

**The Relationship Between Infant Temperament
and Maternal Self-efficacy, Perceived Stress Level
and General Well-being**

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Abstract

The aim of the current study was to investigate whether infant temperament determines first-time mother's self-efficacy, perceived stress level and general well-being. Further, the research was trying to find if mothers who breast-fed their infants perceived lower level of stress than mother's who bottle-fed their infants. This study was correlational and descriptive in nature and was based on quantitative cross-sectional design. A questionnaire combining Infant Characteristics Scale, Maternal Self-Efficacy Scale, Perceived Stress Level Scale, General Health Scale and demographic questions (age, education, marital status, employment status and the method of how the baby was fed) was created as the on line survey. 233 mothers participated in the on line survey. The results indicated that the more difficult the infant the lower maternal self-efficacy, the higher perceived stress level and the lower general well-being. Furthermore it was found that mothers who breast-fed their infants did not report lower stress levels than mothers who bottle-fed their infants. Findings from this study indicate the importance of supporting first-time mothers in their transition into parenthood. Keywords: infant temperament, self-efficacy, stress, well-being.

Introduction

Modern evolutionary psychologists position parenting at the top of the pyramid of human needs, reflecting its central role in human life (Kenrick, Griskevicius, Neuberg & Schaller, 2010).

Becoming a mother for the first time is a major developmental transition of adulthood (Hardwood, McLean & Durkin, 2007) and change is an inevitable element of that process. The transition to motherhood is influenced by mothers' own beliefs in their capabilities as new mothers. This can influence mothers' mental health and well-being (Choenarom, Williams & Hegerty, 2005).

For many people the birth of a child is a long desired event that is associated with many positive consequences. Caring for a newborn can be a joyful event that comes with new responsibilities and burdens often related to juggling the needs of the child with personal needs of the mother and the family (McGrath, Records & Rice, 2008). However, it also involves stress and hassle (Dyrdal & Lucas, 2012). For the first-time mothers with no experience in performing child care routines, difficult infant temperament might cause lower self-efficacy perception, increased stress level and lower general well-being. Further, this may lead to parental conflicts, to maternal depression and has serious consequences on child cognitive, social and behavioural development.

The question how infant temperament affects first time mother's self-efficacy, perceived stress level and general well-being seems to be important field to investigate. Previous research in this area focused mostly on mother's depression and its impact on infant, on self-efficacy but in relation to social and marital support. Research which

investigates first time mothers' self-efficacy, perceived stress level and general well-being in relation to infant temperament seems to be not sufficient.

The aim of this study is to explore whether infant temperament influences first time mothers' self-efficacy, perceived stress level and general well-being.

This literature review will begin by discussing infant temperament. Following this, three psychological variables: self-efficacy, perceived stress level and general well-being will be evaluated in the light of previous research. Finally the importance of current research will be discussed.

Infant temperament

Since 1980s infant and child temperament became one of the central themes of developmental psychology and psychiatry (Zentner & Bates, (2008). Infant temperament has been defined as the infant's behavioural style. It is how they behave in relationship to the environment and caregiving they receive (McGrath et al. 2008).

Researchers vary in the ways that they describe and measure temperament. But most researchers would agree that temperament has a genetic/biological component. Concepts such as reactivity (e.g. activity level, irritability) and self-regulation (e.g. soothability, fearfulness, behavioural inhibition) are central themes in most research of temperament (Blackwell, 2004).

Huge impact on infant temperament research had early work of Thomas and Chess (1977). In their classic New York Longitudinal Study they identified nine temperamental dimensions: activity level, rhythm rhythmicity (regularity), approach/withdrawal, adaptability, sensory threshold, intensity of reaction, quality of

mood, distractibility and attention span/persistence. In addition to nine dimensions Thomas et al. (1977) also introduced a typology of child temperament – the “difficult”, the “slow-to warm” and the “easy”. They found that of the 141 babies they studied two out of three (65%) fit into one of the below profiles.

40% of infants are considered to be easy babies (Thomas et al. 1977). They adjust easily to new situations, quickly establish routines, are generally cheerful and easy to calm. Another 10% of babies are perceived as difficult (Thomas et al. 1977). They are slow to adjust to new experiences, they are likely to react negatively and intensely to different stimuli and events. Slow to warm up babies who accounts for 15% of infants are difficult at the beginning and over time they are becoming easier (Thomas et al. 1977). They also recognized that behaviours that lead to an infant being classified as “easy” or “difficult” can vary based on parental and cultural values, attitudes and practices (Zentner et al. 2008).

Above introduced distinct temperament profiles seem to be useful in describing child behaviour but not as useful in understanding it. The stability of temperament from infancy to early adulthood is poorly understood. According to Thomas and Chess (1986), characteristics of temperament sometimes do and sometimes do not carry over from childhood to adulthood. The continuity of behavioural style from infancy to childhood depends not only on characteristics of the child but also on the dynamic interplay between the child and his/her primary caregiver (Blackwell, 2004).

Question whether classifying a baby’s behaviour according to set temperament styles actually provide insights into a baby’s personality is not answered.

An important aspect of infant temperament research is how the mother perceives her child characteristics. How the child's temperament is exhibited and perceived affects the developing relationship between the infant and the mother. When there is a synchrony between mother and infant temperament there is said to be "Goodness of fit". When synchrony is lacking, the infant is perceived as difficult and demanding (Coplan, O'Neil & Arbeau, 2005). Maternal perception and beliefs about the attributes of the infant affect how they care for their infant and the symbiotic relationship that will support the child's cognitive development (McGrath et al. 2008).

Stifter and Wiggins (2004) found in their research that mothers' ratings of difficult temperament very tremendously. They assert that parent reports of infant temperament and "difficultness" may be influenced by factors that have nothing to do with actual infant temperament, such as socioeconomic status, depression, and maternal anxiety level.

Research conducted by Hane, Fox, Polak-Toste, Ghera, & Guner (2006) has demonstrated that maternal perceptions of infant's temperament are related to quality of mother – infant interactive behaviour, behaviour problems in preschool, and social adjustment in early childhood. The majority of studies suggest that more difficult infant temperament is associated with less positive response from the mother (Donovan, Leavitt & Tylor, 2005). At the same time many theorists have suggested that mothers who responsively meet the needs of their infants following birth provide a necessary foundation for the development of regulated and competent emotional and social behaviour (Bornstein, 2002).

Infant temperament has a big impact on family life, sometimes leading to positive interactions, sometimes to frustrations and sometimes even to conflicts. As child's negative emotionality was found to negatively influence parental caregiving practices it is worth investigating further how infant temperament affects mother's self-efficacy, perceived stress level and general well-being.

Self – efficacy

Maternal self-efficacy is defined as a mother's belief in her ability to successfully organize and execute her parenting plan (Bandura, 1999). Self-efficacy is critical to a mother's functioning as each day mothers (explicitly or implicitly) assess how well they fit into their environment. This has a significant impact on the maternal sense of competence and effectiveness on motherhood tasks (Teti & Gelfand, 1991). Parenting efficacy is believed to be an important contributor in the development of parents' nurturing behaviours (Porter & Hsu, 2003).

It is suggested that maternal feeling of competence is likely to be fostered by infants who are predictable and manageable, who signal their needs effectively, and who are easily soothed. By contrast low maternal self-efficacy might be expected when mothers must cope with babies who are chronically fussy, irritable, and difficult to read (Teti et al. 1991). A constellation of infant characteristics such as fussiness, irritability, and frequent intense crying coupled with low soothability and manageability are typical hallmarks of a difficult temperament. When a new mother is successful in her attempts to sooth and to comfort her infant, she is likely to gain a greater sense of efficacy, but if she

is repeatedly unsuccessful, she may begin to feel less efficacious about her caregiving abilities (Porter et al. 2003).

Understanding self-efficacy is critical as a new mother's perceived level of self-efficacy appeared to be directly related to her interactions with her child (Teti et al. 1991). If a mother feels that she is capable of being an effective mother, she is more likely to act like one. If the mother does not feel capable of being successful, she may fail to try (Bandura, 1999). Further, Bandura (1999) suggested that it is difficult to be successful when one is dwelling on the negative, including the mother's potential for mistakes.

Maternal self-efficacy appeared to serve as a buffer against parental challenges such as maternal depression, difficult infant temperament, or other challenges (Eaton, 2007).

Current research in the area of maternal self-efficacy has found that maternal depression, infant temperament, parental knowledge and social marital supports have been considered as potential predictors of efficacy (Porter et al. 2003). However in Teti et al. (1991) study of self-efficacy in first-time mothers, researchers found that severity of depression and the level of social and marital support were unrelated to how competently mothers performed caretaking activities. Mothers with higher self-efficacy were able to competently care for their infants despite reported depression (Teti et al. 1991). Similarly, difficult infants impaired caretaking to the extent that they affected mothers' beliefs in their efficacy (Teti et al. 1991). Those mothers that had a firm belief in their parenting abilities appeared to be more resourceful in managing a temperamentally difficult infant (Teti et al. 1991).

Ruchala and James (2006) further proposed that the presence of higher self-efficacy was one of the strongest indicators in the positive transition to motherhood and was an important aspect of mothering behaviour.

Previous research has shown a strong link between infant temperament and maternal self-efficacy (Porter et al. 2003). This is thought to be the result of the perceived task difficulty and the outcome expectancies as put forth by Bandura's self-efficacy theory (Bandura, 1999). If a mother feels that she will be ineffective in the task, such as parenting the more challenging infant, she may fail to take initiative in positive parenting behaviours.

Teti et al. (1991) found that a parent was more likely to perceive him or herself as more competent in his/her parenting ability if he or she had higher levels of self-efficacy. In turn, there were potentially better outcomes for their children (Teti et al. 1991).

This literature review indicates that infant temperament is a predictor of maternal self-efficacy. However there are some limitations identified in previous research.

In Teti et al. (1991) study the instrument which was used to measure maternal self-efficacy was observation of maternal behaviour. The two 10 min observational periods used in this study were viewed as behavioural probes, designed to examine affective dimensions of maternal behaviour in specific context. The question is whether findings based on such a short observational time can be considered as reliable ones. Another limitation of this study is the sample. 86 women took part in the research (including 46 depressed women). Majority of sample consist of Mormon mothers. The results may be heavily skewed due to cultural or religious differences of participants.

Research conducted by Porter et al. (2003) has few limitations as well. Sample consists of 61 first time mothers. The participants were predominantly white, middle-class, well-educated and married. The sample is composed of too small number of fairly-risk and well-functioning families. Families under more varied circumstances could provide more reliable findings. Also the fact that infant temperament was measured only with infants up to 3 months can cause significant bias.

Research conducted by Eaton (2007) is not free from limitations as well. The sample which was examined in this study included participants from rural areas only. A more representative sample could include urban areas also. Availability, quantity and accessibility of different resources for new mothers may differ between rural and urban areas. Study was conducted in US and only in English, eliminating other nationalities like Spanish speaking emigrants who constitute a big part of American population.

Taking into consideration limitations of previous research plus the fact that not many studies explore consequences of infant temperament on maternal self-efficacy, perceived stress level and general well-being, it seems reasonable to conduct more studies within this area. Also within Irish research such theme is highly unexplored.

Stress

Stress is a negative emotional experience accompanied by predictable biochemical, physiological, cognitive and behavioural changes that are directed either toward altering the stressful event or accommodating to its effects (Taylor, 2003).

As found by Coplan, Bowker & Cooper, (2003) the relationship between infant temperament and maternal perceived stress is bidirectional. Difficult infant temperament

increases mother's level of stress, and stressed mother affects infant behaviour. Also Edhborg, Seimyr, Lundh and Widstrom, (2000) in their research found that caring for an infant that is difficult in temperament was related to higher levels of maternal stress.

More research supports idea that infant temperament affects mother's perceived stress. Muslow, Caldera, Pursley, Reifman & Huston, (2002) reported a significant association between mother's parenting stress and infant difficultness. Also Ostberg, Hagekull & Hagelin, (2007) found association between parental stress and child temperament among 21 month-old children. Emotional distress may negatively distort parental perception of the child (Najman et al. 2001).

Mantymaa, Puura, Luoma, Salmelin and Tamminen, (2006) found in their research that parental distress was an influential contributor to the mother's perception of her infant's temperament. Infant difficultness increases parenting stress which, in turn, amplifies the perception of the infant as difficult.

Research conducted by Mantymaa et al. (2006) has few limitations. The participants in the study were from culturally homogenous backgrounds, socio-economically quite stable. Therefore the results may not be generalized to more disadvantaged and culturally more diverse populations. Another limitation is the fact that approximately half of the participants had psychosocial problems of various sorts which could affect mothers' perception on infant temperament. The research was run in Finland therefore it is not certain if the findings can be generalized to different nations.

Although the relationship between infant temperament and mother's perceived stress is quite well researched, not many studies are based on Irish sample. Also the

combination of mother's efficacy, stress level and well-being in relation to infant temperament seems to be unexplored field.

The first three years of life are especially critical for the potential impact of stress in the parenting system on a child's cognitive, emotional, and behavioural development (Bornstein, 2002). Physical and psychological stresses may affect the quality of interactions between mothers and infants. Mothers who are stressed have less positive feelings about their infants and are less able than other mothers to perceive and respond to behavioural cues from their infants. Parents who experience high level of stress display lower levels of positive emotions and have negative perceptions of their child's behaviour (Molfese, Rudasil, Beswick, Jacobi-Vessel, & Ferguson, 2010).

Although findings of Molfese et al. (2010) seem valuable, the research is not free from limitations. The findings are based on maternal report, their observational skills. It could have brought some subjectivity into the research. However, there is substantial evidence that mothers are good reporters of their child behaviours (Rothbart & Bates, 2006). The sample also is relatively homogeneous in terms of socioeconomic status (SES). The education, occupation, and total family income of the sample were well above average, which may limit the generalizability of the findings.

Another aspect of mother's perception of stress is maternal depression. New mothers are confronted with infants whose behaviours they may interpret as rejection and feel helpless to control. When infant is highly reactive it increases the likelihood of postpartum depression (Crockenberg & Leerkes, 2003).

Depressed mothers are thought to interact less sensitively with their infants because their preoccupation with their own negative cognitions and feelings interferes

with their ability to notice and respond to infant cues. Depressed mothers may interpret infant distress and slowness to calm as rejection and either withdraw or react angrily (Crockenberg et al. 2003).

Recent investigations report that negative emotional reactions from depressed mothers elicit infant reactions of fear and withdrawal. These negative feelings alter the maternal perception of childrearing stress and provide more reasons for the mother to dislike the temperament of the infant (Mohler, Parzer, Brunner, Wiebel & Resch, 2006). An infant who is active and demanding can seem more difficult for the mother who is also struggling with postpartum depression, potentially escalating the depressive symptoms and the occurrence of more negative outcomes. These depressive feelings in the mothers can lead to long-term emotional and cognitive impairment for the infant (Beck & Gable, 2001). Also McGrath et al. (2008) found that depressed mothers have poorer ratings of their infant temperament than non-depressed mothers.

Important aspect of maternal perceived stress level is the method of feeding the baby. A growing number of research has suggested that breast-feeding is associated with decreased self-reports of maternal stress. Breast-feeding mothers reported being calmer, less anxious, and less stressed (Mezzacappa & Katkin, 2002).

Another study run by Groër, Davis, and Hemphill (2002) confirmed that breastfeeding confers some psychoneuroimmunological benefits to mothers, in part because of its impact on stress. They reported that although women experience many stressors in postpartum period, breastfeeding protects them by inducing calm, lessening maternal reactivity to stressors, and increasing nurturing behaviour.

A study of 28 mothers who were both breast- and bottle-feeding measured mothers' stress levels immediately before and after both types of feeding. Since there was not pre-existing differences between the groups, it was possible to attribute the observed differences in mood to feeding method alone. The researchers found that breast-feeding decreased negative mood and bottle-feeding decreased in positive mood in the same women (Mezzacappa et al. 2002).

Although the review of literature indicates that breastfeeding is associated with the enhancement of maternal mood and reduction of stress, the mechanisms underlying these phenomena are unclear. Personality and situational variables have been found to differ between women who choose to breast-feed versus those who choose bottle-feed (Mezzacappa et al. 2002). Women who are relatively anxious or more fearful may be physiologically less capable of producing milk or maintaining milk production. There are also several situational factors that have profound impact on breast-feeding behaviour as well as on levels of self-reports of stress. It may depend on mother's family and social support she receives from family, work situation, SES, number of children (Riordan & Auerbach, 1999).

As previous research showed stress is directly related with difficult infant temperament. High level of stress might lead to maternal depression. It affects family life. It also impacts infant development. More research in this field seems to be important. No research has been found which investigates stress level of mothers living in Ireland in relation to infant temperament. This study aims to fill this gap

Well – Being

Subjective well-being reflects an individual's overall evaluation of his or her life as a whole. Parental well-being can be studied in terms of five measures of well-being: life satisfaction, loneliness, positive affect, negative effect, and partnership satisfaction.

Becoming a parent is described as one of the most significant developmental tasks of adulthood. People tend to believe that they have personally grown and gained life fulfilment by having children (Keizer & Dykstra, 2010). Therefore it can be assumed that becoming a parent increases life satisfaction. However some research indicates that parenting is associated with reduced life satisfaction. In particular, research run by Kahneman, Krueger, Schkade, Schwarz & Stone, (2004) showed that working mothers in Texas enjoy parenting less than watching TV, shopping or preparing food. One may question how representative the sample is. The research was run in America and whether the findings can be generalized and represent women in others parts of the world especially in Ireland is not known.

In terms of loneliness it is not that clear if a child's birth increases or decreases feeling of loneliness. On the one hand, one may argue that the arrival of the child connects parents to the larger family and community (Furstenberg, 2005). However, children may also isolate their parents from the outside world, and this may be especially the case for mothers in the first months of maternity leave (Kezier, et al. 2010).

Concerning affect, research shows that children create substantial strains on parents' time, and on their physical and emotional energy. These strains may influence affect, adults with young children tend to be less happy, worry more, and experience

higher level of anxiety and depression in comparison with adults without children (Nomaguchi & Milkie, 2003).

Findings generally show that partnership satisfaction deteriorates when couples become parents. The transition to parenthood requires a reorganization of the partnership to meet new challenges, making the couple vulnerable to stress and conflict (Keizer et al., 2010).

Scientific research about the parental well-being is not clear and consistent. Many studies support the idea that parenthood is linked with lower marital satisfaction on average (Twenge, Campbell, & Foster, 2003) and with a decrease in life satisfaction in the first months after childbirth (Luhmann, Hofmann, Eid, & Lucas, 2012). However other work suggests that parents do not experience these negative outcomes, and, on the contrary, report relatively higher feelings of meaning, gratification and reward (Nelson, Kushlev, English, Dunn & Lubomirsky, 2013). Such conflicting findings could be due to the use of divergent methods, analytical approaches, and measures.

A critical issue concerns the extent to which well-being changes over time and across the lifespan. Although many theories posit that well-being should be responsive to changing life circumstances, some research suggests that it is primarily determined by inborn (and relatively stable) personality traits (Diener, Lucas & Scollon, 2006).

In the view of above research interesting question is whether child temperament can change mother's subjective well-being.

Need theories would predict that the satisfaction of an important need (child birth) should lead to increased subjective well-being. However Lyubomirsky and Boehm (2010) suggested that one of the biggest paradoxes in well-being research concerns the

fact that although many people desire to have children, at least some studies have linked parenthood to decreased well-being.

The parenthood and well-being is a quite well researched area. However previous research within parental well-being has not yet determined whether infant temperament impacts maternal well-being. One of the main goals in life is well-being which is associated with happiness, health, life satisfaction. It seems important to investigate whether new mothers' well-being increases/decreases in relation to infant temperament.

Upon viewing literature there are a number of research articles which investigate transition into parenthood and its psychological impact on parents and infants. Another well researched field is first time mother's depression and marital changes related with the birth of the first child. However no research has been found which investigates how infant temperament impacts first-time mother's self-efficacy, perceived stress level and general well-being in Ireland. Therefore the aim of this study is to investigate whether infant temperament determines first-time mother's self-efficacy, perceived stress level and general well-being.

This bidirectional relation between infant temperament and mother's perception of self-efficacy, perceived stress level and general well-being affects child development, maternal psychological condition and furthermore might lead to family conflicts.

Mohler et al. (2006) found that stressed mothers need help in their transition to the motherhood role and in developing synchronicity with their infants. By becoming more familiar with their infants, mothers may be more able to adapt to their mothering role. Strong stress may lead to depression. In this situation interventions are needed

because long-term depressive symptoms and poorer perception of infant temperament have the potential to affect infant and child cognitive development (Beck et al. 2001).

Children's learning in preschool and beyond is predicted, in part, on the skills they have acquired in infancy and toddlerhood (Blair, 2002). Indeed, the extent to which young children acquire early cognitive skills has been associated with certain early behaviours, termed *learning-related or work-related behaviours*. These include attention, self – regulation, inhibition, and cooperation, and have been found to be relatively stable characteristics in young children. Both maternal personality and infant temperament have been implicated as contributors to children's early cognitive outcomes. Research also indicates that maternal warmth and flexibility in parenting are positively associated with children's cognitive outcomes (Smith, Landry & Swank, 2000).

This research is carried out with hope that it will provide additional knowledge about infant temperament and its effects on first-time mother's psychological condition. This knowledge will have implications for the improvement of social, family support for mothers. It might also improve mother's awareness how to deal with difficult infants. As the research showed difficult infants may lead to low self-efficacy, high level of stress which in turn may cause impaired infant development.

Hypothesis

H1 - There will be a negative correlation between maternal self-efficacy and infant temperament.

H2 – Infant temperament significantly predicts maternal self-efficacy.

H3 - There will be a positive correlation between maternal perceived stress level and infant temperament.

H4 – Infant temperament significantly predicts perceived stress level.

H5 - There will be a negative correlation between maternal general well-being and infant temperament.

H6 – Infant temperament significantly predicts general well-being.

H7 - There will be differences in perceived stress level between three groups: mothers who breast-fed, mothers who bottled-fed and mothers who combined breast and bottle feeding.

Methodology

Participants

Participants in this study (N=233) included mothers who are living in Ireland. They ranged in age from 25 or under up to 55, with the majority in the age range 26-40 (N=217, 93.1%). The target participant was the first-time mother with the infant not older than six months. Taking into consideration difficulty of reaching the target group, mothers who have more than one child or have older child than 6 months were invited to participate in this study as well. They were asked to refer to the time when their first child was no older than 6 months.

The sample was gathered by random sampling with elements of snowball sampling. To obtain the target group the link to on line survey – SurveyMonkey was put upon the moderator agreement on www.rollercoaster.ie. Also mothers from Toddler Groups in Lucan were approached with links to the on line survey upon the group leader agreement.

The participants' involvement was anonymous and voluntary. There were no incentives or pay offered to participants for completing the survey, therefore everyone volunteered.

Materials

Infant Characteristics Scale

The most frequently used method to measure infant temperament has been the parent-report questionnaire, in large part because of its ease of use and the low cost of implementing the measure.

Infant Characteristics Questionnaire (ICQ) (Bates, Freeland, & Lounsbury, 1979) was used to measure infant temperament in this study. The tool was developed with the purpose of assessing infant difficulty as perceived by the parents. This is a self-administered questionnaire which requires approximately 5 minutes to answer all questions. The ICQ is comprised of 28 items describing infant behaviour. The mother ranks each item on a 7-point Likert scale, indicating the level of perceived difficulty in dealing with the described behaviour. Responses may range from 1 (very easy) to 7 (very difficult). For example the first item on the instrument asks: “How easy or difficult is it for you to calm or sooth your baby when he/she is upset?”

Four subscales have been identified through principal components analyses: Fussy/Difficult, Unadaptable, Dull, and Unpredictable.

The total scores can range from 28 (not difficult temperament) to 196 (very difficult temperament). The Fussy/Difficult subscale scores can range from 9 to 63. The Unadaptable subscale scores can range from 5 to 45. The Dull subscale scores can range from 4 to 36. The Unpredictable subscale scores can range from 6 to 42.

Higher scores indicate higher levels of infant difficultness (temperament) on a continuum.

For the purpose of the current research the total score of Infant Characteristics Questionnaire will be used. The focus is not on particular infant trait (like fussy/difficult) but on the temperament as a whole.

The ICQ was developed with a sample of 322 parents of infants' age four to six months. Three types of reliability analyses were performed on a second sample of 196 subjects. Internal consistency alphas were highest for the fussy-difficult (0.79) and unadaptable (0.75) factors, with lower values for the dull (0.39) and unpredictable (0.50) factors. Test-retest reliability scores computed over 2 to 10 day intervals were as follows: Fussy/Difficult, 0.70; Unadaptability, 0.54; Dull, 0.57; and Unpredictable, 0.47 (Bates, et al. 1979). Fussy/Difficult is the most clear-cut and valid factor of ICQ because behaviour characterizing this dimension of an infant's temperament is most readily recognized. Convergence has been noted between ICQ factors and comparable variables in other parent report temperament instruments (Bates, et al. 1979). It should be noted that Bates et al. (1979) were not attempting to sample from the entire domain of temperament, but were specifically trying to assess infant difficultness, so they employed a number of negative affect items.

Maternal Self-Efficacy Scale

The Maternal Self-Efficacy Scale (MSES) (Teti & Gelfand, 1991) is a task specific parenting self-efficacy measure that has been frequently used in previous research (e.g., Coleman & Karraker, 2003; Raver & Leadbeater, 1999). A task-specific approach, also known as domain specific self-efficacy, focuses on parents' perceptions of

their own competences related to discrete tasks within the domain of parenting (Coleman et al. 2003).

The Maternal Self-Efficacy Scale focuses on specific parenting tasks associated with infant care, such as changing and bathing one's baby, soothing one's baby, making one's baby smile, etc. The scale includes questions as: "When your baby is crying how good are you at soothing him or her" or "How good are you at understanding what your baby needs?", "For example, do you know when your baby needs to be changed or wants to be fed?"

The Maternal Self-Efficacy Scale consists of 10 items responded to by mothers on a 4-point Likert scale. Responses may range from 1 (not good at all/I don't understand my baby at all) to 4 (very good/I understand my baby almost all the time). The scores can range from 10 to 40, with higher total scores reflecting higher maternal self-efficacy.

Teti & Gelfand (1991) found that the Maternal Self-Efficacy Scale had satisfactory internal scale consistency in both the pilot sample based on 29 mothers (Cronbach's alpha= 0.79) and the follow up study with 86 mothers (Cronbach's alpha= 0.86).

Perceived Stress Scale

The Perceived Stress Scale (PSS) (Cohen, Kamarck & Mermelstein, 1983) was used in this survey to measure the degree to which situations in mothers' life are appraised as stressful. The PSS is a self-report questionnaire which consists of 10 items. The items in the scale were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their life. The questions in the scale are of general nature

therefore are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. The scale includes questions as “In the last month, have you been upset because of something that happened unexpectedly?” or “In the last month, how often have you felt confident about your ability to handle your personal problems?”

Participants responded on a 5-point Likert scale ranging from 0 (never) to 4 (very often). PSS scores were obtained by reversing responses (e.g., 0=4, 1=3, 2=2, 3=1, 4=0) to the four positively stated items (items 4, 5, 7, 8) and then summing across all 10 scale items. Scores can range from 0 to 40, with higher scores indicating greater psychological stress.

The scale internal consistency reliability was assessed in three samples using Cronbachs alpha (Cohen et al. 1983). The scale displayed high internal consistency (0.84, 0.85 and 0.86). However test-retest reliability only remained high over short-time intervals.

General Health Questionnaire (GHQ)

General Health Questionnaire (GHQ) (Goldberg & Williams, 1988) was used in this study to measure mothers' well-being. The GHQ is a measure of current mental health. It focuses on two major areas – the inability to carry out normal functions and the appearance of new and distressing experiences. Since its development by Goldberg and Williams in 1970s it has been widely used in different settings and different cultures.

The GHQ is a self-report questionnaire which contains 12 questions and requires about 5 minutes to answer all items. Each item is rated on a four-point Likert scale

ranging from 0 (better than usual/not at all/ more so than usual) to 3 (much less than usual/much less capable). GHQ scores are obtained by summing all 12 items. Total score can range 0 to 36. Scores >15 suggest evidence of distress. Scores > 20 suggest severe problems and psychological distress. The questionnaire includes questions as: “Have you recently loss much sleep or worry” or “Have you recently been able to face up to your problems?”

Internal consistency has been reported in a range of studies using Cronbach’s Alpha, with correlations 0.77 to 0.93. Split-half and test-retest correlations have been carried out with good results (Goldberg et al. 1988).

Demographic questions

Each mother reported her demographic information on separate survey form created by the researcher. Mothers indicated age, education level, marital status, employment status and the method of feeding their baby (breast-feeding, bottle-feeding or both).

To the survey was attached the cover sheet explaining the purpose of the research. Also contact information for support services were included in the final page of the survey.

Design

This is a quantitative, cross sectional design, a correlational and descriptive in nature. The predictor variable in the design is infant temperament and a method of feeding the infant (breast feeding, bottle feeding or both). The criterion variables in the

study are: maternal self-efficacy, perceived stress level and general well-being. All of the variables in the design are between subjects.

Procedure

Ethical approval to conduct this research was obtained from the DBS Department of Psychology Ethics Committee. For the purpose of this research the questionnaire including cover sheet was created. The cover letter informed respondents that participation is anonymous and voluntary. That the information they provide would remain confidential and that they can withdraw from the survey at any time. The participants were informed about the researcher e-mail address where they could feel free to mail the author of the study at any time with questions or for the results of the present study.

In cover letter there was also information about average time required to fill in the questionnaire (approximately 15 minutes). In the end of cover letter Samaritans number, Aware number, Parentline details, Mental Health Ireland details and HSE details were provided for individuals who had been affected by any of the questions.

The target participants were approached through several ways. The on line survey was hosted on SurveyMonkey (www.surveymonkey.com). The link to the on line survey was placed on www.rollercoaster.ie upon receiving the agreement from the page moderator. The site www.rollerecoaste.ie is directed to mothers. It includes much information about motherhood and also contains many forums where mothers can discuss different topics in relation to their children. The information about the researcher, the

purpose of this study and invitation to participate in the research together with the link to on line survey was placed on mothers' forums.

Participants were also gained through Lucan Toddlers Group. The link to the on line survey was distributed to mothers upon the group leader agreement. Participants were thanked for their help in conducting this research.

The data was collected within 3 weeks.

Data Analysis

As the data did not violate the assumptions of normality, Pearson's correlation tests were conducted to identify correlations between infant temperament and maternal self-efficacy, perceived stress level and general well-being. Further Simple Regression was conducted to check if infant temperament predicts maternal self-efficacy, perceived stress level and general well-being. A one-way between subjects Anova was conducted to check for significant differences in perceived stress level between mothers who breast-fed, bottle-fed or combined feeding. SPSS version 18.0 was used for all statistical analysis.

Results

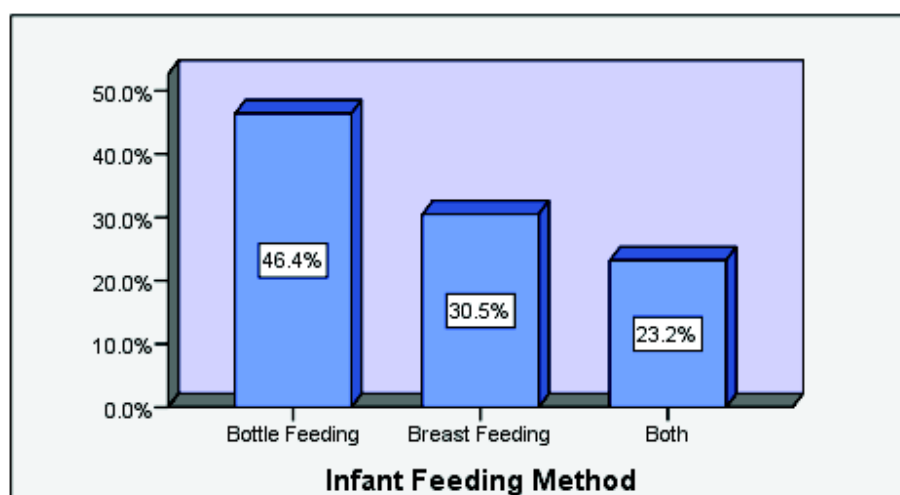
Descriptive Statistics

Preliminary analyses were performed to explore potential relations between demographic variables and maternal self-efficacy, perceived stress level and general well-being. Maternal self-efficacy, perceived stress level and general well-being were not significantly associated with any of the demographic variables including mother's age, employment status, marital status and education level.

A total of 233 mothers were included in this survey. The majority of participants in the study were between the ages of 26-40 (93.1%, N=217). The most common educational level of participants was Bachelor's Degree (32.6% N=76) while 28.3% (N=66) of participants had Master's Degree. The majority of participants were married (80.3%, N=187). More than half of mothers were full-time employed (63.5%, N=148).

The question: "How the baby was fed" was answered by 151 mothers out of 233. Below bar chart provides more detailed information of method of feeding the infants.

Figure 1 *Frequencies of Infant Feeding Method*



Further details on demographics of participants are represented in Table 1.

Table 1 *Demographics*

Variables		N	%
Age	25 or under	5	2.1
	26-40	217	93.1
	41-55	9	3.9
Education	High School	10	4.3
	Vocational/Technical School	15	6.4
	College	46	19.7
	Bachelor's Degree	76	32.6
	Master's Degree	66	28.3
	Doctoral Degree	7	3
	Professional Degree	13	5.6
Marital Status	Living with another	40	17.2
	Married	187	80.3
	Singled	4	1.7
	Other	2	0.9
Employment Status	Full – time	148	63.5
	Part – time	23	9.9
	Self – employed	9	3.9
	Unemployed	52	22.3
Baby feeding method	Bottle fed	70	30
	Breast fed	46	19.7
	Both	35	15

The four variables (infant temperament, maternal self-efficacy, perceived stress-level, general well-being) tested in this survey confirmed normal distribution as can be seen in the following figures 2-5.

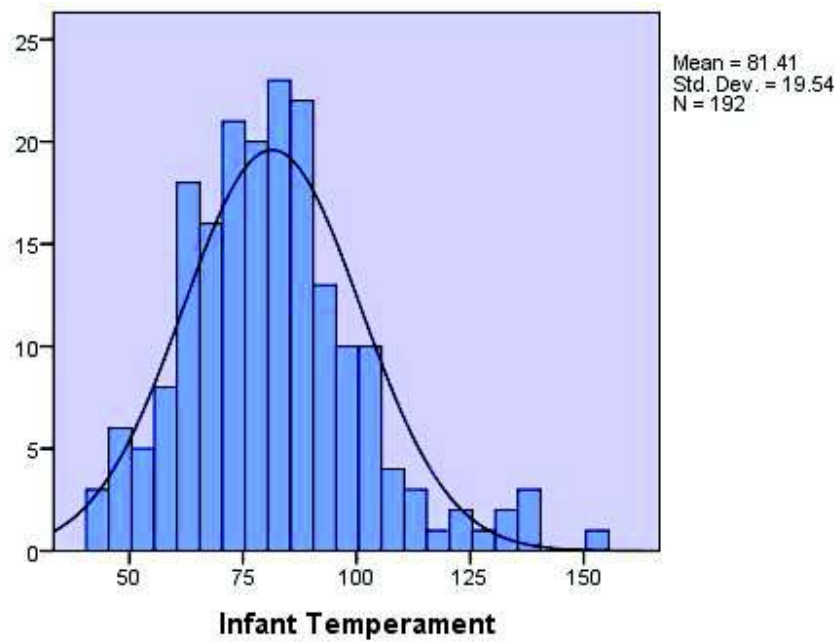
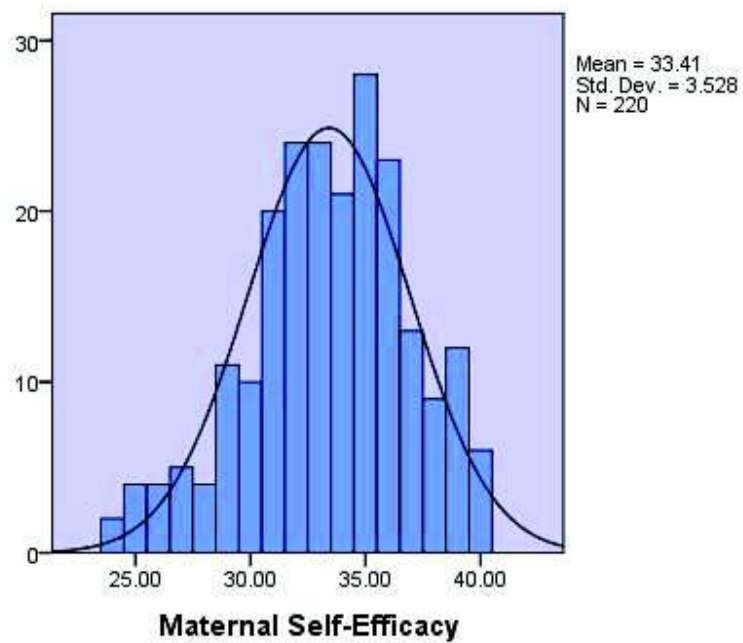
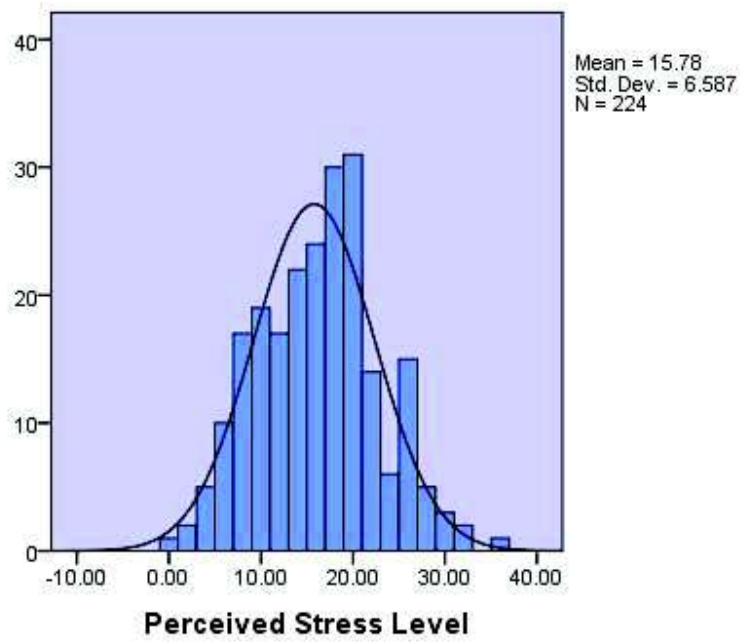
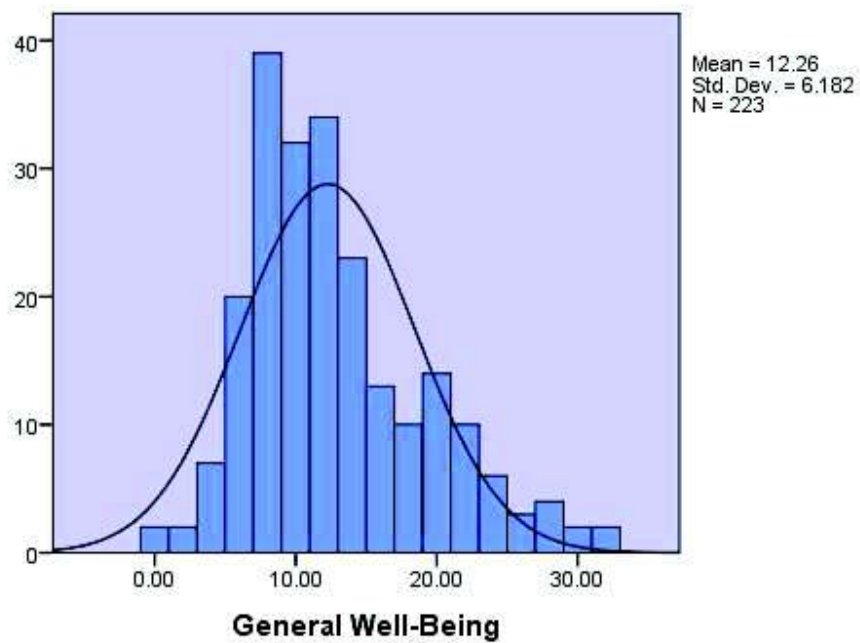
Figure 2 *Respondents' Scores for Infant Temperament*Figure 3 *Respondents' Scores for Maternal Self-Efficacy*

Figure 4 *Respondents' Scores for Perceived Stress Level*Figure 5 *Respondents' Score for General Well-Being*

Range, mean and standard deviation (SD) of Infant Temperament, Maternal Self-Efficacy, Perceived Stress Level and General Well-Being are represented in Table 2.

Table 2 *Mean, and Standard Deviation (SD) and Range of Infant Temperament, Maternal Self-Efficacy, Perceived Stress Level and General Well-Being*

Variable	N	Mean	SD	Range
Infant Temperament	192	81.41	19.54	43-151
Maternal Self-Efficacy	220	33.41	3.53	24-40
Perceived Stress Level	224	15.78	6.59	0-36
General Well-Being	233	12.26	6.18	0-32

Inferential Statistics

Hypothesis1: *There will be a negative correlation between Maternal Self-Efficacy and Infant Temperament.*

To test first hypothesis a Pearson's Correlation Coefficient was conducted. The mean scores for Infant Temperament was 81.41 (SD=19.54) and for Maternal Self-Efficacy was 33.41 (SD=3.53). A Pearson's Correlation Coefficient found that there was a strong negative significant relationship between Infant Temperament and Maternal Self-Efficacy ($r = -.56, p < .01, 2\text{-tailed}$) therefore the null hypothesis was rejected.

Hypothesis 2: *Infant temperament will significantly predict maternal self-efficacy.*

Using simple regression, it was found that infant temperament significantly predicted maternal self-efficacy ($F(1,183) = 84.03, p < .001, R^2 = .32$)(Infant temperament, $\beta = -.56, p < .001$). Confidence limits were narrow, showing that we are 95% confident that the population slope is between $-.12$ and $-.08$. The analysis revealed that the more difficult the infant the lower maternal self-efficacy. The null hypothesis was rejected.

Hypothesis 3: *There will be a positive correlation between Perceived Stress and Infant Temperament.*

To test third hypothesis a Pearson's Correlation Coefficient was conducted. The mean scores for Infant Temperament was 81.41 (SD=19.54) and for Perceived Stress Level was 15.78 (SD=6.59). A Pearson's Correlation Coefficient found that there was a moderate positive significant relationship between Infant Temperament and Perceived Stress Level ($r = .44, p < .01, 2$ -tailed) therefore the null hypothesis was rejected.

Hypothesis 4: *Infant temperament will significantly predict maternal perceived stress level.*

Using simple regression, it was found that infant temperament significantly predicted maternal perceived stress level ($F(1,184) = 44.59, p < .001, R^2 = .2$)(Infant temperament, $\beta = .44, p < .001$). Confidence limits were narrow, showing that we are 95% confident that the population slope is between $.11$ and $.2$. The analysis revealed that

the more difficult the infant the higher perceived stress level. The null hypothesis was rejected.

Hypothesis 5: *There will be a negative correlation between general well-being and infant temperament.*

To test fifth hypothesis a Pearson's Correlation Coefficient was conducted. The mean scores for Infant Temperament was 81.41 (SD=19.54) and for General Well-Being was 12.26 (SD=6.18). A Pearson's Correlation Coefficient found that there was a moderate positive significant relationship between Infant Temperament and General Well-Being ($r = .46, p < .01, 2\text{-tailed}$) therefore the null hypothesis was rejected.

Hypothesis 6: *Infant temperament will significantly predict maternal general well-being.*

Using simple regression, it was found that infant temperament significantly predicted maternal general well-being ($F(1,183) = 48.54, p < .001, R^2 = .21$)(Infant temperament, $\beta = .46, p < .001$). Confidence limits were narrow, showing that we are 95% confident that the population slope is between .11 and .19. The analysis revealed that the more difficult the infant the lower general well-being. The null hypothesis was rejected.

Table 3 represents a summary of significant relationships between infant temperament (IT) and maternal self-efficacy (MSE), perceived stress level (PSL) and general well-being (GWB).

Table 3 *Person's Correlation of Infant Characteristics and Maternal Self-Efficacy, Perceived Stress, General Health*

Variables	Correlation Coefficient, r	Significance
MSE	-.56**	$P < .0001$
PSL	.44**	$P < .0001$
GWB	.46**	$P < .0001$

**Correlation is significant at the .01 level (2-tailed)

Hypothesis 7: *There will be differences in perceived stress level between three groups: mothers who breast-fed, mothers who bottled-fed and mothers who combined breast and bottle feeding.*

When the mean number of perceived stress for each group was examined no significant differences could be observed. A one-way analysis of variance showed that perceived stress did not significantly differ between three groups ($F, (2,143) = .22, p > .001$) therefore the null hypothesis is accepted.

Discussion

Summary of Results

Studies which specifically explored the influence of infant temperament on maternal self-efficacy, perceived stress level and general well-being in Ireland are sparse. Therefore the aim of the current study was to investigate whether the infant temperament determines first-time mother's self-efficacy, perceived stress level and general well-being. The populations of this study was based in Ireland.

Based on the literature it was postulated that mothers of difficult infants would report lower self-efficacy, higher level of perceived stress and lower general well-being. Correlation analysis revealed that there is a significant relationship between infant temperament and maternal self-efficacy, perceived stress level and general well-being. It was further postulated that infant temperament will significantly predict mothers' self-efficacy, perceived stress level and general well-being. A simple regression revealed that infant's temperament significantly predicts mother's self-efficacy, stress-level and general well-being. Analysis of differences among three groups (mothers who breast-fed, mothers who-bottle fed and mothers who combined feeding) were conducted to check for significant differences in the means between those three groups and perceived stress levels. No significant differences were found among three groups of mothers and their stress levels. These findings go against previous research. The possible explanations for findings will be discussed below.

First hypothesis: *there will be a negative correlation between maternal self-efficacy and infant temperament* was supported.

Second hypothesis: *infant temperament will significantly predict maternal self-efficacy* was supported.

Previous research showed a strong relationship between infant temperament and maternal self-efficacy (Teti et al. 1991; Porter et al. 2003; Eaton 2007). This is thought to be the result of the *perceived task difficulty* and the *outcome expectancies* as put forth by Bandura's self-efficacy theory (Bandura, 1999). If a mother feels that she will be ineffective in the task, such as parenting the more challenging infant, she may fail to take initiative in positive parenting behaviours. Also infant temperament showed to be a strong predictor of maternal self-efficacy (Porter et al. 2003).

Consistent with previous research this investigation supported significant relationship between infant temperament and maternal self-efficacy. It also supported infant temperament to be strong predictor of maternal self-efficacy. Mothers who have infants with more challenging temperament reported lower self-efficacy.

Current research extended the literature by offering the insight into Irish population. Also in previous research different methods were used to investigate maternal self-efficacy. Teti et al. (1991) mostly focused on observations of mothers and their infants at three different periods of time. Eaton (2007) and Mantymaa et al. (2006) used only one subscale of Infant Characteristic Questionnaire – Fussy/Difficult to investigate infant's temperament. Molfese et al. (2010) used different questionnaire which investigates child temperament - The Infant Behaviour Questionnaire (IBQ) developed by Rothbart (1981).

In this study, the full version of Infant Characteristics Questionnaire (ICQ) including four subscales was used. It allowed to gain the total information about the infant temperament not only about specific trait like fussy/difficult. Also the sample of 233 mothers is quite big comparing to previous research. Molfese et al. (2010) based their studies on 63 mothers, Teti et al. (1991) investigated 86 mothers in their research, and 115 mothers participated in Eaton's (2007) study. This research complements previous studies.

Third hypothesis: *there will be a positive correlation between maternal perceived stress and infant temperament* was supported.

Fourth hypothesis: *infant temperament will significantly predict maternal perceived stress* was supported.

Number of research suggests that infant temperament significantly affects mothers' perceived stress level (Edhborg et al. 2000; Muslow et al. 2002; Ostberg et al. 2000; Mantymaa et al. 2006). Infants who have difficult temperament may exacerbate maternal stress. In turn mothers who are stressed have less positive feelings about their infants and are less able than other mothers to perceive and respond to behavioural cues from their infants (Molfese et al. 2010).

This study supports previous research findings. It suggests the strong influence that difficult infant temperament plays in leading to higher perceived stress level. Also research found that infant temperament significantly predicts perceived stress level among first time mothers, the more difficult the child the higher level of perceived stress.

This bidirectional relationship between mothers' perceived stress and infant temperament is important field for research. It not only affects mothers' psychological state but also has huge impact on child's cognitive and emotional development.

Fifth hypothesis: *there will be a negative correlation between maternal well-being and infant temperament* was supported.

Sixth hypothesis: *infant temperament will significantly predict maternal well-being* was supported.

Research on parental well-being is contradictory. Twenge et al. (2003) suggests that parenthood is linked with lower marital satisfaction and with decrease in life satisfaction in the first month after child birth. On the contrary Nelson et al. (2003) reported that parents experienced more happiness, feelings of meaning and gratification than non-parents.

Current research found that there is a moderate significant relationship between infant temperament and maternal well-being. Also it was found that infant temperament is a significant predictor of maternal well-being. Mothers of difficult infants reported lower levels of well-being.

Seventh hypothesis: *there will be differences in perceived stress level between three groups: mothers who breast-fed, mothers who bottled-fed and mothers who combined breast and bottle feeding* was rejected.

A number of researchers support the idea that breast-feeding decreases maternal perceived stress level (Mezzacappa et al. 2002; Groër et al. 2002). However findings

from current study contradict previous research. There were no significant differences in perceived stress level found among mothers who breast-fed, bottle-fed or combined feeding. Possible reasons for those findings will be introduced below.

All mothers who took part in this survey are currently leaving in Ireland. According to Economic and Social Research Institute (ESRI) just over half of mothers (56%) currently initiate breast-feeding in Ireland compared to 81% in the UK and over 90% in Scandinavian states (Layte, 2012, para. 1).

It was also found that non-Irish mothers are much likely to breast-feed but the longer the woman is resident in Ireland, the lower the chance she will breast-feed. Also it was suggested that mother's mental health is important. Women being treated for depression or anxiety are 28% less likely to breastfeed (Layte, 2012, para. 4).

As breast-feeding in Ireland is not as common as in other EU countries, many mothers may not be aware of advantages of breast-feeding for both mothers and infants. Therefore they do not feel pressure to take an initiative and maintain breast-feeding for longer time. As current studies confirmed majority of mothers were bottle-feeding. The previous studies would suggest that mothers who bottle-fed would report higher stress level than mothers who breast-fed. However based on current studies run in Ireland mothers who bottle-fed are not more stressed than mothers who breast-fed. The reason may be that if they are not aware of advantages of breast-feeding, or are not truly convinced about those advantages they do not feel stressed of not breast-feeding.

Breast-feeding can decrease stress physiologically and psychologically. Swedish research found that higher oxytocin blood levels decrease blood pressure and levels of

cortisol, a stress hormone (Uvnas-Moberg, 1998). Breast-feeding releases the stress-relieving hormone oxytocin.

Also the awareness of giving the baby the most nutritious milk decreases mother's stress level. But if somebody does not consider breast-milk as the best milk for the infant, not providing this milk will not cause stress.

Another possible explanation for contradicting findings of current research is that there may be a number of other factors which impacts maternal perceived stress level which were not controlled in the current study. Social support she receives from partner, family, socioeconomic status, number of children, work situation, etc. They all could affect maternal perceived stress level regardless of method of feeding the infant.

Limitations

The major limitation of this study is the number of participants. Although 233 mothers participated in the current survey it is still not sufficient number to generalize the findings to the Irish population. Although most hypothesis were supported and confirmed previous research the theme of the infant temperament and its impact on maternal self-efficacy, perceived stress level and general well-being is unexplored in Ireland and need further research.

There are other limitations of current study like questionnaires. It is very difficult to measure infant temperament. Babies at age 0-6 months are difficult to communicate. First-time mothers only learn the motherhood and how to deal with the baby. Quite often they may not know what the baby really wants. Many other factors could be influencing infant's behaviour not only temperament. Babies are colicky, are teething and it may look

like they are fussy, unpredictable, difficult to calm down. The conclusion about infant's temperament based on these behaviours may be misleading.

To further understanding of the relationship between infant temperament and maternal efficacy, future research should be encouraged to include multiple measures of infant temperament, including both subjective (mother's reports) and objective methods (observational assessment).

Maternal self-efficacy, perceived stress level and general well-being could be influenced by many other factors than infant temperament. Past research has demonstrated that nearing 6 months postpartum, married couples report significant alterations in perceptions of marital satisfaction, with satisfaction generally declining (Porter et al. 2003). It is also suggested that lower levels of social support for first-time mothers were related to higher rates of postnatal depression (Inandi et al. 2002).

Social support, marital satisfaction, socioeconomic (SES) status are factors which should be included in further research. Those variables would enable the researcher to observe if maternal self-efficacy, stress level and well-being are influenced by infant temperament or maybe there are other factors which should be considered as well.

Implications for future research

Since relationship between infant temperament and maternal self-efficacy, perceived stress level and general well-being is not highly explored in Ireland, possible future research might replicate the current study with a larger sample size or different methods of measuring variables. Using different methods to measure infant temperament,

maternal self-efficacy, perceived stress level and general well-being and testing bigger number of participants would enhance validity of the research.

Perhaps a deeper look into maternal self-efficacy, perception of infant temperament plus different maternal characteristics would lead to deeper understanding of the differences new mothers experience during the transition to parenthood. Research including maternal temperament, maternal personality traits would allow to understand different mental states of mothers during the transition into motherhood.

The link between infant temperament, social support, marital satisfaction and postpartum depression would be another implication for future research. All those variables have significant impact on mother and infant relationship.

A closer look into the benefits of social support to new mothers is needed. It is clear that infants and new mothers are affected by the social networks in which they exist (Zimmerman & Fassler, 2003). However, it is unclear which social networks are most influential and successful in supporting new mothers in the transition to parenthood. Partners, family, friends play important role in supporting first-time mothers. Also social support from more external sources is desired. Health care professionals, hospitals, some support groups, places where new mothers can meet and discuss their experiences, early childhood professionals play important role in the infant and mother's social network.

Further research investigating potential sources of social network and their impacts on infant and mother relationship would be needed.

As one of the hypothesis was not supported and contradicts previous research the more studies investigating the impact of breast-feeding on maternal mental health would be desired.

Past research found significant link between breast-feeding and perceived stress level. However current research did not confirm previous findings. Since breast-feeding impacts mother's perceived stress and has many advantages for infants further research based on bigger sample and different methods would be beneficial

Up to date there is not much research conducted in Ireland investigating maternal mental health in relation to infant temperament. As previous research showed infant temperament has significant impact on maternal self-efficacy, perceived stress level and general well-being. The findings of the current research confirmed that the more difficult infant temperament the lower maternal self-efficacy, the higher perceived stress level and the lower general well-being.

Above findings might have several implications for practice. Promoting mother-infant relationship would be beneficial. As shown in the study by Porter et al. (2003), mothers feeling more competent with their infants may find them less difficult. Supporting and strengthening the social network of the families and offering concrete help in household duties and child-care would be beneficial for first-time mothers and their relationship with infants.

More opportunities for first-time mothers to share their experiences with other mothers would also be beneficial for maternal mental health. Local community centres, local libraries, local health care centres would be good opportunities to meet other mothers, to exchange information how to cope with new responsibilities. Also involvement of clinicians in dealing with fussy infants could reduce maternal stress level.

More research in this area would bring more awareness of the problem and the possible solutions how to deal with problem.

Conclusion

Current study found that the more difficult the infant the lower maternal self-efficacy, the higher perceived stress level and the lower general well-being. However current study does not support findings from previous research that mothers who breast-fed perceived lower stress level than mothers who bottle-fed or combined feeding. Maternal mental health plays important role not only in transition into parenthood but also in cognitive and emotional development of infant. Therefore further research investigating possible factors of maternal mental health seems to be important. This study provided a baseline for prospective research to be conducted on the topics discussed.

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Appendix 1

Questionnaire Cover Letter

The relationship between infant temperament and maternal self - efficacy, perceived stress and general well being

My name is Magdalena Lemanska and I am conducting research in the Department of Psychology that explores infant temperament and its impact on mother's self – efficacy, stress level and well – being. This research is being conducted as part of my studies and will be submitted for examination.

Please share approximately 15 minutes time to fill out the survey. This survey will help to identify some strengths and challenges of motherhood. Please fill out the survey with reference to only first child during his/her first 6 months of life. If you are a mother of older child or you have more than one child please refer to the time when you were first time mother with the child not older than 6 months.

Participation involves completing and returning the attached anonymous survey. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included on the final page.

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential. Thus responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from

participation after the questionnaire has been collected.

The questionnaires will be securely stored and data from the questionnaires will be transferred from the paper record to electronic format and stored on a password protected computer.

It is important that you understand that by completing and submitting the questionnaire that you are consenting to participate in the study.

Should you require any further information about the research, please contact

Magdalena Lemanska, [REDACTED] My supervisor Emma Harkin can be contacted at [REDACTED]

Thank you for taking the time to complete this survey.

Appendix 2

Questionnaires

DEMOGRAPHIC QUESTIONS

What is your age?

- †1) 25 or under
- †2) 26-40
- †3) 41- 55
- †4) 56 or above

What is the highest level of education you have completed?

- †1) Primary School
- 2) High School or equivalent
- 3) Vocational/Technical School
- 4) College
- 5) Bachelor's Degree
- 6) Master's Degree
- 7) Doctoral Degree
- 8) Professional Degree

What is your current marital status?

- †1) Divorced
- 2) Living with another
- 3) Married
- 4) Separated
- 5) Singled
- 6) Widowed
- 7) Other

What is your current employment status?

- 1) Full - time employed
- 2) Part -time employed
- 3) Self - employed
- 4) Unemployed

Is your baby?

- 1) Bottle-fed
- 2) Breast-Fed
- 3) Both

INFANT CHARACTERISTICS QUESTIONNAIRE (ICQ)

On the following questions, please circle the number that is most typical of your baby. “About average” means how you think the typical baby would be scored. Put NA next to any item that does not apply to your baby. For example, if your baby has not had solid food yet, you would mark the item regarding his/her reaction to solid food as NA.

- 1. How easy or difficult is it for you to calm or soothe your baby when he/she is upset?**

1	2	3	4	5	6	7
Very easy			About average			Difficult

- 2. How easy or difficult is it for you to predict when your baby will go to sleep and wake up?**

1	2	3	4	5	6	7
Very easy			About average			Difficult

3. How easy or difficult is it for you to predict when your baby will become hungry?

1	2	3	4	5	6	7
Very easy			About average			Difficult

4. How easy or difficult is it for you to know what's bothering your baby when he/she cries or fusses?

1	2	3	4	5	6	7
Very easy			About average			Difficult

5. How many times per day, on the average, does your baby get fussy and irritable--for either short or long periods of time?

1	2	3	4	5	6	7
Never	1-2 times per day	3-4 times per day	5-6 times per day	7-9 times per day	10-14 times per day	More than 15

6. How much does your baby cry and fuss in general?

1	2	3	4	5	6	7
Very little; much less than the average baby			Average amount; about as much as the average baby			A lot; much more than the average baby

7. How did your baby respond to his/her first bath?

1	2	3	4	5	6	7
Very well-- baby loved it			Neither liked nor disliked it			Terribly-- didn't like it

8. How did your baby respond to his/her first solid food?

1	2	3	4	5	6	7
Very favourably-- liked it immediately			Neither liked nor disliked it			Very negatively--did not like it at all

9. How does your baby typically respond to a new person?

1	2	3	4	5	6	7
Almost always responds favourably		Responds favourably about half the time			Almost always responds negatively at first	

10. How does your baby typically respond to being in a new place?

1	2	3	4	5	6	7
Almost always responds favourably		Responds favourably about half the time			Almost always responds negatively at first	

11. How well does your baby adapt to things (such as in items 7-10) eventually?

1	2	3	4	5	6	7
Very well, always likes it eventually		Ends up liking it about half the time			Almost always dislikes it in the end	

12. How easily does your infant get upset?

1	2	3	4	5	6	7
Very hard to upset-- even by things that upset most babies			About average		Very easily upset by things that wouldn't bother most babies	

13. When your baby gets upset (e.g., before feeding, during diapering, etc.), how vigorously or loudly does he/she cry and fuss?

1	2	3	4	5	6	7
Very mild intensity or loudness			Moderate intensity or loudness		Very loud or intense, really cuts loose	

14. How does your baby react when you are dressing him/her?

1	2	3	4	5	6	7
Very well-- likes it			About average--doesn't mind it		Doesn't like it at all	

15. How active is your baby in general?

1	2	3	4	5	6	7
Very calm and quiet			Average			Very active and vigorous

16. How much does your baby smile and make happy sounds?

1	2	3	4	5	6	7
A great deal, much more than most infants			An average amount			Very little, much less than most infants

17. What kind of mood is your baby generally in?

1	2	3	4	5	6	7
Very happy and cheerful			Neither serious nor cheerful			Serious

18. How much does your baby enjoy playing little games with you?

1	2	3	4	5	6	7
A great deal, really loves it			About average			Very little, doesn't like it very much

19. How much does your baby want to be held?

1	2	3	4	5	6	7
Wants to be free most of the time		Sometimes wants to be held; sometimes not				A great deal-- wants to be held almost all of the time

**20. How does your baby respond to disruptions and changes in everyday routine,
such as when you go to church or a meeting, on trips, etc.?**

1	2	3	4	5	6	7
Very favourably, doesn't get upset			About average			Very unfavourably, gets quite upset

21. How easy is it for you to predict when your baby will need a diaper change?

1	2	3	4	5	6	7
Very easy			About average			Very difficult

22. How changeable is your baby's mood?

1	2	3	4	5	6	7
Changes seldom, and changes slowly when he/she does change			About average			Changes often and rapidly

23. How excited does your baby become when people play with or talk to him/her?

1	2	3	4	5	6	7
Very excited			About average			Not at all

24. Please rate the overall degree of difficulty your baby would present for the average mother.

1	2	3	4	5	6	7
Super easy			Ordinary, some problems			Highly difficult to deal with

25(A). On the average, how much attention does your baby require, other than for caregiving (feeding, diaper changes, etc.)?

1	2	3	4	5	6	7
Very little--much less than average			Average amount			A lot--much more than the average baby

26(B). When left alone, your baby plays well by him/herself.

1	2	3	4	5	6	7
Almost always		About half the time				Almost never-- won't play by self

27(C). How does your baby react to being confined (as in a car seat, infant seat, playpen, etc.)?

1	2	3	4	5	6	7
Very well-- likes it			Minds a little or protests once in awhile			Doesn't like it at all

28(D). How much does your baby cuddle and snuggle when held?

1	2	3	4	5	6	7
A great deal--		Average; sometimes does			Very little;	
almost every time		and sometimes doesn't			seldom cuddles	

Maternal Self-Efficacy Scale

(Teti & Gelfand, 1991, Child Development)

You will be asked some questions about yourself and your baby. The idea is to get general information of how you usually handle different situations with your baby. It is known that no one is always effective or always ineffective. We all do better in some situations than in others. So you will be asked to think about some situations that all mothers of infants encounter.

1. When your baby is upset, fussy, or crying, how good are you at soothing him or her?

1	2	3	4
not good at all	not good enough	good enough	very good

2. How good are you at understanding what your baby wants or needs? For example, do you know when your baby needs to be changed or wants to be fed?

1	2	3	4
I don't understand my baby very well	I understand my baby some of the time	I understand my baby most of the time	I understand my baby almost all of the time at all

3. How good are you at making your baby understand what you want him/her to do? For example, if you want your baby to eat or play quietly, how good are you at making her or him do that?

1	2	3	4
not good at all	not good enough	good enough	very good

4. How good are you at getting your baby to pay attention to you? For example, when you want your baby to look at you, how good are you at making him or her do it?

1	2	3	4
not good at all	not good enough	good enough	very good

5. How good are you at getting your baby to have fun with you? For example, how good are you at getting your baby to smile and laugh with you?

1	2	3	4
not good at all	not good enough	good enough	very good

6. How good are you at knowing what activities your baby will enjoy? For example, how good are you at knowing what games and toys your baby will like to play with?

1	2	3	4
not good at all	not good enough	good enough	very good

7. How good are you at keeping your baby occupied when you need to do housework? For example, how good are you at finding things for your baby to do when you need to do the dishes?

1	2	3	4
not good at all	not good enough	good enough	very good

8. How good do you feel you are at feeding, changing, and bathing your baby?

1	2	3	4
not good at all	not good enough	good enough	very good

9. How good are you at getting your baby to show off for visitors? For example, how good are you at making your baby smile or laugh for people who visit?

1	2	3	4
not good at all	not good enough	good enough	very good

10. In general, how good a mother do you feel you are with your baby?

1	2	3	4
not good at all	not good enough	good enough	very good

PERCEIVED STRESS SCALE (PSS)

Instructions

The questions in this scale ask you about your feelings and thoughts during the first six months of life of your first baby. In each case, you will be asked to indicate how often you felt or thought a certain way. Please refer in your answers to only first 6 months of life of your first baby.

For each question circle one of the following options:

0 = **never** 1 = **almost never** 2 = **sometimes** 3 = **fairly often**

4 = **very often**

1	In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2	In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3	In the last month, how often have you felt nervous and stressed?	0	1	2	3	4

4	In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5	In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6	In the last month, how often have you found that you could not cope with all the things you had to do?	0	1	2	3	4
7	In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8	In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9	In the last month, how often have you been angered because of things that happened that were outside of your control?	0	1	2	3	4
10	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

GENERAL HEALTH QUESTIONNAIRE (GHQ)

Please answer all the questions simply by underlying the answer which you think most nearly applies to you. Please refer to first 6 months of life of your first child.

1) Have you recently been able to concentrate on whatever you're doing?

Better than usual Same as usual Less than usual Much less than usual

2) Have you recently loss much sleep or worry?

Not at all No more than usual Rather more than usual Much more than usual

3) Have you recently felt that you are playing a useful part in things?

More so than usual Same as usual Less useful than usual
Much less useful

4) Have you recently felt capable of making decisions about things?

More so than usual Same as usual Less so than usual Much
less capable

5) Have you recently felt constantly under strain?

Not at all No more than usual Rather more than usual Much more
than usual

6) Have you recently felt you couldn't overcome your difficulties?

Not at all No more than usual Rather more than usual Much more
than usual

7) Have you recently been able to enjoy your normal day - to - day activities?

More so than usual Same as usual Less so than usual
Much less useful

8) Have you recently been able to face up to your problems?

More so than usual Same as usual Less able than usual Much less able
than usual

9) Have you recently been feeling unhappy and depressed?

Not at all No more than usual Rather more than usual Much more than usual

10) Have you recently been losing confidence in yourself?

Not at all No more than usual Rather more than usual Much more
than usual

11) Have you been thinking of yourself as a worthless person?

Not at all No more than usual Rather more than usual Much more
than usual

12) Have you been feeling reasonably happy, all things considered?

More so than usual About same as usual Less so than usual
Much less than usual

Contacts of helpful organisations**Samaritans**

Confidential Emotional Support Service

+353 1 6710071

www.samaritans.org

Aware

Supporting light through the depression

info@aware.ie

www.aware.ie

+00353 1 661 7211

HSE

Family Support Centre

www.hse.ie

Public Health Nurses

www.hse.ie