakic Rados, Ayers & Burn, 2015; Noy, Taubman-Ben-Ari, Kuint, 2015; Mangelsdorf, 2017; Nishi & Usuda, 2017; Rozen, Taubman-Ben-Ari, Gan, Strauss, Morag, 2017; Porat-Zyman Taubman, Kuint & Morag, 2018; Shenkman, 2018; Taubman-Ben-Ari, Skvirsky, Strauss & Morag, 2018). All of these studies used the PTGI to measure growth, apart from Shenkman (2018), who used a section of the Psychological Wellbeing Scale (PWS), and Mangelsdorf (2017), who used the Personal Growth Initiative Scale II (PGIS-II). There was notable variation within the reported prevalence of growth and mean growth scores (Table 3), which may be due to the PTGI being administered at different

times following the birth, different ways of determining the mean score and using translated (Sawyer, et al., 2015) or short form (Nishi & Usuda, 2017) versions of the PTGI.

All of the studies in this review reported growth on four of the PTGI domains, however there was limited or no change on the remaining dimension of spiritual change in two of the studies (Sawyer & Ayers, 2009; 2012; Nishi & Usuda, 2017); this may be because the PTGI has been found to lack sensitivity on the Spirituality dimension and has since been replaced with the Posttraumatic Growth Inventory-Expanded (PTGI-X) (Tedeschi et al., 2017). The PTGI-X has four newly developed Spiritual-existential change items, which reflect a wider range of perspectives from different cultures (Tedeschi et al., 2017).

Before discussing the papers in this literature review, it is important to note that there were many possible ways of grouping these findings. Whilst this review has used the categories of 'Internal resources', 'External resources' and 'Event characteristics', there may have been issues with these categories as they each included a wide range of factors. For example, the Personal resources group combines both unchangeable aspects of age and education and psychological features that are in constant change. Event characteristic covers a wide range of variables including infant temperament, premature birth and mode of delivery. External resources ranged from time since event to social support. Furthermore, social support can be conceptualised in multiple ways, such as an internal resource or relational resource rather than solely an external resource. For example, social support could be conceptualised as an internal perception of being cared for (Barrera, 1986; Taylor, 2011). However, a decision was made to group the findings of this review in terms of internal resources, external resources and event characteristics, with social support as an external resource, in order to remain consistent with existing models and literature on childbirth-related PTG, which used these categories (Taubman-Ben-Ari, 2010; 2014; 2018; Tedeschi & Calhoun, 1998).

1.3.6.1 PTG prevalence following childbirth:

Almost all of the studies in this review revealed some degree of growth, but only three stated the prevalence; these ranged from 35 percent (Sawyer, et al. 2015) to 50.5 percent (Sawyer & Ayers, 2009) of mothers reporting PTG following childbirth. Reporting prevalence suggests that there is a defined cut-off point for what constitutes growth; however, these papers do not state how they determined prevalence and the PTGI does not define any recommended target scores. The variation in prevalence may also be due to differences in the measures used, inconsistencies in when the PTGI was administered and differences in how the researchers

reported results; some researchers recorded the mean of each rating on the dimension, whilst others reported the mean of the overall score for that dimension and some did not report any value. For example, Mangelsdorf's (2017) study found an increase in the overall mean growth score before and after birth; however, it was hard to compare this data with other studies as they used a different measure of growth (Personal Growth Initiative Scale-II). Furthermore, some studies used translated versions of the PTGI (Sawyer, et al., 2015) without then validating the measure in that culture, or short-form versions of the PTGI (Nishi & Usuda, 2017).

Table 3

Summary of participant demographics, sampling, method and findings from the literature search

Authors	Date	Country	Participants						Sampling and Method	Growth Prevalence	Mean PTGI score	Measures/Analysis
			Group	N	Drop outs	Age range (years)	Mean Age (SD)	Child ages				
Sawyer & Ayers	2009	UK	Mothers	219	3	18-42	28.14 (5.4)	1-36 months	Cross-sectional. Online. Questionnaire	50.50%	58.81 (21.61)	Posttraumatic Diagnostic Scale PDS, Coping Resources Inventory CRI, Support and Control During Birth Questionnaire SCDBQ
Taubman-Ben-Ari, Findler & Kuint	2010	Israel	Mums of preterm (PT)/ full-term (FT) singles/twins	211	14	19-45	36.44 (4.22)	3 weeks - 1 year	Longitudinal. Hospital wards. Interview/ Questionnaires.	-	Mean of individual scores: PT twins: 3.27 (0.71) FT twins: 2.95 (1.01) Singles: 3.00 (0.64)	Mental Health Inventory MHI, Family Inventory of Life Events and Changes FILE, Experiences in Close Relationships ECR, Support Functions Scale SFS, Evaluating and Nurturing Relationship Issues Communication and Happiness Scale ENRICH, Infant Characteristics Questionnaire ICQ. Mothers' Feelings Towards Their Baby Questionnaire MFTBQ
Sawyer, Ayers, Young, Bradley & Smith	2012	UK	Pregnant mothers	125	36	18-42	31.86 (5.61)	28 weeks pregnant-8 weeks	Clinics. Prospective Questionnaire.	47.9%	39.81 (24.06)	Impact of Events Scale IES, PTSD Symptom Scale-Self-Report PSS-SR Multi-dimensional Scale of Perceived Social Support MSPSS, Self-Reporting Questionnaire-20 for distress SRQ-20
Taubman-Ben-Ari, Shlomo & Findler	2012	Israel	First time mothers/ grandmothers	152		21-37	26.9 (3.92)	6-24 months	Cross-sectional. Convenience/ snowball sampling Questionnaire	-	Individual scores: 3.28 (0.82)	MSPSS, Appraisal Scale, Purpose of Life Test
Taubman-Ben-Ari & Spielman	2014	Israel	First-time mothers/ Fathers of preterm/full-term babies	218			28.64 (3.95)	1, 5 and 24 months	Longitudinal. Hospital wards. Questionnaire.	-	65.58 (17.96)	Caregiving Questionnaire CQ for spouse support, PSS, ENRICH, ICQ, ECR, Developmental Inventory for 2 year olds, Self-esteem Scale SES, Sense of Coherence Scale SOC

Authors	Date	Country	Participants						Sampling and Method	Growth Prevalence	Mean PTGI score	Additional measures/Analysis
			Group	N	Drop outs	Age range (years)	Mean Age (SD)	Child age Range				
Sawyer, Nakic Rados, Ayers & Burn	2015	England: Croatia:	Mothers	193 160	10 17	18-40 22-41	26 (5.2) 31.3 (4.2)	1-24 months	Cross-sectional. Online questionnaire	UK: 44% Croatia: 35%	Croatian version of PTGI	Brief Cope Questionnaire BCQ, Edinburgh Postnatal Depression Scale EPDS, IES
Noy, Taubman-Ben-Ari, Kuint	2015	Israel	Mothers	414	11 3	19-45	1.3 (4.3)	12 months	Cross-sectional. Questionnaires. Deliberate sampling: over-representing twins/preterms	-	-	MHI, SFS, ENRICH, ICQ, ECR
Mangelsdorf	2017	Germany	Mothers	22	5	-	28.09 (3.15)	Pregnancy, 1-2 months, 4 months.	Longitudinal. MRI scans/online Questionnaire.	Used PGIS-II	Used PGIS-II	Magnetic Resonance Imaging MRI, Personal Growth Initiative Scale-II PGIS-II
Nishi & Usuda	2017	Japan	Mothers	177	60		31.6	Pregnancy, 1 month	Prospective. Questionnaires. Hospital wards.	-	27.1 (9.5) short form PTGI (10 items)	Tachikawa Resilience Scale TRS, EPDS, Wijma Delivery Expectancy/Experience Questionnaire W-DEQ
Rozen, Taubman-Ben-Ari, Gan, Strauss, Morag	2017	Israel	Preterm Mums	94	2	21-42	32.54 (3.85)	1-2 months after due date	Longitudinal Questionnaires Hospital wards	-	Individual score: 2.96 (1.25)	PSS, SFS, ECR, SES Note: PTGI was translated to Croatian but not validated within this culture.
Porat-Zyman, Taubman-Ben-Ari, Kuint & Morag	2018	Israel	Preterm/ fullterm Mums	561	336	19-45	31.50 (4.46)	1 month, 1, 2 and 4 years	Deliberate sampling: over-representation of twins/preterms. Longitudinal. Questionnaires.	-	Individual score: PT: 3.51 (0.59) FT: 3.19 (0.18)	MHI
Shenkman	2018	Israel	Lesbian and Heterosexual Mums	114	-	26-60	37.02 (5.4)	3.59 (3.17) 5.17 (5.21)	Cross-Sectional. Online. Questionnaires.	Used the PG scale from PWB	Used the PG scale from PWB	Basic Needs Satisfaction Ratings BNSR, PG Scale from Psychological Well-Being Scale PWB
Taubman-Ben-Ari, Skvirsky, Strauss & Morag	2018	Israel	Preterm/ fullterm Mums	652	393	25-49	37.5 (4.32)	3 weeks, 1, 2, and 4 years	Longitudinal. Questionnaires. Hospital wards.	-	Individual score: PT: 3.45 (0.07) FT: 3.18 (0.06)	SES, Life Orientation Test LOT

The studies in Table 3 were assessed in order to determine the quality and weighting of their findings. The CASP cohort study checklist (CASP, 2018b) (Appendix L) was used for longitudinal studies and AXIS tool (Downes, et al., 2016) (Appendix M) was used for cross-sectional studies; these are presented in Table 4 and Table 5 respectively. The issues highlighted in these tables will be included in the discussion below.

Table 4

Summary of Appraisal tool for Cross-Sectional Studies (AXIS) (Downes, et al., 2016)

	Sawyer & Ayers 2009	**Taubman-Ben-Ari, et al., 2012**	**Sawyer, et al., 2015**	**Noy, et al., 2015**	**Shenkman 2018**
Clear aims/objectives	✓	✓	✓	✓	✓
Appropriate design	✓	✓	✓	✓	✓
Justified sample size	Didn't report sample size calculation	Didn't report sample size calculation	Didn't report sample size calculation	Didn't report sample size calculation	Didn't report sample size calculation
Defined target population	✓	✓	✓	✓	✓
Representative population	Internet convenience sample	✓	Internet convenience sample	✓	Internet convenience sample
Address and categorise non-responders	X	X	X	X	X
Measured variables appropriate to the aims	✓	✓	✓	✓	✓
Valid instruments	Didn't specify the type of support measured.	Didn't specify the type of support measured.	PTGI translated into Croatian without validating this measure in this culture.	✓	✓
Clear statistical significance	✓	✓	✓	✓	✓
Replicable methods	✓	✓	✓	✓	✓
Basic data adequately described	✓	✓	✓	✓	Unclear if child's age measured in months or years
Good response rate	✓	✓	✓	✓	✓
Information about non-responders described	X	X	X	X	X
Internal consistency	✓	Not stated	✓	Not stated	Not stated
Planned analyses completed and reported	✓	✓	✓	✓	✓
Conclusions justified by the results	✓	✓	✓	✓	✓
Study limitations discussed	✓	✓	✓	✓	✓
No conflicts of interest	✓	✓	✓	✓	✓
Ethical approval and consent attained	✓	✓	✓	✓	✓

Table 5

Summary of CASP cohort study checklist (CASP, 2018b)

	Taubman-Ben-Ari, et al., 2010	**Sawyer, et al., 2012**	**Taubman-Ben-Ari & Spielman 2014**	**Mangelsdorf 2017**	**Nishi & Usuda 2017**	**Rozen, et al., 2017**	**Porat-Zyman, et al., 2018**	**Taubman-Ben-Ari, et al., 2018**
Clear aim	✓	✓	✓	✓	✓	✓	✓	✓
Acceptable recruitment	✓	Internet convenience sample	✓	✓	✓		✓	✓
Accurate measurement	✓	SRQ20 floor effects. MPSS ceiling effects. Didn't specify type of support measured.	Didn't specify type of support measured.	✓	✓	✓	✓	✓
Considered confounding factors	✓	✓	✓	✓	✓	✓	✓	✓
Complete follow up	✓	76% response rate	85% response rate	✓	66% response rate	✓	✓	✓
Long enough follow up	✓	✓	✓	✓	Relatively short follow up- 1 month.	Relatively short follow up - 1 month	Included a 4yr follow up- can't determine if PTG is due to birth or subsequent experiences	
Precise results	✓	✓	✓	✓	✓	✓	✓	✓
Believable results	✓	✓	✓	✓	✓	✓	✓	✓
Generalisable to local populations	May be culturally specific to Israel	Mainly White European/high SES	May be culturally specific to Israel	May be culturally specific to Germany	May be culturally specific to Japan	Small homogeneous sample in Israel. Mainly high SES	May be culturally specific to Israel	May be culturally specific to Israel
Results fit with other evidence	No correlation with attachment anxiety Correlation with emotional support from the maternal grandmother.	Correlation with postnatal distress No correlation with support.	Correlation with attachment anxiety	✓	✓	Negative correlation with attachment anxiety Curvilinear association with PTSD. Correlation with emotional support from the maternal grandmother.	✓	✓

1.3.6.2 Factors examined in previous research

The research in this review explored a range of factors that may be associated with PTG. For the purposes of discussion, these factors have been grouped into personal resources, event characteristics and external resources. Personal resources include self-efficacy, wellbeing, self-esteem, attachment, age, education, socio-economic status and employment. Event characteristics include method of delivery, how distressing the event was, infant temperament and development and preterm and multiple births. External resources include time and support.

1.3.6.2.1 Personal resources:

Previous research has examined potential relationships between growth and personal resources such as self-efficacy, wellbeing, self-esteem, attachment, age, education, socio-economic status and employment. No association was found with wellbeing and growth (Noy et al., 2015) or self-esteem and growth (Spielman & Taubman-Ben-Ari, 2009; Taubman-Ben-Ari, et al., 2012; 2018; Rozen, et al., 2017). However, there was a significant relationship between optimism and growth (Taubman-Ben-Ari, et al., 2018), which is consistent with previous research into PTG following other traumas (Prati & Pietrantoni, 2009); Taubman-Ben-Ari, et al. (2018) suggest that this may be because optimistic people are able to focus on the important things in life, are less likely to perceive threat and expect positive outcomes in stressful events, which will support the development of growth.

In terms of coping strategies, 'Approach coping', such as 'Seeking guidance and support' and 'Problem solving', were associated with higher levels of growth (Sawyer & Ayers, 2009), which is consistent with previous research (Frazier et al., 2004). There was also an association between growth and the 'Avoidance' strategy of 'Seeking alternative rewards' (Sawyer & Ayers, 2009); this finding was not supported by previous research and the authors suggest that this may be because this strategy is specific to new mothers, who are particularly likely to engaging in new activities and make new friends as part of motherhood (Sawyer & Ayers 2009). These findings may also be culturally-specific, as emotion-focused coping was only associated with growth in England and denial was only related to growth in Croatia (Sawyer et al., 2015).

There were inconsistent findings in relation to attachment, as identified the CASP checklist (CASP, 2018b) in Table 5. Taubman-Ben-Ari & Speilman (2014) found a positive relation between attachment anxiety and growth. Whereas Rozen et al. (2017) found a negative association, where the more anxious the attachment, the lower the growth on the

'Spiritual Change' and 'Personal Strength' dimensions. In contrast, Noy et al. (2015) and Taubman-Ben-Ari et al. (2010) found no significant correlation between attachment anxiety and growth. Although these studies had similar researchers, sample sizes, measures and methodological rigor, there were differences in the time intervals following birth and proportions of premature and multiple births within the sample population (Noy et al., 2015; Taubman-Ben-Ari et al., 2010; 2014); these differences may explain the inconsistences in the findings.

Being a mother to a previous child and having higher levels of resilience was associated with higher levels of growth, particularly in terms of 'Relating to others' and 'New possibilities' (Nishi & Usuda, 2017); however, it is difficult to determine if this association is the result of having previously given birth or from already having a good network of other mothers to get support from. Lower levels of childbirth-related fear were also associated with higher levels of growth, especially a greater sense of 'Personal strength' (Nishi & Usuda, 2017). However, as noted in the CASP checklist (CASP, 2018b) (Table 5), this study was conducted in Japan and therefore the results may be culturally specific.

In terms of age, the majority of previous research suggests that younger mothers are more likely to experience growth (Sawyer, et al., 2009; 2012; 2015; Taubman-Ben-Ari, et al., 2010); this finding is consistent with research into growth following other traumas (Bellizzi & Blank, 2006; Manne et al., 2004; Butler et al., 2005; Polatinsky & Esprey, 2000; Helgeson et al., 2006; Kinsinger et al., 2006; Linley & Joseph, 2004; Powell et al., 2003). However, it should be noted that associations between age, coping and growth accounted for under 10 percent of the variance in growth (Sawyer & Ayers, 2009) and two studies found no significant relationship between age and growth (Noy et al., 2015; Taubman-Ben-Ari & Spielman, 2014).

The research also suggests that mothers who are unemployed or have a lower socio-economic status are more likely to report growth on the 'Relating to Others' dimension and mothers with lower levels of education are more likely to report growth on the 'Personal Strength' and 'Spiritual Change' dimensions then employed or educated mothers (Rozen, et al., 2017; Sawyer, et al., 2011; 2012; Noy, et al., 2015; Taubman-Ben-Ari, et al., 2010).

Joseph and Linley (2008) suggest that this association between limited personal resources and growth, may be because accommodating to a trauma reveals new abilities and encourages them to set new goals, which are key elements of growth. These findings also support the FDM (Tedeschi & Calhoun, 2014) model, where individuals with lower levels of personal resources are more likely to exhaust resources, revealing new strengths and resulting

in PTG. Tedeschi and Calhoun (2004) also hypothesise that this association between age and growth may be because younger individuals are more open to making changes or learning, than older individuals.

1.3.6.2.2 Event characteristics:

Previous research has examined whether growth is associated with different event characteristics of birth, such as method of delivery, distress associated with the event, infant temperament and development and preterm and multiple births. In terms of child characteristics, there was a significant correlation between infant temperament and growth (Taubman-Ben-Ari & Speilman, 2014); where mothers who perceive their infant as having a 'good' temperament, reporting higher levels of growth. Stress was significantly correlated with growth in mothers who felt that their child had an easy temperament; this may be because they are unable to attribute this stress to their child's behaviour and therefore have to reassess their self-perceptions, which can lead to growth (Taubman-Ben-Ari & Speilman, 2014). On the other hand, there was no relationship between stress and growth in mothers who perceived their child as having challenging behaviour (Taubman-Ben-Ari & Speilman, 2014).

Higher levels of child development were only associated with growth in mothers of full-term babies and not premature babies (Taubman-Ben-Ari & Speilman, 2014); these full-term mothers may perceive their child's development as being the result of their own parenting abilities, whereas pre-term mothers may attribute their child's progress to healthcare services.

Research suggests that higher levels of growth are associated with premature deliveries compared to full-term deliveries (Noy et al., 2015; Taubman-Ben-Ari & Speilman, 2014) and that this higher level of growth can also be found at 4 years following childbirth (Porat-Zyman, et al., 2018). This research also highlights that mothers with better mental health had higher levels of growth, suggesting that mental health is a moderating factor following premature birth (Porat-Zyman, et al., 2018); however, this study only assessed postnatal mental health and not antenatal mental health and therefore there this study can only determine correlation and not causation. The authors suggest that, when these mothers are faced with a new reality of premature delivery, they are forced to examine their core beliefs and experience growth whilst overcoming the challenges of motherhood (Porat-Zyman, et al., 2018). However, this growth may also be due to cofounding variables including accessing additional support from services.

Research into multiple births suggests that there are no significant differences in PTG in cases of full-term singles and full-term twins (Taubman-Ben-Ari, et al., 2010; Noy et al., 2015), possibly because these events have been normalised and are not perceived as challenging. On the other hand, premature deliveries and elective caesarean sections were found to be related to high levels of growth (Taubman-Ben-Ari, et al., 2010; Noy et al., 2015; Sawyer, et al., 2012), which may be due to the more challenging nature of the births or additional support from services.

Sawyer et al., (2012) identified that the strongest predictor of growth following childbirth was antenatal PTSD symptoms related to a stressful event during pregnancy and distress during pregnancy. They suggest that women who are feeling vulnerable following a stressful event may be more likely to see childbirth as a crisis and therefore experience more growth (Sawyer et al., 2012). This contradicts previous research which found no significant association between previous trauma and PTG following a subsequent trauma (Frazier, Tashiro, Berman, Steger, & Long, 2004; Park, Cohen, & Murch, 1996); however, these studies only assessed the presence of a prior trauma and not the current level of distress in response to the trauma.

In terms of postnatal PTSD symptoms, there was no significant correlation between postnatal PTSD symptoms and growth, with effect sizes of -0.03 (Sawyer & Ayers, 2009), 0.13 (Sawyer et al., 2012) and 0.3 (Sawyer et al., 2015). This is consistent with previous research into PTG (Cordova et al., 2001; 2007; Park et al., 1996; Tedeschi & Calhoun, 1996; Sears et al., 2003; Widows et al., 2005) and supports the idea that PTG and PTSD are separate dimensions rather than polar ends of the same continuum (Tedeschi & Calhoun, 1995, 2004). However, it should be noted that there were inconsistencies and possible cultural differences in Sawyer et al.'s (2015) study, as although the there was no association between PTSD and PTG in the UK sample (effect size of 0.03), there was an association between PTSD symptoms and higher levels of growth in the Croatian sample (effect size of 0.27). The authors suggest that this may be because the participants may have already experienced trauma as young adults during the Homeland War in Croatia and therefore may need a higher level of distress in order to precipitate PTG in childbirth.

In contrast to the findings regarding PTSD symptoms, Sawyer, et al. (2012) found a positive relationship between general postnatal distress and growth; however, this was not a significant predictor of growth in the regression analysis. Sawyer et al. (2012) propose that these inconsistent results may be the result of a curvilinear relationship between distress and growth, whereby low-level distress is not significant enough to cause growth and high-level

distress is too overwhelming. On this curve, moderate-level distress is most likely to enable growth as it is significant but not overwhelming. This proposal is supported by Rozen, et al. (2017), who identified a curvilinear association on all PTGI dimensions, except 'Spiritual Change'. A similar curvilinear relationship has also been noted in PTG research following other traumas (Kleim & Ehlers, 2009; Butler et al., 2005; McCaslin et al., 2009). This curvilinear relationship would explain why significant associations were not found in studies involving correlation or regression, which assumes a linear relationship.

This curvilinear relationship is consistent with the OVP model (Joseph & Linley, 2005), which suggests that a trauma needs to be significant enough to shatter assumptions, and the FDM model (Tedeschi & Calhoun, 2014), which refers to a 'seismic event'. However, neither of these models explain how high levels of distress may prevent growth.

1.3.6.2.3 External resources:

Previous research has examined external resources such as the amount of time following the birth and the amount of social support the individual receives. In terms of time, Taubman-Ben-Ari and Speilman (2014) identified growth at one month after birth, which then increased by 24 months, suggesting that growth is a process rather than an outcome and develops over time. These findings are compatible with both FDM (Tedeschi & Calhoun, 2014) and OVP (Joseph & Linley, 2005), as the individual needs time to go through a process before achieving growth. For example, FDM refers to a series of stages, which are each related to different levels of growth (Tedeschi & Calhoun, 2014). In contrast, Sawyer (2015) identified no association between the amount of time following the birth and growth. However, as highlighted in the AXIS tool (Downes, et al., 2016) (Table 5), there were some methodological issues in this study as the PTGI was translated into Croatian without validating the measure in this culture; this means that the findings of this study (Sawyer, 2015) should not be weighted as heavily as Taubman-Ben-Ari and Speilman's (2014) research.

In terms of support, the research revealed inconsistent results regarding the relationship with growth. Sawyer, et al. (2009; 2012; 2014) found no relationship between PTG and support, which is consistent with research in other areas, such as cancer (Cordova et al., 2001; Sears, Stanton, & Danoff-Burg, 2003; Widows et al., 2005). However, the CASP checklist (CASP, 2018b) (Table 5) highlighted methodological issues with this study, which means that these findings may not be weighted as heavily as other studies in this literature review. For example there were ceiling effects on their Multi-dimensional Scale of Perceived

Social Support measure and this study did not specify which type of support was being measured.

In contrast, the majority of studies in this review did find an association between growth and support, as higher levels of perceived emotional support from the maternal grandmother were associated with PTG on all dimensions (Taubman-Ben-Ari, et al., 2010; Rozen et al., 2017; Noy et al., 2015). The only study which differentiated between different types of support was Noy et al (2015), who noted a stronger association between emotional support and growth, compared to instrumental support. The association between growth and support is consistent with previous research following other traumas (Kinsinger et al., 2006; Sheikh, 2004).

Support from the maternal grandmother was most significantly associated with growth when the mother had low-risk premature babies or full-term twins (Taubman-Ben-Ari, et al., 2010); this may be because these mothers required higher levels of support but would not necessarily be accessing additional services, such as intensive care. These findings are consistent with previous research highlighting the importance of social support in managing stress for new mothers (Davis, Logsdon, & Birkmer, 1996; Zachariah-Boukydis & Lester, 1998).

A good couple relationship, with low levels of conflict, and a positive perception of the parenting element of their relationship were associated with higher levels of growth (Noy, et al., 2015). In particular, Taubman-Ben-Ari, et al. (2010) identified that mothers with lower levels of education or negative feelings towards their baby were more likely to experience an association between the quality of their marital relationship and growth; the authors propose that these mothers may perceive their relationship with their partner as a source of support and a way to escape.

Shenkman (2018) looked at Basic Need Satisfaction Ratings (BNSR) in new mothers in heterosexual and lesbian relationships; these ratings assess the support the person receives from their partner for their sense of competence, relatedness and autonomy. This study found that there was only an association between BNSR and PTG in lesbian mothers and not heterosexual mothers, suggesting that sexual orientation is a moderating factor (Shenkman, 2018). This finding is consistent with previous research, which reported no significant association between the quality of the marital relationship and growth following childbirth (Taubman-Ben-Ari et al., 2009).

These findings support FDM (Tedeschi & Calhoun, 1995, 2004, 2014), OVP (Joseph & Linley, 2005) and previous studies (Cadell, Regehr, & Hemsworth, 2003; Dirik & Karanci,

2008; Senol-Durak & Ayvasik, 2010; Slavin-Spenny, et al., 2011; Smyth, Hockemeyer, & Tulloch, 2008; Ullrich & Lutgendorf, 2002; Nenova, et al., 2013), which have highlighted the positive association between support and PTG. According to OVP, social support is included in the 'sociocultural factors' element (Joseph & Linley, 2005). According to FDM, social support encourages awareness and revisions of perspectives and allows the individual to move from rumination to growth (Tedeschi & Calhoun, 2014).

1.3.7 Issues with previous research:

As highlighted in the CASP checklist (CASP, 2018b) (Table 4) and AXIS tool (Downes, et al., 2016) (Table 5) there were some methodological issues with the studies in this literature review. Firstly, these studies may be influenced by researcher bias as they were completed almost exclusively by Sawyer (3 studies) and Taubman-Ben-Ari (7 studies).The majority of the research was also included within this review was completed in England and Israel; the results may therefore be culturally-specific and further cross-cultural research is needed to allow for generalisations to be made. Furthermore, many of these studies used convenience and snowball sampling, which meant that the participants were likely to be within the researcher's social network and lack diversity. Some studies used samples which were relatively small and homogenous (Rozen, et al., 2017), with participants who were almost entirely White European (Sawyer, et al., 2012) or from above-average socioeconomic status (Rozen, et al., 2017; Sawyer, et al., 2012); it is therefore not appropriate to generalise these findings to other groups. It should also be noted that the participants were self-selecting and therefore may have volunteered because their birth was particularly traumatic; this may therefore not be representative of the levels of birth trauma in the general population.

Although these studies have attempted to reduce the effects of social desirability by using anonymous questionnaires, many participants may still have felt a pressure to portray themselves as a 'good mum'. Participant responses may also have been affected by recall bias due to the retrospective nature of the study. There were also potential issues with measure validity, as one study used a translated version of the PTGI without assessing its validity within that culture (Sawyer et al., 2015).

There were also issues with the measures that were used. For example, in the Sawyer et al., (2012) study there were floor effects in the PTSD scores, which suggests that not all experiences of childbirth are traumatic, and ceiling effects in the social support measure, which makes it hard to establish any correlations with growth. It was also difficult to compare the PTGI scores as some studies stated the mean of each rating on a dimension whereas

others stated the mean of the dimension totals and often these studies did not specify their calculations. This measure also did not include specific cut-offs for what constitutes moderate or significant growth, which may be why some studies did not report prevalence. There was also no space for participants to include additional qualitative information about their experience or note growth on other dimensions. Furthermore, the measure was administered at different times and therefore differences in growth ratings may be due to differences in in how much time the mothers have had since the birth.

The support measures were generally restricted to support from the maternal grandmother, which therefore does not take into account the role of the partner, siblings, friends and parenting groups or instances where grandmothers are not involved. There was also an issue with the use of self-report measures as they are a subjective report and may be subject to bias; however, two studies have demonstrated the validity of self-reported of growth by corroborating these results with reports from other family members (Taubman-Ben-Ari, et al., 2012; 2014).

Many studies also didn't take into account previous traumas, which could have influenced their experience of childbirth; however, researcher cannot measure every variable without subjecting participants to a large batch of tests, which would increase the likelihood of fatigue effects. These studies also cannot separate the experience childbirth from the experience of pregnancy or 'motherhood'; therefore any growth identified could be the result of any of these experiences or a combination of them. In fact, Tedeschi & Calhoun (1996) found that people can sometimes experience personal growth without trauma, or in response to significant positive events such as an unexpectedly good experience of childbirth.

Finally, it should be noted that these studies are only establishing correlation and not causation. Most studies used a cross-sectional design, where participants only completed the PTGI after birth; this meant that there were no baseline measures to compare growth against. There were two studies which used a prospective (Sawyer et al., 2012; Mangelsdorf, 2017) or longitudinal (Taubman-Ben-Ari & Speilman, 2014) design to try and establish a baseline; however, these studies had high dropout rates. Furthermore, some of these longitudinal studies included measures at 4 years post birth (Porat-Zyman, 2018; Taubman-Ben-Ari, 2018), where it would not be possible to determine if this growth is the result of the birth or subsequent experiences. Although it is not possible to separate the experiences of pregnancy, birth and parenthood, it may have been helpful to include a post-birth time frame in the inclusion and exclusion criteria for this literature review to try and reduce the likelihood of PTG being from subsequent experiences following birth.

1.3.8 Summary and areas for further research

This review suggests that, although many mothers experience difficulties and distress following childbirth, this experience may also provide an opportunity for growth by altering their worldview and priorities. These findings will hopefully allow professionals to understand not only the potential negative effects of birth but also the opportunity to thrive. This could then lead to the development of interventions designed to help empower mothers and enhance growth. However, it is important to first develop a clearer understanding of the contributing factors and any inconsistencies in the research.

The contradictory results regarding social support may be because some types of support do foster growth and others do not; however, it was not possible to identify this as most of the studies did not define which types of support they were measuring (Joseph & Linley, 2005). It was only Noy et al. (2015) who made this distinction and noted that emotional support was associated with growth, whereas instrumental support had no significant association. Informational support refers to giving advice, emotional support refers to listening and demonstrating empathy and instrumental support involves helping with practical tasks (Hombrados-Mendieta, et al., 2012).

It is also important to assess the source of support. The existing research has focused almost exclusively on maternal grandmother support and has therefore not taken into account instances when grandmothers are unavailable or where there are alternative sources of support, such as parenting groups. Further research is therefore required to examine whether particular sources and types of support are related to PTG following birth.

Developing a greater understanding of the role of social support on PTG may lead to interventions that foster support systems and therefore enhance growth; this is important, not only for the mother's experience but also her attachment and bond with her child. For example, midwives could encourage mothers to involve the maternal grandmother during childbirth, if appropriate.

1.4 Aims and Hypotheses

This thesis aims to examine whether particular dimensions of support are associated with PTG following childbirth; this will include examining informational, instrumental and emotional support from a range of sources including partner, friends, family and community.

The relationship between PTG and the perceived frequency of the support and level of satisfaction with this support will also be explored.

Based on previous research, it is predicted that there will be a significant positive association between support from the family and PTG following childbirth. Furthermore, it is predicted that social support from other sources are likely to have a similar association with PTG following childbirth. In terms of types of support, previous research suggests that emotional support will have a more significant association with PTG following childbirth than instrumental support.

This research may have implications for theory, research and clinical practice. It will highlight areas that require further research and hopefully lead to the development of more detailed models, which take into account the role social support in the development of PTG following childbirth. In terms of clinical implications, these findings may help professionals foster PTG in mothers following childbirth, which in turn could lead to a better mother-infant bond (Bailham & Joseph, 2003) and improvements in the infant's wellbeing (Glasheen, et al., 2010; O'Donnell, et al., 2014; WHO, 2013).

CHAPTER 2: METHODS CHAPTER

2.1 Chapter Overview

This chapter will outline the epistemological positioning of the research and why a post-positivist paradigm is necessary for approaching this particular research question. The hypotheses, design, procedure, measures, analysis, participants, ethical considerations and dissemination will then be discussed.

2.2 Epistemological positioning and justification of methodology

Prior to conducting this research, it is important to consider the underlying philosophical context of the area under investigation, as this is central to the research design. In social science, research philosophy relates to 'the development of knowledge and the nature of that knowledge in the social world' (Bahari, 2010, p.18). Epistemological positions involve assumptions about what constitutes knowledge or proof within a discipline (Kuhn, 1970). This section will therefore be discussing the method for the current study, based on

previous research, and the epistemological and ontological positions which are most appropriate for exploring this area of research.

2.2.1 Previous research

The review revealed eleven quantitative studies of PTG following childbirth, which have explored a range of different factors including socioeconomic status, level of education, attachment, coping strategies and distress (Schweinsberg & Patlamazoglou, 2009; Sawyer, et al., 2009; 2011e; 2012; 2015; Taubman-Ben-Ari, et al., 2010; 2014; Noy, et al., 2015; Rozen, et al., 2017; Millar, 2012a). This research has identified an association between PTG and emotional support from the maternal grandmother (Sawyer, 2011e; Millar, 2012a; Taubman-Ben-Ari, et al., 2010; Rozen et al., 2017; Noy et al., 2015); however, there has only been limited research into other types and sources of support. This thesis therefore aims to address the gap in current research by exploring the association between social support and PTG following childbirth in more detail. In order to explore this association and make comparisons to existing studies, similar quantitative methods need to be used. This study will therefore be using surveys to gather data and then regression analysis to identify potential predictors of PTG.

2.2.2 Quantitative research and Positivism

Whereas qualitative research generally generates theories, quantitative research involves theory testing and emphasises quantification in the collection and analysis of data (Bryman, 2001). Quantitative research relies on assumptions about cause and effect and reduces areas of research to specific variables and hypotheses (Bahari, 2010).

Quantitative research tends to involve a Positivist Paradigm, Objectivist Epistemological position and Realist Ontology (Scotland, 2012). The researcher attempts to maintain an analytic distance, using a deductive or theory-testing approach and statistical tests to search for objective knowledge, which exists independently of the researcher (Girod-Seville & Perret, 2001). They attempt to predict, isolate and define categories before research starts and then determine the relationships between them (Ryan, 2006).

Positivist research attempts to obtain universal generalisations that can be applied across contexts (Wahyuni, 2012). It assumes that statistical studies can establish the probability that findings are not the result of chance, which can then allow for generalisations to be made (Alvesson & Skoldberg, 2009). It takes a position that different researchers will

generate the same results by using statistical tests and replicable methods (Creswell 2009), thus making the findings generalisable to the rest of the population under study.

However, there are issues with the positivist paradigm and quantitative research. For example, despite positivist assumptions about replication, repeating existing research has sometimes led to different results; on some occasions the original study shows a statistically significant result but the replication does not (Maxwell, Lau & Howard, 2015). This 'replication crisis' (Loken & Gelman, 2017) challenges the assumption that there is a single truth which can be repeatedly measured using a replicable method.

There is also a standard error of measurement, which is the amount of variability in a test caused by measurement error (Harvill, 1991), and researchers attempt to reduce this by using a large sample. However, even with a large number of participants, the sample population might not be representative of the wider population. For example, a study involving online questionnaires may exclude people with no internet access from participating, leading to a skewed sample (Fan, et al., 2006). As a result, generalisations cannot always be made to the entire population.

Furthermore, there are issues with the use of self-report measures in quantitative research as they give fixed options that force the participant to answer, they require a degree of introspective ability, questions may be misunderstood, people interpret scales differently (Austin, et al., 1998) and participants may be affected by demand characteristics or social desirability bias.

There are also issues with taking a positivist approach when testing PTG, as it is a relatively new term and there is still ongoing debate about what this phenomenon is and how to measure it. Furthermore, participants will have a prior relationship to the term 'trauma' as it is not a neutral state that we observe. Trauma is a socially mediated construct, which is influenced by political agendas, defined in research questions and linked with how communities assign and regulate the rights of victimhood (Fassin & Rechtman, 2009).

In this study the variables are not directly observable and concepts like PTSD and PTG could be considered to be socially constructed (Summerfield, 2001). Furthermore, as a researcher, it is not possible to take a completely objective stance; researchers have their own experiences, which may influence their choice of measures and interpretation of results. Therefore, instead of positivist, this research will involve a post-positivist paradigm.

2.2.3 Post-Positivism

Positivism and post-positivism share the ontological view that reality is external and objective; they maintain the separation of the researcher from the researched by taking the stance of the outsider perspective (Wahyuni, 2012). In terms of epistemology, they promote the use of a scientific approach by developing hypotheses, creating numeric measures and using statistical tests to generate knowledge (Wahyuni, 2012).

Despite these similarities, they have different philosophical assumptions. Post-positivists challenge the belief of one absolute truth by suggesting that scientific knowledge is historically and socially conditioned; they argue that there are no absolute or objective truths, only relative or local truths (Alvesson & Skoldberg, 2009).

Whereas positivist researchers believe that their research methods mirrors reality, post-positivist researchers believe that research methods mainly mirror the ideology of the researcher (Ryan, 2006). Post-positivism recognises that there is no neutral knowledge as our understanding of the world is mediated by discourse and personal experience; "Discourse is responsible for reality and not a mere reflection of it" (Ryan, 2006, p. 22). Post-positivists believe that "the production of knowledge is political and privileges certain interests" (Ryan, 2006, p.22). Ryan (2006) argues that divisions between objectivity and subjectivity are socially constructed to control ideas about what knowledge is legitimate.

Post-positivists also believe in generalisation, but acknowledge that "understanding social reality needs to be framed in a certain context of dynamic social structures" (Wahyuni, 2012, p.71). They attempt to be reflexive and acknowledge the complexity of human experience (Ryan, 2006). Instead of aiming to discover the truth within the subject, post-positivists attempt to construct a narrative with participants (Ryan, 2006). Post-positivists assume a learning role rather than a testing one; they believe that they are conducting research among people or with people, rather than conducting research on them (Wolcott, 1990).

2.2.4 Conclusion

There are multiple paradigms that could be considered when examining PTG and no single philosophy will be able to explain it completely; however, Post-positivism is the only one that fits the research question by allowing for a potential causal relationship with clear caveats. Using a Post-positivist paradigm allows quantitative tools to be used in an attempt to gather data about PTG, whilst also acknowledging that this method has limitations, as PTG is a socially-constructed concept that may be influenced by politics and dominant discourses in society.

2.3 Design

This quantitative study involved using a cross-sectional design, which is a type of non-experimental research in which the researcher measures variables and assesses the statistical relationship between them with little or no effort to control extraneous variables (Field, 2016); this method was chosen as the variables cannot be easily or ethically controlled or manipulated. The disadvantages of this design are that causation cannot be determined, only correlation (Field, 2016).

2.4 Procedure

Following ethical approval from Essex University (Appendix B), adverts for the study (Appendix C) were placed in the following locations:

- Birth Trauma Network
- Birth Trauma Association Website
- Twitter (Appendix D)
- Wordpress (Appendix E)
- Facebook (Appendix F)
- Mumsnet forum
- Netmums forum
- Groups locations such as Baby Sensory or Toy Library

Several locations were used to target participants from a range of backgrounds; this was important as demographic factors like socio-economic status have been found to be associated to higher levels of PTG (Sawyer, et al., 2009; 2011; 2012; 2015; Taubman-Ben-Ari, et al., 2010; Noy et al., 2015; Rozen et al., 2017). Adverts were not placed in National Health Service (NHS) locations, as this would require NHS ethics approval.

The advert invited women who have given birth to a child in the last six to 18 months to participate in a study about the role of social support in the development of PTG following childbirth. It explained that the study would involve completing three online questionnaires via a website link and that participants could enter a prize draw to win a family photoshoot.

When accessing the website link, they were provided with an information sheet (Appendix G) detailing the title of the project, background to the research, research method, potential benefits and risks and the procedure for concerns and complaints. They were also given contact details for the Researcher, Academic Supervisors, Clinical director for the Doctorate in Clinical Psychology, University of Essex Research Governance and Planning Manager and a list of support services for Birth Trauma.

They were reassured that all data would be anonymised, securely stored and kept confidential; the anonymous and confidential nature of this research hopefully reduced the likelihood of participants feeling pressured to give socially desirable responses. They were also advised that they did not have to participate and could withdraw consent at any time prior to submitting their final responses; it was explained that, due to the anonymous nature of the study, their responses could not be withdrawn once they had clicked on the final submission button.

Mothers then had the option of competing an online consent form (Appendix G) and demographic questionnaire (Appendix H), which were created using Qualtrics software (2018). These questions included the participant's age, the number of children, the age of the most recent child, their marital status, country of residence and socioeconomic status. The participants then proceeded to an online version of the PTGI-X (Tedeschi et al., 2017) (Appendix A), Impact of Events Scale-Revised (IES-R) (Weiss & Marmar, 1996) (Appendix I) and the Questionnaire on the Frequency of and Satisfaction with Social Support (QFSSS) (García-Martín, et al., 2016) (Appendix J).

Finally, participants were asked if they would like to submit their email address to be included in the family photoshoot prize draw. They were then advised that their email addresses would be stored separately from their responses and only accessible to the researcher and research supervisors. These details were only be used for the purpose of selecting a prize draw winner and they were destroyed following this.

On the final page of the survey participants were reminded that, once they have clicked the final 'submit' button, they will no longer be able to withdraw their information due to the anonymous nature of the research. Any incomplete responses were assumed to be withdrawal of consent and this data was therefore be deleted. Following completion, participants were presented with contact details of the researcher and support services once again.

2.5 Measures

All consenting participants completed a few demographic questions (Appendix H) about their country of residence, age, number of children, age of their youngest child and sociodemographic status. They then proceeded to an online version of the PTGI-X (Tedeschi et al., 2017) (Appendix A), IES-R (Weiss & Marmar, 1996) (Appendix I) and QFSSS (García-Martín, et al., 2016) (Appendix J). Online versions of these measures were created using Qualtrics (2018) software as they were easier to distribute, more convenient to return and would ensure that all responses are received by the researcher and securely stored. The online measures will need to be mobile-friendly, as many mothers are likely to complete the questionnaires while caring for their child.

2.5.1 Posttraumatic Growth Inventory-Expanded (PTGI-X)

The PTGI-X (Tedeschi et al., 2017) (Appendix A) is a 25-item scale with 0-5 likert-type ratings. The scale aims to examine how people change or strengthen their perceptions of self, others, and the meaning of events. It includes factors of 'New possibilities', 'Relating to others', 'Personal strength', 'Spiritual change', and 'Appreciation of life'. The PTGI-X is scored by adding all of the responses and factors are scored by adding all of the responses for that factor. As the PTGI-X has more items on the Spiritual Change dimension, the means on this dimension and the overall growth mean cannot be compared with previous PTGI (Tedeschi & Calhoun, 1996) measures; however, means on the other four dimensions are equivalent.

The PTGI-X has been found to have satisfactory internal reliability across the three samples; 0.97 for the United States, 0.96 for Turkey, and 0.95 for Japan (Tedeschi et al., 2017). Confirmatory Factor Analysis indicated that the PTGI-X has the same factor structure as the original PTGI (Tedeschi et al., 2017). To test the concurrent validity, the PTGI-X scores were compared with conceptually related constructs in the three samples; the PTGI-X was significantly associated with the examination of core beliefs and deliberate rumination about the event, but not with intrusive rumination (Tedeschi et al., 2017).

Joseph et al.'s (2012) Psychological Wellbeing - Posttraumatic Changes Questionnaire (PWB-PTCQ) was also considered as a measure of PTG; however, the PTGI-X was selected as it was the most commonly used in the systematic review and this would provide an opportunity for comparisons to be made between studies (Schweinsberg &

Patlamazoglou, 2009; Sawyer et al., 2009; 2011e; 2012; 2015; Taubman-Ben-Ari, et al., 2010; 2014; Noy, et al., 2015; Rozen, et al., 2017; Millar, 2012ab).

2.5.2 Impact of Events Scale-Revised (IES-R)

The IES-R (Weiss & Marmar, 1996) (Appendix I) was used to assess for PTSD symptoms. This measure involved 22 items, which the participant rated on a 5 point scale from 0 (Not at all) to 4 (Extremely) based on how distressed they had been by these difficulties over the past seven days in relation to a specific trauma. Scores of 24 or more suggest that these symptoms are a clinical concern (Asukai, Kato, et al., 2002) and scores of 33 and above represents the cut-off for a probable diagnosis of PTSD (Creamer, Bell & Falilla, 2002).

The IES-R has been found to have high internal consistency (alpha=0.96) (Creamer, Bell & Falilla, 2002) and good concurrent and discriminative validity (Beck et al., 2008). This measure has been used in previous childbirth studies (Goutaudier et al., 2012; Denis et al., 2011; Edworthy et al., 2008; Lemola et al., 2007; De Schepper, 2016; Abdollahpour, Khosravi & Bolbolhaghighi, 2016; İsbİr, Incl, Bektaş, Yıldız, & Ayers, 2016) and been found to have high reliability in this population (alpha=0.88; alpha=0.94) (Olde, Kleber, van der Hart, & Pop, 2006; Sawyer, 2012).

In Creamer, Bell & Falilla's (2002) study, they noted that correlations among the subscales were higher in a community sample of veterans with varying levels of traumatic stress symptomatology (*N*=154), than in the treatment-seeking sample of veterans with a confirmed PTSD diagnosis (*N*=120); this finding suggests that the IES-R may be sensitive to lower levels of symptoms or a more general construct of traumatic stress. As the current study aims to capture these lower levels, the IES-R was considered to be more appropriate than the PTSD Checklist for DSM-5 (PCL-5) (Weathers et al., 2013), which focuses more on the full diagnostic criteria for PTSD in the DSM-5.

The International Trauma Questionnaire (ITQ) (Cloitre, et al., 2018) was also considered as it measures symptoms of PTSD and Complex PTSD, as defined in the International Classification of Diseases 11 (ICD 11) (WHO, 2018). However, the reliability and validity of this measure has only been assessed using a relatively small sample and therefore further research is needed to accurately determine its psychometric properties.

2.5.3 Questionnaire on the Frequency of and Satisfaction with Social Support (QFSSS)

The QFSSS (García-Martín, et al., 2016) (Appendix J) was used to assess the type, frequency and quality of different sources of support. On the QFSSS (García-Martín, et al., 2016) participants rate instrumental, informational and emotional support from their partner, family, friends and community in terms of perceived frequency (0-5) and satisfaction (0-5). Participants were asked to specify which person or group they were thinking of for some sources of support (e.g. 'mother' for the Family section). Scores on the QFSSS range from 12 to 60.

Although the QFSSS has previously only been used in Spanish populations, it has been found to have high internal consistency (values of Cronbach's alpha range from 0.76 to 0.95) (García-Martín, et al., 2016). Correlational analysis showed significant positive associations between QFSSS scores and measures of subjective well-being and perceived social support, as well as significant negative associations with measures of loneliness (Pearson's r correlation range from 0.11 to 0.97) (García-Martín, et al., 2016). Confirmatory factor analysis suggested an internal four-factor structure that corresponds to the sources of support analysed: partner, family, friends and community; values for the Goodness of Fit Index (GFI) range from 0.93 to 0.95 and for the Comparative Fit Index (CFI) range from 0.95 to 0.98 (García-Martín, et al., 2016). These results confirm that the QFSSS is a valid, versatile tool for the detailed assessment of social support. Furthermore, Convergent Validity was assessed as part of this study.

When selecting a social support measures, the Significant Others Scale (SOS) (Power, Champion & Aris, 1988) was also considered, as this measures the actual and ideal emotional and practical support from various sources; however, it was decided that the QFSSS would be more appropriate as it provides more specific categories for the types of support, rather than simply assessing the actual and ideal emotional and practical support.

The Perinatal Depression Predictors Inventory-Revised (PDPI-R) (Beck, 2002) was also considered as it includes questions about marital status, socioeconomic status, self-esteem, prenatal mental health, history of mental health, social support, marital/partner satisfaction, life stress, child care stress and infant temperament. The social support section includes questions about emotional and instrumental support and perceived support reliability from the partner, friends and friends. However, it was felt that the 'self-report' version did not have clear instructions and therefore might not be the best choice for an online questionnaire; for example, this questionnaire asks about the participant's wellbeing without explaining what time frame this question is referring to.

2.6 Analysis

A correlation matrix was presented to determine what factors needed to be controlled for in the regression analysis. In order to complete both of these analyses, it was important to first determine if the assumptions had been met. Pearson's product-moment correlation coefficient and linear regression assume that the data is interval or ratio, the dependent variable is normally distributed, there are no outliers, there is a linear relationship between the variables and there is homoscedasticity (Onwuegbuzie & Daniel, 1999; Schober, Boer & Schwarte, 2018). To test for multivariate normality the P-P plots were checked and to test for homoscedasticity the standardised predicted value was plotted against the standardized residuals. Histograms were also used to identify possible outliers. In addition to the above assumptions, regression analyses assume that there is no multicollinearity and the model residuals are normally distributed. Multicollinearity was assessed using the Variance Inflation Factor (VIF), with scores over 5 indicating possible multicollinearity and variables with scores over 10 being excluded from the analysis (Field, 2013).

The assumptions of Pearson's product-moment correlation coefficient were not met as some of the data was not normally distributed so Spearman's rank-order correlation was used instead. The regression analysis was then completed using Statistical Package for Social Sciences (SPSS) to determine if there was a relationship between the sources of support and the level of post-traumatic growth. As the previous literature identified a relationship between PTG and age, socioeconomic status and PTSD, these variables were included in regression analysis and controlled for as potential cofounding variables.

2.7 Participants

Based on an A-priori sample size calculator for Multiple Regression (Soper, 2019) an estimated minimum sample size of 181 participants will be needed for the regression analysis, based on an expected effect size of 0.15, a desired statistical power level of 0.8, probability of 0.05 and 28 potential predictors; this effect size was chosen based on previous research into the relationship between PTG and social support (Noy et al., 2015; Taubman-Ben-Ari, et al., 2010; Rozen et al., 2017). This was a minimum sample size and efforts were made to recruit more participants to allow for demographic variables to be controlled for in the analysis.

Participants were recruited using adverts placed in locations and websites that mothers frequently use, such as mother-and-baby groups, parenting forums and social networking websites. The advert (Appendix C) included information about the purpose of the study, what it would involve, eligibility criteria, Researcher contact details and the questionnaire website address. It also explained that they have the right to withdraw at any time prior to submitting their answers, responses would be confidential and the data would be stored securely and anonymously.

Adverts were placed in multiple locations to target participants from a range of backgrounds; this was important as demographic factors like socio-economic status have been found to be associated to higher levels of PTG (Sawyer, et al., 2009; 2011; 2012; 2015; Taubman-Ben-Ari, et al., 2010; 2011; Noy et al., 2015; Rozen et al., 2017).

Snowball sampling was also used, whereby participants were encouraged to inform other eligible mothers about the study. All participants were given the option of entering into a prize draw for a family photoshoot to encourage participation. As participants completing the questionnaire were self-selected, the results may not be an accurate reflection of the general population. For example, some participants may have chosen to participate because they felt that the study was particularly relevant to them.

To be eligible, participants had to be mothers, who have experienced childbirth (i.e. not gained a child through adoption) and have a child who is between six months and 18 months old. This age range was chosen as it provides enough time after the birth for the mother to have experienced growth, but not so long that they would have difficulty remembering the experience.

2.8 Ethical considerations

Ethical approval was gained from Essex University (Appendix B) prior to recruitment. NHS approval was not needed as locations like GP surgeries and maternity wards were not used. As noted previously, all mothers were provided with an information sheet, including details about confidentiality and their right to withdraw (Appendix G), and gave informed consent if they wanted to participate. They were also advised that answering questions about childbirth may trigger difficult or traumatic memories for some participants and were be provided with a list of support services for Birth Trauma and PTSD. These contact details were provided at the start of the study, to ensure that any participants who dropped out would still know how to access support.

Qualtrics did not identify participant's names, email addresses or IP addresses and only the researcher had access to the data, although academic supervisors could request anonymised versions of the data. When participants gave their email addresses to enter the Family photoshoot prize draw, these were stored separately from responses, so that they could not be linked. These email addresses were only accessible to the researcher for the purpose of selecting a prize winner and were be destroyed following this.

2.9 Dissemination

The findings will be disseminated through this thesis as well as midwifery and psychology journals such as BMC Pregnancy and Childbirth, Midwifery Journal and the British Journal of Psychology. The findings will be shared in all of the recruitment locations including the Birth Trauma Network, mother-and-baby groups, online forums and social networking websites. The findings will also be shared with NHS maternity services, psychology services and children's centres. Finally, there may be potential to present at conferences like the Positive Birth Conference and Maternal Mental Health Conference. The timeline (Appendix K) illustrates predicted timescales for completion and dissemination.

CHAPTER 3: RESULTS CHAPTER

3.1 Chapter overview

This chapter will initially examine whether the data meets the assumptions of correlation and regression analysis including tests of normality, homoscedasticity and linearity. A correlation matrix will be used, alongside existing literature, to identify which variables should be included in the regression analysis, including any potential cofounding variables that will need to be controlled for in the analysis. Finally, the findings of the regression analysis will be reported; this analysis includes all sources of support in order to test the hypothesis that there is be a significant association between social support and PTG.

3.2 Assumptions of statistical tests

Before completing a correlation coefficient or regression analysis, it was important to determine whether the data has met the assumptions for these tests. Pearson's product-

moment correlation coefficient and linear regression assume that the data is interval or ratio, the dependent variable is normally distributed, there are no outliers, there is a linear relationship between the variables and there is homoscedasticity (Onwuegbuzie & Daniel, 1999; Schober, Boer & Schwarte, 2018).

Homoscedasticity refers to the assumption that the variability in scores for the dependent variable is similar for each of the independent variable values (Onwuegbuzie & Daniel, 1999); this was assessed by examining bivariate scatter plots for a 'funnel' shape. Normal distribution refers to the assumption that the data is arranged with most values clustered in the middle of the range and the rest taper off symmetrically towards either extreme (Onwuegbuzie & Daniel, 1999); this was assessed using frequency histograms, statistical means and measures of skewness and kurtosis. A range of -2 to 2 was used as an acceptable level of skewness and kurtosis (George & Mallery, 2010). The histograms also identified possible outliers.

The responses regarding the participant's age, number of children and youngest child's age were all interval data. Socioeconomic status was measured in terms of three categories of 'low', 'middle' and 'high'. However, for the purpose of correlation and regression analysis, this data was dichotomised by coding low socioeconomic status as '1' and middle and high socioeconomic status as '2'. The decision to group low socioeconomic status separately was made based on the findings of the literature review, which suggested that lower socioeconomic status is more strongly associated with PTG then middle or high socioeconomic status.

Similarly, Relationship Status was dichotomised into two categories for the purpose of analysis; 'Married' and 'Partnered' were combined to form a category of '1- Partner' and 'Separated' and 'Single' were combined to form a category of '0- No Partner'. Dichotomising the data in this way was necessary for the analysis and unlikely to affect the findings, as the levels of support are expected to be similar for participants in the married and partnered categories.

As well as the above assumptions, multiple linear regression assumes that there is no multicollinearity; this means that there should not be high levels of correlation between independent variables (Alin, 2010). Multicollinearity was assessed based on the Variance Inflation Factor (VIF) when completing the regression analysis, with scores over 5 indicating possible multicollinearity and scores over 10 being excluded from the analysis (Field, 2013).

The following sections examine each of the variables to determine if they meet the assumptions for Pearson's product-moment correlation coefficient and linear regression

analysis. If the assumption of Pearson's product-moment correlation coefficient were not met, then Spearman's rank-order correlation was used instead; Spearman's correlation does not require normally distributed data, but does assume that the measures are ordinal, interval or ratio scale and the data is monotonic (Schober, Boer & Schwarte, 2018). If any of the assumptions of the multiple linear regression analysis were not met then these will be discussed.

3.3 Number of responses

Of the 342 people who started the questionnaires, 217 submitted completed responses. Seven of these were excluded due to not meeting the criteria for participation; for example, reporting that their youngest child's age was greater than 18 months. All of the remaining 210 participants gave ratings for support from friends and family, 201 gave ratings for partners and 193 gave ratings for community support. There were 189 participants who had ratings for all four sources of support.

3.4 Demographics

3.4.1 Country of residence

There were 187 participants from the United Kingdom (89.04 percent), 10 from the United States (4.76 percent), 4 from Ireland (1.90 percent), 2 from Canada (0.95 percent), 1 from Australia (0.48 percent), 1 from India (0.48 percent), 1 from France (0.48 percent), 2 from the Netherlands (0.95 percent), 1 from Belgium (0.48 percent) and 1 from Turkey (0.48 percent).

3.4.2 Socioeconomic status and marital status

In terms of socioeconomic status, 15 (7 percent) reported 'low', 190 (91 percent) reported 'middle' and 5 (2 percent) reported 'high' socioeconomic status. For the purpose of correlation and regression analysis, this data was dichotomised by coding low socioeconomic status as '1' and middle and high socioeconomic status as '2'. The decision to group low socioeconomic status separately was made based on the findings of the literature review, which suggested that lower socioeconomic status is more strongly associated with PTG then middle or high socioeconomic status. In terms of marital status, 9 participants were single (4 percent), 50 were partnered (24 percent), 146 were married (70 percent) and 5 were separated

(2 percent). As noted previously, these responses were dichotomised, with 14 participants classed as ‘No partner’ and 196 classed as ‘Partner’.

3.4.3 Age and gender

All of the participants were female. Their ages ranged from 18 to 44 years old. The histogram indicated that the data was normally distributed, with no obvious outliers (Figure 1).

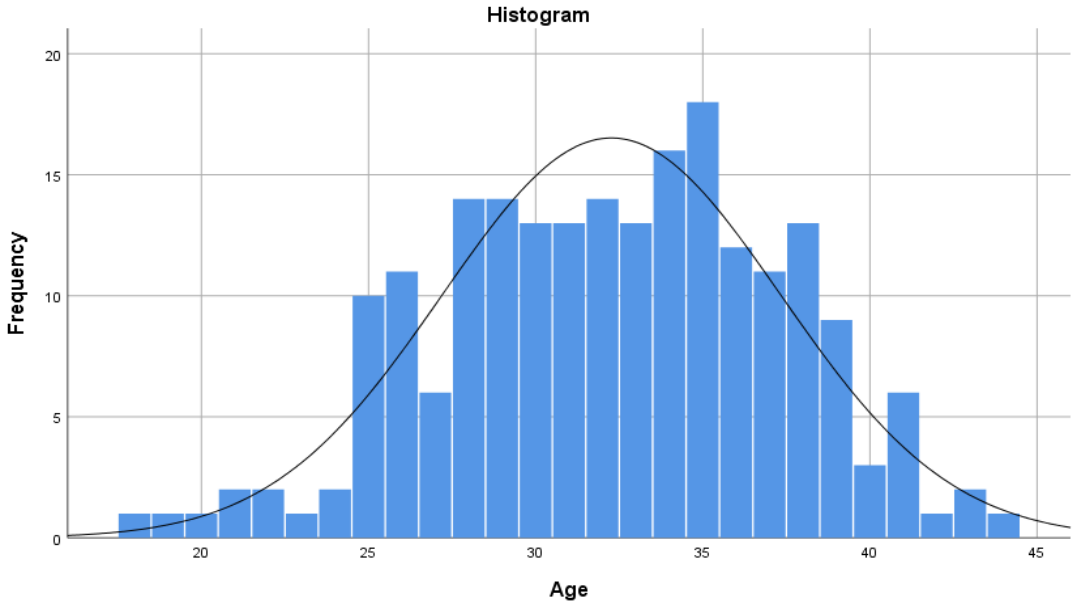


Figure 1. Histogram of each participant’s Age

The participants ages were also found to be normally distributed on the Shapiro-Wilk test D(210) =0.989, p=0.117. The data was in the normal range for kurtosis (-1) and skewness (-1.185), with a mean age of 32.27 years old (SD 5.071) (Table 1). The line of best fit on the scatter graph suggests that the younger the mother, the greater the likelihood that they will report PTG (Figure 2); however, the scatter was widespread, which suggests that this is not a strong relationship. The scatterplot also indicated homoscedasticity (Figure 2).

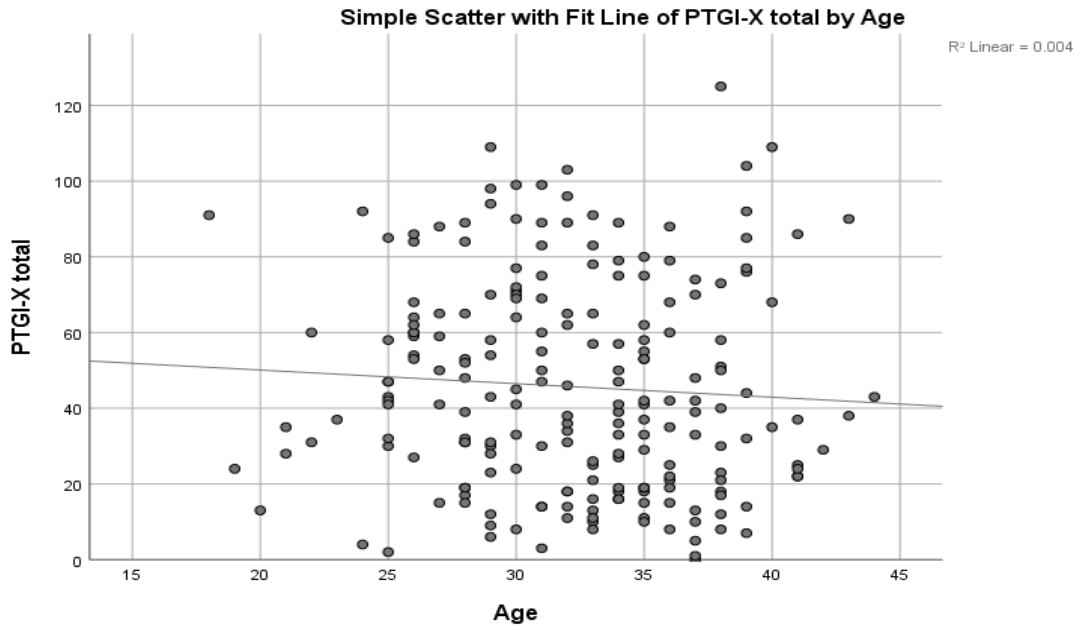


Figure 2. Scatter graph of participants' ages

3.4.2 Number of children

The number of children was not found to be normally distributed on the Shapiro-Wilk test, D(210)=0.596, p=0.000 or histogram (Figure 3). The data was positively skewed (21.917), with high kurtosis (65.174) (Table 1) and a few outliers on the histogram, as some mothers had more than 5 children (Figure 3). To avoid repetition, all subsequent histograms will be reported but not shown. Participants had between 1 to 10 children, with a median of 1 and an interquartile range of 1 (Table 1).

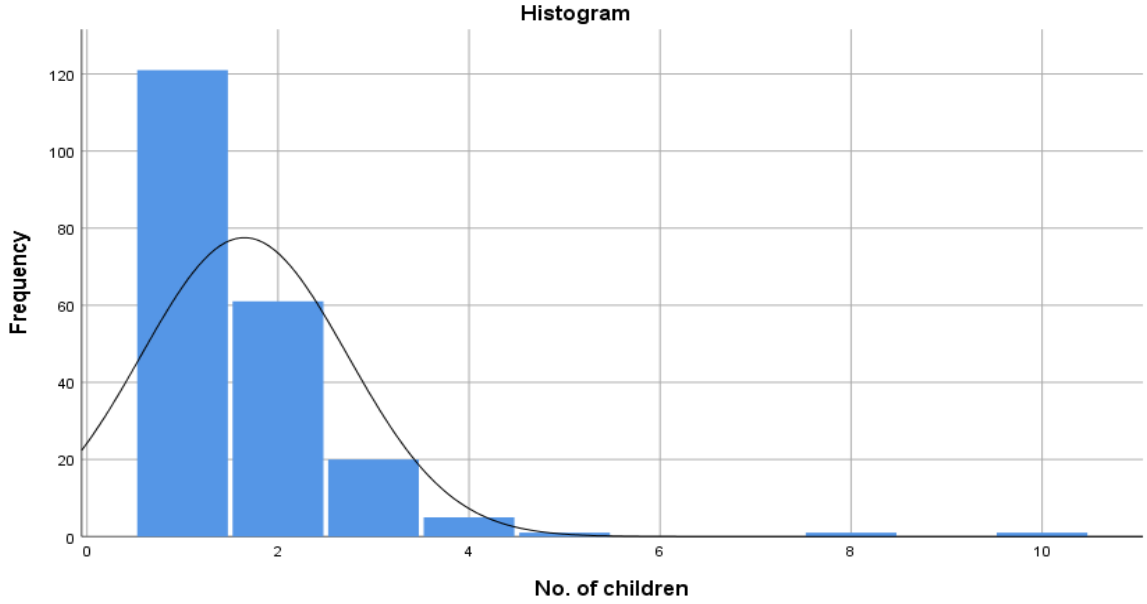


Figure 3. Histogram of number of children

The line of best fit on the scatterplot (Figure 4) suggests that the greater the number of children, the less likely the mothers are to report PTG; however, the scatter had a wide spread, suggesting that this is not a strong relationship.

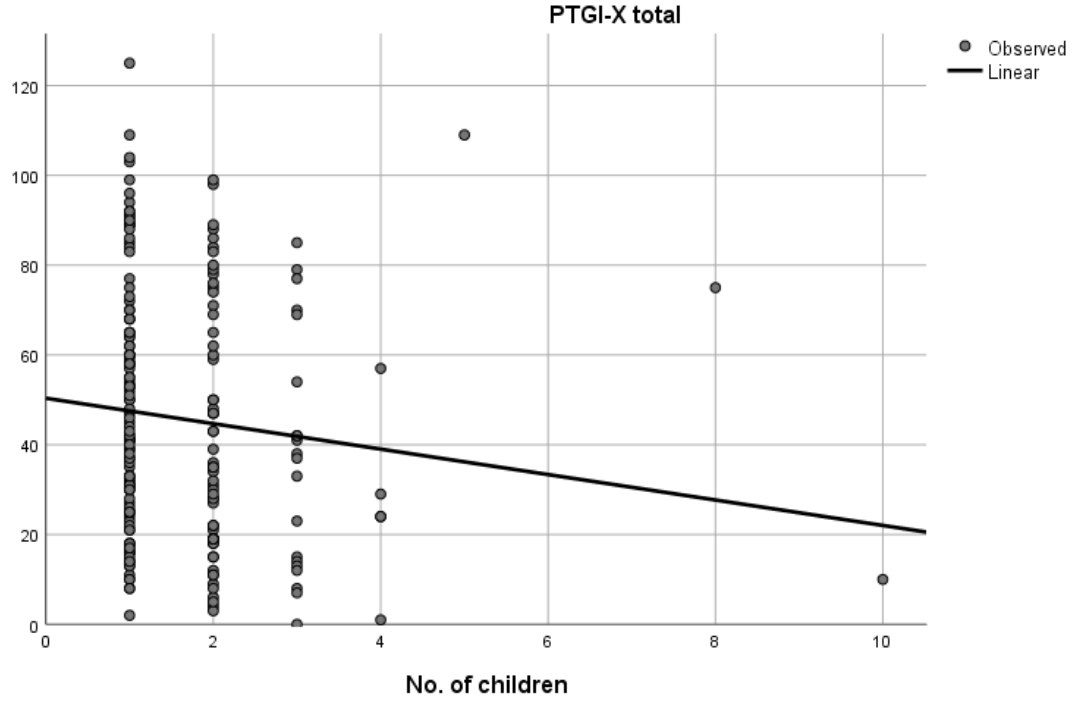


Figure 4. Scatter graph of the number of children

3.4.3 The age of youngest child

The ages of the youngest children were not normally distributed on the Shapiro-Wilk test, D(201)=0.927, p=0.000 and histogram. The data was within the acceptable range for skewness (0.786) but there was low kurtosis (-3.578) (Table 6). There were no outliers on the histogram and homoscedasticity on the scatterplot (Figure 5). The youngest child's ages ranged from 6 to 18 months, with a median age of 11 months and an interquartile range of 7 (Table 6). The line of best fit on the scatterplot (Figure 5) suggests that the greater the age of the youngest child, the more likely the mothers are to report PTG; however, the scatter had a wide spread, suggesting that this is not a strong relationship.

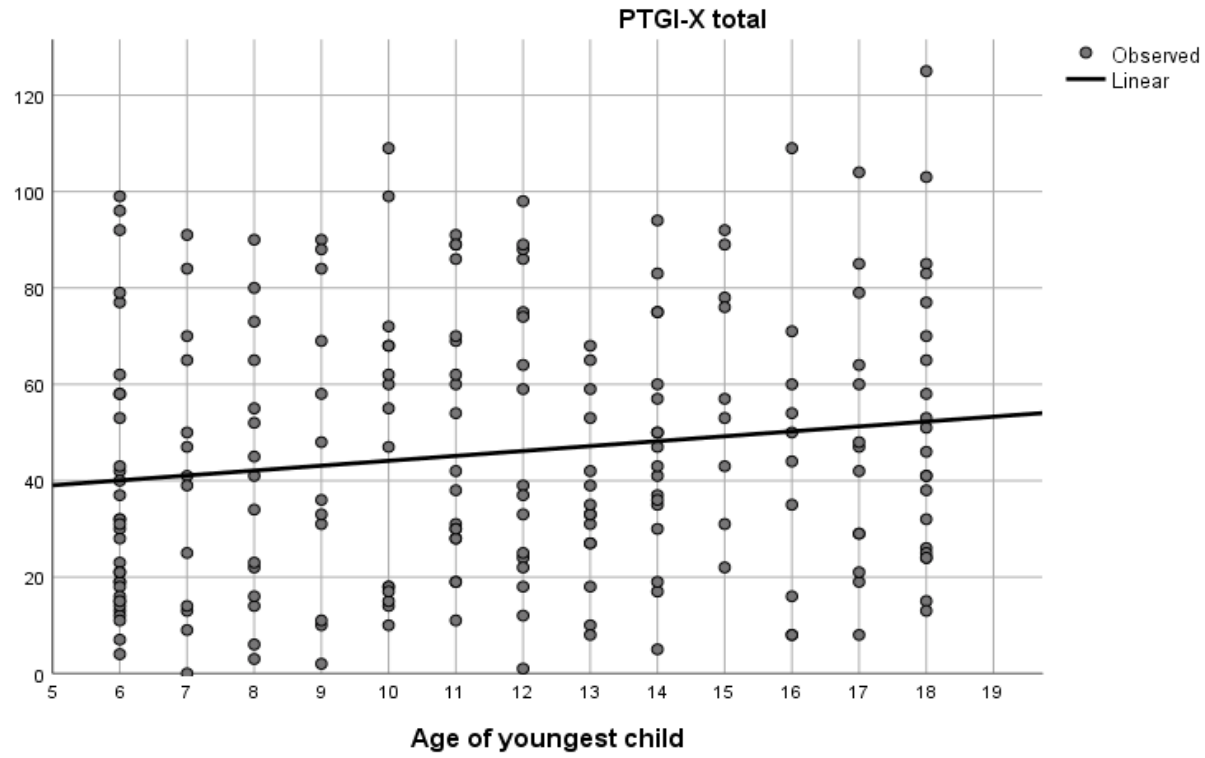


Figure 5. Scatter graph of the age of the youngest child in months

Table 6

Descriptives of demographic factors

	Mother's age	**No. of children**	**Child's age**
Mean (standard error)	32.27 (0.350)	1.65 (0.075)	11.53 (10.99-12.07)
95% confidence interval	31.58-32.96	1.50-1.79	0.274
Median	32.50	1.00	11.00
Variance	25.718	1.167	15.801
Standard Deviation	5.071	1.080	3.975
Range	26 (18-44)	9 (1-10)	12(6-18)
Inter-quartile range	7	1	7
Skew value (standard error)	-0.199 (.168)	3.682 (.168)	0.132 (.168)
Skewness Z-score	-1.185	21.917	0.786
Kurtosis (standard error)	-0.334 (.334)	21.768 (.334)	-1.195 (0.334)
Kurtosis Z-score	-1	65.174	-3.578

3.5 Distribution of data on each measure

3.5.1 PTSD symptoms on the Impact of Event Scale-Revised (IES-R) (Weiss & Marmar, 1996)

The IES-R total scores were not normally distributed on the histogram and Shapiro-Wilk test, D(201)=0.8766, p=0.000. The data was positively skewed (4.321), with low kurtosis (-2.440) (Table 7) and no outliers on the histogram. The total scores on the IES-R ranged from 0 to 86, with a median total score of 16.5 and an interquartile range of 35 (Table 7). The scatterplot suggests that the assumption of homoscedasticity was met (Figure 6). A line of best fit on the scatterplot (Figure 5) suggests that the greater the level of PTSD symptoms, the less likely the mother was to report PTG. The data was also assessed for possible curvilinear relationships, based on the findings of existing literature; this revealed a possible mild curve (Figure 5), suggesting that mothers with moderate levels of PTSD may be slightly less likely to report PTG, compared to mothers with low or high-levels of PTSD, however this was not a significant relationship (see Table 13). This contrasts previous studies (Frazier et al., 2001; Levine et al., 2008; Wu, Zhang, Liu, Zhou & Wei, 2015; Kleim & Ehlers, 2009; Butler et al., 2005; McCaslin et al., 2009) which suggested a possible curvilinear relationship in the opposite direction, with moderate levels of distress relating to higher levels of PTG than low or high levels of distress. However, it should be noted that the scatter in the current study was widespread in both the linear and curvilinear lines of best fit, which suggests that this is not a strong relationships.

Table 7

Descriptives of IES-R

Descriptive test	Statistic
Mean (standard error)	24.91 (1.589)
95% confidence interval	21.78 - 28.04
Median	16.50
Variance	530.16
Standard Deviation	23.025
Range	86 (0-86)
Inter-quartile range	40
Skew value (standard error)	0.726 (0.168)
Skewness Z-score	4.321
Kurtosis (standard error)	-0.815 (0.334)
Kurtosis Z-score	-2.440

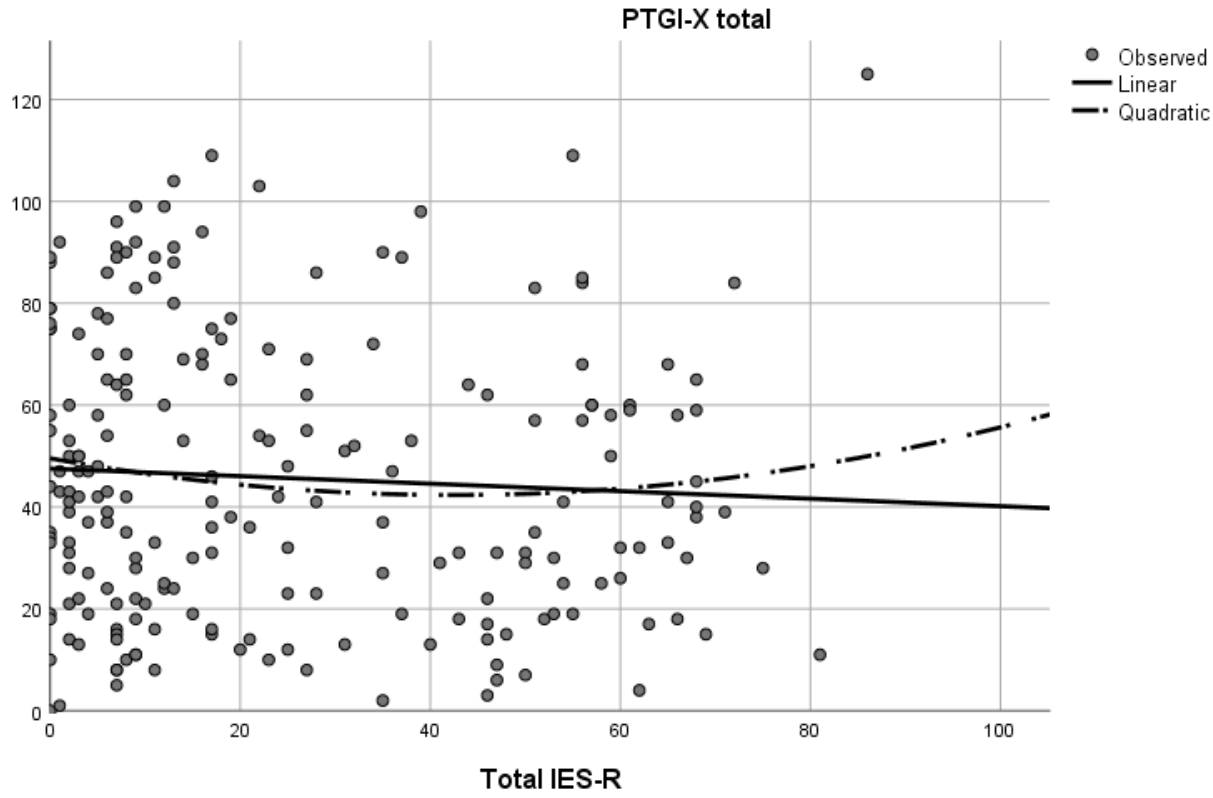


Figure 6. Scatter graph of total IES-R scores

3.5.2 Social Support on the Questionnaire on the Frequency of and Satisfaction with Social Support QFSSS (García-Martín, et al., 2016)

3.5.2.1 Total Support Frequency

The total support frequency scores on the QFSSS were found to be normally distributed on the histogram and Shapiro-Wilk test D(210) =0.993, p=0.417 (Table 8). These scores ranged from 7 to 59, with a mean total score of 36.88 (SD 9.391). The histogram revealed a couple of outliers, where some participants reported very low levels of support frequency; however, skewness (-1.083) and kurtosis (0.365) were within the acceptable range (Table 9). The line of best fit on the scatterplot (Figure 8) suggests that the greater the total support frequency, the more likely mothers were to report PTG; however, the scatter had a wide spread, suggesting that this is not a strong relationship.

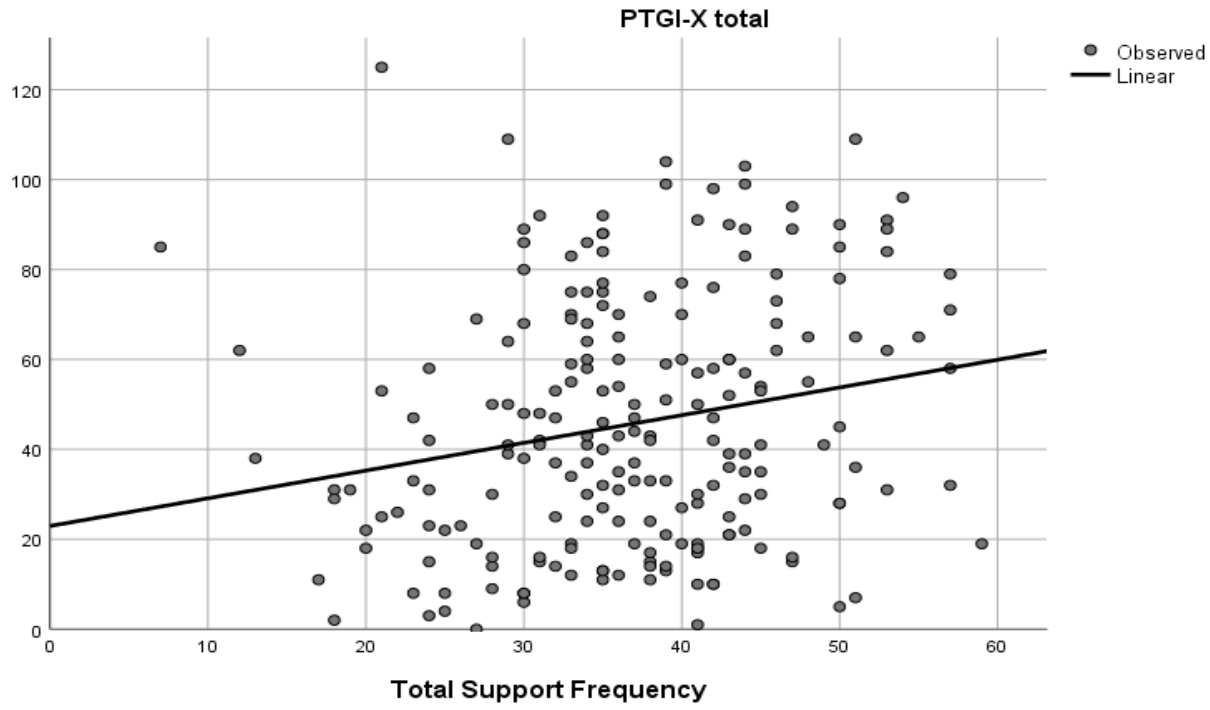


Figure 8. Scatter Graph of total Support Frequency

3.5.2.2 Total Support Satisfaction

The total support satisfaction scores on the QFSSS were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.975, p=0.001 (Table 8). These scores had an interquartile range of 13 and a median total score of 43 (Table 9). Kurtosis was within the acceptable range (-0.189) but there was a negative skew (-3.095) (Table 9). The

histogram also revealed some outliers, where a few mothers reported very low levels of support satisfaction. The line of best fit on the scatterplot (Figure 9) suggests that the greater the total support satisfaction, the more likely mothers were to report PTG; however, the scatter had a wide spread, suggesting that this is not a strong relationship. The scatter graph also indicates homoscedasticity (Figure 9).

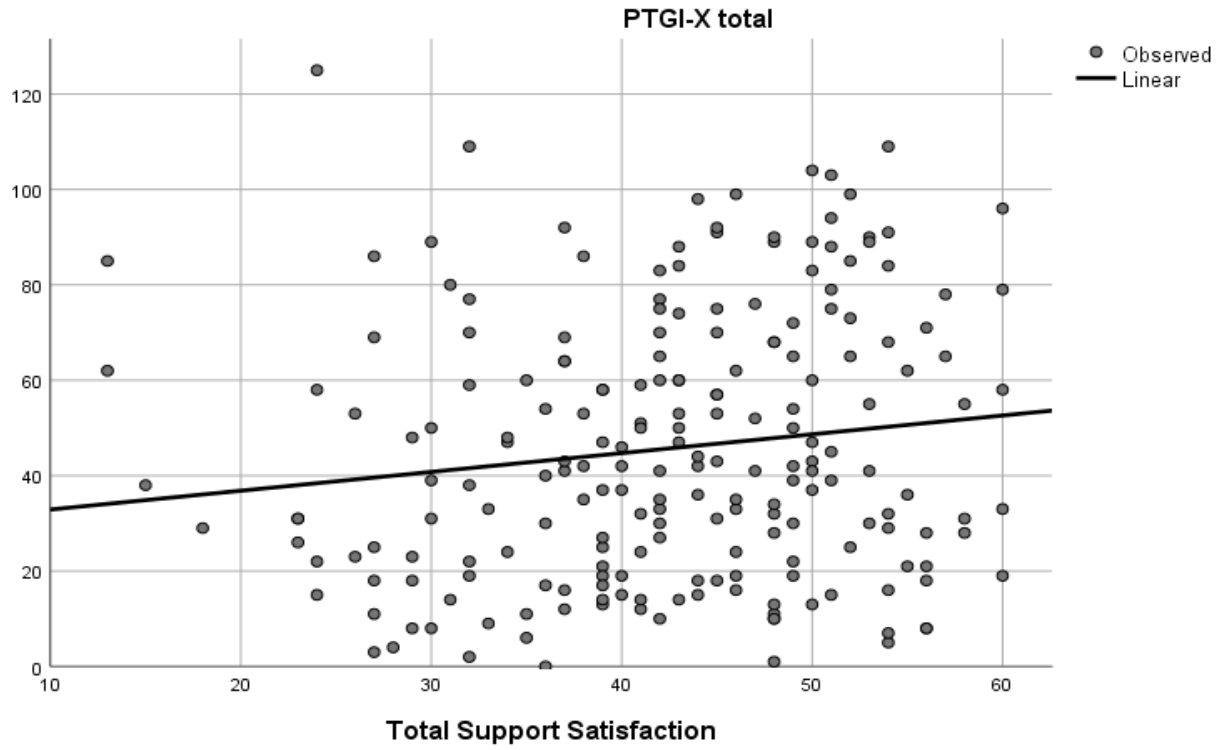


Figure 9. Scatter Graph for total Support Satisfaction

3.5.2.3 Frequency and satisfaction of support from different sources

In terms of the different source of support, Partner Support Frequency scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.880, p=0.000 (Table 8); however, skewness (-1.065) and kurtosis (0.571) were within the acceptable range (Table 9). There was a median of 12.00 and interquartile range of 5 (Table 9). Partner Support Satisfaction scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.827, p=0.000 (Table 8); however, skewness (-1.404) and kurtosis (-1.485) were within the acceptable range (Table 9). There was a median of 12.00 and interquartile range of 5 (Table 9).

Family Support Frequency scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.922, p=0.000 (Table 8); however, skewness (-

0.233) and kurtosis (-1.164) were within the acceptable range (Table 9). There was a median of 10.00 and interquartile range of 7 (Table 4). Family Support Satisfaction scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.893, p=0.000 (Table 8); however, skewness (-0.716) and kurtosis (-0.462) were within the acceptable range (Table 9). There was a median of 12.00 and interquartile range of 6 (Table 9).

Friend Support Frequency scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.917, p=0.000 (Table 8); however, skewness (0.017) and kurtosis (-1.217) were within the acceptable range (Table 9). There was a median of 9.00 and interquartile range of 6 (Table 9). Friend Support Satisfaction scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.903, p=0.000 (Table 8); however, skewness (-0.586) and kurtosis (-0.596) were within the acceptable range (Table 9). There was a median of 12.00 and interquartile range of 5 (Table 9).

Community Support Frequency scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.966, p=0.000 (Table 8); however, skewness (0.164) and kurtosis (-0.672) were within the acceptable range (Table 9). There was a median of 6.00 and interquartile range of 6 (Table 9). Community Support Satisfaction scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.921, p=0.000 (Table 8); however, skewness (-0.603) and kurtosis (-0.544) were within the acceptable range (Table 9). There was a median of 9.50 and interquartile range of 6 (Table 9).

Table 8

Shapiro-Wilk tests of normality for QFSSS Support ratings

	Statistic	Degrees of freedom	Significance
Partner SF	.880	210	.000
Partner SS	.827	210	.000
Family SF	.922	210	.000
Family SS	.893	210	.000
Friend SF	.937	210	.000
Friend SS	.903	210	.000
Community SF	.966	210	.000
Community SS	.921	210	.000
Total SF	.993	210	.417
Total SS	.975	210	.001

SF=Support Frequency, SS=Support Satisfaction

Table 9

Descriptives of QFSSS Support ratings

	Median	Variance	Standard Deviation	Range	Inter-quartile range	Skewness (standard error)	Skew value z-score	Kurtosis (standar	Kurtosis z-score
Partner SF	12.00	15.594	3.949	15 (0-15)	5	-1.065 (0.168)	-6.339	0.571 (0.334)	1.710
Partner SS	12.00	15.035	3.878	15 (0-15)	5	-1.404 (0.168)	-8.357	-1.485 (0.334)	-4.446
Family SF	10.00	14.823	3.850	12 (3-15)	7	-0.233 (0.168)	-1.386	-1.164 (0.334)	-4.150
Family SS	12.00	12.659	3.558	12 (3-15)	6	-0.716 (0.168)	-4.262	-0.462 (0.334)	-1.383
Friend SF	9.00	14.695	3.833	12 (3-15)	6	0.017 (0.168)	0.101	-1.217 (0.334)	-3.644
Friend SS	12.00	13.675	3.698	12 (3-15)	5	-0.586 (0.168)	-3.488	-0.596 (0.334)	-1.784
Community SF	6.00	15.760	3.970	15 (0-15)	6	0.164 (0.168)	0.976	-0.672 (0.334)	-2.012
Community SS	9.50	19.742	4.443	15 (0-15)	6	-0.603 (0.168)	-3.589	-0.544 (0.334)	-1.629
Total SF	36.50	88.186	9.391	52 (7-59)	12	-0.182 (0.168)	-1.083	0.119 (0.334)	0.356
Total SS	43.00	96.763	9.837	47 (13-60)	13	-0.520 (0.168)	-3.095	-0.063 (0.334)	-0.189

SF=Support Frequency, SS=Support Satisfaction

A breakdown of the Family sources of support revealed that 169 Participants received support from their mother (80.5 percent), 21 received support from their Sister (10.0 percent). 9 received support from their Father (4.3 percent), 4 received support from their mother-in-Law (1.9 percent), 2 received support from their infant's Godmother (1.0 percent), 1 received support from their Father-in-law (0.5 percent), 1 received support from their Sister-in-law (0.5 percent), 1 received support from their Brother (0.5 percent), 1 received support from their Aunt (0.5 percent) and 1 received support from their extended family (0.5 percent) (Figure 10).

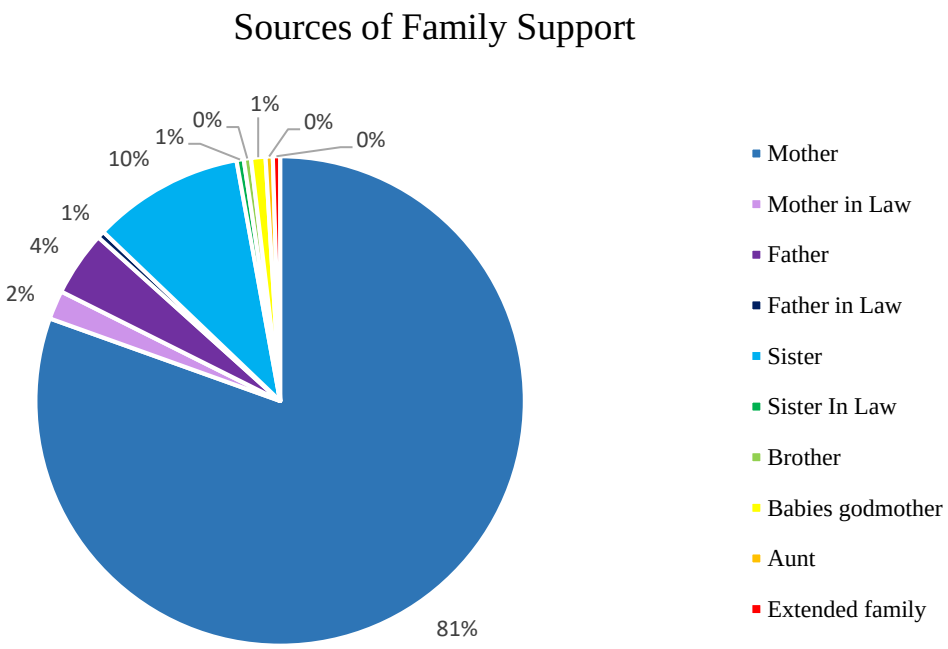


Figure 10. Pie chart of sources of Family support

A breakdown of the Community sources of support revealed that 95 received support from a mother and Baby Group (49.5 percent), 16 received support from the National Childbirth Trust (NCT) (8.3 percent), 15 received support from the Health Visitor or Midwife (7.8 percent), 10 received support from a Toddler playgroup (5.2 percent), 9 received support from their Nursery, Preschool or School network (4.7 percent), 8 received support from the hospital or GP (4.2 percent), 6 received support from a Birth trauma or counselling group (3.1 percent), 6 received support from an online support group (3.1 percent), 5 received support from their work colleagues (2.6 percent), 5 received support from a Church or Mosque (2.6 percent), 5 received support from another source (2.6 percent), 5 received support from the

Children's centre (2.6 percent), 4 received support from Home start or Sure start (2.1 percent), 2 received support from an exercise group (1.0 percent) and 1 received support from their neighbour (0.5 percent) (Figure 11).

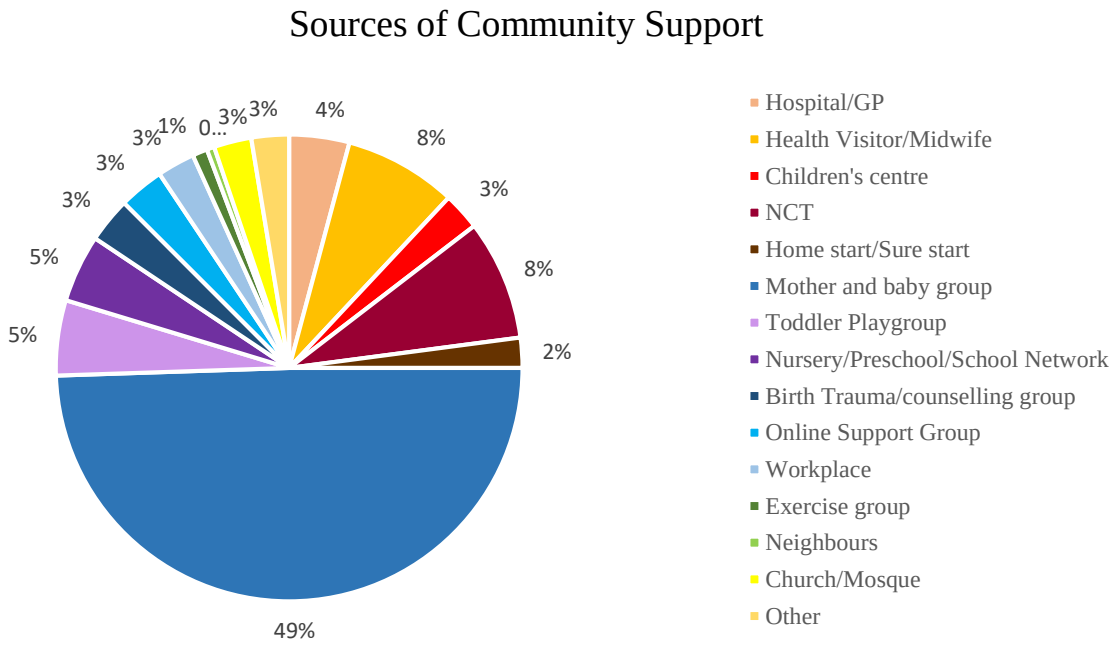


Figure 11. Pie chart of sources of Community support

3.5.3 Growth on the PTGI-X (Tedeschi et al., 2017)

The PTGI-X total scores were not normally distributed on the histogram and Shapiro-Wilk test D(210)=0.960, p=0.000 (Table 10). This data was positively skewed (2.32), with negative kurtosis (-2.39) (Table 11) and possible outliers on the histogram. The total scores on the PTGI-X ranged from 0 to 125, with a median total score of 41 and an interquartile range of 44 (Table 11).

Unfortunately there are no recommended cut off points for what constitutes PTG in previous literature or on the PTGI-X measure itself. It was therefore not possible to determine the prevalence of growth. However, the relatively low median scores suggest that the majority of mothers reported relatively low levels of PTG. There was a median total PTG score of 41.0, (maximum potential total score of 125), compared to previous research where there were mean total PTG scores of 58.81 (Sawyer & Ayers, 2009), 39.81 (Sawyer et al., 2012) and 65.58 (Taubman-Ben-Ari & Spielman, 2014). For 'Relating to Others' there was a median of 12 out of 35, for 'New Possibilities' there was a median of 7 out of 25, for 'Personal Strength' there was a median of 9 out of 20, for 'Spiritual and Existential Change'

there was a median score of 3 out of 30 and for 'Appreciation of Life' there was a median score of 8 out of 15 (Table 6). The 'Spiritual and Existential Change' dimension appeared to have the lowest scores; this is consistent with previous research, which indicated limited growth on this dimension (Sawyer & Ayers, 2009; 2012; Nishi & Usuda, 2017). This may be a sign that there is still a lack of sensitivity on this dimension of the PTGI-X measure, despite Tedeschi et al. (2017) adding four more 'Spiritual and Existential Change' items to reflect a wider range of perspectives from different cultures.

In terms of the different dimensions of the PTGI-X (Table 6), Factor I: 'Relating to Others' scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.954, p=0.000 (Table 10). These scores ranged from 0 to 35, with a median score of 12 and interquartile range of 14 (Table 11). Factor II: 'New Possibilities' scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.931, p=0.000 (Table 10). These scores ranged from 0 to 22, with a median score of 7 and interquartile range of 10 (Table 11). Factor III: 'Personal Strength' scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.954, p=0.000 (Table 10). These scores ranged from 0 to 20, with a median score of 9 and interquartile range of 9 (Table 11). Factor IV: 'Spiritual and Existential Change' scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.833, p=0.000 (Table 10). These scores ranged from 0 to 27, with a median score of 3 and interquartile range of 9 (Table 11). Factor V: 'Appreciation of Life' scores were not found to be normally distributed on the histogram and Shapiro-Wilk test D(210)=0.959, p=0.000 (Table 10). These scores ranged from 0 to 15, with a median score of 8 and interquartile range of 7 (Table 11).

Table 10

Shapiro-Wilk tests of normality for the PTGI-X total scores and subscales

Shapiro-Wilk test	Statistic	Degrees of freedom	Significance
Relating to Others (RO)	.954	210	.000
New Possibilities (NP)	.931	210	.000
Personal Strength (PS)	.954	210	.000
Spiritual and Existential Change (SEC)	.833	210	.000
Appreciation of Life (AL)	.959	210	.000
PTGI-X Total	.960	210	.000

Table 11

Descriptives of PTGI-X scores

	Median	Variance	Standard Deviation	Range	Maximum possible score	Inter-quartile range	Skewness (standard error)	Skew z-score	Kurtosis (standard error)	Kurtosis z-score
RO	12	80.254	8.958	35 (0-35)	35	14	0.469 (0.177)	2.65	-0.714 (0.352)	-2.02
NP	7.00	40.793	6.387	22 (0-22)	25	10	0.454 (0.177)	2.56	-0.998 (0.352)	-2.84
PS	9.00	32.117	5.667	20 (0-20)	20	9	0.039 (0.177)	0.22	-1.139 (0.352)	-3.24
SEC	3.00	45.738	6.738	27 (0-27)	30	9	1.231 (0.177)	1.31	0.627 (0.352)	1.78
AL	8.00	17.567	4.191	15 (0-15)	15	7	-0.209 (0.177)	-1.18	-0.892 (0.352)	-2.53
PTGI-X	41.00	740.439	27.211	109 (0-109)	125	44	0.411 (0.177)	2.32	-0.840 (0.352)	-2.39

RO=Relating to Others, NP=New Possibilities, PS=Personal Strength, SEC=Spiritual and Existential Change, AL=Appreciation of Life, PTGI-X=PTGI-X Total Score

3.6 Correlation matrix

In order to determine what factors need to be controlled for in the regression analysis, a correlation matrix was completed for all the variables (Table 12). The non-parametric Spearman's rank order correlation coefficient test was used as the previous analyses revealed that the majority of variables were not normally distributed and therefore did not meet the assumptions for Pearson's product-moment correlation (Chen & Popovich, 2002). It should also be noted that this matrix includes a large number of analyses and it is therefore possible that some findings are significant purely due to the number of analyses that were run; however, this was only an exploratory analysis ahead of the main analysis and therefore a Bonferroni correction was not applied.

Table 12

Correlation matrix of all variables

	Age	No. ch	Ch age	Rel	SES	IES-R	PE SF	PIns SF	PInf SF	PE SS	PIns SS	PInf SS	FaE SF	FaIns SF	FInf SF	FaE SS	FaInst SS	FaInf SS	FrE SF	FrIns SF	FrInf SF	FrE SS	FrIns SS	FrInf SS	CE SF	CIns SF	CInf SF	CE SS	CInst SS	CInf SS	RO	NP	PS	SEC	AL	PTGI -X
Age	1	**.198****	**.198****	0.064	**.308****	**-.208****	-0.011	0.003	0.075	-0.017	0.02	0.046	-0.124	-0.035	-0.08	-0.082	0.033	-0.035	0.072	0.068	**.156***	**.148***	**.145***	**.169***	-0.049	0.006	-0.032	0.038	0.03	0.032	-0.094	**-.144***	-0.089	0.079	**-.152***	-0.102
No. ch		1	0.038	0.015	0.011	-0.049	-0.072	0.101	0.027	-0.067	0.118	0.041	-0.057	-0.07	-0.033	-0.104	-0.086	-0.127	0.038	0.028	0.108	-0.032	-0.006	-0.029	-0.024	-0.009	-0.039	-0.075	-0.118	-0.062	**-.145***	**-.188****	-0.035	-0.099	**-.273****	**-.163***
Ch age			1	-0.076	-0.132	-0.004	-0.014	-0.028	-0.044	-0.035	-0.064	-0.015	-0.133	-0.067	-0.05	-0.077	-0.003	0.005	0.032	-0.033	-0.023	0.083	0.022	0.047	**-.146***	-0.129	-0.121	-0.135	**-.197****	-0.125	**.158***	**.166***	**.164***	0.128	0.01	**.154***
Rel				1	**.269****	**- .171***	0.092	0.089	0.025	0.091	0.058	0.111	0.028	0.021	-0.041	0.027	-0.026	-0.02	-0.001	0.008	0.044	0.051	0.015	0.028	-0.076	-0.004	-0.039	0.018	0.072	0.032	0.012	-0.075	-0.074	-0.067	-0.096	-0.058
SES					1	**- .141***	0.071	-0.034	0.122	0.076	0.022	0.073	-0.065	-0.006	-0.122	-0.058	-0.023	-0.066	**.141***	**.203****	**.238****	**.171***	**.164***	**.208****	-0.019	0.052	0.024	0.026	0.066	0.085	-0.04	-0.075	-0.019	0.016	-0.008	-0.041
IES-R						1	-0.089	**-.149***	-0.109	-0.134	**-.151***	-0.133	-0.026	-0.021	-0.037	-0.093	**-.140***	**-.164***	-0.102	0.033	-0.074	**-.181****	**-.140***	**-.199****	0.069	0.121	-0.033	-0.022	-0.104	-0.081	-0.059	-0.055	**-.159***	-0.058	0.075	-0.067
PESF							1	**.644****	**.687****	**.814****	**.580****	**.663****	0.13	.144*	0.102	0.11	0.138	**.150***	**.181***	**.243****	**.194****	**.226****	**.212****	**.225****	0.058	0.057	0.075	0.077	0.075	0.043	**.267****	**.148***	0.058	0.088	0.087	**.170***
PInstSF								1	**.621****	**.574****	**.724****	**.618****	0.11	0.132	**.150***	0.105	**.163***	**.146***	**.143***	**.171***	**.190****	**.144***	0.128	**.146***	0.121	0.086	0.118	0.11	0.101	0.103	**.186****	0.082	0.128	-0.036	0.039	0.112
PInfSF									1	**.620****	**.541****	**.756****	0.121	0.107	**.150***	0.105	0.122	0.11	**.167***	**.200****	**.201****	0.126	**.177***	**.186****	0.039	0.047	0.067	0.03	-0.019	0.006	**.148***	0.065	0.047	0.009	0.012	0.079
PESS										1	**.607****	**.675****	0.086	0.082	0.045	0.125	0.126	**.140***	**.210****	**.264****	**.216****	**.267****	**.289****	**.279****	0.092	0.058	0.101	0.114	0.117	0.103	**.299****	**.153***	0.088	0.126	0.08	**.190****
PInstSS											1	**.675****	**.161***	**.151***	0.128	**.202****	**.171***	**.162***	**.144***	**.158***	**.171***	**.173***	**.182****	**.190****	**.153***	0.106	0.127	0.097	0.084	0.131	**.173***	0.048	0.053	-0.053	0	0.068
PInfSS												1	**.235****	**.202****	**.254****	**.234****	**.213****	**.252****	**.212****	**.261****	**.212****	**.226****	**.266****	**.246****	0.113	0.08	0.115	0.103	0.106	0.089	**.183****	0.057	0.046	0.003	0.028	0.09
FaESF													1	**.706****	**.788****	**.837****	**.607****	**.742****	**.242****	**.251****	**.166***	**.161***	**.216****	**.180****	0.13	0.111	0.087	0.12	0.138	0.088	**.212****	0.045	**.145***	0.075	0.123	**.150***
FaInstSF														1	**.707****	**.594****	**.814****	**.712****	.157*	**.261****	0.129	**.140***	**.232****	**.200****	0.107	**.154***	0.046	**.181***	**.221****	0.131	**.177***	0.029	0.133	0.105	0.124	**.137***
FaInf SF															1	**.694****	**.664****	**.793****	**.196****	**.258****	**.240****	0.115	**.216****	**.205****	0.135	0.045	0.135	**.161***	**.154***	**.150***	**.240****	0.1	**.170***	**.167***	**.143***	**.205****
FaE SS																1	**.638****	**.791****	**.204****	**.220****	**.138***	**.235****	**.279****	**.239****	0.041	0.015	-0.026	**.155***	0.129	0.097	**.190****	0.047	0.129	0.117	0.091	**.137***
FaInstSS																	1	**.826****	**.183****	**.239****	**.176***	**.217****	**.274****	**.285****	0.071	0.107	0.039	**.202****	**.256****	**.184***	**.225****	0.121	**.195****	**.182****	**.182****	**.218****
FaInf SS																		1	**.222****	**.218****	**.178****	**.250****	**.280****	**.286****	0.074	0.034	0.05	**.204****	**.202****	**.142***	**.248****	0.106	**.154***	**.170***	**.143***	**.203****
FrESF																			1	**.807****	**.825****	**.805****	**.769****	**.758****	**.203****	**.170***	**.223****	**.210****	**.148***	**.191****	**.288****	0.125	**.172***	**.190****	0.101	**.215****
FrInstSF																				1	**.818****	**.680****	**.732****	**.675****	**.317****	**.330****	**.276****	**.267****	**.240****	**.231****	**.346****	**.194****	**.227****	**.230****	**.225****	**.294****
FrInf SF																					1	**.722****	**.745****	**.784****	**.261****	**.203****	**.307****	**.251****	**.218****	**.258****	**.288****	**.154***	**.169***	**.225****	**.145***	**.237****
FrE SS																						1	**.865****	**.893****	.180*	0.12	**.150***	**.289****	**.248****	**.206****	**.221****	**.157***	0.128	**.215****	0.091	**.188****
FrInstSS																							1	**.914****	**.198****	**.142***	**.158***	**.319****	**.312****	**.251****	**.246****	**.151***	**.145***	**.229****	0.098	**.204****
FrInf SS																								1	**.180***	0.109	**.162***	**.335****	**.333****	**.293****	**.231****	**.165***	0.128	**.226****	0.112	**.197****
CE SF																									1	**.670****	**.782****	**.759****	**.681****	**.687****	0.135	0.066	0.098	0.059	0.071	0.115
CInstSF																										1	**.616****	**.562****	**.636****	**.536****	0.053	0.021	0.068	-0.004	0.065	0.055
CInfSF																											1	**.656****	**.612****	**.757****	**.163***	0.101	0.138	0.083	0.087	**.145***
CE SS																												1	**.834****	**.843****	0.038	-0.018	-0.035	0.014	-0.034	-0.003
CInstSS																													1	**.789****	0.067	0.013	-0.01	0.08	0.017	0.038
CInfSS																														1	0.063	0.025	-0.003	0.035	-0.023	0.031
RO																															1	**.714****	**.658****	**.644****	**.607****	**.875****
NP																																1	**.695****	**.666****	**.748****	**.894****
PS																																	1	**.630****	**.628****	**.842****
SEC																																		1	**.610****	**.820****
AL																																			1	**.810****
PTGIX																																				1

** Correlation is significant at the 0.01 level (2 tailed), * Correlation is significant at the 0.05 level (2 tailed). Age=mother's age, No. ch=Number of children, Ch age=Youngest Child's Age, Rel=Relationship Status, SES=Socioeconomic Status, PESF=Partner Emotional Support Frequency, PESS=Partner Emotional Support Satisfaction, PInstSF=Partner Instrumental Support Frequency, PInstSS=Partner Instrumental Support Satisfaction, PInfSF=Partner Informational Support Frequency, PInfSS=Partner Informational Support Satisfaction, FaESF=Family Emotional Support Frequency, FaESS=Family Emotional Support Satisfaction, FaInstSF=Family Instrumental Support Frequency, FaInstSS=Family Instrumental Support Satisfaction, FaInfSF=Family Informational Support Frequency, FaInfSS=Family Informational Support Satisfaction, FrESF=Friend Emotional Support Frequency, FrESS=Friend Emotional Support Satisfaction, FrInsSF=Friend Instrumental Support Frequency, FrInsSS=Friend Instrumental Support Satisfaction, FriInfSF=Friend Informational Support Frequency, FriInfSS=Friend Informational Support Satisfaction, CESF=Community Emotional Support Frequency, CESS=Community Emotional Support Satisfaction, CInsSF=Community Instrumental Support Frequency, CInsSS=Community Instrumental Support Satisfaction, CInfSF=Community Informational Support Frequency, CInfSS=Community Informational Support Satisfaction, RO=Relating to Others, NP=New Possibilities, PS=Personal Strength, SEC=Spiritual Change, AL=Appreciation of Life, PTGI-X=PTGI-X Total Score

3.6.1 Correlation between demographic factors and support

The Spearman's correlation indicated that the mother's age was significantly and positively correlated with the number of children (r_s=0.198, p<.01), the youngest child's age (r_s=0.198, p<.01) and socioeconomic status (r_s=0.308, p<0.01) (Table 12); this suggests that older mothers are more likely to have more children, older children and a higher socioeconomic status, compared to younger mothers. The mother's age was also significantly and positively correlated with Friend Informational Support Frequency (r_s=0.156, p<0.05) and Satisfaction (r_s=0.169, p<0.05), Friend Emotional Support Satisfaction (r_s=0.148, p<0.05) and Friend Instrumental Support Satisfaction (r_s=0.145, p<0.05) (Table 12); this suggests that older mothers are more likely to receive frequent informational support from their friends and be satisfied with all forms of support from their friends.

The age of the youngest child was significantly and negatively correlated with Community Emotional Support Frequency (r_s=-0.146, p<0.05) and Community Instrumental Support Satisfaction (r_s=-0.197, p<0.01) (Table 12); this suggests that the younger the child, the more likely the mother was to have frequent emotional and satisfactory practical support from the community.

Relationship status was significantly and positively correlated with socioeconomic status (r_s=0.269, p<0.01) (Table 12); this suggests that the higher the participant's socioeconomic status, the more likely they were to be in a relationship. However, relationship status was not significantly correlated with any of the social support measures, which suggests that mothers with partners do not receive significantly higher levels of support to single or separated mothers.

Finally, socioeconomic status was significantly and positively correlated with Friend Emotional Support Frequency (r_s=-0.141, p<0.05) and Satisfaction (r_s=-0.171, p<0.05), Friend Instrumental Support Frequency (r_s=-0.203, p<0.01) and Satisfaction (r_s=-0.164, p<0.05) and Friend Informational Support Frequency (r_s=-0.238, p<0.01) and Satisfaction (r_s=-0.208, p<0.01) (Table 12); this suggests that mothers with higher socioeconomic status were more likely to receive frequent and satisfactory informational, emotional and practical support from their friends.

3.6.2 Correlation between demographic factors and PTG

The number of children was significantly and negatively correlated with 'Relating to Others' (r_s=-.145, p<0.01), 'New Possibilities' (r_s=-.188, p<0.01), 'Appreciation of Life' (r_s=-.273, p<0.01) and the PTGI-X Total (r_s=-.163 p<0.05) (Table 12); this indicates that mothers with fewer children are more likely to report growth, especially in terms of 'Relating to Others', 'New Possibilities' and 'Appreciation of Life'. In contrast, the age of the youngest child was significantly and positively correlated with 'Relating to Others' (r_s=0.158, p<0.05), 'New Possibilities' (r_s=0.166, p<0.05), 'Personal Strength' (r_s=0.164, p<0.05) and the Total PTGI-X (r_s=0.154, p<0.05) (Table 12); this

suggests that the older the youngest child, the more likely mothers are to report PTG, especially in terms of 'Relating to Others', 'New Possibilities' and 'Personal Strength'.

Participants' ages were significantly and negatively correlated with 'New Possibilities' (r_s=-.144, p<0.05) and Appreciation of Life' (r_s=-.152, p<0.05) (Table 12); this suggests that younger mothers are more likely to experience growth in terms of 'New Possibilities' and 'Appreciation of Life'. However, Relationship Status and Socioeconomic Status did not correlate with any dimensions of the PTGI-X.

3.6.3 Correlations with PTSD symptoms

IES-R scores were significantly and negatively correlated with socioeconomic status (r_s=-.141, p<0.05), relationship status (r_s=-.171, p<0.05) and age (r_s=-.208, p<0.01) (Table 12); this suggests that mothers who are young, from a lower socioeconomic background or not in a relationship are more likely to report higher levels of PTSD symptoms. IES-R was also significantly and negatively correlated with Partner Instrumental Support Frequency (r_s=-.149, p<0.05) and Satisfaction (r_s=-.151, p<0.05), Family Instrumental Support Satisfaction (r_s=-.140, p<0.05), Family Informational Support Satisfaction (r_s=-.164, p<0.05), Friend Emotional Support Satisfaction (r_s=-.181, p<0.01), Friend Instrumental Support Satisfaction (r_s=-.140, p<0.05) and Friend Informational Support Satisfaction (r_s=-.199, p<0.01) (Table 12); these findings suggest that mothers with less frequent and satisfactory instrumental support from Partners, less satisfactory informational and instrumental support from Family and less satisfactory emotional, informational and instrumental support from Friends are more likely to report greater PTSD symptoms. Finally, there was a significant and negative correlation between IES-R and the 'Personal Strength' dimension of the PTGI-X (r_s=-.159, p<0.05) (Table 12); this suggests that mothers with higher levels of PTSD symptoms are less likely to report growth on the dimension of Personal Strength. It is important to note that these are correlations and do not indicate causation; therefore, it is not possible to determine if mothers have lower levels of support as a result of their PTSD symptoms or vice versa.

3.6.4 Correlation between support and PTG

3.6.4.1 Correlation between support and PTGI-X Factor I of 'Relating to Others'

PTGI-X Factor I of 'Relating to Others' was significantly and positively correlated with Partner Emotional Support Frequency (r_s=0.267, p<0.01) and Satisfaction (r_s=0.299, p<0.01), Partner Instrumental Support Frequency (r_s=0.186, p<0.01) and Satisfaction (r_s=0.173, p<0.05) and Partner Informational Support Frequency (r_s=0.148, p<0.05) and Satisfaction (r_s=0.183, p<0.01) Table 12). 'Relating to Others' was also significantly and positively correlated with Family

Emotional Support Frequency (r_s=0.212, p<0.01) and Satisfaction (r_s=0.190, p<0.01), Family Instrumental Support Frequency (r_s=0.177, p<0.05) and Satisfaction (r_s=0.225, p<0.01), Family Informational Support Frequency (r_s=0.240, p<0.01) and Satisfaction (r_s=0.248, p<0.01), Friend Emotional Support Frequency (r_s=0.288, p<0.01) and Satisfaction (r_s=0.221, p<0.01), Friend Instrumental Support Frequency (r_s=0.2346, p<0.01) and Satisfaction (r_s=0.246, p<0.01) and Friend Informational Support Frequency (r_s=0.288, p<0.01) and Satisfaction (r_s=0.231, p<0.01) (Table 12). The only aspect of Community Support that was significantly and positively correlated with 'Relating to Others' was Informational Support Frequency (r_s=0.163, p<0.05) (Table 12). These results suggest that mothers with frequent and satisfactory support of all types, from Partners, Friends and Family are more likely to experience growth in terms of 'Relating to Others'. However, in terms of Community support, only frequent informational support appeared to relate to higher levels of growth on this dimension.

3.6.4.2 Correlation between support and PTGI-X Factor II of 'New Possibilities'

PTGI-X Factor II of 'New Possibilities' was significantly and positively correlated with Partner Emotional Support Frequency (r_s=0.148, p<0.05) and Satisfaction (r_s=0.153, p<0.05), Friend Instrumental Support Frequency (r_s=0.194, p<0.01) and Satisfaction (r_s=0.151, p<0.05), Friend Informational Support Frequency (r_s=0.154, p<0.05) and Satisfaction (r_s=0.165, p<0.05) and Friend Emotional Support Satisfaction (r_s=0.157, p<0.05) (Table 12). These results suggest that mothers with frequent and satisfactory emotional support from their partner or any form of satisfactory support from their friends are more likely to experience growth on the dimension of 'New Possibilities'. In contrast, support from family and community did not appear to relate to growth on this dimension.

3.6.4.3 Correlation between support and PTGI-X Factor III of Personal Strength

PTGI-X Factor III of 'Personal Strength' was significantly and positively correlated with Family Emotional Support Frequency (r_s=0.145, p<0.05), Family Informational Support Frequency (r_s=0.170, p<0.05) and Satisfaction (r_s=0.154, p<0.05), Family Instrumental Support Satisfaction (r_s=0.195, p<0.01), Friend Emotional Support Satisfaction (r_s=0.172, p<0.05), Friend Instrumental Support Frequency (r_s=0.227, p<0.01) and Satisfaction (r_s=0.145, p<0.05) and Friend Informational Support Frequency (r_s=0.169, p<0.05) (Table 12). These results suggest that mothers with frequent and satisfactory informational support, frequent emotional support and satisfactory instrumental support from family are more likely to report growth on the 'Personal Strength' dimension. Growth on this dimension is also more likely in mothers with satisfactory instrumental support from friends

and frequent emotional, instrumental and informational support from friends. In contrast, support from the partner and community did not appear to relate to growth on this dimension.

3.6.4.4 Correlation between support and PTGI-X Factor IV of Spiritual and Existential Change

PTGI-X Factor of 'Spiritual and Existential Change' was significantly and positively correlated with Family Informational Support Frequency (r_s=0.167, p<0.05) and Satisfaction (r_s=0.170, p<0.05), Friend Emotional Support Frequency (r_s=0.190, p<0.01) and Satisfaction (r_s=0.215, p<0.05), Friend Instrumental Support Frequency (r_s=0.230, p<0.01) and Satisfaction (r_s=0.229, p<0.05) and Informational Support Frequency (r_s=0.225, p<0.01) and Satisfaction (r_s=0.226, p<0.01) (Table 12). These results suggest that mothers with frequent and satisfactory informational support from family, satisfactory instrumental support from family and frequent and satisfactory support, of all types, from their friends are more likely to experience growth on the dimension of 'Spiritual and Existential Change'. In contrast, support from the partner and community did not appear to relate to this dimension.

3.6.4.5 Correlation between support and PTGI-X Factor V of Appreciation of Life

PTGI-X Factor V of 'Appreciation of Life' was significantly and positively correlated with Family Informational Support Frequency (r_s=0.143, p<0.05) and Satisfaction (r_s=0.143, p<0.05), Family Instrumental Support Satisfaction (r_s=0.182, p<0.01), Friend Instrumental Support Frequency (r_s=0.225, p<0.01) and Friend Informational Support Frequency (r_s=0.145, p<0.05) (Table 12). These results suggest that mothers with frequent and satisfactory informational support from their family, satisfactory instrumental support from their family, frequent instrumental support from friends and frequent informational support from friends are more likely to experience growth on the dimension of 'Appreciation of Life'. In contrast, support from the partner and community did not appear to relate to this dimension.

3.6.4.6 Correlation between support and PTGI-X total scores

PTGI-X total scores were significantly and positively correlated with Family Emotional Support Frequency (r_s=0.150, p<0.05) and Satisfaction (r_s=0.137, p<0.05), Family Instrumental Support Frequency (r_s=0.137, p<0.05) and Satisfaction (r_s=0.218, p<0.01) and Family Informational Support Frequency (r_s=0.205, p<0.01) and Satisfaction (r_s=0.203, p<0.01) (Table 12). These total scores were also significantly and positively correlated with Friend Emotional Support Frequency (r_s=0.215, p<0.01) and Satisfaction (r_s=0.188, p<0.01), Friend Instrumental Support Frequency (r_s=0.294, p<0.01) and Satisfaction (r_s=0.204, p<0.01) and Friend Informational Support Frequency

(r_s=0.237, p<0.01) and Satisfaction (r_s=0.197, p<0.01) (Table 7). Finally, PTGI-X total scores were significantly and positively correlated with Partner Emotional Support Frequency (r_s=0.170, p<0.05) and Satisfaction (r_s=0.190, p<0.01) and Community Informational Support Satisfaction (r_s=0.145, p<0.05) (Table 12).

These results suggest that mothers with frequent and satisfactory support from friends and family, in all forms, are more likely to report higher levels of overall PTG. mothers with frequent and satisfactory emotional support from the partner and frequent informational support from the community are also more likely to report higher overall levels of PTG.

3.7 Curvilinear Regression analysis of IES-R and PTGI-X

The existing literature suggested that there may be a curvilinear relationship between PTSD symptoms and PTG. Linear and curvilinear regression analyses of total IES-R scores and total PTGI-X were therefore completed. In the linear model there was no significant regression equation (F(1, 207)=0.778, p=0.374), with an adjusted R^2 of -0.001 (Table 13); in this model, PTSD symptoms were not found to be a significant predictor of PTG (ß=-0.061, t=-0.882, p=0.379) (Table 14). In the curvilinear model, there was no significant regression equation (F(2, 207)=0.786, p=0.457), with an adjusted R^2 of -0.002 (Table 13); in this model, PTSD symptoms were not found to be a significant predictor of PTG, (linear ß=-0.281, t=-1.097, p=0.274; curvilinear ß=0.229, t=0.892, p=0.374) (Table 14) (Miles & Shevlin, 2001).

Table 13

IES-R and PTGI-X Curvilinear Model Summary[a]

					Change Statistics				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.061[a]	.004	-.001	27.823	.004	.778	1	208	.379
2	.087[b]	.008	-.002	27.836	.004	.795	1	207	.374

a. Predictors: (Constant), Total IES-R

b. Predictors: (Constant), Total IES-R, IESRsquared

c. Dependent Variable: PTGI-X total

Table 14

PTGI-X Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	47.522	2.832		16.779	.000		
	Total IES-R	-.074	.084	-.061	-.882	.379	1.000	1.000
2	(Constant)	49.547	3.631		13.646	.000		
	Total IES-R	-.340	.310	-.281	-1.097	.274	.073	13.720
	IESRsquared	.004	.004	.229	.892	.374	.073	13.720

a. Dependent Variable: PTGI-X total

3.8 Multiple Linear Regression analysis

The regression analysis aimed to determine whether certain dimensions of social support are predictors of PTG following childbirth; this analysis therefore included all of the dimensions of social support and PTG. In addition to this, all of the variables that were significantly correlated with PTG in the matrix (Table 12) were included as potential cofounding variables, so they could be controlled for in the regression analysis. This included the mother's age, which was negatively correlated with PTG in the literature review as well as on the dimensions of 'New Possibilities' and 'Appreciation of Life' in the correlation matrix (Table 712. The age of the youngest child was included as it was significantly positively correlated with PTG on the 'Relating to Others', 'New Possibilities' and 'Personal Strength' dimensions (Table 12). The number of children was also included, as the correlation matrix indicated a significant negative correlation with PTG on the 'Relating to Others', 'New Possibilities' and 'Appreciation of Life' dimensions (Table 12).

Finally, PTSD symptoms were included as they were significantly correlated with PTG on the dimension of 'Personal Strength' (Table 12). As noted previously, the findings regarding PTSD symptoms and PTG have been inconsistent in previously literature, possibly due to researchers only assessing for a linear relationship and not a curvilinear relationship; however, the analyses in this study did not find a linear or curvilinear relationship between PTSD symptoms and the total PTG scores (Table 13). The PTSD symptoms will therefore only be included as a linear relationship in the subsequent regression analyses.

Furthermore, as the existing literature highlighted a consistent significant negative relationship between the socioeconomic status and PTG, this variable was also included as a potential cofounding variable, even though no significant correlation was found in the matrix (Table 12). This finding may have been due to a lack of diversity in the sample, with 91 percent of the

sample identifying as Middle Class. It was important to still include this variable as it was possible for it to be significant in the regression model, even though it was not significantly correlated in the matrix.

The multiple linear regression was conducted to determine whether PTG could be predicted based on the mother's age, number of children, age of the youngest child, socioeconomic status, PTSD symptoms and the frequency and satisfaction with emotional, instrumental and informational support from the partner, friends, family and community. When these regression analyses were initially run, there was high multicollinearity between the Friend Informational Support Satisfaction variable (VIF=11.780) and all of the other dimensions of support; this variable was higher than the recommended cut-off point of 10 (Field, 2013) and was therefore removed from the models.

3.8.1 Multiple Linear Regression analysis for Total PTGI-X

When the demographics, PTSD symptoms and social support variables were included in the regression model with PTGI-X as the dependent variable, there was a significant regression equation (F(28, 188)=2.904, p=<0.000), with an adjusted R^2 of 0.221 and R^2 of 0.337. Based on the adjusted R^2 this model accounts for 22.1 percent of the variance in PTG.

It was found that PTG was significantly predicted by the number of children (ß=-0.143, t=-2.094, p<.05) and the age of the youngest child (ß=0.188, t=2.611, p<.05), Family Instrumental Support Frequency (ß=-0.360, t=-2.466, p<.05), Family instrumental Support Satisfaction (ß=0.523, t=3.055, p<.05) and Friend Instrumental Support Frequency (ß=0.378, t=2.586, p<.05) (Table 10). Family Instrumental Support Satisfaction was the strongest predictor of the overall PTG score (p=0.03) (Table 10).

Table 15

PTGI-X Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
(Constant)	26.861	21.869		1.228	.221		
Age	-.805	.415	-.150	-1.941	.054	.691	1.447
No. ch	**-3.599**	**1.719**	**-.143**	**-2.094**	**.038**	**.885**	**1.130**
Ch age	**1.275**	**.488**	**.188**	**2.611**	**.010**	**.799**	**1.251**
SES	6.445	8.635	.058	.746	.457	.688	1.453
IES-R	-.114	.093	-.095	-1.228	.221	.696	1.436
PESF	3.080	2.992	.141	1.029	.305	.220	4.542
PInsSF	-3.431	3.048	-.145	-1.126	.262	.250	4.001
PInfSF	.023	2.428	.001	.010	.992	.297	3.362
PESS	3.599	3.010	.160	1.196	.234	.231	4.330
PInsSS	.165	3.439	.006	.048	.962	.230	4.344
PInfSS	-2.821	3.071	-.125	-.918	.360	.225	4.435
FaESF	2.340	3.277	.121	.714	.476	.144	6.958
FaInsSF	**-7.013**	**2.843**	**-.360**	**-2.466**	**.015**	**.194**	**5.147**
FaInfSF	4.547	2.862	.234	1.589	.114	.191	5.240
FaESS	-3.142	3.208	-.152	-.979	.329	.171	5.845
FaInsSS	**11.458**	**3.751**	**.523**	**3.055**	**.003**	**.141**	**7.085**
FaInfSS	-3.522	3.697	-.166	-.953	.342	.137	7.311
FrESF	-2.132	3.240	-.101	-.658	.511	.175	5.706
FrInsSF	**7.514**	**2.905**	**.378**	**2.586**	**.011**	**.194**	**5.159**
FrInfSF	1.872	2.974	.095	.629	.530	.182	5.507
FrESS	-1.274	3.335	-.060	-.382	.703	.168	5.949
FrInsSS	-.574	3.379	-.027	-.170	.865	.168	5.963
CESF	4.060	2.884	.198	1.408	.161	.209	4.776
CInsSF	-2.768	2.374	-.126	-1.166	.245	.357	2.804
CInfSF	2.232	2.755	.112	.810	.419	.215	4.647
CESS	-5.623	3.635	-.267	-1.547	.124	.139	7.193
CInsSS	2.745	3.174	.134	.865	.388	.173	5.784
CInfSS	-2.022	3.504	-.093	-.577	.565	.159	6.279

a. Dependent Variable: PTGI-X Total

It should be noted that the VIF score was higher than 5 for many variables, indicating possible multicollinearity; these included Family Emotional Support Frequency (VIF=6.958) and Satisfaction (VIF=5.845), Family Instrumental Support Frequency (VIF=5.147) and Satisfaction (VIF=7.085), Family Informational Support Frequency (VIF=5.240) and Satisfaction (VIF=7.311), Friend Emotional Support Frequency (VIF=5.706) and Satisfaction (VIF=5.494), Friend Instrumental Support Frequency (VIF=5.159) and Satisfaction (VIF=5.963), Friend Informational Support Frequency (VIF=5.507), Community Emotional Support Satisfaction (VIF=7.193), Community Instrumental Support Satisfaction (VIF=5.784) and Community Information Support Satisfaction (VIF=6.279) (Table 10). Although a VIF score of under 5 is ideal, Field (2013) suggests that all VIF scores under 10 can be kept in the analysis.

The Standardised Residuals indicated no outliers; the maximum score was 2.658, which was within the recommended cut off of 3.29, and the minimum score was -2.005, which was within the recommended cut off of -3.29 (Field, 2013). Furthermore, a reasonably normal distribution was indicated on the normal P-P plot (Figure 12) and histogram (Figure 13); this means that the data meets this assumption of the regression analysis and did not require transformation. Unless otherwise stated, all further analyses had similar distribution of standardized residuals and therefore graphs will not be presented for each analysis.

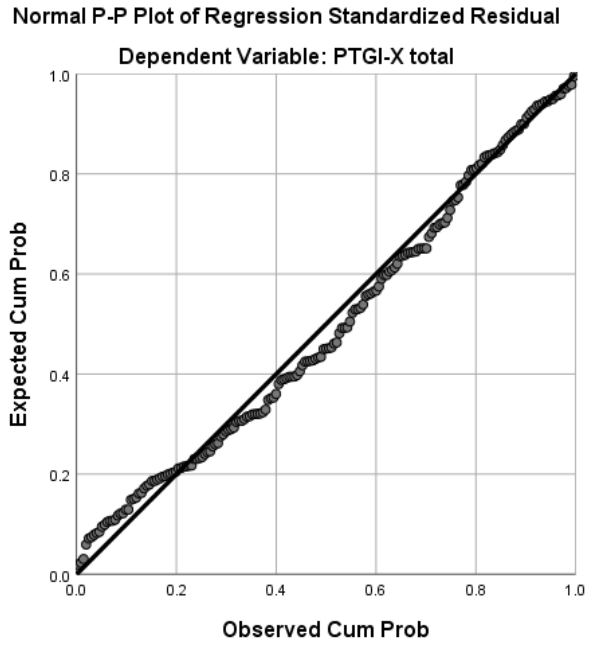


Figure 12. PTGI-X Total Normal P-P Plot

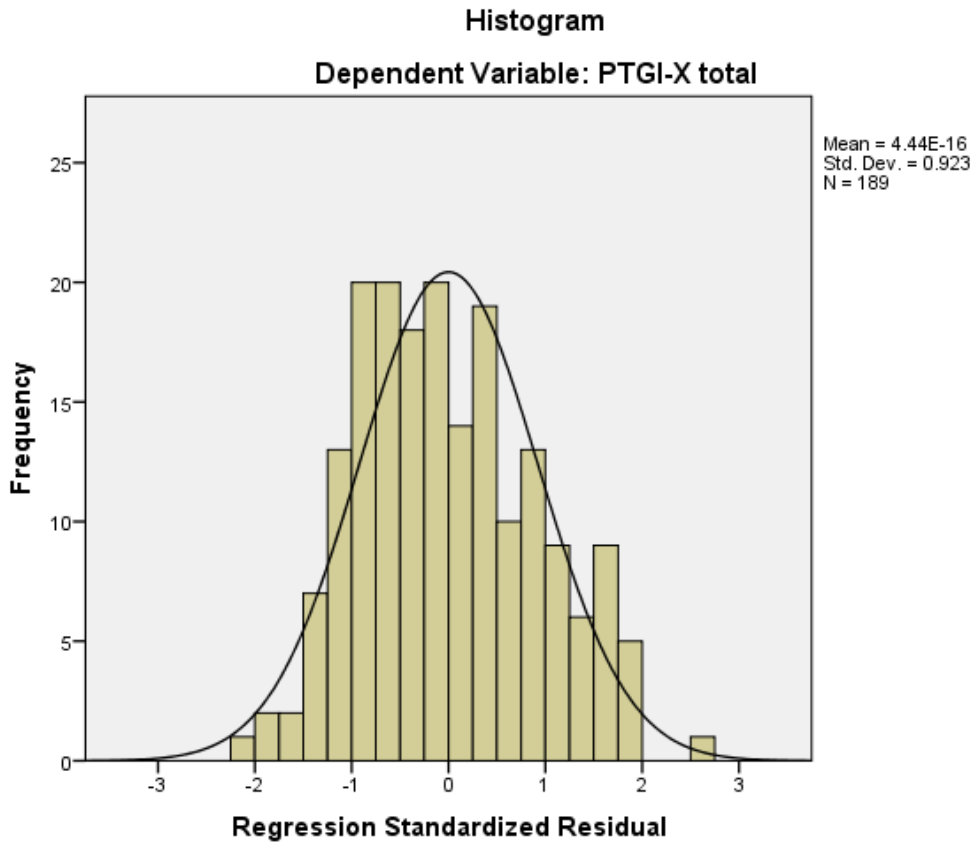


Figure 13. Histogram of Regression standardised residual

3.8.2 Multiple Linear Regression analysis for PTGI-X Factor I: Relating to Others

The Relating to Others regression analysis revealed a significant regression equation (F(29, 188)=2.935, p=<0.001), with an adjusted R^2 of 0.235 and R^2 of 0.345. Based on the adjusted R^2, this means that this model accounts for 23.5 percent of the variance in PTG factor I of Relating to Others. In this model, the Relating to Others dimension of PTG was significantly predicted by the age of the youngest child (ß=0.210, t=2.919, p<.05) and Friend Instrumental Support Frequency (ß=0.353, t=2.429, p<.05). Friend Instrumental Support Frequency was the only support predictor of growth on the Relating to Others dimension (p=0.016) (Table 16).

The Standardised Residuals indicated no outliers (Maximum Standardised Residual=2.251, Minimum Standardised Residual=-2.251) and the normal P=P plot indicated a reasonably normal distribution; these findings suggest that the data meets this assumptions of the regression analysis.

Table 16

PTGI-X Factor I Relating to Others Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
(Constant)	.883	7.395		.119	.905		
Age	-.265	.137	-.150	-1.940	.054	.683	1.465
No. ch	-.769	.563	-.093	-1.367	.174	.885	1.130
Ch age	**.468**	**.160**	**.210**	**2.919**	**.004**	**.795**	**1.258**
SES	2.498	2.929	.068	.853	.395	.641	1.560
IES-R	-.021	.031	-.052	-.676	.500	.693	1.442
PESF	.944	.980	.131	.963	.337	.220	4.546
PInsSF	-.547	1.001	-.070	-.547	.585	.248	4.026
PInfSF	-.442	.803	-.065	-.551	.583	.292	3.430
PESS	1.622	.986	.219	1.646	.102	.231	4.334
PInsSS	.543	1.128	.064	.481	.631	.229	4.363
PInfSS	-.901	1.005	-.121	-.896	.372	.225	4.435
FaESF	1.319	1.073	.208	1.229	.221	.144	6.964
FaInsSF	-1.614	.932	-.252	-1.731	.085	.194	5.166
FaInfSF	.852	.942	.133	.905	.367	.189	5.291
FaESS	-1.030	1.051	-.152	-.980	.329	.171	5.851
FaInsSS	2.262	1.228	.314	1.842	.067	.141	7.088
FaInfSS	-.216	1.213	-.031	-.178	.859	.136	7.344
FrESF	.224	1.061	.032	.211	.833	.175	5.709
FrInsSF	**2.311**	**.952**	**.353**	**2.429**	**.016**	**.194**	**5.165**
FrInfSF	.305	.976	.047	.313	.755	.181	5.529
FrESS	-1.156	1.093	-.165	-1.058	.292	.168	5.961
FrInsSS	-.078	1.109	-.011	-.071	.944	.167	5.998
CESF	.891	.964	.132	.924	.357	.201	4.980
CInstSF	-1.439	.779	-.199	-1.849	.066	.355	2.814
CInfSF	1.109	.906	.170	1.224	.223	.213	4.688
CESS	-.959	1.202	-.138	-.798	.426	.136	7.345
CInsSS	1.075	1.039	.159	1.035	.302	.173	5.785
CInfSS	-1.018	1.150	-.142	-.885	.377	.158	6.310

a. Dependent Variable: PTGI-X Factor I Relating to Others

3.8.3 Multiple Linear Regression analysis for PTGI-X Factor II: New Possibilities

The New Possibilities regression analysis revealed a significant regression equation (F(29, 188)=2.373, p=<0.001), with an adjusted R^2 of 0.179 and R^2 of 0.301. Based on the adjusted R^2, this means that this model accounts for 17.9 percent of the variance in PTG factor II of New Possibilities. It was found that the New Possibilities of PTG was significantly predicted by the age of the mother (ß=-0.190, t=-2.371, p<.05), Number of children (ß=-0.178, t=2.533, p<.05), age of the youngest child (ß=0.177, t=2.385, p<.05), Family Instrumental Support Frequency (ß=-0.421, t=-2.769, p<.05) and Satisfaction (ß=0.511, t=2.897, p<.05) and Friend Instrumental Support Frequency (ß=0.371, t=2.107, p<.05) (Table 17). Family Instrumental Support Satisfaction was the strongest support predictor of growth (p=0.004 on the New Possibilities dimension (Table 17). The Standardised Residuals indicated no outliers (Maximum Standardised Residual=2.444, Minimum

Standardised Residual=-2.309) and the normal P=P plot indicated a reasonably normal distribution; these findings suggest that the data meets this assumptions of the regression analysis.

Table 17

PTGI-X Factor II New Possibilities Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	**Std. Error**	**Beta**	**T**	**Sig.**	**Tolerance**	**VIF**
(Constant)	**11.317**	**5.457**		**2.074**	**.040**		
Age	**-.239**	**.101**	**-.190**	**-2.371**	**.019**	**.683**	**1.465**
No. ch	**-1.052**	**.415**	**-.178**	**-2.533**	**.012**	**.885**	**1.130**
Ch age	**.282**	**.118**	**.177**	**2.385**	**.018**	**.795**	**1.258**
SES	-1.165	2.162	-.045	-.539	.591	.641	1.560
IES-R	-.023	.023	-.083	-1.040	.300	.693	1.442
PESF	1.030	.723	.201	1.424	.156	.220	4.546
PInsSF	-1.312	.739	-.236	-1.776	.078	.248	4.026
PInfSF	.610	.592	.126	1.030	.305	.292	3.430
PESS	.228	.727	.043	.314	.754	.231	4.334
PInsSS	.481	.833	.080	.578	.564	.229	4.363
PInfSS	-.960	.742	-.180	-1.294	.198	.225	4.435
FaESF	.264	.792	.058	.333	.739	.144	6.964
FaInsSF	**-1.924**	**.688**	**-.421**	**-2.796**	**.006**	**.194**	**5.166**
FaInfSF	.884	.695	.194	1.273	.205	.189	5.291
FaESS	-.753	.775	-.156	-.972	.333	.171	5.851
FaInsSS	**2.626**	**.906**	**.511**	**2.897**	**.004**	**.141**	**7.088**
FaInfSS	-.538	.895	-.108	-.601	.549	.136	7.344
FrESF	-1.112	.783	-.225	-1.420	.158	.175	5.709
FrInsSF	**1.479**	**.702**	**.317**	**2.107**	**.037**	**.194**	**5.165**
FrInfSF	.703	.720	.152	.977	.330	.181	5.529
FrESS	.577	.807	.116	.716	.475	.168	5.961
FrInsSS	-.253	.819	-.050	-.309	.758	.167	5.998
CESF	.937	.711	.195	1.318	.190	.201	4.980
CInstSF	-.324	.575	-.063	-.564	.573	.355	2.814
CInfSF	-.028	.668	-.006	-.042	.967	.213	4.688
CESS	-1.722	.887	-.348	-1.941	.054	.136	7.345
CInsSS	.717	.767	.149	.935	.351	.173	5.785
CInfSS	.128	.849	.025	.151	.880	.158	6.310

a. Dependent Variable: PTGI-X Factor II New Possibilities

3.8.4 Multiple Linear Regression analysis for PTGI-X Factor III: Personal Strength

The Personal Strength regression analysis revealed a significant regression equation (F(29, 188)=2.263, p=<0.001), with an adjusted R^2 of 0.168 and R^2 of 0.292. Based on the adjusted R^2, this means that this model accounts for 16.8 percent of the variance in PTG factor III of Personal Strength.

It was found that the Personal Strength dimension of PTG was significantly predicted by the age of the mother (ß=-0.197, t=-2.442, p<.05), age of the youngest child (ß=0.225, t=3.002, p<.05), IES-R (ß=-0.225, t=2.813, p<.05), Family Instrumental Support Satisfaction (ß=0.529, t=2.979, p<.05) and Friend Instrumental Support Frequency (ß=0.302, t=1.990, p<.05) (Table 18). Family Instrumental Support Satisfaction was the strongest support predictor of growth (p=0.003) on the Personal Strength dimension (Table 18).

The Standardised Residuals indicated no outliers (Maximum Standardised Residual=2.844, Minimum Standardised Residual=-2.177) and the normal P=P plot indicated a reasonably normal distribution; these findings suggest that the data meets this assumptions of the regression analysis.

Table 18

PTGI-X Factor III Personal Strength Coefficients[a]

	Unstandardized Coefficients		**Standardized Coefficients**			**Collinearity Statistics**	
	B	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
(Constant)	5.954	4.877		1.221	.224		
Age	**-.220**	**.090**	**-.197**	**-2.442**	**.016**	**.683**	**1.465**
No. ch	-.175	.371	-.033	-.471	.638	.885	1.130
Ch age	**.317**	**.106**	**.225**	**3.002**	**.003**	**.795**	**1.258**
SES	2.760	1.932	.119	1.429	.155	.641	1.560
IES-R	**-.057**	**.020**	**-.225**	**-2.813**	**.006**	**.693**	**1.442**
PESF	-.296	.646	-.065	-.459	.647	.220	4.546
PInsSF	.382	.660	.077	.578	.564	.248	4.026
PInfSF	-.013	.529	-.003	-.025	.980	.292	3.430
PESS	.815	.650	.174	1.254	.212	.231	4.334
PInsSS	-.518	.744	-.097	-.697	.487	.229	4.363
PInfSS	-.608	.663	-.129	-.918	.360	.225	4.435
FaESF	.482	.708	.120	.680	.497	.144	6.964
FaInsSF	-1.057	.615	-.261	-1.719	.088	.194	5.166
FaInfSF	.930	.621	.230	1.498	.136	.189	5.291
FaESS	-.114	.693	-.027	-.164	.870	.171	5.851
FaInsSS	**2.412**	**.810**	**.529**	**2.979**	**.003**	**.141**	**7.088**
FaInfSS	-1.550	.800	-.350	-1.938	.054	.136	7.344
FrESF	-.115	.700	-.026	-.164	.870	.175	5.709
FrInsSF	**1.249**	**.627**	**.302**	**1.990**	**.048**	**.194**	**5.165**
FrInfSF	-.039	.643	-.009	-.060	.952	.181	5.529
FrESS	-.435	.721	-.098	-.604	.547	.168	5.961
FrInsSS	.129	.732	.029	.177	.860	.167	5.998
CESF	.705	.636	.165	1.110	.269	.201	4.980
CInstSF	-.136	.513	-.030	-.264	.792	.355	2.814
CInfSF	.943	.597	.228	1.579	.116	.213	4.688
CESS	-.398	.793	-.091	-.502	.616	.136	7.345
CInsSS	-.276	.685	-.065	-.402	.688	.173	5.785
CInfSS	-1.011	.758	-.223	-1.333	.184	.158	6.310

a. Dependent Variable: PTGI-X Factor III Personal Strength

3.8.5 Multiple Linear Regression analysis for PTGI-X Factor IV: Spiritual Change

The Spiritual Change regression analysis revealed a significant regression equation (F(29, 188)=1.830, p=<0.05), with an adjusted R^2 of 0.114 and R^2 of 0.246. Based on the adjusted R^2, this means that this model accounts for 11.4 percent of the variance in PTG factor IV of Spiritual Change.

It was found that the Spiritual Change dimension of PTG was significantly predicted by Partner Instrumental Support Frequency (ß=-0.297, t=-2.158, p<.05), Family Instrumental Support Satisfaction (ß=0.459, t=2.511, p<.05) and Community Emotional Support Satisfaction (ß=-0.442, t=-2.375, p<.05) (Table 19). Family Instrumental Support Satisfaction was the strongest support predictor of growth (p=0.013) on the Spiritual and Existential Change dimension (Table 19).

The Standardised Residuals indicated that there may be a slight upper outlier, as the Maximum score was 3.310, which is higher than the recommended 3.29 (Field, 2013) limit. Field (2013) notes that this can be a cause for concern as this means that a value this high is unlikely to occur in an average sample. Furthermore, the normal P=P plot (Figure 14) and histogram of the regression residual (Figure 15) did not indicate a normal distribution; we would therefore not recommend placing too much weight on any conclusions drawn from this model.

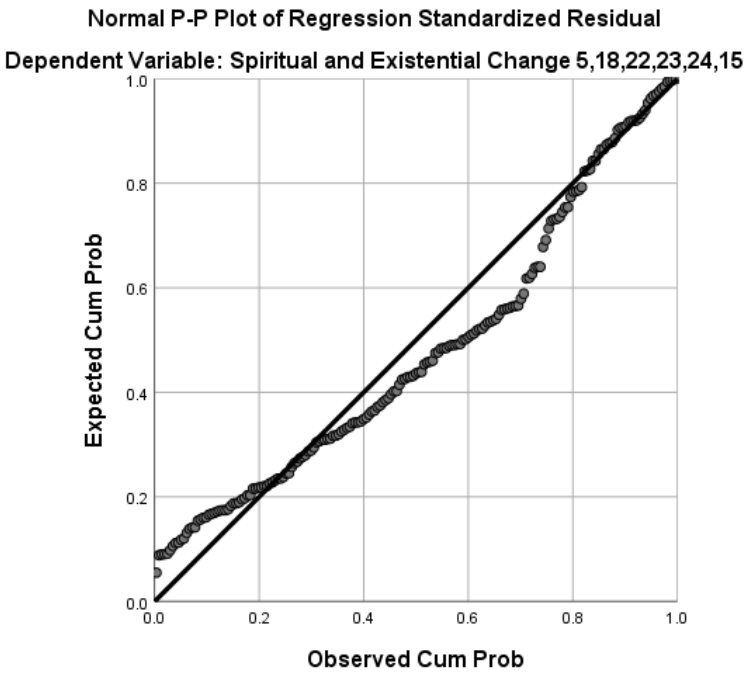


Figure 14. PTGI-X Factor IV Spiritual Change Normal P-P Plot

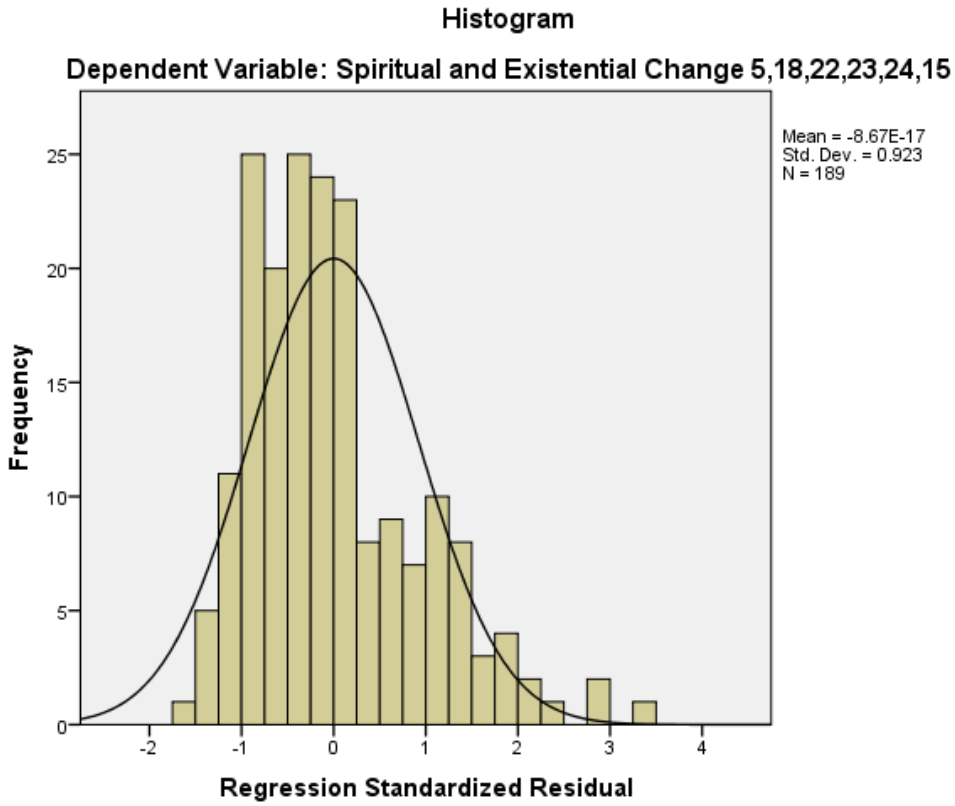


Figure 15. Histogram of regression standardised residual

Table 19

PTGI-X Factor IV Spiritual Change Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
(Constant)	-.440	5.989		-.074	.941		
Age	.049	.111	.037	.444	.658	.683	1.465
No. ch	-.759	.456	-.122	-1.665	.098	.885	1.130
Ch age	.164	.130	.097	1.263	.208	.795	1.258
SES	-.330	2.372	-.012	-.139	.889	.641	1.560
IES-R	-.018	.025	-.059	-.720	.472	.693	1.442
PESF	1.092	.794	.201	1.376	.171	.220	4.546
PInsSF	**-1.749**	**.811**	**-.297**	**-2.158**	**.032**	**.248**	**4.026**
PInfSF	.363	.650	.071	.558	.577	.292	3.430
PESS	.619	.798	.111	.775	.439	.231	4.334
PInsSS	-.362	.914	-.057	-.397	.692	.229	4.363
PInfSS	-.456	.814	-.081	-.560	.576	.225	4.435
FaESF	-.073	.869	-.015	-.084	.933	.144	6.964
FaInsSF	-1.458	.755	-.301	-1.931	.055	.194	5.166
FaInfSF	1.368	.763	.283	1.794	.075	.189	5.291
FaESS	-.393	.851	-.077	-.462	.645	.171	5.851
FaInsSS	**2.497**	**.995**	**.459**	**2.511**	**.013**	**.141**	**7.088**
FaInfSS	-1.122	.982	-.212	-1.142	.255	.136	7.344
FrESF	-.456	.859	-.087	-.531	.596	.175	5.709
FrInsSF	1.098	.771	.222	1.424	.156	.194	5.165
FrInfSF	.736	.790	.150	.931	.353	.181	5.529
FrESS	-.275	.885	-.052	-.311	.756	.168	5.961
FrInsSS	.066	.899	.012	.074	.941	.167	5.998
CESF	1.340	.781	.263	1.717	.088	.201	4.980
CInstSF	-.701	.631	-.128	-1.112	.268	.355	2.814
CInfSF	-.366	.734	-.074	-.499	.618	.213	4.688
CESS	**-2.313**	**.974**	**-.442**	**-2.375**	**.019**	**.136**	**7.345**
CInsSS	1.239	.842	.243	1.473	.143	.173	5.785
CInfSS	.600	.931	.111	.644	.521	.158	6.310

a. Dependent Variable: PTGI-X Factor IV Spiritual Change

3.8.6 Multiple Linear Regression analysis for PTGI-X Factor V: Appreciation of Life

The Appreciation of Life regression analysis revealed a significant regression equation (F(29, 188)=2.242, p=<0.001), with an adjusted R^2 of 0.161 and R^2 of 0.290. Based on the adjusted R^2, this means that this model accounts for 16.1 percent of the variance in PTG Factor IV of Appreciation of Life.

It was found that the Appreciation of Life dimension of PTG was significantly predicted by the number of children (ß=-0.218, t=-3.074, p<.05), Family Instrumental Support Frequency (ß=-0.327, t=-2.156, p<.05) and Satisfaction (ß=0.496, t=2.787, p<.05) and Friend Instrumental Support

Frequency (ß=0.445, t=2.934, p<.05) (Table 20). Friend Instrumental Support Frequency (p=0.004) was the strongest support predictor of growth on the Appreciation of Life dimension (Table 20).

The Standardised Residuals indicated no outliers (Maximum Standardised Residual=2.742, Minimum Standardised Residual=-1.966) and the normal P=P plot indicated a reasonably normal distribution; these findings suggest that the data meets this assumptions of the regression analysis.

Table 20

PTGI-X Factor V Appreciation of Life Coefficients[a]

	Unstandardized Coefficients		**Standardized Coefficients**			**Collinearity Statistics**	
	B	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
(Constant)	**8.387**	**3.611**		**2.322**	**.021**		
Age	-.124	.067	-.150	-1.855	.065	.683	1.465
No. ch	**-.845**	**.275**	**-.218**	**-3.074**	**.002**	**.885**	**1.130**
Ch age	.039	.078	.037	.498	.619	.795	1.258
SES	2.367	1.430	.138	1.655	.100	.641	1.560
IES-R	.005	.015	.027	.342	.733	.693	1.442
PESF	.297	.479	.088	.621	.536	.220	4.546
PInsSF	-.237	.489	-.065	-.484	.629	.248	4.026
PInfSF	-.448	.392	-.141	-1.143	.255	.292	3.430
PESS	.302	.481	.087	.628	.531	.231	4.334
PInsSS	-.009	.551	-.002	-.016	.987	.229	4.363
PInfSS	.103	.491	.030	.210	.834	.225	4.435
FaESF	.335	.524	.113	.639	.524	.144	6.964
FaInsSF	**-.982**	**.455**	**-.327**	**-2.156**	**.033**	**.194**	**5.166**
FaInfSF	.474	.460	.159	1.032	.304	.189	5.291
FaESS	-.838	.513	-.264	-1.633	.104	.171	5.851
FaInsSS	**1.671**	**.600**	**.496**	**2.787**	**.006**	**.141**	**7.088**
FaInfSS	-.063	.592	-.019	-.106	.916	.136	7.344
FrESF	-.683	.518	-.211	-1.319	.189	.175	5.709
FrInsSF	**1.363**	**.465**	**.445**	**2.934**	**.004**	**.194**	**5.165**
FrInfSF	.192	.476	.063	.403	.688	.181	5.529
FrESS	-.004	.534	-.001	-.007	.994	.168	5.961
FrInsSS	-.403	.542	-.122	-.744	.458	.167	5.998
CESF	.267	.471	.084	.567	.572	.201	4.980
CInstSF	-.187	.380	-.055	-.492	.624	.355	2.814
CInfSF	.540	.442	.177	1.222	.224	.213	4.688
CESS	-.302	.587	-.093	-.515	.607	.136	7.345
CInsSS	-.015	.507	-.005	-.029	.977	.173	5.785
CInfSS	-.688	.562	-.206	-1.225	.222	.158	6.310

a. Dependent Variable: PTGI-X Factor V Appreciation of Life

In summary, it was initially hypothesised that all sources of support would foster growth, with support from Family being the strongest predictor. This hypothesis was partially supported, as Family Instrumental Support Satisfaction was the most significant predictor of growth on all

dimensions of PTG, except the dimensions of 'Relating to others' and 'Appreciation of Life', where Friend Instrumental Support Frequency was the strongest predictor of growth; these findings suggest that having frequent practical support from friends or satisfactory practical support from family, may lead to higher levels of PTG following childbirth. However, these findings also partly contradict this hypothesis, as Family Instrumental Support Frequency was a negative predictor of the total PTG and dimensions of 'Appreciation of Life' and 'New Possibilities'; this suggests that more frequent support from family can actually inhibit growth on these dimensions. Furthermore, in most of the analyses, other sources of support were not significant predictors of growth.

In terms of types of support, it was hypothesised that emotional support would be the strongest predictor of growth; however, this hypothesis was rejected as the findings indicated that emotional support was not a significant predictor of PTG. Instead, as noted previously, Instrumental Support was the strongest predictor of growth. These findings have been summarised in Table 21 and will be explored in more detail in the discussion chapter.

Table 21

Summary of key findings

	Friend Instrumental Support Frequency	Family Instrumental Support Satisfaction	Family Instrumental Support Frequency	Community Emotional Support Satisfaction	Partner Instrumental Support Frequency
Factor I: Relating to Others					
Factor II: New Possibilities		Most Significant			
Factor III: Personal Strength		Most Significant			
Factor IV: Spiritual Change		Most Significant			
Factor V: Appreciation of life	Most Significant				
Total		Most Significant			

Green= Foster Growth. Grey= Inhibit Growth

CHAPTER FOUR: DISCUSSION

4.1 Chapter Overview

This chapter will be discussing the findings of this research, in relation to the existing literature and models of PTG, in order to address the research questions. This will involve exploring whether there were any differences in the effect that informational, instrumental and emotional support from friends, family, the community and their partner has on mother's levels of PTG following childbirth. Potential cofounding variables will also be discussed. This chapter will then

outline the strengths, limitations and implications of these findings for theory, future research and clinical practice.

4.2 The relationship between Social Support and PTG

The aim of this research was to explore the effect of different sources and types of social support on the development of PTG following childbirth. It was initially hypothesised that all sources of support would foster growth and that emotional support from Family will be the strongest predictor. This was based on the existing literature (Taubman-Ben-Ari, et al., 2010; Rozen et al., 2017; Noy et al., 2015) as well as the OVP model (Joseph & Linley, 2005) and FDM model (Tedeschi & Calhoun, 2014).

The OVP model (Joseph & Linley, 2005) suggests that adverse events shatter the individual's sense of self and the world. In order to integrate this trauma into their self-structure, the experience must be held and processed in active memory; this leads to oscillating intrusive and avoidant states, which are characteristic of PTSD. These states continue until the information is either accommodated or assimilated (Wu, Zhang, Liu, Zhou & Wei, 2015). Assimilation involves maintaining the individuals existing assumptions by attributing blame to themselves, whereas Accommodation involves altering the existing assumptions in either a negative (e.g. hopelessness) or positive (e.g. appreciation) direction based on the meaning they attribute to the event. The greater the individual's social support, the more likely they are to move towards positive accommodation or 'growth' (Joseph & Linley, 2005).

Alternatively, the FDM model (Tedeschi & Calhoun, 2014) suggests that individuals actively construct a meaningful and manageable cognitive model of the world (Kelly, 1955; Neimeyer, 1993). When trauma disrupts this, it leads to distress and automatic rumination, which is consistent with the re-experiencing and avoidance symptoms PTSD. With social support and the development of new coping behaviours, this rumination becomes more deliberate, with narrative development and a search for meaning (Joseph & Linley, 2006). Through deliberate rumination, the individual adjusts the beliefs that are no longer possible to maintain following trauma; depending on how they attribute these events, it will lead to either growth or continued distress on each dimension (Joseph & Linley, 2006).

Whilst both of these models note the important role of social support in the development of growth, neither model explains this process in detail or indicates which types and sources of support would be most beneficial for growth. This discussion will therefore explore the main findings of the current study in relation to these models as well as previous literature.

Before discussing these findings, it should also be noted that, although this study aimed to explore PTG following childbirth, there was no requirement for participants to have a minimum score on the IES-R; this design was chosen so that comparisons could be made between mothers with a range of IES-R scores. However, the results of this study suggest that some mothers experienced growth without any symptoms of trauma. This is consistent with Tedeschi and Calhoun's (1996) research, which noted that people can also experience growth as the result of a self-enhancing cognitive bias, maturational process or following significant positive life changes, which challenge their schemas. In light of this, it may be more helpful to consider these changes as 'personal growth' rather than 'posttraumatic growth'. The term 'personal growth' will therefore be used throughout the remainder of this discussion.

4.2.1 Social support and Total PTG

The total Personal Growth was significantly positively correlated with Friend and Family Support Frequency and Satisfaction, in all forms. Mothers with more frequent and satisfactory emotional support from their partners and more frequent informational support from the community are also more likely to report higher overall levels of Personal Growth. In terms of predictors, the overall level of Personal Growth was significantly and positively predicted by Friend Instrumental Support Frequency and Family Instrumental Support Satisfaction. In contrast, Family Instrumental Support Frequency was a significant negative predictor of overall Personal Growth.

These findings are consistent with both the OVP (Joseph & Linley, 2008) and FDM (Tedeschi & Calhoun, 2014) models in the sense that they highlight the important role of social support in the development of Growth. However, these findings also appear to contradict these models by highlighting that more frequent practical support from family could actually inhibit growth. However, these results could fit with the idea that individuals with lower levels of resources are more likely to exhaust resources, revealing new strengths and resulting in Growth (Joseph and Linley, 2008; Tedeschi & Calhoun, 2014). For example, mothers with high levels of practical support from family may then no longer needs to develop new skills and realise their potential. These findings will be discussed in more detail in the summary and conclusions section of this chapter.

4.2.2 Social support and the 'Relating to Others' dimension

Growth on the dimension of 'Relating to Others' was significantly correlated with Support Frequency and Satisfaction in all types of support, from partners, friends and family; this may be because higher levels of support allow the mother to feel that they can express themselves and rely on others. However, in terms of Community support, only Information Support Frequency appeared

to relate to growth on this dimension; this may be because mothers were less likely to receive other types of support from the community.

Of these variables, Friend Instrumental Support Frequency was the only significant predictor of growth on the dimension of 'Relating to Others'. These findings support both the OVP (Joseph and Linley, 2008) and FDM (Tedeschi & Calhoun, 2014) models, as they highlight the important role of social support in the development of growth. However, they also highlight that not all types and sources of support contribute to growth.

It is possible that, whilst family and partners have always provided a degree of practical support, it is only after going through childbirth that they start to receive practical support from friends and accept that they can rely on others in this way, leading to growth. This idea is consistent with Tedeschi, Park and Calhoun's (2014) suggestion that growth on the 'Relating to others' dimension is likely to be due to mothers developing a greater sense of compassion and connection with others as they find out who they can truly rely on following childbirth.

4.2.3 Social support and the 'New Possibilities' dimension

Growth on the dimension of 'New Possibilities' was significantly correlated with Partner Emotional Support Frequency and Satisfaction and all forms Friend Support Satisfaction. In terms of predictors, growth on this dimension was only significantly and positively predicted by Friend Instrumental Support Frequency and Family Instrumental Support Satisfaction; whereby higher ratings of this type of support led to greater levels of growth on this dimension. In contrast, Family Instrumental Support Frequency was a significant negative predictor of growth on this dimension.

These results suggest that practical support, which is most likely to come from friends and family, may be the most valuable in terms of growth; it is possible that this type of support provides mothers with a break from practical tasks and more time to reflect on their experience, which has been identified as being an important factor for growth in the FDM model (Tedeschi & Calhoun, 2014). In contrast, emotional or informational support, may provide the mother with too much guidance and prevent them from needing to re-evaluate their experiences, abilities and hopes for the future.

4.2.4 Social support and the 'Personal Strength' dimension

Growth on the dimension of 'Personal Strength' was significantly positively correlated with Family Informational Support Frequency and Satisfaction, Family Emotional Support Frequency, Family Instrumental Support Satisfaction, Friend Instrumental Support Satisfaction and Friend Emotional, Instrumental and Informational Support Frequency. However, as with the 'New Possibilities' dimension, only Friend Instrumental Support Frequency and Family Instrumental

Support Satisfaction were significant positive predictors of growth on the dimension of 'Personal Strength'. Tedeschi, Park and Calhoun (2014) suggest that growth on these dimensions is likely to be due to mothers becoming more aware of their vulnerability, whilst also developing a sense of strength from overcoming their experience of childbirth. It is possible that having friends and family help with practical parenting tasks may provide the mother with enough time and space to reflect on their experiences; this may then lead to them becoming more aware of both their vulnerabilities and strengths.

4.2.5 Social support and the 'Spiritual and Existential Change' dimension

Growth on the dimension of 'Spiritual and Existential Change' was significantly positively correlated with Family Informational Support Frequency and Satisfaction, Family Instrumental Support Satisfaction and the Frequency and Satisfaction with support, of all types, from Friends. In terms of predictors, growth on this dimension was significantly positively predicted by Family Instrumental Support Satisfaction and significantly negatively predicted by Partner Instrumental Support Frequency and Community Emotional Support Satisfaction. This contrasts other dimensions, where support from these sources was not considered to be significant.

These results do not support the OVP (Joseph and Linley, 2008) and FDM (Tedeschi & Calhoun, 2014) models, in the sense that they highlight that some forms of support actually inhibit growth. However, as noted previously, these results could fit with the idea that individuals with lower levels of resources are more likely to exhaust resources, revealing new strengths and resulting in Growth (Joseph and Linley, 2008; Tedeschi & Calhoun, 2014). It is possible that having frequent practical support from partners and satisfactory emotional support from the community means that mothers are less likely to need to search for spiritual or existential meaning in their experience and therefore less likely to experience growth on this dimension. Alternatively, as it could be that having higher levels of growth on this dimension means that they are less likely to require these types of support.

4.2.6 Social support and the 'Appreciation of Life' dimension

Growth on the dimension of 'Appreciation of Life' was significantly correlated with Family Informational Support Frequency and Satisfaction, Family Instrumental Support Satisfaction, Friend Instrumental Support Frequency and Friend Informational Support Frequency. In terms of predictors, growth on this dimension was significantly and positively predicted by Friend Instrumental Support Frequency and Family Instrumental Support Satisfaction. In line with all other analyses, frequent instrumental support from family was once again a significant negative predictor of growth on this dimension. It may be that mothers with high levels of practical support from

family do not feel the need to re-examine aspects of their life that they had previously taken for granted and therefore may not experience growth on the dimension of 'Appreciation of Life'.

4.3 Potential cofounding variables

PTSD symptoms, SES, mother's age, the number of children, and the age of the youngest child were all identified as potential cofounding variables and were therefore included in the analysis so that they could be controlled for. This section will be discussing the relationship between each of these variables and Personal Growth and social support.

4.3.1 PTSD symptoms

This research identified that mothers who are younger, from a lower socioeconomic background or not in a relationship are more likely to report higher levels of PTSD symptoms. PTSD symptoms were significantly negatively correlated with Partner Instrumental Support Frequency and Satisfaction, Family Informational Support Satisfaction, Family Instrumental Support Satisfaction, Friend Emotional Support Satisfaction, Friend Informational Support Satisfaction and Friend Instrumental Support Satisfaction.

In terms of the dimensions of growth, PTSD symptoms were a significant negative predictor of growth on the dimension of Personal Strength, possibly because mothers who are struggling to cope with ongoing distress may not feel that they are stronger than before their experience of childbirth. In terms of overall levels of growth, there was no linear relationship between PTSD and the total Personal Growth score. These findings are consistent with some of the previous literature, which identified no significant correlation between PTSD symptoms and total Personal Growth (Sawyer et al., 2009; 2012; 2015; Cordova et al., 2001; 2007; Park et al., 1996; Tedeschi & Calhoun, 1996; Sears et al., 2003; Widows et al., 2005) and supports the idea that Personal Growth and PTSD are separate dimensions rather than polar ends of the same continuum (Tedeschi & Calhoun, 1995, 1998, 2004; Payne, Joseph, & Tudway, 2007; Linley & Joseph, 2004; Baillie, Sellwood & Wisely, 2014; Wu, Xu & Sui, 2016; Zieba, et al., 2019; Purc-Stephenson et al., 2015; Kroemeke et al., 2017).

These findings are consistent with the OVP model (Joseph & Linley, 2005), which suggests that some elements can be accommodated in a negative direction or assimilated, whilst others are accommodated in a positive direction, resulting in simultaneous distress and growth. This idea has been supported by research, demonstrating that assimilation and accommodation can co-occur (Block, 1982) and that PTSD and Personal Growth can co-occur (Payne, Joseph, & Tudway, 2007;

Linley & Joseph, 2004; Baillie, Sellwood & Wisely, 2014; Wu, Xu & Sui, 2016; Zieba, et al., 2019; Purc-Stephenson et al., 2015; Kroemeke et al., 2017).

Other research (Rozen, et al., 2017; Kleim & Ehlers, 2009; Butler et al., 2005; McCaslin et al., 2009) has suggested that this lack of linear relationship between PTSD symptoms and Growth was because there is actually a curvilinear relationship between these variables; whereby low-level distress is not significant enough to cause growth, moderate levels are optimal for growth and high-levels are too overwhelming. However, in contrast, the current study identified no curvilinear relationship. This may be because there was a lack of variation in the IES-R scores, with the majority of mothers reporting low levels of PTSD symptoms. It should be noted that, although many participants did not currently have PTSD symptoms, they may have had symptoms soon after the birth. A prospective study would be better able to capture PTSD symptoms at 1 month following the birth and then determine whether these symptoms were related to Personal Growth at a later point in time. This design would also be a better test of the FDM (Tedeschi, Park & Calhoun, 1995) and OVP (Joseph & Linley, 2005) models as they suggest you need time to process the trauma. It would therefore be helpful to explore this relationship in more detail in future research, with a prospective study and a more varied sample.

4.3.2 Socioeconomic Status

This research suggests that mothers with low socioeconomic status are significantly less likely to be in a relationship and less likely to report frequent and satisfactory instrumental, informational and emotional support from friends. However, this research did not identify any association between socioeconomic status and Personal Growth; this contradicts the existing literature, which suggests that mothers who are unemployed or have lower socioeconomic status are more likely to experience higher levels of Growth (Rozen, et al., 2017; Sawyer, et al., 2011; 2012; Noy, et al., 2015; Taubman-Ben-Ari, et al., 2010). These findings are also inconsistent with the FDM model (Tedeschi, et al., 2014), which suggests that mothers from lower socioeconomic backgrounds are more likely to use up their personal resources, revealing new strengths and resulting in PTG.

These contradictory findings may be because the majority of the sample in the current study identified as Middle Class and the sample was therefore not varied enough for comparisons to be made. It is possible that there were fewer mothers from low socioeconomic status because these mothers were less likely to have the means to access an online questionnaire. It was also hypothesised that mothers with low SES may have struggled with the wording of the questions and therefore been more likely to drop out; however, this was found to be unlikely, as an analysis of the 125 drop outs indicated that only 10 identified as low SES. It is also possible that participants didn't

have a clear understanding of the different class categories as these are socially and culturally constructed concepts that involve many different factors.

4.3.3 Mother's age

This research suggests that younger mothers are more likely to have lower socioeconomic status, fewer children and younger children. Younger mothers are also less likely to have frequent informational support from their friends and be satisfied with any form of support from their friends. The age of the mother was also found to be a significant predictor of the 'New possibilities' and 'Personal Strength' dimensions of Personal Growth, with younger mothers reporting higher levels of growth on these dimensions. This finding is consistent with existing Personal Growth research into childbirth (Sawyer, et al., 2009; 2012; 2015; Taubman-Ben-Ari, et al., 2010) and other traumas (Bellizzi & Blank, 2006; Manne et al., 2004; Butler et al., 2005; Polatinsky & Esprey, 2000; Helgeson et al., 2006; Kinsinger et al., 2006; Linley & Joseph, 2004; Powell et al., 2003), where younger participants reported higher levels of Personal Growth. It should be noted that two previous studies found no significant relationship between age and growth (Noy et al., 2015; Taubman-Ben-Ari & Spielman, 2014); however, these studies focused on premature births and it may be that this experience was sufficiently difficult that it resulted in growth for mothers of all ages, which led to age no longer being considered significant.

A negative correlation between age and Personal Growth is consistent with the FDM model (Tedeschi, et al., 2014), which suggests that younger mothers are more likely to use up their personal resources, revealing new strengths and resulting in Growth. Tedeschi and Calhoun (2004) also hypothesise that this association between age and growth may be because younger individuals are more open to making changes or learning, than older individuals.

4.3.4 Number of children

The number of children was found to be a significant negative predictor of the 'New possibilities' and 'Appreciation of Life' dimensions of Personal Growth, as well as the overall level of Personal Growth, with fewer children being associated with higher levels of growth. Whilst the number of children was significantly correlated to the 'Relating to Others' dimension, this was not found to be a significant predictor of growth on this dimension.

These findings are inconsistent with existing literature, which suggests that being a mother to a previous child was associated with higher levels of Personal Growth, particularly in terms of 'Relating to Others' and 'New Possibilities' (Nishi & Usuda, 2017). However, it should be noted that only a few mothers in this study had more than two or three children, which may have made it more difficult to identify correlations.

It is possible that there is a greater discrepancy between never having experienced birth, to the first experience of birth, compared to the transition from one experience of birth to another. The greater this discrepancy, the greater likelihood that their experience will shatter their assumptions, requiring growth (Tedeschi, et al., 2014).

4.3.5 Age of the youngest child

This research suggest that the older the youngest child is, the less likely the mother is to have frequent emotional support and satisfactory instrumental support from the community. This may be because mothers with older children are less likely to still be receiving support from health visitors or having maternity leave to attend groups.

The age of the youngest child was found to be a significant predictor of the 'Relating to Others', 'New possibilities' and 'Personal Strength' dimensions of Personal Growth, whereby the older the child, the greater the growth on these dimensions. These findings are consistent with existing literature, which suggested that growth is a process that develops over time, with higher ratings of PTG at 24 months following birth, compared to one month after birth (Taubman-Ben-Ari & Speilman, 2014). However, it should be noted that Sawyer (2015) identified no association between the amount of time following the birth and growth.

These findings are compatible with both FDM (Tedeschi & Calhoun, 2014) and OVP (Joseph & Linley, 2005), as the individual needs time to go through a process before achieving growth. For example, the FDM model refers to a series of stages, which are each related to different levels of growth (Tedeschi & Calhoun, 2014).

4.3.6 Relationship status

Relationship status was not significantly correlated with Personal Growth in this research or in the existing literature. This may be because relationship status was not significantly correlated with any of the social support measures, which suggests that mothers with partners do not receive significantly higher levels of support compared to single or separated mothers. The lack of correlation may also be because the majority of the participants were married and there wasn't enough variation for comparisons to be made. Due to the lack of correlation in the matrix and existing literature, this variable was not included in the regression analysis.

4.4 Summary and conclusions

It was initially hypothesised that all sources of support would foster growth, especially support from Family, and that emotional support will be the strongest predictor. This was based on

existing literature, which highlighted that perceived emotional support from the maternal grandmother was associated with Growth (Taubman-Ben-Ari, et al., 2010; Rozen et al., 2017; Noy et al., 2015) and emotional support was more strongly associated with Growth then instrumental support (Noy et al., 2015). This hypothesis was also consistent with the OVP model, where social support is included in the 'sociocultural factors' element (Joseph & Linley, 2005), and the FDM model, where social support helps them move from automatic and distressing rumination to deliberate rumination and growth (Tedeschi & Calhoun, 2014).

The findings of this study highlight the important role of social support in the development of growth, which is consistent with the FDM model (Tedeschi & Calhoun, 1995, 2004, 2014), OVP model (Joseph & Linley, 2005) and previous studies (Cadell, Regehr, & Hemsworth, 2003; Dirik & Karanci, 2008; Senol-Durak & Ayvasik, 2010; Slavin-Spenny, et al., 2011; Smyth, Hockemeyer, & Tulloch, 2008; Ullrich & Lutgendorf, 2002; Nenova, et al., 2013; Ryan & Deci, 2001; Taubman-Ben-Ari et al., 2010; 2012; 2014; 2018; Sawyer, et al., 2009; 2012; 2015; Noy, et al., 2015; Mangelsdorf, 2017; Nishi & Usuda, 2017; Rozen, et al., 2017; Porat-Zyman, et al., 2018; Shenkman, 2018). However, in contrast to these models, this study highlights that only certain sources and types of support foster growth, whereas others can inhibit it.

In this study, Family Instrumental Support Satisfaction was the most significant predictor of growth on all dimensions, except the dimensions of 'Relating to others' and 'Appreciation of Life', where Friend Instrumental Support Frequency was the strongest predictor of growth; these findings suggest that having frequent practical support from friends or satisfactory practical support from family, may lead to higher levels of Personal Growth following childbirth. This may be because having practical support provides mothers with a break from parenting in order to reflect on their experience of birth and motherhood; this rumination can then lead to Growth (Tedeschi & Calhoun, 1995). This type of support is most likely to come from friends and family, which may be why instrumental support from these sources of support were the most significant predictors of Growth.

In contrast, Family Instrumental Support Frequency was a negative predictor of total Personal Growth and dimensions of 'Appreciation of Life' and 'New Possibilities'; this suggests that more frequent support from family can actually inhibit growth on these dimensions. In line with FDM (Tedeschi & Calhoun, 1995, 2004, 2014) and OVP (Joseph & Linley, 2005) models, it is hypothesised that individuals with lower levels of resources, such a less frequent instrumental support from family, are more likely to exhaust resources, revealing new strengths and resulting in PTG. Having too much instrumental support may mean that they are not challenged and therefore don't feel any need to adapt and grow. The contrast between Frequent Instrumental Support from Family inhibiting Growth and Frequent Instrumental Support from Friends fostering Growth may be because frequent support from family is likely to be significantly more intrusive then frequent

support from friends. For example, a friend is likely to come round for a few hours to help, whereas a family member may actually move in for a few weeks to help out with the new baby.

Similarly, more frequent practical support from partners and emotional support from the community inhibited growth on the dimension of 'Spiritual and Existential Change'; these mothers may feel that they have enough resources from their partner or community and therefore not feel the need to search for new spiritual meaning. These findings may explain the inconsistencies in the existing literature, where a relationship was found between social support and Growth in some studies (Taubman-Ben-Ari, et al., 2010; Rozen et al., 2017; Noy et al., 2015) and not others (Sawyer, et al., 2009; 2012; 2014).

It was interesting that community support was not a significant predictor of Growth; this may be because mothers tend to only interact with community sources of support occasionally, such as one hour a week at a baby group. This level of support may therefore have been insufficient to affect the development of Growth. Similarly, partner was not a significant predictor of Growth, apart from inhibiting Growth on the dimension of 'Spiritual and Existential Change'. This may be because partners can be both a source of support and a source of conflict or additional pressure on new mothers, as many relationship become under strain following the addition of a new baby.

It was also interesting that emotional support didn't play a significant role in predicting Growth, as this contradicts previous literature which highlights an association between perceived emotional support from the maternal grandmother and Growth (Taubman-Ben-Ari, et al., 2010; Rozen et al., 2017; Noy et al., 2015). However it should be noted that most of these studies only measured emotional support and did not provide the option of reporting other forms of support; mothers may have therefore reported an overall level of support in this dimension rather than simply emotional support. The only study which differentiated between different types of support was Noy et al (2015), who noted a stronger association between emotional support and growth, compared to instrumental support; however this study only looked at support from the maternal grandmother.

These results also provided an insight into the people and groups that made up the different sources of support. In terms of community support, around half of mothers cited mother and baby groups as their main source of support and the remainder cited a wide range of different sources. In terms of family support, the vast majority of mothers cited their main source of family support as their own mother or sister; it is possible that this is because female family members are more likely to have experience caring for children and therefore volunteer to support with childcare tasks, or may feel more comfortable in certain situations like the mother breast feeding. These findings are supported by previous research (Warren, 2005); however, most previous research has focused on vulnerable populations like first time or adolescent mothers. This paper therefore contributes to the

existing literature by providing further information about sources of support for mothers within the general population.

In summary, it was initially hypothesised that all sources of support would foster growth, with support from Family being the strongest predictor. This hypothesis was partially supported, as Family Instrumental Support Satisfaction was the most significant predictor on most dimensions of PTG. However, these findings also partly contradict this hypothesis, as Family Instrumental Support Frequency was sometimes a negative predictor of Personal Growth; this suggests that more frequent support from family can actually inhibit growth on these dimensions. Furthermore, in most of the analyses, other sources of support were not significant predictors of growth.

In terms of types of support, it was hypothesised that emotional support would be most likely to foster growth; however, this hypothesis was rejected as emotional support was not found to be significant predictor of Personal Growth, apart from the Spiritual and Existential Change dimension, where it was a negative predictor of growth. Instead, Instrumental Support from Friends or Family was the strongest predictor of growth on all dimensions.

In terms of cofounding variables, the age of the youngest child was found to be a significant predictor of the 'Relating to Others', 'New possibilities' and 'Personal Strength' dimensions of PTG; these findings are consistent with FDM (Tedeschi & Calhoun, 2014)**,** OVP (Joseph & Linley, 2005) and existing literature (Taubman-Ben-Ari & Speilman, 2014), which suggests that growth is a process that develops over time

In contrast to existing literature, there was no relationship between Growth and PTSD symptoms (Kleim & Ehlers, 2009; Butler et al., 2005; McCaslin et al., 2009), apart from the dimension of 'Personal Strength', where low PTSD symptoms related to higher PTGI-X scores. There was also no relationship between Growth and age (Sawyer, et al., 2009; 2012; 2015; Taubman-Ben-Ari, et al., 2010; Bellizzi & Blank, 2006; Manne et al., 2004; Butler et al., 2005; Polatinsky & Esprey, 2000; Helgeson et al., 2006; Kinsinger et al., 2006; Linley & Joseph, 2004; Powell et al., 2003) or sociodemographic status (Rozen, et al., 2017; Sawyer, et al., 2011; 2012; Noy, et al., 2015; Taubman-Ben-Ari, et al., 2010). Furthermore, the number of children was found to be a significant negative predictor of the 'New possibilities' and 'Appreciation of Life' dimensions of Growth, which contrasts existing literature (Nishi & Usuda, 2017). However, it should be noted that only a few mothers in this study had more than two or three children, which may have made it more difficult to identify correlations.

Unfortunately there are no recommended cut off points for what constitutes Growth in previous literature or on the PTGI-X measure itself. It was therefore not possible to determine the prevalence of growth. However, the median scores suggest that the majority of mothers reported relatively low levels of Personal Growth; there was a median PTGI-X score of 41.0 (maximum

potential total score of 125) compared to previous research where there were mean total PTG scores of 58.81 (Sawyer & Ayers, 2009), 39.81 (Sawyer et al., 2012) and 65.58 (Taubman-Ben-Ari & Spielman, 2014). In future it would be helpful for the PTGI-X to include recommended cut-off points, in order for more comparisons to be made in research. The remainder of this chapter will explore the strengths, limitations and potential implications for theory, research and clinical practice.

4.5 Strengths of the current study

The social support measure covered multiple aspects of support, including sources, types, frequency and satisfaction; this made it possible to explore social support in much more detail than previous research, which focused on support from the maternal grandmother and often did not differentiate the type of support. This study therefore makes a significant contribution to the existing Personal Growth knowledge base.

All of the questionnaires used likert scales, which were easily quantifiable for the purposes of analysis. This method also allowed participants to respond with a degree of agreement including neutral or undecided views, rather than forcing them to provide a yes or no answer; this means that the answers are more likely to be representative of their actual experience.

These measures were used online, which made it possible to collect data efficiently, with minimal cost and from a wide area; this study included participants from the United Kingdom, United States, Ireland, Canada, Australia, India, France, Netherlands, Belgium and Turkey. The use of online measures and a cross-sectional design allowed for the collection of a large sample, which meant that the analysis was adequately powered.

4.6 Limitations of the current study

These models only accounted for 11 to 23 percent of the variance in Personal Growth, which means that the majority of the variance is still unaccounted for; based on existing literature, it is hypothesised that the additional factors influencing the development of Personal Growth may include cultural differences (McMillen, 2004; Splevins, et al., 2010; Stanton & Low, 2004), personality traits (Mi Young & Yujeong, 2018), history of previous trauma, degree of rumination (Linley & Joseph, 2004; Helgeson et al., 2006), multiple births or premature deliveries (Taubman-Ben-Ari, et al., 2010) and cognitive coping strategies like putting into perspective, positive refocusing, and positive reappraisal (Garnefski, Kraaij, Schroevers & Somsen, 2008). Further research is therefore required to determine the significance of these variables.

Due to the cross-sectional design it was not possible to determine cause and effect in the relationship between social support and Personal Growth; it therefore remains unclear if social support contributes to PTG or is the result of it. It may be that mothers who have experienced Personal Growth may be more likely to actively foster and value relationships, leading to higher levels of reported social support.

Furthermore, although variables like socioeconomic status were included in the regression analysis as potential cofounding variables to be controlled for, there may have been additional cofounding variables which were not taken into account. However, it would not have been practical to include every variable measured in the regression analysis, especially given the number of different dimensions of social support and Personal Growth, as this would have resulted in many more predictor variables which would have included an even larger size for the analysis to be adequately powered.

The measures were self-report ratings and therefore may only be capturing perceived growth rather than real growth (Frazier, Tennen, Gavian, Park, Tomich & Tashiro, 2009); previous studies (Taubman-Ben-Ari, et al., 2012; 2014) have attempted to address this by also getting ratings from family members, however it would have been difficult to recruit both mothers and family members for this research due to the timescale of the thesis. These responses may have also been influenced by demand characteristics, whereby the participants may have attempted to give the answers they thought the researcher wanted, and response fatigue, due to the length of the three questionnaires and the fact that the participants were likely to be sleep deprived, with young babies to look after.

Despite the benefits of likert scales, there may have been a tendency for participants to avoid choosing the extreme ends of the scales or concentrating their responses on one side of the rating scales (Albaum & Murphy, 1988). The lack of free-flow text boxes for qualitative data meant that there was no opportunity to explain their answer in more detail or provide more information. Furthermore, the use of online measures potentially excluded certain mothers from participating, as they might not have had access to the internet; therefore, it may have been helpful to also include the additional option of a postal questionnaire for those who want to be involved but don't have access to the internet.

There were also some issues with the social support measure, which appeared to have good validity and reliability, but had only been used previously in two studies (Hombrados-Mendieta, et al., 2012; García-Martín, Hombrados-Mendieta & Gómez-Jacinto, 2016). As this measure captured multiple sources and types of support, as well as ratings of frequency and satisfaction, there was a great deal of correlation between these variables; this led to high multicollinearity in the regression models. In order to try and address this issue, the items with the highest multicollinearity were removed one-by-one to determine whether this improved the model; however, it was found to result

in very minimal improvement and the removal of multiple variables reduced the ability to draw conclusions about different types and sources of social support. It was therefore concluded that it was best to keep these variables in the model, but note that it should be interpreted with caution due to the high level of multicollinearity. The only variable that was removed from the models was Friend Informational Support Satisfaction variable, as it had a very high VIF score; this aspect of support therefore requires further exploration in the future as it may have been a significant predictor if it was left in the analysis.

One of the main limitations of this study was that there was no minimum IES-R score required for participation even though the focus of the study, PTG, would suggest the presence of a traumatic event prior the experience of Growth. This design was initially chosen so that it would be possible to identify a relationship between PTG and a range of different IES-R scores; however, in retrospect, this meant that not all participants had experienced trauma and it was not possible to draw conclusions about PTG. In light of this, the term Personal Growth has been used instead. This limitation will need to be addressed in future studies.

As discussed previously, the lack of diversity in the sample may have affected the ability to identify a significant relationship between Personal Growth and SES. The majority of the sample identified as Middle Class; this may be because participants didn't have a clear understanding of the different class categories or felt that Middle Class was the most socially-desirable. It may therefore have been helpful to ask participants to record their occupation status or level of income instead. Furthermore, the large proportion of Middle Class participants may be because interest in the study was partly generated through word of mouth, originating with university-educated professionals. It may therefore have been better to specifically advertise in areas with social deprivation.

Although this study has identified growth, it is not possible to determine if this growth is a direct result of childbirth, as it is impossible to separate this experience from their experience of pregnancy and parenting. It should also be noted that, whilst this research has identified predictors of growth, the reasons for these predictors are still unclear and potential reasons can only be hypothesised based on the existing research and models.

4.7 Implications of the current study

4.7.1 Clinical Implications

As noted previously, clinicians should be aware of the potential for growth but also introduce this sensitively, tentatively and not too soon after the trauma (Calhoun & Tedeschi, 1999; Tedeschi, Calhoun & Groleau, 2015). Furthermore, clinicians should explain that they are not suggesting that

the trauma was positive, but rather that something positive has arisen from their struggle; PTG originates from the client and not the trauma (Calhoun & Tedeschi, 1999).

It is recommended that clinicians draw on the 'THRIVE' acronym, which includes Taking stock, Harvesting hope, Re-authoring, Identifying change, Valuing change and Expressing change in action (Joseph, 2012). Similarly, Tedeschi, Calhoun and Groleau (2015) recommend that professionals should take an 'Expert Companion' approach, which emphasises that professional knowledge and human companionship are both important for facilitating growth (Calhoun & Tedeschi, 2013; Tedeschi & Calhoun, 2006). However, these recommendations do not take into account the role of other sources of support and ways to encourage support networks that may facilitate growth. Furthermore, this research has highlighted that support can either foster or inhibit growth depending on its source, type, frequency and level of satisfaction and that this process may be more complicated then identified in previous studies and models. It is therefore important that healthcare professionals are aware of these predictors and encourage specific types and sources of support.

Based on the findings of this thesis it is recommended that health care professionals not only ask about how much support a mother has from her friends and family but also how satisfied she is with this support. If a mother has unsatisfactory support from her family then it may be helpful to discuss whether she would benefit from being able to do more things for herself. Similarly, if a mother is feeling isolated, it may be helpful to encourage her to reach out to people or join mother and baby groups. Furthermore it may be useful for children's centres to establish 'befriending services' where mothers who are looking to make friends can find other mothers in their area; this would be particularly useful for mothers who are too anxious to attend groups.

In addition to this, health professionals could encourage mothers to develop a 'support plan' similar to the way they develop a 'birth plan'; in this plan they could consider who they would like support from, what type of support they would like and how often they think they would need this support. This may vary at different points in the pregnancy, birth and early stages of parenthood. For example, a mother may want a lot of emotional support from her partner during the birth, occasional practical support from her family immediately following the birth and then frequent support from friends after the first few weeks. If a mother is able to reflect on this and share it with her support network during pregnancy, then it may make it easier for her to get the support that she needs in order to experience Personal Growth.

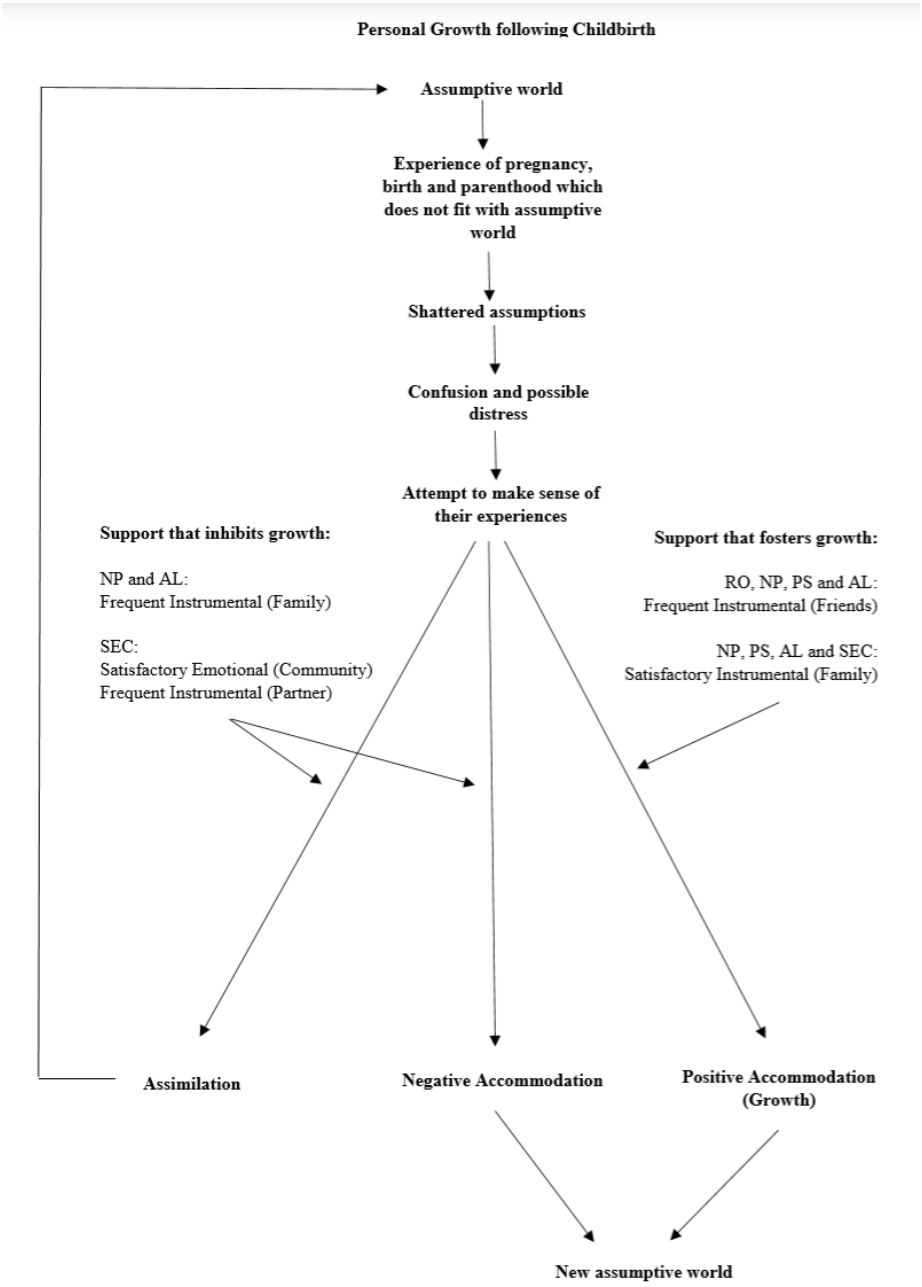
Finding ways to foster Growth following childbirth is important for both the mother and infant; the positive psychological changes she experiences may in turn lead to better attachment with her infant (Bailham & Joseph, 2003) and subsequent improvements in the infant's physical,

social and psychological wellbeing (Glasheen, et al., 2010; O'Donnell, Glover, Barker & O'Connor, 2014; WHO, 2013).

4.7.2 Implications for Theory

These findings support both the OVP (Joseph & Linley, 2005) and FDM (Tedeschi & Calhoun, 2014) models in that they identify the important role of social support in the development of PTG. However, these findings also highlight that this relationship may be more complicated than the models suggest, as some types and sources of support promote growth and others inhibit growth. These models may therefore need to be revised in order to capture this complex relationship.

Furthermore, these models are specifically focused on growth following trauma and do not take into account instances where individuals experience growth following significant positive life events; for example, some mothers experienced growth following childbirth without experiencing the child as traumatic. It may also be useful to have a childbirth-specific model of personal growth, which acknowledges the potential role of pregnancy, birth and parenting in growth as well as the potential for growth to emerge after positive experiences. A proposed childbirth-specific version of Joseph and Linley's (2005) Organismic Valuing Process is outlined in Figure 16.



RO=Relating to Others, NP=New Possibilities, PS=Personal Strength, AL=Appreciation of Life, SEC=Spiritual and Existential Change

Figure 16. A proposed childbirth-specific version of Joseph and Linley's (2005) Organismic Valuing Process.

4.7.3 Implications for future research

In order to assess for a relationship between SES and PTG, it would be beneficial to target a wider range of social classes during recruitment, for example advertising in areas of social deprivation. Furthermore, to accurately identify the participant's SES, it may be more helpful to ask them their occupation status and level of income.

In an attempt to ensure that the measure of PTG is not simply capturing perceived growth, it would be helpful to also ask a family member or partner to also complete the PTG measures; this

method has previously been used in childbirth-related PTG research (Taubman-Ben-Ari, et al., 2012; 2014). It would also be helpful to include qualitative data, to try determine some of the reasons why mothers value certain types and sources of support over others.

Furthermore, to gain a greater understanding of the potential cause and effect relationship between social support and PTG, it would be helpful to use a longitudinal or prospective design where data is collected during pregnancy, after birth and at follow up. This would help researchers to determine whether social support contributed to PTG or was an outcome or mediator of it. However, this may be a challenge due to the time requirements and high drop-out rates associated with this design.

Furthermore, this research identified a range of IES-R scores, indicating that not all mothers experienced birth as traumatic. There was no correlation between PTSD symptoms and total PTG, which means that some people may have experienced PTSD symptoms and low PTG or low PTSD symptoms alongside high levels of PTG. This is consistent with Tedeschi and Calhoun's (1996) research, which identified that people can experience growth without trauma; for example, as the result of a self-enhancing cognitive bias, maturational process or following significant positive life changes, which challenge their schemas. It would therefore be clearer to refer to this growth as 'Personal growth' rather than 'Post-traumatic growth' in future research. Alternatively, there should be a minimum IES-R score for participants to be eligible for this study, in order to ensure that the research is actually examining 'Posttraumatic' Growth. Finally, it would be useful to pilot some of the interventions discussed in the clinical implications section so they can be evaluated in future research in terms of effectiveness.

4.8 Final Summary and Conclusion

This research highlights the complex relationship between social support and Personal Growth. Whereas FDM (Tedeschi & Calhoun, 1995, 2004, 2014) and OVP (Joseph & Linley, 2005) models suggested that all social support will foster growth, this study has identified that only certain dimensions of support contribute to growth and some dimensions may actually inhibit growth. Satisfactory instrumental support from family and frequent instrumental support from friends appeared to result in higher levels of growth on most dimensions, whereas frequent instrumental support from family tended to inhibit growth.

In line with existing models and literature, it was proposed that these findings may be because having practical support provides the mother with a break from parenting tasks and they then have space to deliberately ruminate about their experience; having time to reassess their beliefs and form new schemas can then lead to growth. However, frequent practical support from family

may inhibit growth, as the mother then does not experience the struggle of fulfilling these parenting responsibilities and does not feel a need to grow or change as a result. These explanations are offered tentatively, as they are merely hypotheses based on existing research and models; further Qualitative research is needed to explore how mothers experience these dimensions of support.

Furthermore, these findings can only indicate correlations between these variables and not causation; it is therefore also possible that individuals had more satisfactory practical support from family or frequent practical support from friends as a result of the growth that they had experienced. It may be that mothers who had not experienced growth and were still struggling with high levels of distress required more frequent practical support from their families. Further prospective or longitudinal research is required to understand causation between these variables.

It was also noted that it may be helpful for future research to use the term 'Personal growth' rather than 'Posttraumatic growth'. Many mothers reported low PTSD symptoms, suggesting that they may not have experienced the birth as traumatic. In spite of this, the majority of mothers reported some degree of growth. It is possible that some mothers may experience growth following a positive experience of birth, provided that the experience shattered their assumptions. This idea is consistent with FDM, which refers to a 'seismic event' that can be negative or positive (Tedeschi & Calhoun, 1996). As well as taking into account positive birth experiences, it would be helpful for the model to include pregnancy and parenthood, as the influence of these experiences cannot be separated from the experience of childbirth.

Understandably, many clinicians have been keen to foster growth in individuals, in the hope that it may have positive consequences in their lives; however, this study has highlighted that only certain types of support foster growth and others may actually inhibit growth. Based on these findings, it is recommended that clinicians focus on encouraging practical support from family members, provided that they are satisfactory and low frequency, and frequent practical support from friends. However, future research is needed to develop more comprehensive models of Growth and understand the role support in more detail, to reduce the likelihood that clinicians may end up accidently inhibiting growth.

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Appendix A: Post-traumatic Growth Inventory- Expanded (PTGI-X) (Tedeschi, et al., 2017)

PTGI-X

Indicate for each of the statements below the degree to which this change occurred in your life as a result of your most recent experience of childbirth:

	0= I did not experience this change as a result of childbirth	1= I experienced this change to a very small degree as a result of childbirth	2= I experienced this change to a small degree as a result of childbirth	3= I experienced this change to a moderate degree as a result of childbirth	4= I experienced this change to a great degree as a result of childbirth	5= I experienced this change to a very great degree as a result of childbirth
I changed my priorities about what is important in life.	○	○	○	○	○	○
I have a greater appreciation for the value of my own life.	○	○	○	○	○	○
I developed new interests.	○	○	○	○	○	○
I have a greater feeling of self-reliance	○	○	○	○	○	○
I have a better understanding of spiritual matters.	○	○	○	○	○	○
I more clearly see that I can count on people in times of trouble.	○	○	○	○	○	○
I established a new path for my life.	○	○	○	○	○	○
I have a greater sense of closeness with others.	○	○	○	○	○	○
I am more willing to express my emotions.	○	○	○	○	○	○
I know better that I can handle difficulties.	○	○	○	○	○	○
I am able to do better things with my life.	○	○	○	○	○	○
I am better able to accept the way things work out.	○	○	○	○	○	○
I can better appreciate each day.	○	○	○	○	○	○
New opportunities are available which wouldn't have been otherwise.	○	○	○	○	○	○

I have more compassion for others.	○	○	○	○	○	○
I put more effort into my relationships.	○	○	○	○	○	○
I am more likely to try to change things which need changing.	○	○	○	○	○	○
I have a stronger religious faith.	○	○	○	○	○	○
I discovered that I'm stronger than I thought I was.	○	○	○	○	○	○
I learned a great deal about how wonderful people are.	○	○	○	○	○	○
I better accept needing others.	○	○	○	○	○	○
I have a greater sense of harmony with the world.	○	○	○	○	○	○
I feel more connected with all of existence.	○	○	○	○	○	○
I feel better able to face questions about life and death	○	○	○	○	○	○
I have greater clarity about life's meaning.	○	○	○	○	○	○

PTGI-X Scoring:

1. I changed my priorities about what is important in life. (V)
2. I have a greater appreciation for the value of my own life. (V)
3. I developed new interests. (II)
4. I have a greater feeling of self-reliance. (III)
5. I have a better understanding of spiritual matters. (IV)
6. I more clearly see that I can count on people in times of trouble. (I)
7. I established a new path for my life. (II)
8. I have a greater sense of closeness with others. (I)
9. I am more willing to express my emotions. (I)
10. I know better that I can handle difficulties. (III)
11. I am able to do better things with my life. (II)
12. I am better able to accept the way things work out. (III)
13. I can better appreciate each day. (V)
14. New opportunities are available which wouldn't have been otherwise. (II)
15. I have more compassion for others. (I)
16. I put more effort into my relationships. (I)
17. I am more likely to try to change things which need changing. (II)
18. I have a stronger religious faith. (IV)
19. I discovered that I'm stronger than I thought I was. (III)
20. I learned a great deal about how wonderful people are. (I)
21. I better accept needing others. (I)
22. I have a greater sense of harmony with the world. (IV)
23. I feel more connected with all of existence. (IV)
24. I feel better able to face questions about life and death. (IV)
25. I have greater clarity about life's meaning. (IV)

Note: Scale is scored by totalling all responses. Factors are scored by adding responses to items on each factor. Items to which factors belong are not listed on administered form.

PTGI-X Factors

Factor I: Relating to Others
Factor II: New Possibilities
Factor III: Personal Strength
Factor IV: Spiritual and Existential Change
Factor V: Appreciation of Life

Appendix B: Ethics application

Application for Ethical Approval of Research Involving Human Participants

This application form must be completed for any research involving human participants conducted in or by the University. 'Human participants' are defined as including living human beings, human beings who have recently died (cadavers, human remains and body parts), embryos and foetuses, human tissue and bodily fluids, and human data and records (such as, but not restricted to medical, genetic, financial, personnel, criminal or administrative records and test results including scholastic achievements). Research must not commence until written approval has been received (from departmental Director of Research/Ethics Officer, Faculty Ethics Sub-Committee (ESC) or the University's Ethics Committee). This should be borne in mind when setting a start date for the project. Ethical approval cannot be granted retrospectively and failure to obtain ethical approval prior to data collection will mean that these data cannot be used.

Applications must be made on this form, and submitted electronically, to your departmental Director of Research/Ethics Officer. A signed copy of the form should also be submitted. Applications will be assessed by the Director of Research/Ethics Officer in the first instance, and may then passed to the ESC, and then to the University's Ethics Committee. A copy of your research proposal and any necessary supporting documentation (e.g. consent form, recruiting materials, etc) should also be attached to this form.
A full copy of the signed application will be retained by the department/school for 6 years following completion of the project. The signed application form cover sheet (two pages) will be sent to the Research Governance and Planning Manager in the REO as Secretary of the University's Ethics Committee.

1. Title of project: A Quantitative Analysis of the relationship between Social support and Post-Traumatic Growth in mothers following Childbirth.

2. The title of your project will be published in the minutes of the University Ethics Committee. If you object, then a reference number will be used in place of the title.

   Do you object to the title of your project being published? Yes ☐ / No ☒

3. This Project is: ☐ Staff Research Project ☒ Student Project

4. Principal Investigator(s) (students should also include the name of their supervisor):

Name:	Department:
Danielle Crane	School of Health and Human Sciences
Dr Danny Taggart (Supervisor)	School of Health and Human Sciences
Dr Leanne Andrews (Co-Supervisor)	School of Health and Human Sciences

5. **Proposed start date**: September 2018
6. **Probable duration**: Till 7/4/2020

7. Will this project be externally funded? Yes ☐ / No ☒

   If Yes,

8. What is the source of the funding?

   n/a

9. If external approval for this research has been given, then only this cover sheet needs to be submitted

   External ethics approval obtained (attach evidence of approval) Yes ☐/ No ☒

Declaration of Principal Investigator:

The information contained in this application, including any accompanying information, is, to the best of my knowledge, complete and correct. I/we have read the University's *Guidelines for Ethical Approval of Research Involving Human Participants* and accept responsibility for the conduct of the procedures set out in this application in accordance with the guidelines, the University's *Statement on Safeguarding Good Scientific Practice* and any other conditions laid down by the University's Ethics Committee. I/we have attempted to identify all risks related to the research that may arise in conducting this research and acknowledge my/our obligations and the rights of the participants.

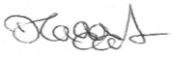
Signature(s): 

Name(s) in block capitals: DANIELLE CRANE

Date: 05/06/18

Supervisor's recommendation (Student Projects only):

I have read and approved the quality of both the research proposal and this application.

Supervisor's signature:  DANNY TAGGART

Outcome:

The departmental Director of Research (DoR) / Ethics Officer (EO) has reviewed this project and considers the methodological/technical aspects of the proposal to be appropriate to the tasks proposed. The DoR / EO considers that the investigator(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in this application, and to deal with any emergencies and contingencies that may arise.

This application falls under Annex B and is approved on behalf of the ESC ☐

This application is referred to the ESC because it does not fall under Annex B ☐

This application is referred to the ESC because it requires independent scrutiny ☐

Signature(s): .....

Name(s) in block capitals: .....

Department: .....

Date: .....

The application has been approved by the ESC ☐

The application has not been approved by the ESC ☐

The application is referred to the University Ethics Committee ☐

Signature(s): .....

Name(s) in block capitals: .....

Faculty: .....

Date: .....

Details of the Project

1. **Brief outline of project** (This should include the purpose or objectives of the research, brief justification, and a summary of methods but should not include theoretical details. It needs to be understandable to a lay person, i.e. in everyday language that is free from jargon, and the reviewer must be able to understand what participants will be asked to do.).

This study aims to examine the relationship between different types and sources of social support and Post-Traumatic Growth (PTG) in mothers following childbirth. This is important as there has been limited research into PTG following childbirth, despite it being a potentially traumatic experience that most women go through. Previous studies have focused almost exclusively on support from Maternal grandmothers and therefore further research is needed to explore other sources of support.

In this study, mothers will be recruited through adverts placed in locations and websites that mothers frequently attend and then snowball sampling will be encouraged, whereby they will be informed that they can invite other eligible mothers to participate. Consenting participants will be asked to complete an online demographic questionnaire, The International Trauma Questionnaire (ITQ) (Cloitre, et al., 2018), Post-traumatic Growth Inventory- Expanded (PTGI-X) (Tedeschi et al., 2017) and The Questionnaire on the Frequency of and Satisfaction with Social Support (QFSSS) (García-Martín, Hombrados-Mendieta & Gómez-Jacinto, 2016). The QFSSS includes ratings for frequency and quality of instrumental support, emotional support and informational support from the partner, friends, family and community. The data will then be analysed using regression analyses to determine if there are any associations between the variables.

Participant Details

2. Will the research involve human participants? (indicate as appropriate)

Yes ☒ No ☐

3. Who are they and how will they be recruited? (If any recruiting materials are to be used, e.g. advertisement or letter of invitation, please provide copies).

Participants will be recruited using adverts placed in locations and websites that mothers frequently use; this will include children's centres, mother-and-baby groups, online parenting forums and social networking websites. The advert will include information about the purpose of the study, what it will involve, eligibility criteria, contact details of the Researcher and the website address for the questionnaires. It will also explain that they have the right to withdraw at any time, their responses will be confidential and the data will be stored securely and anonymously, with a numeric code.

Snowball sampling will also be used, whereby mothers are encouraged to inform other eligible mothers about the study. To encourage participation, all mothers will be given the option of being included in a prize draw for a mother and baby photoshoot following their survey.

To be eligible, participants should be mothers, who are 18 years old or over, have experienced childbirth (i.e. not gained a child through adoption) and should have a child who is between 6 months and 10 years old. This age range was chosen as it provides enough time after the birth for the mother to have experienced growth, but not so long that they would have difficulty remembering the experience.

Will participants be paid or reimbursed?

There will be no costs to participants as they will be completing the measures online and do not need to travel. Participants will be entered into a prize draw for a mother and baby photoshoot.

4. Could participants be considered:

(a) to be vulnerable (e.g. children, mentally-ill)? Yes ☒/ No ☐

(b) to feel obliged to take part in the research? Yes ☐/ No ☒

If the answer to either of these is yes, please explain how the participants could be considered vulnerable and why vulnerable participants are necessary for the research. This study will be open to all eligible mothers, it is therefore possible that some of them may have mental health problems or may be vulnerable due to their experience of a traumatic birth.

Informed Consent

5. Will the participant's consent be obtained for involvement in the research orally or in writing?[1] (If in writing, please attach an example of written consent for approval):

Yes ☒ No ☐

If in writing, please tick to confirm that you have attached an example of written consent ☒

Consent should be obtained before data is collected. How will consent be obtained and recorded? Who will be giving consent? Please indicate at what stage in the data collection process consent will be obtained. If consent is not possible, explain why. The advert and information sheet will clearly detail what the study involves, allowing mothers to make an informed decision about whether to participate. They will be informed that they do not have to participate and have the right to withdraw at any time. Those who would like to participate, will be invited to complete an online consent form prior to any survey questions.

Please attach a participant information sheet where appropriate.

Confidentiality / Anonymity

6. If the research generates personal data, describe the arrangements for maintaining anonymity and confidentiality or the reasons for not doing so.

All information will be anonymous and confidential. The survey site (Qualtrics) does not record IP addresses, names or email addresses of participants and is a secure and confidential system. The survey responses will be password protected and stored on the university M drive. The survey responses should not contain any personal information as participants are specifically asked to identify sources of support in terms of 'brother' or 'friend' rather than using names. In the last question of the survey, participants will be given the option of submitting their email address if they would like to enter the baby photoshoot prize draw. These participant email addresses will only be available to the researchers for the purposes of contacting the winner. All email details will be destroyed following the prize draw.

[1] If the participant is not capable of giving informed consent on their own behalf or is below the age of consent, then consent must be obtained from a carer, parent or guardian. However, in the case of incompetent adults, the law in the United Kindom does not recognize proxy consent by a relative. In addition, the University Ethics Committee is not able to provide ethical approval for such research. It needs to be approved by a Health Research Authority National Research Ethics Service Research Ethics Committee.

Data Access, Storage and Security

7. Describe the arrangements for storing and maintaining the security of any personal data collected as part of the project. Please provide details of those who will have access to the data.

The consent forms and questionnaire responses will be stored separately on the university M drive to ensure that responses remain confidential and secure. All files will be password protected. Only the researcher will have access to these drives. However, the Research Supervisors may request to see the anonymised data.

Data Sharing

8. Do you intend to share or archive data generated from this project?

Yes ☐ No ☒ (If no, please skip to question 10)

If Yes,

Please describe briefly and continue to question 9. (*Relevant considerations include funder, publisher, or other requirements for shared data. If you have completed a data management plan, the section on sharing/archiving may be copied here*.):

9. Please indicate the means by which you intend to share/archive your data:

Openly available from a data repository (*e.g. UK Data Archive, University of Essex Research Data Repository, other repository*)	☐
Available via a data repository but with controlled access (*Examples of access controls include registration with the repository, requesting permission from the depositor, and data access committees.*)	☐
Other (*Please provide details*)	☐

10.

If you answered 'no' to question 8 above, please provide specific reasons why the data will not be made available (*e.g. participants have not consented, sensitivity of the data, intellectual property restrictions, etc.*)
Participants are only consenting for their data to be used in the present study.

It is a requirement of the Data Protection Act 1998 to ensure individuals are aware of how information about them will be managed. Please tick the box to confirm that participants will be informed of the data access, storage and security arrangements described above. If relevant, it is appropriate for this to be done via the participant information sheet ☒

Further guidance about the collection of personal data for research purposes and compliance with the Data Protection Act can be accessed at the following weblink. Please tick the box to confirm that you have read this guidance (http://www.essex.ac.uk/records_management/policies/data_protection_and_research.aspx) ☒

Risk and Risk Management[2]

11. Are there any potential risks (e.g. physical, psychological, social, legal or economic) to participants or subjects associated with the proposed research?

Yes ☒ No ☐

If Yes,

Please provide full details of the potential risks and explain what risk management procedures will be put in place to minimise the risks:
Answering questions about their experience of childbirth could trigger memories that are difficult or traumatic. They will therefore be clear details about what the study involves so they can decide whether they feel able to participate. There will also be a care pathway following the study, where participants are given contact details for the birth trauma association.

12. Are there any potential risks to researchers as a consequence of undertaking this proposal that are greater than those encountered in normal day-to-day life?

Yes ☐ No ☒

If Yes,

Please provide full details and explain what risk management procedures will be put in place to minimise the risks:

13. Will the research involve individuals below the age of 18 or individuals of 18 years and over with a limited capacity to give informed consent?

Yes ☐ No ☒

If Yes, a Disclosure and Barring Service disclosure (DBS check) may be required.[3]

14. Are there any other ethical issues that have not been addressed which you would wish to bring to the attention of the Faculty Ethics Sub-Committee and/or University Ethics Committee.

n/a

[2] Advice on risk assessment is available from the University's Health and Safety Advisers (email safety@essex.ac.uk; tel 2944) and on the University's website at www.essex.ac.uk/health-safety/risk/default.aspx.

[3] Advice on the Disclosure and Barring Service and requirement for checks is available: (1) for staff from Employment Compliance Manager in Human Resources (email staffing@essex.ac.uk) and on the University's website at http://www.essex.ac.uk/hr/policies/docs/CRBdocumentpolicy.pdf; (2) for students from the University's Academic Section.

Ethics Approval: Amendment Request

Name: DANIELLE CRANE **Date:** 25/3/19 **Signature:** 

Description of Amendment:

I was previously planning to use the *PTSD* Checklist for DSM-5 (PCL-5) (Weathers, Litz, Keane, Palmieri, Marx & Schnurr, 2013) to assess for trauma. I have now decided to use the Impact of Events Scale- Revised IES-R (Weiss & Marmar, 1996).

Reason for Amendment:

I discussed various trauma measures with my supervisors and we agreed that the IES-R would be the most appropriate measure for this study. The IES-R has been found to have high internal consistency (alpha=0.96) (Creamer, Bell & Falilla, 2002) and good concurrent and discriminative validity (Beck et al., 2008). This measure has been used in previous studies involving mothers following childbirth (Goutaudier et al., 2012; Denis et al., 2011; Edworthy et al., 2008; Lemola et al., 2007; De Schepper, 2016; Abdollahpour, Khosravi & Bolbolhaghighi, 2016; İsbİr, Incl, Bektaş, Yıldız, & Ayers, 2016) and been found to have high reliability this population (alpha=0.88; alpha=0.94) (Olde, Kleber, van der Hart, & Pop, 2006; Sawyer, 2012).

In Creamer, Bell & Falilla's (2002) study, they noted that correlations among the subscales were higher in a community sample of veterans with varying levels of traumatic stress symptomatology (*N*=154), than in the treatment-seeking sample of veterans with a confirmed PTSD diagnosis (*N*=120); this finding suggests that the IES-R may be sensitive lower levels of symptoms or a more general construct of traumatic stress. As the current study aims to capture these lower levels, the IES-R was considered to be more appropriate than the PTSD Checklist for DSM-5 (PCL-5) (Weathers et al., 2013), which focuses more on the full diagnostic criteria for PTSD in the DSM-5.

References:

Abdollahpour, S., Khosravi, A., & Bolbolhaghighi, N. (2016). The effect of the magical hour on post-traumatic stress disorder (PTSD) in traumatic childbirth: a clinical trial. *Journal of Reproductive and Infant Psychology*, *34*(4), 403-412.

Beck, J. G., Grant, D. M., Read, J. P., Clapp, J. D., Coffey, S. F., Miller, L. M., & Palyo, S. A. (2008). The Impact of Event Scale-Revised: Psychometric properties in a sample of motor vehicle accident survivors. *Journal of anxiety disorders*, *22*(2), 187-198.

Creamer, M. Bell, R. & Falilla, S. (2002). Psychometric properties of the Impact of Event ScaleRevised. *Behaviour Research and Therapy. 41*: 1489-1496.

De Schepper, S., Vercauteren, T., Tersago, J., Jacquemyn, Y., Raes, F., & Franck, E. (2016). Post-Traumatic Stress Disorder after childbirth and the influence of maternity team care during labour and birth: A cohort study. *Midwifery*, *32*, 87-92.

Denis, A., Parant, O. & Callahan, S. (2011). Post-traumatic stress disorder related to birth: a prospective longitudinal study in a French population. Journal of Reproductive and Infant Psychology, 29, 125-135.

Edworthy, Z., Chase, R. & Williams, H. (2008). The role of schema and appraisals in the development of post-traumatic stress symptoms following birth. Journal of Reproductive and Infant Psychology, 26, 123-138

İsbİr, G. G., İncİ, F., Bektaş, M., Yıldız, P. D., & Ayers, S. (2016). Risk factors associated with post-traumatic stress symptoms following childbirth in Turkey. *Midwifery*, *41*, 96-103.

Goutaudier, N., Sejoune, N., Rousset, C., Lami, C., & Chabrol, H. (2012). Negative emotions, childbirth pain, perinatal dissociation and self-efficacy as predictors of postpartum posttraumatic stress symptoms. Journal of Reproductive and Infant Psychology, 30(4), 352-362. doi: 10.1080/02646838.2012.738415

Lemola, S., Stadlmayr, W., & Grob, A. (2007). Maternal adjustment five months after birth: the impact of the subjective experience of childbirth and emotional support from the partner. Journal of Reproductive and Infant Psychology, 25(3), 190-202

Olde, E., Kleber, R. J., van der Hart, O., & Pop, V. J. (2006). Childbirth and posttraumatic stress responses: a validation study of the Dutch impact of event scale–revised. *European Journal of Psychological Assessment*, *22*(4), 259-267.

Sawyer, A. E., Ayers, S., Young, D., Bradley, R., & Smith, H. (2012). Posttraumatic growth after childbirth: A prospective study. *Psychology & Health, 27* (3), pp. 362-377.

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). The PTSD Checklist for DSM-5 (PCL-5) – Standard [Measurement instrument]. Available from http://www.ptsd.va.gov/

Weiss, D. S., & Marmar, C. R. (1996). The Impact of Event Scale - Revised. In J. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD*. pp. 399-411. New York: Guilford.

(For office use only)

The amendment has been approved ☐

The amendment has not been approved ☐

Resubmission required ☐

Signature:

Name (in block capitals):

Department:

Date:

Appendix C: Advert

Would you like to participate in a study about your experiences following childbirth?

We are looking for **mothers of 6 to 18 months old children** to participate in a study examining the role of social support in the development of post-traumatic growth following childbirth.

This will involve completing 3 **online questionnaires** about:

1. Any distress you've experienced following childbirth
2. Any positive changes you've experienced following childbirth
3. Any support you've received from friends, family and groups

All data will be anonymised and kept confidential.

You do not have to participate and can withdraw your consent at any time.

If you would like to participate, please visit:

www.websitelink.com

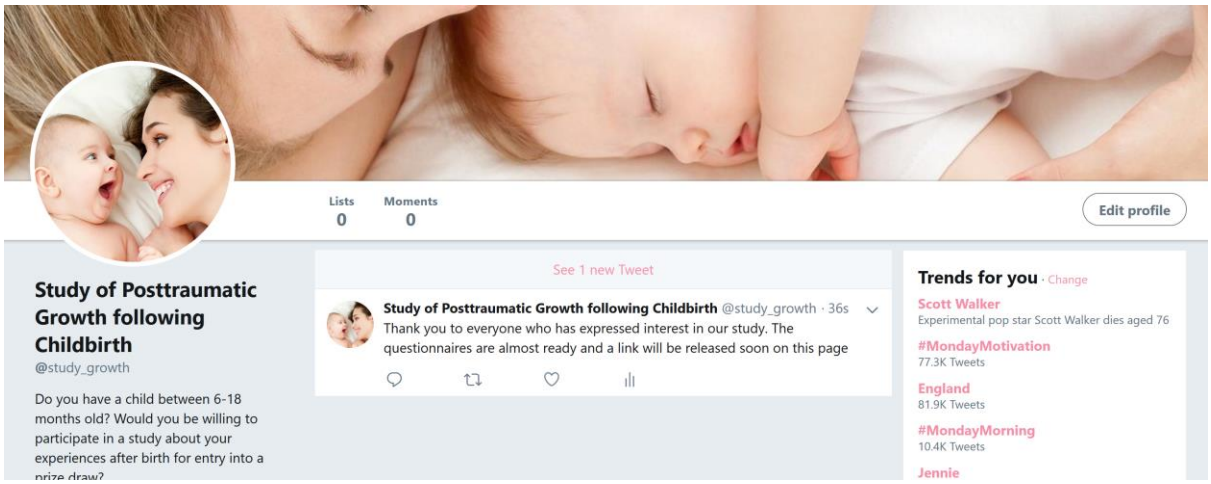
If you have any questions please contact:

Danielle Crane: Trainee Clinical Psychologist at Essex University

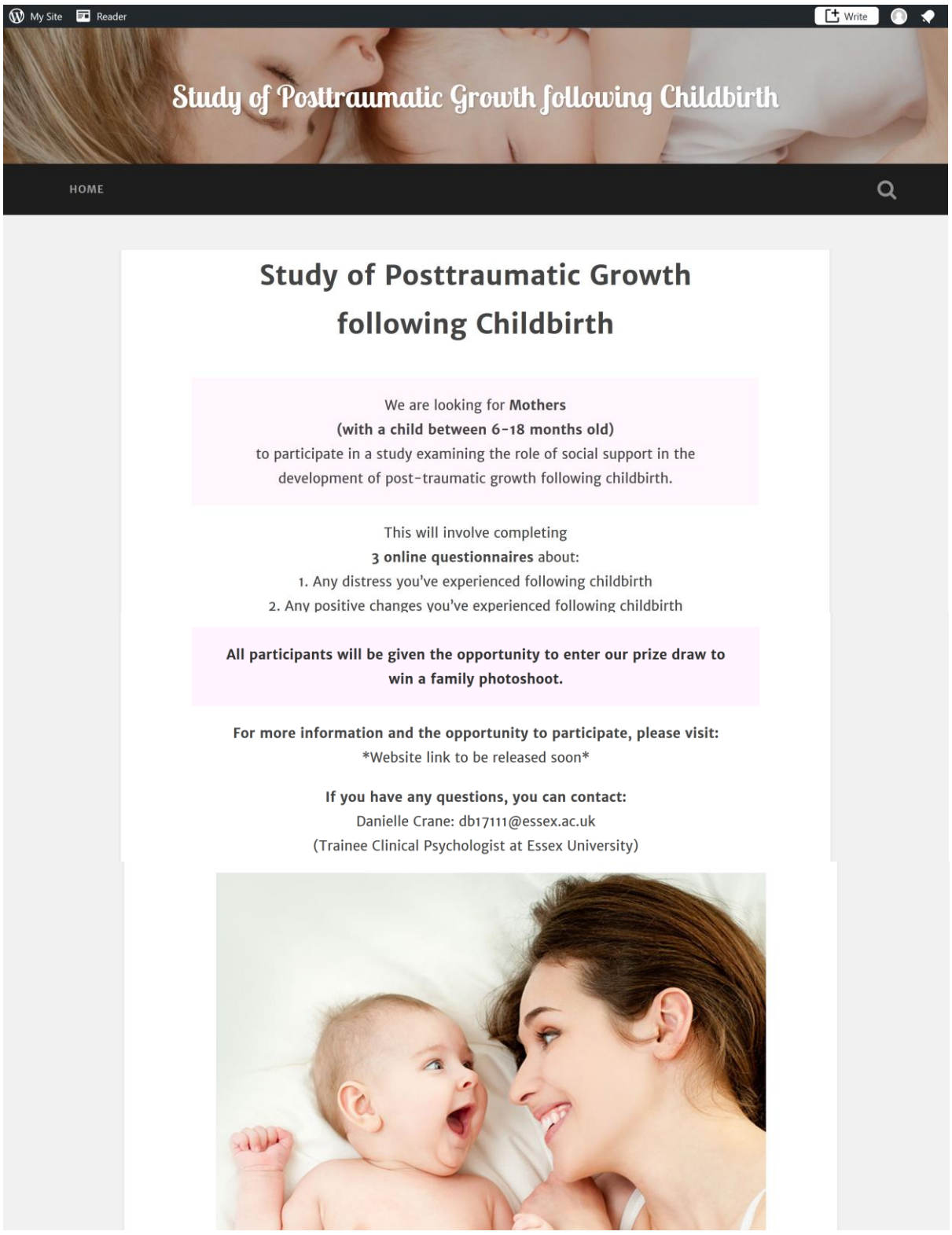
Email: db17111@essex.ac.uk

University of Essex

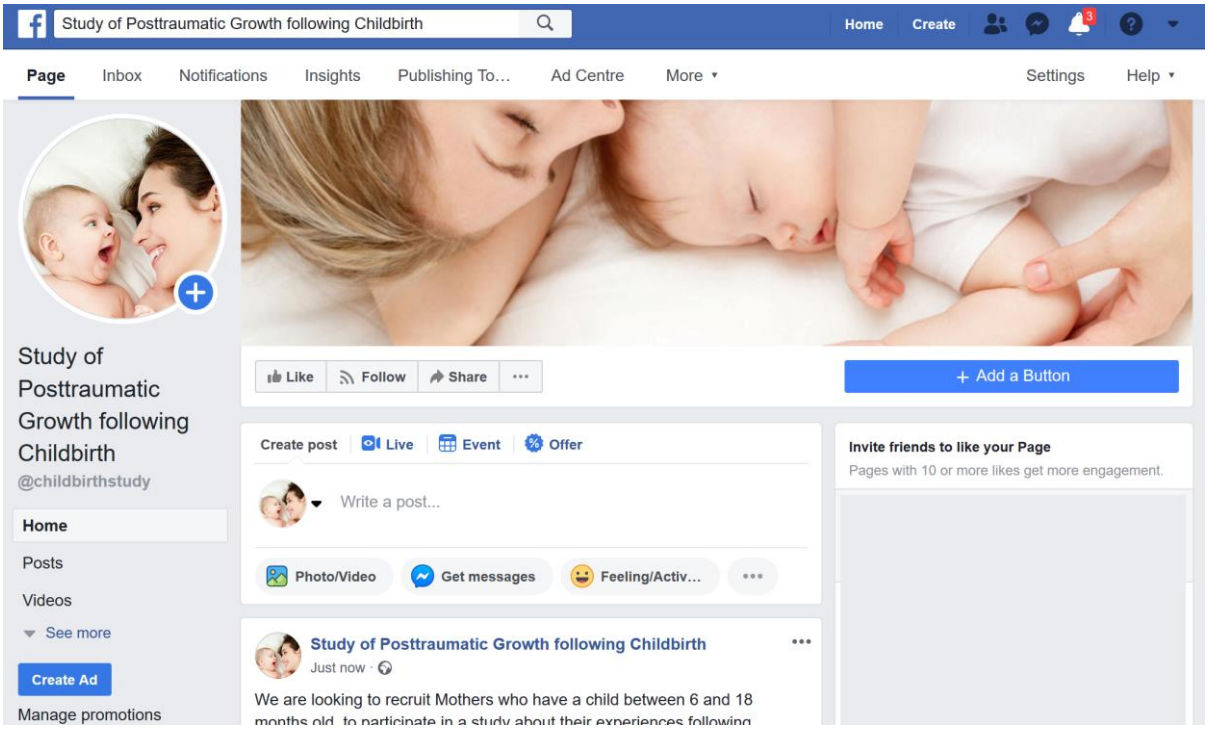
Appendix D: Twitter promotion



Appendix E: Wordpress promotion



Appendix F: Facebook promotion



Appendix G: Online Information Sheet and Consent Form

Title of the Project:

A Quantitative Analysis of the relationship between Social Support and Post-Traumatic Growth in mothers following Childbirth.

Invitation to our study:

If you have given birth to a child in the last 6 to 18 months, then we would like to invite you to participate in an online survey about Social Support and Posttraumatic Growth following Childbirth.

Background to the project:

We are examining whether certain sources and types of social support are associated with post-traumatic growth following childbirth. Post-traumatic growth is a term used to describe positive psychological change following a traumatic experience; this can include emotional growth, feeling stronger, closer relationships and a greater appreciation for life. These positive changes can occur at the same time as negative effects and post-traumatic stress disorder.

Participation and informed consent:

Your participation in this survey is voluntary. Before you decide whether you want to take part, it is important to read through all of the information we have provided. You may email the researcher (see below) if you have any questions. Should you agree to take part in this study, you will be asked to complete a consent form before completing the questionnaires.

Research Method:

The project will involve completing an online consent form and a few demographic questionnaire about your age, country of residency, number of children, age of your youngest child and sociodemographic status. You will then be invited to complete the following questionnaires:

- **The Impact of Events Scale-Revised (IES-R):** This involves rating 22 statements on a scale of 0-4 based on how much you agree with them.

- **The Post-traumatic Growth Inventory (PTGI-X):** This involves rating 25 statements on a scale of 0-5, based on how strongly you feel the statement applies to you.

- **The Questionnaire on the frequency and satisfaction with social support (QFSSS):** This involves rating how often you receive emotional, instrumental and informational support from your partner, friends, family and community and how satisfied you are with this support.

This survey should take approximately 15 minutes to complete.

Confidentiality

Your survey answers will be collected through Qualtrics, a secure and confidential system, which does not identify your name, email address or IP address. Therefore, your responses will remain anonymous.

The data will then be stored in password protected electronic files only accessible to the researcher and the two research supervisors.

In the last question of the survey, participants will be given the option of submitting their email address if they would like to enter the baby photoshoot prize draw. These email addresses will only be available to the researchers for the purposes of contacting the winner. All email details will be destroyed following the prize draw.

Findings

After the end of the project, the findings will be written as a Doctoral Thesis. We will be happy to provide you with a copy of this thesis or a lay summary of the main findings if you express an interest.

Benefits

All participants will be invited to enter our baby photoshoot prize draw at the end of their survey.

Potential risks

Answering questions about childbirth may trigger difficult or traumatic memories for some participants. There are contact details below for services who can provide you with support if you feel you would like someone to talk to.

Withdrawal

You may refuse to take part in the research or exit the survey at any time without penalty. Incomplete survey responses will be removed automatically. Due to the anonymous nature of your responses, we will not be able to remove your data once it has been submitted.

Concerns and complaints

If you have any concerns about any aspect of the study or you have a complaint, in the first instance please contact Danielle Crane (Principal investigator). If are still concerned or you think your complaint has not been addressed to your satisfaction, please contact Dr Frances Blumenfeld (Clinical Director for the Doctorate in Clinical Psychology). If you are still not satisfied, please contact the University's Research Governance and Planning Manager (Sarah Manning-Press).

Funding

The research is not funded

Ethical approval

This project has been reviewed on behalf of the University of Essex Ethics Committee and had been given approval.

Contact details

Principal investigator
Danielle Crane (Trainee Clinical Psychologist), School of Health and Social Care, University of Essex, Wivenhoe Park, CO4 3SQ. Email: db17111@essex.ac.uk.

Academic Supervisors
Dr Danny Taggart, School of Health and Social Care, University of Essex, Wivenhoe Park, CO4 3SQ, Email: dtaggart@essex.ac.uk. Phone: 01206 874100
Dr Leanne Andrews, School of Health and Social Care, University of Essex, Wivenhoe Park, CO4 3SQ, Email: landre@essex.ac.uk. Phone: 01206 874466

Clinical Director for the Doctorate in Clinical Psychology
Dr Frances Blumenfeld, University of Essex, Wivenhoe Park, CO4 3SQ,
Email: fblume@essex.ac.uk. Phone: 01206 873125

University of Essex Research Governance and Planning Manager
Sarah Manning-Press, Research & Enterprise Office, University of Essex, Wivenhoe Park, CO4 3SQ. Colchester. Email: sarahm@essex.ac.uk. Phone: 01206-873561

Sources of Support

In addition to contacting the researcher, the following services are available if you would like any support for childbirth-related trauma:

Birth Trauma Association: http://www.birthtraumaassociation.org.uk/

Mind: https://www.mind.org.uk/information-support/types-of-mental-health-problems/postnatal-depression-and-perinatal-mental-health/ptsd-and-birth-trauma/#.WztlkSCQw2w

Postnatal PTSD or Birth Trauma – Pandas Foundation UK:
http://www.pandasfoundation.org.uk/postnatal-ptsd-or-birth-trauma/

Babycentre: https://www.babycentre.co.uk/a1011239/how-to-recover-after-a-traumatic-birth

NHS website: https://www.nhs.uk/conditions/pregnancy-and-baby/feeling-depressed-after-birth/#postnatal-post-traumatic-stress-disorder-ptsd

PTSD alliance: http://www.ptsdalliance.org/

Your GP can also provide support and a referral to local services.

Electronic consent:

Please select your choice below. You may print a copy of this consent form for your records. Clicking on the "Agree" button indicates that:

- You are 18 years of age or older
- You have read and understood the information above
- You have been given the opportunity to ask questions by emailing the researcher
- You understand that, due to the nature of the topic, some individuals may find the questions trigger difficult memories of the childbirth.
- You understand that your information will be securely stored and accessible only to the members of the research team directly involved in the project, and that confidentiality will be maintained.
- You understand that data collected in this project might be published, in which case you will remain completely anonymous.
- You are aware that you have the right to withdraw at any time without giving any reason and without penalty.
- You voluntarily agree to participate in this study

☐ Agree

☐ Disagree

Appendix H: Online Demographic questions

Demographics

D1 Please state your country of residence:

D2 Please state your age in years:

D3 Please state the number of children you have given birth to:

D4 Please state the age of your youngest child in months:

D5 Please select your marital status:

- Single
- Married
- Separated
- Divorced
- Widowed
- Partnered

D6 Please select your Socio economic status:

- Low
- Middle
- High

Appendix I: Impact of Events Scale-Revised IES-R (Weiss & Marmar, 1996)

Impact of Events Scale-Revised

IES-R

Below is a list of difficulties people sometimes experience after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you DURING THE PAST SEVEN DAYS with respect to YOUR MOST RECENT EXPERIENCE OF CHILDBIRTH. How much have you been distressed or bothered by these difficulties?

	0 Not at all	1 A little bit	2 Moderately	3 Quite a bit	4 Extremely
1. Any reminder brought back feelings about it	○	○	○	○	○
2. I had trouble staying asleep	○	○	○	○	○
2. Other things kept making me think about it	○	○	○	○	○
4. I felt irritable and angry	○	○	○	○	○
5. I avoided letting myself get upset when I thought about it or was reminded of it	○	○	○	○	○
6. I thought about it when I didn't mean to	○	○	○	○	○
7. I felt as if it hadn't happened or wasn't real	○	○	○	○	○
8. I stayed away from reminders of it	○	○	○	○	○
9. Pictures of it popped into my mind	○	○	○	○	○
10. I was jumpy and easily startled	○	○	○	○	○
11. I tried not to think about it	○	○	○	○	○
12. I was aware that I still had a lot of feelings about it, but I didn't deal with them	○	○	○	○	○
13. My feelings about it were kind of numb	○	○	○	○	○
14. I found myself acting or feeling like I was back at that time	○	○	○	○	○

15. I had trouble falling asleep	○	○	○	○	○
16. I had waves of strong feelings about it	○	○	○	○	○
17. I tried to remove it from my memory	○	○	○	○	○
18. I had trouble concentrating	○	○	○	○	○
19. Reminders of it caused me to have physical reactions, such as sweating trouble breathing, nausea, or a pounding heart	○	○	○	○	○
20. I had dreams about it	○	○	○	○	○
21. I felt watchful and on-guard	○	○	○	○	○
22. I tried not to talk about it	○	○	○	○	○

Appendix J: Questionnaire on the Frequency of and Satisfaction with Social Support (QFSSS) (García-Martín, et al., 2016)

Questionnaire on the Frequency of and Satisfaction with Social Support QFSSS

S1 **The next questions relate to your support network:**

Do you have a partner?

- ○ Yes
- ○ No

Condition: No Is Selected. Skip To: The next question will be about suppo....

S2 **Partner Support: FREQUENCY:**

How often do you recieve support from your Partner?

	Rarely	Sometimes	Quite often	Almost always	Always
EMOTIONAL SUPPORT: your partner is loving, affectionate and listens to you when you want to talk and express your feelings.	○	○	○	○	○
INSTRUMENTAL SUPPORT: Would do you a favour if needed or is willing to do specific things for you, such as providing money, taking you to the doctor or helping you in any other activity	○	○	○	○	○
INFORMATIONAL SUPPORT: Gives you useful advice and information regarding questions, problems or daily tasks	○	○	○	○	○

S3 **Partner Support: SATISFACTION:**

How satisfied are you with the support you recieved?

	Dissatisfied	Barely satisfied	Fairly satisfied	Quite satisfied	Very satisfied
EMOTIONAL SUPPORT: your partner is loving, affectionate and listens to you when you want to talk and express your feelings.	○	○	○	○	○

INSTRUMENTAL SUPPORT: Would do you a favour if needed or is willing to do specific things for you, such as providing money, taking you to the doctor or helping you in any other activity	○	○	○	○	○
INFORMATIONAL SUPPORT: Gives you useful advice and information regarding questions, problems or daily tasks	○	○	○	○	○

S4

The next question will be about support from a family member. Please state who you will be referring to using their role (eg Sister) rather than their name.

S5

Family Support: FREQUENCY:

How often do you recieve support from your Family?

	Rarely	Sometimes	Quite often	Almost always	Always
EMOTIONAL SUPPORT: your partner is loving, affectionate and listens to you when you want to talk and express your feelings.	○	○	○	○	○
INSTRUMENTAL SUPPORT: Would do you a favour if needed or is willing to do specific things for you, such as providing money, taking you to the doctor or helping you in any other activity	○	○	○	○	○
INFORMATIONAL SUPPORT: Gives you useful advice and information regarding questions, problems or daily tasks	○	○	○	○	○

S6

Family Support: SATISFACTION:

How satisfied are you with the support you recieved?

	Dissatisfied	Barely satisfied	Fairly satisfied	Quite satisfied	Very satisfied
EMOTIONAL SUPPORT: your partner is loving, affectionate and listens to you when you want to talk and express your feelings.	○	○	○	○	○
INSTRUMENTAL SUPPORT: Would do you a favour if needed or is willing to do specific things for you, such as providing money, taking you to the doctor or helping you in any other activity	○	○	○	○	○
INFORMATIONAL SUPPORT: Gives you useful advice and information regarding questions,	○	○	○	○	○

S7

Friend Support: FREQUENCY:

How often do you recieve support from your Friends?

	Rarely	Sometimes	Quite often	Almost always	Always
EMOTIONAL SUPPORT: your partner is loving, affectionate and listens to you when you want to talk and express your feelings.	○	○	○	○	○
INSTRUMENTAL SUPPORT: Would do you a favour if needed or is willing to do specific things for you, such as providing money, taking you to the doctor or helping you in any other activity	○	○	○	○	○
INFORMATIONAL SUPPORT: Gives you useful advice and information regarding questions, problems or daily tasks	○	○	○	○	○

S8

Friend Support: SATISFACTION:

How satisfied are you with the support you recieved?

	Dissatisfied	Barely satisfied	Fairly satisfied	Quite satisfied	Very satisfied
EMOTIONAL SUPPORT: your partner is loving, affectionate and listens to you when you want to talk and express your feelings.	○	○	○	○	○
INSTRUMENTAL SUPPORT: Would do you a favour if needed or is willing to do specific things for you, such as providing money, taking you to the doctor or helping you in any other activity	○	○	○	○	○
INFORMATIONAL SUPPORT: Gives you useful advice and information regarding questions,	○	○	○	○	○

problems or daily tasks

S9

Community Support: FREQUENCY:

How often do you recieve support from your Community?

	Rarely	Sometimes	Quite often	Almost always	Always
EMOTIONAL SUPPORT: your partner is loving, affectionate and listens to you when you want to talk and express your feelings.	○	○	○	○	○
INSTRUMENTAL SUPPORT: Would do you a favour if needed or is willing to do specific things for you, such as providing money, taking you to the doctor or helping you in any other activity	○	○	○	○	○
INFORMATIONAL SUPPORT: Gives you useful advice and information regarding questions, problems or daily tasks	○	○	○	○	○

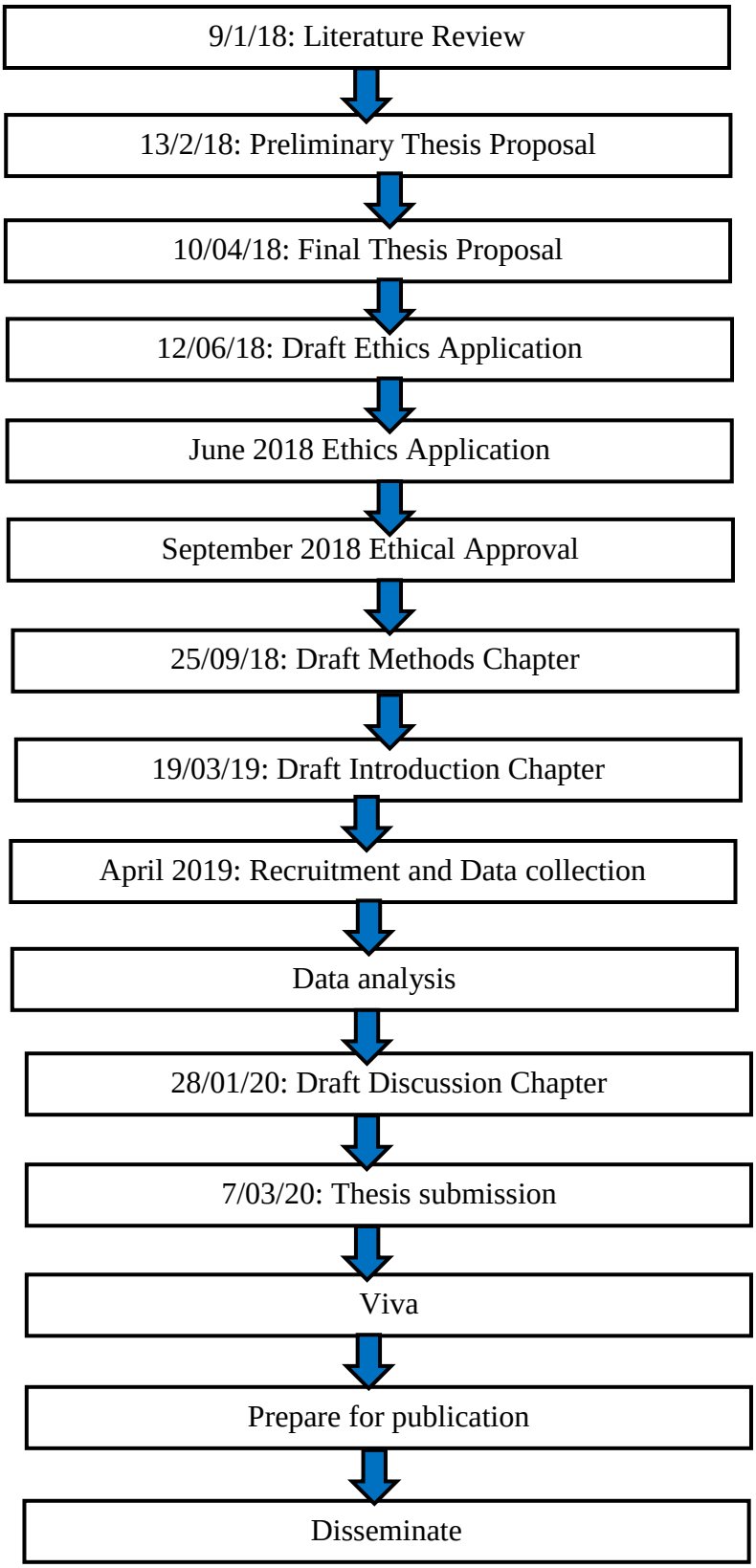
S10

Community Support: SATISFACTION:

How satisfied are you with the support you recieved?

	Dissatisfied	Barely satisfied	Fairly satisfied	Quite satisfied	Very satisfied
EMOTIONAL SUPPORT: your partner is loving, affectionate and listens to you when you want to talk and express your feelings.	○	○	○	○	○
INSTRUMENTAL SUPPORT: Would do you a favour if needed or is willing to do specific things for you, such as providing money, taking you to the doctor or helping you in any other activity	○	○	○	○	○
INFORMATIONAL SUPPORT: Gives you useful advice and information regarding questions, problems or daily tasks	○	○	○	○	○

Appendix K: Timetable Flowchart



Appendix L: CASP cohort study checklist (CASP, 2018b)

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CASP Checklist: 12 questions to help you make sense of a Cohort Study

How to use this appraisal tool: Three broad issues need to be considered when appraising a cohort study:

- Are the results of the study valid? (Section A)
- What are the results? (Section B)
- Will the results help locally? (Section C)

The 12 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is "yes", it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a "yes", "no" or "can't tell" to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA 'Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

For each new checklist, a group of experts were assembled to develop and pilot the checklist and the workshop format with which it would be used. Over the years overall adjustments have been made to the format, but a recent survey of checklist users reiterated that the basic format continues to be useful and appropriate.

Referencing: we recommend using the Harvard style citation, i.e.: *Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Cohort Study) Checklist. [online] Available at: URL. Accessed: Date Accessed.*

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Paper for appraisal and reference:.....

Section A: Are the results of the study valid?

1. Did the study address a clearly focused issue?

Yes	
Can't Tell	
No	

HINT: A question can be 'focused' in terms of
- the population studied
- the risk factors studied
- is it clear whether the study tried to detect a beneficial or harmful effect
- the outcomes considered

Comments:

2. Was the cohort recruited in an acceptable way?

Yes	
Can't Tell	
No	

HINT: Look for selection bias which might compromise the generalisability of the findings:
- was the cohort representative of a defined population
- was there something special about the cohort
- was everybody included who should have been

Comments:

Is it worth continuing?

3. Was the exposure accurately measured to minimise bias?

Yes	
Can't Tell	
No	

HINT: Look for measurement or classification bias:

- did they use subjective or objective measurements
- do the measurements truly reflect what you want them to (have they been validated)
- were all the subjects classified into exposure groups using the same procedure

Comments:

4. Was the outcome accurately measured to minimise bias?

Yes	
Can't Tell	
No	

HINT: Look for measurement or classification bias:

- did they use subjective or objective measurements
- do the measurements truly reflect what you want them to (have they been validated)
- has a reliable system been established for detecting all the cases (for measuring disease occurrence)
- were the measurement methods similar in the different groups
- were the subjects and/or the outcome assessor blinded to exposure (does this matter)

Comments:

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5. (a) Have the authors identified all important confounding factors?

Yes ☐
Can't Tell ☐
No ☐

HINT:
- list the ones you think might be important, and ones the author missed

Comments:

5. (b) Have they taken account of the confounding factors in the design and/or analysis?

Yes ☐
Can't Tell ☐
No ☐

HINT:
- look for restriction in design, and techniques e.g. modelling, stratified-, regression-, or sensitivity analysis to correct, control or adjust for confounding factors

Comments:

6. (a) Was the follow up of subjects complete enough?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- the good or bad effects should have had long enough to reveal themselves
- the persons that are lost to follow-up may have different outcomes than those available for assessment
- in an open or dynamic cohort, was there anything special about the outcome of the people leaving, or the exposure of the people entering the cohort

6. (b) Was the follow up of subjects long enough?

Yes ☐
Can't Tell ☐
No ☐

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Comments:

Section B: What are the results?

7. What are the results of this study?

HINT: Consider
- what are the bottom line results
- have they reported the rate or the proportion between the exposed/unexposed, the ratio/rate difference
- how strong is the association between exposure and outcome (RR)
- what is the absolute risk reduction (ARR)

Comments:

8. How precise are the results?

HINT:
- look for the range of the confidence intervals, if given

Comments:

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9. Do you believe the results?

Yes	
Can't Tell	
No	

HINT: Consider
- big effect is hard to ignore
- can it be due to bias, chance or confounding
- are the design and methods of this study sufficiently flawed to make the results unreliable
- Bradford Hills criteria (e.g. time sequence, dose-response gradient, biological plausibility, consistency)

Comments:

Section C: Will the results help locally?

10. Can the results be applied to the local population?

Yes	
Can't Tell	
No	

HINT: Consider whether
- a cohort study was the appropriate method to answer this question
- the subjects covered in this study could be sufficiently different from your population to cause concern
- your local setting is likely to differ much from that of the study
- you can quantify the local benefits and harms

Comments:

11. Do the results of this study fit with other available evidence?

Yes	
Can't Tell	
No	

Comments:

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12. What are the implications of this study for practice?

Yes	
Can't Tell	
No	

HINT: Consider
- one observational study rarely provides sufficiently robust evidence to recommend changes to clinical practice or within health policy decision making
- for certain questions, observational studies provide the only evidence
- recommendations from observational studies are always stronger when supported by other evidence

Comments:

Appendix M: Appraisal tool for Cross-Sectional Studies (AXIS) (Downes, Brennan, Williams & Dean, 2016)

		Yes	No	Do not know/comment
Introduction				
1	Were the aims/objectives of the study clear?			
Methods				
2	Was the study design appropriate for the stated aim(s)?			
3	Was the sample size justified?			
4	Was the target/reference population clearly defined? (Is it clear who the research was about?)			
5	Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?			
6	Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?			
7	Were measures undertaken to address and categorise non-responders?			
8	Were the risk factor and outcome variables measured appropriate to the aims of the study?			
9	Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trialled, piloted or published previously?			
10	Is it clear what was used to determined statistical significance and/or precision estimates? (eg, p values, CIs)			
11	Were the methods (including statistical methods) sufficiently described to enable them to be repeated?			
Results				
12	Were the basic data adequately described?			
13	Does the response rate raise concerns about non-response bias?			
14	If appropriate, was information about non-responders described?			
15	Were the results internally consistent?			
16	Were the results for the analyses described in the methods, presented?			
Discussion				
17	Were the authors' discussions and conclusions justified by the results?			

		Yes	No	Do not know/comment
18	Were the limitations of the study discussed?			
Other				
19	Were there any funding sources or conflicts of interest that may affect the authors' interpretation of the results?			
20	Was ethical approval or consent of participants attained?			