Submission to the Productivity Commission Inquiry into Paid Maternity, Paternity and Parental Leave

June 2008

NSW Commission for Children and Young People

National Investment for the Early Years (NIFTeY)

NSW Commission for Children and Young People
Level 2, 407 Elizabeth Street
Surry Hills NSW 2010
Phone: (02) 9286 7270
Fax: (02) 9286 7267
Email: kids@kids.nsw.gov.au

Submission to the Productivity Commission Inquiry into Paid, Maternity, Paternity and Parental Leave

June 2008

Introduction

In our view there are two main objectives of a paid parental leave scheme:
1. To provide the best possible health and development opportunities for children; and
2. To provide workforce attachment for women, which in turn also benefits children.

There is a significant amount of evidence that paid maternity leave can provide major benefits for babies as it gives them time with their mothers at a crucial phase in a child's early years of development (Baker & Milligan 2006; Kramer et al. 2001). Supporting parents so they can nurture their babies and young children is shown to have significant immediate as well as long term benefits for children's wellbeing, their families and society. As a growing body of evidence shows, interventions in early childhood are much more effective than those later in life (Heckman 2006).

The most frequent explanation for the importance of paid parental leave is that it provides a mother with time to recover from birth (Kramer et al. 2001), bond with her baby (Baker & Milligan 2006) and monitor her baby's welfare, which also provides for better injury prevention (American Academy of Pediatrics 1997), and to establish breastfeeding (Berger et. al 2005). The long-term health benefits of breastfeeding (Chatterji & Frick 2005), and the importance of breastfeeding for enhancing attachment and mitigating maternal depression have been extensively documented (Baker & Milligan 2006). There is also evidence that breastfeeding may reduce the incidence of obesity in later life (Toschke et. al 2002) and that it reduces the subsequent risks of depression and anxiety in teenagers (Oddy et al. 2003). There is also evidence that the more time infants spend with their caregivers in the first year of life the more they are likely to have a long-term healthier lifestyle with less television viewing, more exercise and more social involvement. (Olfman 2005; Ball et al 2007)

More broadly speaking, parental leave greatly enhances the amount of time spent in face-to-face and organised activities that promote an infant's social development and emotion regulation (Greenspan & Salmon 2001). As we will indicate in this report, healthy brain development and long-term mental and physical health are vitally dependant on continuous nurturing interactions over the first years of life (Greenspan & Shanker in press; Greenspan & Shanker 2006). Conversely, we have evidence that maternal employment during an

infant's first year of life can have a detrimental effect on their cognitive development (Waldfogel 2006).

One of the greatest risks to children's health and development is poverty (Esping-Andersen & Sarasa, 2002). Poverty impacts on the ability of families to provide basics such as housing, food, health care and clothing, as well as additional supports or expert services. Poverty is also connected to parental stress, which makes it difficult for parents to care for their children in an attentive and consistent way. Strategies that allow women to maintain their connection to the workforce, such as paid parental leave, can help to address poverty. Mothers' employment can be beneficial for children after their first year, as long as it actually increases income and does not involve long hours (Waldfogel 2006). While the area is not one that has been well-studied yet, there is evidence to suggest that current maternal employment is positively related to language and social development in preschoolers at the age of four (Nomaguchi 2006).

Paid parental leave that is in children's best interests

We recommend that a paid parental leave scheme that provides the best possible health and development outcomes for all children should be based on the following features.

- Is of sufficient duration to benefit children, that is at least one year, but preferably two years
- Is flexible and allows parents to choose how they will take their paid parental leave
- Supports the role of the other parent in raising infants through a designated leave period for them
- Supports the prenatal period by allowing mothers to take leave from six weeks before the expected date of birth and take prenatal leave to attend health appointments
- Applies to all parents in the workforce and is linked to participation in the workforce, not employment with an individual employer
- Replaces income up to $100,000, to allow one parent to stay at home with their infant
- Makes payment through employers to maintain workplace attachment and parents continue to be entitled to superannuation contributions and receive social security income supports where eligible
- Guarantees a return to work with flexible conditions
- Is jointly funded by Government and employers
- Is legislatively based and accompanied by a public awareness campaign
- Is reviewed after five years particularly in relation to implementation and long term impacts on the infant
- Is complemented by a family friendly industrial relations policy and practices
- Is integrated into broader national early childhood policies designed to support children's development and well-being

Unpaid versus paid parental leave

A host of studies have now shown that of all the factors that impinge on take-up of parental leave, or early return to the workforce, by far the most significant is family income level. It is clear that the lower the family's income the greater the likelihood of non-compliance or early return to work (see, e.g., Frize 2006). Significantly, these effects are mitigated when there is employer top-up of salary (Marshall 2003, Statistics Canada Report). All of the evidence we have from countries such as Sweden and Cuba points to the fact that universal participation in a parental leave program is only possible if financial considerations do not enter into the family's decision in regards to taking parental leave.

The social implications of this finding are important. Our attempts to fight the problem of poverty will be frustrated so long as parental leave programs remain unpaid. Leaving parental leave to the market place primarily encourages middle and higher socio-economic groups who can afford to participate, thereby providing their children with the sorts of enriched parent-child interactions over the critical early years of life that will provide the child with better health and with strong cognitive, communicative, social and emotional capacities. The effects of being unable to participate in a parental leave program because of a pressing need to sustain full employment show up in a strong gradient effect measuring the school-readiness of five year-old children measured across populations (McCain, Mustard & Shanker 2007).

In addition, any lump sum maternity payment does not appear to have had a significant impact on promoting close nurturing interactions between caregivers and their children during the early years of life.

Paid parental leave and childcare

Another question that frequently arises in this debate is whether similar benefits for child development can be obtained with a universal childcare program. Baker, Gruber and Milligan's (2005) recent report on the impact of Quebec's universal childcare program provides a sobering answer to this question.

In 1997 the government of Quebec introduced a program to provide regulated spaces for all children in the province aged 0 to 4 at a cost of $5/day regardless of whether their parents were working. The program was phased in over four years, starting with four year olds in September 1997, three year olds in 1998, two year olds in 1999 and children aged zero and one in September 2000.

Baker, Gruber and Milligan's analysis of the effects of this program, particularly in regards to babies who entered in the first year of life, is quite worrying. They found strong evidence that such children were worse off on a variety of behavioural and health measures, ranging from aggression to motor-social skills to illness. Their analysis also suggests that the program led to more hostile, less consistent parenting, worse parental health and lower-quality parental relationships (Baker, Gruber & Milligan 2005).

The concerns raised by Baker, Gruber and Milligan primarily relate to the effects of lower-quality childcare centres. There is other evidence showing the beneficial effects of high-quality childcare on children's language and social development (see, e.g., Astington & Pelletier 2005), but these latter studies apply to preschool children from the age of three years.

The UK Effective Provision of Pre-School Education (EPPE) Project shows that while poor quality childcare, for example, with untrained staff and high staff turnover and where opportunities to develop ongoing relationships were limited, had a negative impact on children three years and over; the negative impacts were even more significant for infants under the age of two years. The study also found that extensive periods of formal childcare before the age of three were associated with higher levels of anti-social behaviour at three and five years of age (EPPE 2003). The extensive US National Institute for Child Health and Development (NICHD 2006) study supports these findings. This study has shown that although children may gain some short-term cognitive benefits from centre based childcare, early entry and long hours in formal childcare are associated with increased risks of later childhood behavioural problems such as aggression (NICHD 2006).

The evidence of the negative effects of full-time daycare on babies and infants development is an important indication of why it is in society's long-term interests to adopt paid parental leave programs for babies and infants (Belsky 2006).

Children's needs in their first two years: the biological story

To a considerable extent the debate over paid parental leave has been dominated by political considerations, rather than a clear understanding of the biological processes involved for the mother and infant. The more we can ground the debate in current scientific knowledge of the processes that promote healthy brain and mental development in the early years of life, the better we can understand precisely why we are seeing the sorts of benefits that have been recorded in terms of better cognitive, communicative and social outcomes. (Shanker in press)

As important as bonding or attachment are to child health, development and caregiver health, we are also beginning to understand the processes that underpin their development. The better these processes can be understood, the better we can understand why paid parental leave is one of the most prudent investments we can make for the future well-being of our society (Heckman 2006).

Secondary altriciality [1]

Nature was confronted with an interesting dilemma when forming the human brain. From the moment that our ancestors began to walk upright bipedalism gave us an advantage over other species. The gradual evolution of a larger prefrontal cortex, which apparently was precipitated by our becoming bipedal, gave humans an advantage in terms of a more sophisticated ability to focus attention, plan and control actions, reflect on past and anticipate future events, and manage social interchanges. However, the transition to bipedalism set a limit on how far the growth of the prefrontal cortex could progress if human females were to preserve their capacity to walk upright.

Nature's solution was to have us give birth to our babies 'prematurely', when the newborn's brain is less than a quarter of its adult size, and then nurture our babies outside the womb for the first year of life. As a result, caregiver-child interactions in the first year of life came to play a critical role in the development of a baby's regulatory mechanisms.

Genetically-controlled processes, such as myelination and synaptogenesis, have a profound impact on the development of an infant's brain. However, what has attracted a great deal of interest amongst developmental neuroscientists in recent years is the effect of experience on the development of the prefrontal cortex, and the connections formed between higher and lower systems on the 'neuroaxis'. The central question here is how a child develops the so-called Executive Functions necessary to regulate and focus attention.

One of the most significant aspects of *secondary altriciality* is precisely that, by being regulated, the child develops the capacity to regulate themselves. It is via the endless interactions that occur between child and caregiver, which serve to regulate the child, that the child's self-regulatory systems receive the inputs needed to become fully functional. Especially worrying, therefore, is what happens to a child's capacity to self-regulate if they do not undergo these experiences. Furthermore, if a child is deprived of these constant and close interactions, it can profoundly effect how the pathways in their brain develop, thereby significantly influencing the child's subsequent mental and physical health (Mustard, McCain & Shanker 2007).

Dyadic interaction and the development of the brain

Nature's basic design for early brain development was to have the primary caregiver operate as an external central nervous system, regulating the development of the emotion and self-regulatory mechanisms in the infant's prefrontal cortex. From the first days after birth a baby and its caregiver are engaged in an interactive system of reciprocal stimulation (Schore 1994). The

[1] Altriciality is the phenomenon that occurs in birds and humans where the offspring of a species are hatched or born in a very immature and helpless condition and require the care of their parents for some time. Stephen Jay Gould referred to *secondary altriciality* to draw attention to the fact that humans give birth to a small number of babies with senses that are fairly well developed at birth but who lack the neural systems necessary to regulate their own internal states and behaviour (Gould 1978, Shanker & King 2002, Greenspan & Shanker 2004, Falk 2000).

primary modalities for this process are shared gaze, vocalizations, touch, and smell (Greenspan & Shanker 2004).

The caregiver's affect signals stimulate positive affect in the child, which is communicated back to the mother via the child's signals such as facial expressions, body movements and vocalizations, so that both members of the dyad enter into a symbiotic state of heightened arousal. Conversely, a non-affectively expressive maternal face, in which, for example, there is no brightness in the mother's eyes, triggers negative affect in the child (Tronick 1989). A non-responsive child, or a child who displays negative facial expressions, can produce profound negative affect in the mother. The child finds facial expressions with no affect or negative affect aversive and will initially attempt to induce positive facial expressions before subsiding into a state of withdrawal (Tronick 1982). A recent study has established that the neural systems that a child uses to process facial expressions of emotion are fundamentally influenced by the nature of her early emotional experiences with her primary caregiver (Shanker in press).

In other words, in healthy development the communication of affect signals are co-regulated, virtually from birth (Fogel 1993). This is the reason why developmental psychologists refer to the early stages of dyadic interaction as a form of ‘proto-conversation’ (Trevarthen 1979). These proto-conversations serve to cement the emotional ties between caregiver and child (Bruner 1983). They are essential, not just for the infant's capacity to self-regulate, but for their developing ability to engage in co-regulated problem-solving interactions, which play a critical role in the development of their higher cortical functions.

When a child is involved in a continuous flow of back-and-forth communication, they are constantly sampling subtle variations in their environment. A child’s affect not only mobilizes their ability to focus on and process these sensory variations but also, drive the process of differentiation that occurs between caregiver and child. As the infant gestures or vocalizes to her caregiver, the caregiver’s response changes ever so slightly to deal with the infant's affective overture. In turn, the infant now has an opportunity to process an ever so slightly novel affective response from the caregiver. As this process repeats itself over and over, their co-regulated communication became more and more differentiated. This type of learning interaction facilitates new neural pathways in the brain that have to do with subtle sensory affective discrimination, pattern recognition, and ever more complex subtle response patterns (Greenspan & Shanker 2006).

The baby’s physiologic reactivity serves as the foundation for the development of their affect signalling system, which takes on affective qualities through child-caregiver interactions. It is this enhanced signalling system that enables the child to construct patterns that eventually take on meaning and leads to different levels of emotional and intellectual organisation. This process can be significantly disrupted by biological challenges and/or social conditions that impair or constrict the child’s capacity or opportunity to engage in these co-regulated interactions. *No less serious are employment practices that significantly constrain the caregiver’s opportunity to engage in these brain-*

building interactions. Perhaps the consequence of such short-sighted policies can be seen in the worryingly high and increasing rates of behavioural, psychological and developmental problems that we are currently seeing in our children (Cordero et. al 2006; Collishaw, 2004).

Emotion and self-regulation

One of the key questions that arises from the *secondary altriciality* concept is: What neural systems is a child is born with? In addition to their sensory system and a number of primitive reflexes, a child comes into the world with 'primitive emotion circuits' inherited from distant evolutionary ancestors (Panksepp 1998). These primitive emotion circuits are triggered by a selective range of stimuli serving some evolutionary function and setting off a wave of physiological, behavioural and experiential responses that the infant cannot regulate themselves, due to its under-developed Executive Functions. If, for example, a baby starts to become angry the emotion would, were the baby left alone, likely keep escalating until sheer exhaustion forces the system to shut down. Therefore, the caregiver must exercise this regulating function until such time as the relevant medial prefrontal cortical systems in the baby's developing brain can exercise this function on their own (see Greenspan & Shanker 2004).

There is a wealth of recent research demonstrating that maternal absence in the first year of life is negatively related to physiological regulation (Porter 2003). There is also evidence that the better a caregiver can read and anticipate a baby's nonverbal cues the better they can reduce or anticipate such distress and the better the baby in turn can internalize such emotion-regulation strategies (Sroufe 1996, 2000). Such 'mindreading' abilities on the part of the caregiver are *not* innate; rather, they can only be attained through the countless caregiver-child interactions that nature designed us to experience in the critical first year of a baby's life (Greenspan & Shanker 2004).

The current study of emotion-regulation is not just concerned with the control of fear, anxiety, anger, and frustration but also, with goal selection, interest, motivation, curiosity, cognitive flexibility, effective decision-making, calmness, and contentment. The child's positive emotions, which can only develop in these close caregiver-child interactions, play an energizing and even a regulating role.

Developmental neuroscientists have started to go still further and look at the crucial role of emotion in the consolidation of synaptic connections (Tucker et. al 2000) and in the integration of various parts of the brain involved in emotion-regulation (Lewis 2005). Tucker (2007) and Lewis (2005) have proposed the metaphor of vertical integration along a "neuroaxis" as a way of understanding the sorts of top-down and bottom-up coordination involved in emotion-regulation.

The *neuroaxis* is conceptualized as proceeding from the lowest or most primitive level of the brain (the brain stem) to the most advanced (i.e., phylogenetically newest) structures in the cerebral cortex. The idea here is that the oldest levels are the most structured at birth. These are the automatic perceptual and behavioural programs that flow up the neuroaxis, i.e., stimulus-response systems formed in our prehistory. At the upper end are the highly plastic structures that

are shaped by the child's experiences (Tucker 2007; Lewis 2005; Lewis & Todd 2007).

The more there is 'synchrony' and 'co-regulation' between these different levels of the neuroaxis, the more stable and flexible is the brain's response to a stimulus. Equally important is the number of systems involved, their amplitude, and their processing efficiency. That is, some forms of regulation are more constricting than others. For example, if it requires a great deal of effort to remain calm, the infant might have little remaining capacity to attend to what someone is saying. Or if an infant deals with the feelings of distress or anxiety that result from separation by withdrawal, she might be cutting herself off from social experiences that are necessary for the development of the 'social' brain network (Shanker in press). Similarly, a child who regulates herself by perseverating might be able to maintain a feeling of relative security, but such actions will significantly inhibit the child's capacity to attend to other aspects of her environment (Greenspan & Wieder 2007).

In summary, developmental neuroscience is shedding important new light on the critical role of caregiver-child interactions during the first year of life for virtually every aspect of the child's subsequent development. This growing body of research provides a compelling biological underpinning to account for why maternal employment during the child's first year of life can have a detrimental effect on a child's long-term cognitive and social development. The challenge for us is how we enable mothers to be at home with their infant during this critical period. For this reason we consider a paid parental leave period of at least one year is essential to support the healthy development of this dyadic relationship between babies and their caregiver.

The critical role of the caregiver in the development of self-regulation: the first two years

A baby goes through a series of emotional transformations in the first year of life as the result of child-caregiver interactions in which emotional, cognitive, communicative and social processes become inextricably bound together. It is through their caregiver's continuous actions and reactions that the baby's responses to stimuli become permeated with a wealth of meanings and associations.

The basic principle of the concept of 'emotional transformations' is that children initially experience a limited number of global states, for example, calmness, excitement and distress (Rothbart et al. 2000; Fox & Calkins 2003). A caregiver's nurturing, pleasurable and calming interactions enable the child to experience soothing pleasure and interest in the caregiver's sounds and sights and in movements such as turning to look at the caregiver. Herein lies the reason why, in Baker and Milligan's words, "increased parental care leads to better temperament" (Baker & Milligan 2005), and why "goodness of fit" between caregivers and their infants, emphasised earlier by Chess and Thomas (1984), is so important.

In this way, certain emotional processes, such as pleasurable interest in soothing sounds, begin to differentiate from these global states. As their

nervous systems develop, in part because of nurturing interactions, and the capacity to discriminate differences and organise patterns develop further, children begin to further differentiate and elaborate these global states. They do this through continuing interactive experiences with their caregivers. For example, as caregivers respond to their infant's interests with different types of smiles and joyful sounds, we often observe the infant expressing a range of pleasurable smiles and a deepening sense of joy and security.

Through continuing caregiver-child interactions of this type, children associate more and more specific subjective qualities with selective physical sensations. For example, the sound of the caregiver's voice registers as a sensation, but it is also either pleasurable or aversive. The caregiver's touch is a tactile sensation that also may be soothing or overstimulating. Every experience that a infant undergoes involves this form of association.

Both aspects of a child's perceptions, the physical and the emotional, are bound together. Thus, a hug feels tight and *secure* or tight and *frightening,* a surface feels cold and *aversive* or cold and *pleasant,* a mobile looks colourful and *interesting* or colourful and *frightening.* These emotional associations can have an almost infinite degree of subtle variation so that each child's sense of pleasure or security is unique and highly textured. It goes without saying that, the more time the child spends with their caregiver in the early months of life, the more opportunity for these positive associations to form.

0-3 months

An infant's ability to choose between different responses is very much a function of these emotional associations. By the time an infant has begun to choose between responses, they have gone through a series of progressively more complex affect transformations, in which the affect patterns described above come to give rise to and then orchestrate a large range of cognitive, as well as social processes. In the first stage the child begins to forge sensory–affect–motor connections (0-3 months). Pleasurable, affective experiences, along with growing motor control, enable a baby to begin to respond with actions, such as reaching towards pleasurable touch and turning away from unpleasant ones. In this manner motor responses quickly move beyond reflexes and become part of a sensory–affect–motor pattern. That is, affect serves as a mediator between sensation and motor response, connecting the two together. This basic unit of sensory–affect–motor response becomes more and more established through child–caregiver interactions.

In order to form these connections, a baby must experience positive affects, and must do so frequently. For example, because they find the stimulus pleasurable, a baby turns towards the sound of its mother's voice or turns to look for her smiling face. If the experience is aversive, primitive neural systems trigger an automatic response to avoid the experience, thereby inhibiting the formation of stimulus–affect–motor connections.

To forge the sensory-affect–motor connections, individual differences must be attended to. Children vary considerably in how they attend to sounds, sights, touches, smells, and movements. Some are very sensitive and require more

soothing, while others are under-reactive and require more energetic wooing. Some quickly turn towards the source of a sound while others take more time to develop this skill. Similarly, some babies begin to recognise visual or auditory patterns fairly quickly and others more slowly. Thus caregivers have to tailor their interactions to their baby's individual preferences and abilities. The more time that caregivers spend with their babies, the better they can adjust their behaviours to the child's biological profile and the better the dyad displays 'goodness-of-fit' in their interactions (Chess & Thomas, 1984). Should a caregiver fail to recognise the child's negative reactions or respond appropriately to a child's overtures, the child may become subdued and withdrawn or adopt defensive behaviours such as gaze aversion or arching its back and straining to turn away.

By no means, then, is a child's ability to recognise social and communicative patterns or to engage in mutual gaze with its caregiver simply a maturational phenomenon; it is learned. The caregiver must continuously engage in a variety of subtle affective behaviours, both soothing and arousing, that are finely tuned to the child's individual sensory proclivities, in order to promote the development of these capacities (Greenspan, 1997). A baby must be enticed by the emotional rhythm of the caregiver's voice, by big smiles and gleaming eyes, to look or listen to interesting sounds and sights, if she is to progress beyond the very simple stimulus-response sequences that she displays at birth and begins to engage in shared gaze (Greenspan & Shanker, 2004).

2-5 months

In the second stage of emotional transformation, the child develops a more intimate relationship with their caregiver (2–5 months). With warm nurturing the baby becomes progressively more invested in and interested in its caregivers, whom they can now distinguish from other adults. Positive and often joyful emotions enable the baby to coordinate gaze, listening and movement in synchronous and purposeful interactions. Through these continuous affective interactions the baby begins to discern patterns in her caregivers' voices and affect signals. Children begin to discriminate their emotional interests, such as joy, indifference, and annoyance, and to recognise the emotional significance of facial expressions or vocalisations.

4-10 months

In the third stage of affective transformation the child begins to master the ability to engage in purposeful two-way interactions (4–10 months). For this to happen, caregivers need to read and respond to the baby's emotional signals and challenge the baby to read and respond to theirs. Through these continuous interactions the baby begins to engage in back-and forth emotional signalling. The six month old smiles eagerly at its mother, gets a smile back, then smiles again. Different motor gestures, such as facial expressions, vocalizations, arm movements, become part of this signalling, which now harnesses a broad range of emotions (pleasure, curiosity, assertiveness, fear, etc.), sensations (touch, taste, sights, sounds, odours), purposeful movements and emerging social patterns.

By eight months, many of these exchanges usually occur in a row. The child is now using purposeful affective signalling to orchestrate the different components of its central nervous system in an integrated manner. The baby is beginning to use her purposeful activity in affective interactions to form higher-level cognitive, communicative and social skills. For example, searching in the caregiver's hand for her rattle, reciprocally exchanging a variety of sounds and initiating facial expressions and gestures to achieve closeness, such as reaching out to be picked up.

Through these increasingly complex interactions, the child acquires implicit knowledge of the social and communicative patterns that will serve as a framework for their growing understanding of the world. Through the endless smiles, head nods, friendly gestures, animated movements, etc., that they encounter in their countless interactions with their caregiver, the child is learning to read and respond to the social and emotional cues of others as well as to communicate their own. These meaningful patterns involving the back-and-forth reading and responding to each other's emotional signals enables the child to begin forming for themselves the social patterns, cultural norms, rules (including obligations) that characterise their family, community and culture.

9-18 months

In the fourth stage of affective transformation, the child learns to sustain a continuous flow of back-and-forth affective communication in order to collaborate with a caregiver in solving affective, meaningful problems (9–18 months). For example, the 14 month old child takes the caregiver by the hand and, with a series of physical and emotional gestures and vocalizations, gets the caregiver to go over to the toy area, points at and vocalizes about the desired toy up on the shelf, and manages to get the caregiver to pick her up to reach for the desired object. In these complex interactions, the child is further developing the capacities to read and respond to a broad range of emotional and social signals as a basis for forming patterns that include a growing sense of self and expectations from others as well as social and cultural norms.

Herein lies the reason why we should be thinking in terms of a minimum one year mandate and perhaps extending this to two years. The simple point is that the core capacities that develop during this time underpin the child's entry into language, and following that, logical thinking (Greenspan & Shanker 2004). The point of the preceding sections has been to establish that the development of these core capacities rests fundamentally on caregiver-child interactions. If these interactions are constricted, for whatever reason, this can have serious long-term consequences especially on the child's capacity to self-regulate, with all of the implications that this carries for education and social behaviour (see Shanker in press).

Translating science into action

The better we understand the dyadic processes involved in early brain development during the first year of life, the better we can appreciate the consequences of practices that interfere with or constrict these processes.

Like all mammals, humans display a number of mechanisms that promote mother-child attachment. For example, newborns are perceptually attuned to the human face, voice, touch, taste, and even movements, with a marked preference shown to the primary caregiver (Messer 1994). Likewise, caregivers exhibit a number of behaviours that would suggest that we are pre-adapted to nurture our children. For example, mothers can reliably distinguish between the crying of their own baby and other babies and they unconsciously fine-tune their behaviours in order to help their child master, not just verbal, but all kinds of social and cognitive skills (Gallaway & Richards 1994).

It is hardly surprising that we should see such instinctive behaviours, given the pivotal role that the caregiver plays in the development of the child's brain. The better we can understand these mechanisms underpinning attachment, the better we can understand how changes to a developmental manifold that has evolved over millions of years can impair early brain development. For example, there was a movement in some developed countries in the 1950s to create more sanitary post-delivery conditions in order to reduce the incidence of infection in newborns, improve the baby's temperature regulation, and enable the mother to rest after delivery (Blum 2002). As part of this babies were immediately separated from their mothers and placed in sterile nurseries. However, we now know that there are a number of neurobiological mechanisms triggered by immediate skin-to-skin contact between newborn and mother that were compromised by these new delivery procedures. Ironically, it also turns out that babies placed immediately with their mother are actually warmer than 'cot babies'.

In this example, the costs of tampering with the developmental manifold turned up immediately, in a dramatic increase in breast-feeding problems, which in turn had significant ramifications for both brain development and later health. Moreover, the incidence rate of these problems was significantly reduced when hospitals reverted to the practice of immediate contact (Winberg 2005).

The overall lesson we have taken from this research is that the more society changes, at a pace that just a century ago could scarcely have been imagined, the more we need to understand the formative biological processes that were forged over hundreds of thousands, if not millions of years. In particular, we need to do everything possible to support the early dyadic experiences that promote an infant's development of their core capacities. The capacities that we are concerned with here are those that enable an infant to master their emotions and thus attend to the world (i.e., those that are grouped together under the rubrics of *self-regulation* and *executive functioning*); to form a strong attachment with primary caregivers; to engage in back-and-forth communicative interactions with caregivers, which involves the development of intentional or purposive behaviour; to engage in sustained, joint problem-solving with caregivers; and then, to develop symbolic and language capacities and the capacity to think logically and reflectively.

A paid parental leave scheme that supports children's well-being

Of sufficient duration to benefit to children

We recommend a paid parental leave scheme of at least one year, but preferably two years. A lesser period does not provide parents with sufficient time to engage in the ongoing dyadic interactions that are so important in a child's first year of life.

The question of how long to mandate maternal leave is difficult to answer for empirical as well as theoretical reasons. As we have discussed above an infant's brain goes through a particularly robust period of synaptogenesis and synaptic pruning in the first two years of life, suggesting that a two-year leave period would have the strongest effect on healthy brain development. To date, however, we only have data on the effects of extending parental leave to 18 months.

The results from these studies are clear; longer periods of parental leave are associated with improved child health. The children of mothers who stay away from work for more than 12 weeks are more likely to breastfeed, to be fully immunized, and to receive recommended interventions. Indeed, Gregg, Washbrook, Propper & Burgess reported that extending paid leave in the UK from six to 12 months would reduce infant mortality by 6.8 per cent (Gregg & Waldfogel 2005).

Conversely, there is evidence that maternal employment during the child's first year of life can have a detrimental effect on a child's cognitive development (Waldfogel 2006; Gregg et. al 2005; Hill et. al 2005).

However, as we have said above, maternal employment after a child's first year can benefit the child. In the famous study reported in Hart and Risley's classic *Meaningful differences in the everyday experience of young American children* (1995) showing that by age three a child from a professional family will have heard approximately 11 million words addressed to them, whereas a child from a low-income family would have heard around three million words. What's more, the quality of the language experience was different, with better off children being exposed to more supportive comments than their less well-off peers, and those from a more disadvantaged background being exposed to a greater number of "put-down" comments. The most significant aspect of this finding was that these differences in the amount of a child's language experience are strongly linked, at age nine, to significant differences in child outcomes. The implications of this study for the effects of maternal employment on a young child's language experience are clear.

A flexible scheme that suits families' needs

We recommend that parents should have the flexibility to choose how they take their paid parental leave. An ideal scheme is one that allows parents to choose for one parent to take leave, or each take part of the leave as it suits their individual situation.

In order to provide maximum health benefits to infants it may be preferable that the majority of the leave be taken by mothers to assist in maintaining breastfeeding. The trend for mothers to take most of the paid leave has been the experience in other countries such as Sweden. However, in situations where mothers are experiencing postnatal depression, for example, it is important for children's well-being that families have the flexibility to choose an arrangement that is suitable for them.

In this submission two different dynamics are identified that can, in certain circumstances, pull in different directions. The one concerns the kind of constant and close interactions that an infant needs in order to develop their core capacities. The other is the kind of constant and close interactions that primary caregivers need for their own physical and mental health as well as parenting skills and satisfaction. When parents are in employment during their children's early years of life the opportunities to develop these parenting skills can be affected.

There is nothing in the literature to suggest that the caregiver-child interactions described in this report must be with the biological parent. In fact, the evidence from primate research suggests that nature provided us with certain mechanisms to promote attachment between any adult-child pair (Williams 1999). What matters from the perspective of the infant is simply that they form a secure attachment, whether this is with grandparents, adoptive parents, foster parents, or other family members. However, as the EPPE (2003) study found, an infant is likely to experience significantly higher levels of anti-social and 'worried' behaviour the more non-parent carers they have.

Massive investments in formal childcare to achieve appropriate staff to child ratios would be needed in order to achieve this secure attachment for infants in their first few years of life, although there is no evidence on whether the quality of engagement between carers and young children in formal childcare could ever provide this need. Rather, from the evidence we have, childcare can have negative impacts on children at such a young age, as has been discussed above.

Grandparents may be able to foster the necessary caregiver-child interactions and the increase in one parent families and rise in maternal employment has led to grandparents increasingly acting as carers for their grandchildren on a regular basis (Wise 2003). However, due to increased overall workforce participation and the increase in people delaying retirement from work until later, many grandparents are unlikely to be available to care for their grandchildren while their parents are at work.

It is partly because of the issue of stability and constancy that we go to such efforts to support the biological parent-child relationship. There is also the issue of the parent's own mental and physical well-being. And here research indicates that, even in those cases where it is necessary for the child's early development to be placed with an interim or alternative primary caregiver, everything possible should be done for the well-being of the parents to restore the family structure (see Greenspan et al. 1987). While the situations described here clearly relate to

the multi-risk family, the argument bears on our overall approach to parental leave programs.

Encouraging the role of partners

We recommend that consideration be given to including a period of supporting parent's leave for fathers/partners in addition to the 52 weeks of paid parental leave. We recommend that this leave should be forfeited if not taken and that it should be provided at income replacement levels up to $100,000.

Historically, the issue of father involvement was largely overlooked by developmental scientists, but over the past decade there has a dramatic surge in research on father involvement (summarised in Sakardi et. al 2007). In brief, this research has shown that father involvement can be linked to improved mental health in children and better ability to cope with stress, disappointment and frustration. It has also been linked to better grades in school, improved social development and physical well-being (Sakardi et. al 2007). For fairly obvious reasons, it leads to better mental health for mothers, better family dynamics and better parenting (Sakardi et. al 2007). Also extremely important is the research linking father involvement to better health for fathers themselves (see Fatherhood and Health Outcomes in Europe, WHO 2007).

Only a handful of countries have woken up to the importance of this research, and father participation has been slow to develop. As Sakardi (February 2008) has pointed out:

> *Public policy has the potential to facilitate or create barriers to fathers spending time with their children during the crucial years of early development. Unfortunately current institutional policies in most countries do not support the increased involvement of fathers in child rearing. Paid parental leave for fathers and employers sympathetic to fathers staying at home with sick children is still a dream in most countries.*

Begins in the prenatal period

Recent research has raised concerns about the effect of maternal stress on foetal development (see, e.g., Field 2007). We recommend that mothers should be entitled to take paid parental leave from at least six weeks before the baby's expected date of birth, or earlier in circumstances beyond the mother's control, for example, for premature births or other medical conditions associated with pregnancy where the mother is not able to take sick leave.

We also recommend consideration of a minimum period of prenatal leave to allow women and their partners to attend prenatal appointments. This leave should be available to parents who are adopting a child to allow them to attend appointments related to the adoption.

An equitable eligibility criteria

To be maximally effective, any preventative approach to mental and physical health must be universal (Mustard, McCain & Shanker 2007). In order to meet the objective of providing the best possible health and development opportunities for children we recommend that paid parental leave should apply to all parents, in

the workforce. This includes casuals, contractors and people who are self-employed. It also includes adoptive parents or parents from a surrogacy arrangement.

Eligibility for paid parental leave should be based on a person's participation in the workforce, not linked to their time in an individual workplace. Any requirements for continued service with the one employer would mean that a significant number of women are ineligible for paid parental leave. For example, in 2006 approximately a quarter of all female employees had less than 12 months service with their current employer (ABS 2006). A scheme that all employers contribute to would be consistent with such an approach and help to distribute the expense of paid parental leave in an equitable way.

For parents not in the workforce, we recommend that social security income supports, including the Baby Bonus paid on a fortnightly basis, should continue to apply.

A sufficient payment rate

We recommend that a rate of payment at income replacement levels is essential to allow one parent to stay at home with their infant and maintain the necessities of caring for a family. Families need to have the certainty of their full income to enable them to meet their financial obligations. Paying parental leave at income replacement levels is consistent with all other forms of leave, such as annual leave or sick leave which are paid on an income replacement basis. However, we do recommend a cap on payments of $100,000 per annum, with the possibility of employers of women earning more than this being able to choose to top-up payments to full salary replacement.

As one of the objectives of paid parental leave should be to maintain workforce attachment we recommend that parents receive payments through their employer. This will help to maintain the relationship between employee and employer and the likelihood that the employee will return to the workplace at the end of their leave. While on paid parental leave, we recommend that a parent continue to receive superannuation contributions, be subject to income tax and eligible to receive social security income supports dependent on their income.

A return to work guarantee

We recommend the establishment of a legislated return to work with flexible conditions guarantee as part of paid parental leave, similar to the UK *Employment Rights Act 1996* (UK). In the UK parents are given a statutory right to apply for flexible work conditions upon their return to work. This right extends to children up to school age and for children with disabilities up to the age of 18 years. As with the UK scheme, we recommend that the request must be considered by an employer and that there be exemptions for employers in certain circumstances.

Funded by the community

We recommend that paid parental leave is funded jointly by Government and employers with contributions by employers made through the current tax system. We recommend that the Baby Bonus be incorporated into the paid parental leave

scheme payments for parents in the workforce, but continue to be paid separately for those parents who are not working.

We do not present a costing or model for how a paid parental leave scheme may work as we consider this is best left to the Productivity Commission based on the submissions received to its Inquiry. However, we encourage the Australian Government to make a commitment to increasing their investment in the early years of life, through paid parental leave, as well as other strategies. Children are the responsibility of our entire community and an investment in children early on will bring significant benefits for our entire community.

In June 2007 the NSW Commission for Children and Young People, National Investment for the Early Years (NIFTeY), the Queensland Commission for Children and Young People and the National Foundation for Australian Women (NFAW) commissioned an opinion poll from NewsPoll. The poll found high public support for the development of a national system of paid maternity leave, as well as support for the financing of such a system through funding by government, employers and employees. However, we recommend that employees should not be required to contribute to the paid parental leave scheme we have proposed. Given the significant impact that family income levels have on take-up of parental leave, parents are unlikely to take the entire leave period if they are required to contribute to their own paid leave but cannot afford to do so.

We recognise that some small businesses or those with a high female workforce may be disadvantaged by the introduction of paid parental leave scheme as employees will be likely to take longer leave. Therefore, we recommend that consideration be given to grants to employers to assist with the costs of recruitment and re-training. Exempting small businesses that have a small number of employees from the employer contributions may also need to be considered as part of this.

Implementation

We recommend that the paid parental leave scheme should be based in legislation.

We recommend that the paid parental leave scheme should be accompanied by supporting guidelines, as well as a public awareness campaign on entitlements and responsibilities for employers and employees.

We also recommend that the legislation implementing paid parental leave should provide for a review of the scheme five years after its commencement. The review should include consideration of the impacts of paid parental leave on children's well-being. In addition, we recommend further research into the long term impacts of paid parental leave on children's well-being and development, similar to research that has been conducted in the US and Canada (for example, Baker & Milligan 2006).

Family-friendly employment standards and work practices

Australian industrial relations policy should include any paid parental leave scheme and other family-friendly practices. We recommend that as part of its Inquiry the Productivity Commission considers how the proposed National Employment Standards can better meet the needs of children of working parents and how paid parental leave may form part of the Standards.

Long work hours and nontraditional work schedules appear to have a negative impact on children's well-being. Therefore, we recommend that an industrial relations policy that will support families to care for their children should include provisions so that parents can work part-time with the right to return to full-time work as the child gets older. The particular needs of children with a disability, and their parents, should be considered in such policy. It should also include paid leave to assist parents meet the needs of children who are sick.

We also support family-friendly policies that include a parent's right to negotiate or vary their total working hours to meet demands of a young family. Sweden provides such an example as parents have the right to reduce their workload by 25 per cent until their child is eight, which is usually done by reducing the work hour to six hours a day. Set hours, including predictable start and finish times, can greatly benefit some families, while others prefer flexibility. Regulation of overtime and 'unsocial' hours and the requirement of a minimum period of notice for intended changes to rostering arrangements are other strategies that can support parents.

An integrated early childhood policy

Any investment in paid parental leave must be coupled with other practices and programs designed to enhance a child's early development. We recommend that a paid parental leave scheme should be situated within an integrated national policy on early childhood.

Consideration should also be given to the likely impacts of a paid parental leave scheme on other aspects of early childhood policy and practice. For example, having more parents who are at home with their babies for longer may lead to an increase in the demand for services and activities during the day that can support parents in raising their children.

Conclusion

As Mustard, McCain & Shanker (2007) explained in *Early Years Study II*, the early period of development shapes the brain and influences lifelong learning, behaviour, and health. The early years are a period of heightened sensitivity to negative and positive experiences. Risk-taking in adolescence, mid-life health status and cognitive abilities in later life all have their roots in our early childhood experiences. Every aspect of human development is shaped by the cumulative effect of a child's early dyadic experiences.

We now know more than ever about how these early experiences promote optimal early child and brain development. Universal paid parental leave

represents one of the most important and cost-effective applications that we can make of this knowledge.

In terms of promoting the future health and well-being of our society there could be no more powerful first step than a comprehensive paid parental leave scheme. The better we understand the biological reasons why this is the case, the more we can begin to appreciate why parental leave is one of the most prudent investments we can make for the future well-being of our society (Heckman 2006). We consider a scheme of at least one year of paid parental leave to be one of the most important investments the Australian Government can make to improve children's well-being and development, and in turn Australia's productivity.

References

Australian Bureau of Statistics [ABS] (2006) *Forms of Employment Australia*, November 2006, Cat. No. 6359.0

Als H., Duffy F. H., McAnulty G. B. (1996) "Effectiveness of individualized neurodevelopmental care in the newborn intensive care unit (NICU)", *Acta Paediatrica*, 16, pp. 21-30

American Academy of Pediatrics (1997) "Breastfeeding and the use of human milk", *Pediatrics*, 100(6), pp. 1035-1039

Astington, J. W. & Pelletier, J. (2005) Theory of mind, language and learning in the early years: Developmental origins of school readiness. In B. D. Homer & C. Tamis-Lemonda (Eds.), *The development of social cognition and communication,* Mahwah, NJ, Erlbaum, pp. 205-230

Baker, M., Gruber, J., Milligan, K. (2005) *Universal childcare, maternal labor supply and family well-being*, Working Paper 11832, National Bureau of Economic Research

Baker, M. & Milligan, K. (2006) *The Early Development and Health Benefits of Maternity Leave Mandates*, July 2006

Ball, J., Moselle, K., & Pedersen, S. (2007) *Father's involvement as a determinant of child health,* Commissioned review of research for the Public Health Agency of Canada

Belsky, J. (2006). "Early child care and early child development: Major findings from the NICHD Study of Early Child Care", *European Journal of Developmental Psychology, 3*, pp. 95-110

Berger, Lawrence M., Jennifer Hill and Jane Waldfogel (2005) "Maternity leave, early maternal employment and child health and development in the US", *Economic Journal*, 115

Blum, D. (2002) *Love at Goon Park*, Perseus Books

Bruner, J.S. (1983). *Child's talk: Learning to use language,* New York, W. W. Norton & Co.

Chatterji, P. & Frick, K. D. (2005) "Does Returning to Work After Childbirth Affect Breastfeeding Practices?", *Review of Economics of the Household*, Volume 3, Issue 3, pp. 315-335

Chess, S., & Thomas, A. (1984). *Origins and evolution of behavior disorders*, Brunner/Mazel

Collishaw et al (2004) "Time trends in adolescent mental health", *Journal of Child Psychology and Psychiatry***,** Volume 45, Issue 8, pp. 1350-1362

Cordero, J, Greenspan, SI, Bauman, ML, Brazelton, TB, Dawson, G, Ph.D., Dunbar, B. Mundy, PC, Perou, R, Scott, KG, Shanker, SG, & Stein, REK. (2006) *Centers for Disease Control and Prevention (CDC) and the Interdisciplinary Council on Developmental and Learning Disorders (ICDL) Work Group on Early Identification and Preventive Intervention*, ICDL

Diamond, L.M., & Aspinwall, L.G. (2003) "Emotion regulation across the lifespan: Commentary and directions for future research", *Motivation and Emotion*, 27, pp. 125-156

Diamond, A., Barnett, S., Thomas, J. and Munro, S. (2007) "Preschool program improves cognitive control", *Science*, Nov 30, 2007

Falk, D. (2000) *Primate Diversity,* New York, W. W. Norton

Field, T. (2007). *The amazing infant*, Oxford, Wiley-Blackwell

Fogel, A. (1993) *Developing Through Relationships*, The University of Chicago Press

Fox, NA and Calkins, SD (2003) "The development of self-control of emotion: Intrinsic and extrinsic asymmetry", *Developmental Neuropsychology*, 8, pp. 165-184

Franco, M., P. Orduñez, B. Caballero, J. Tapia Granados, M. Lazo, J. Bernal, E. Guallar & R. Cooper (2007) "Impact of Energy intake, physical activity, and population-wide weight loss on cardiovascular disease and diabetes mortality in Cuba", *American Journal of Epidemiology,* pp. 1980-2005

Frize, M. (2006) *Factors influencing take-up of paternity leave*, Equal Opportunities Commission

Gallaway, C. and Richards, B. J. (1994) *Input and interaction in language acquisition*, Cambridge, Cambridge University Press

Gould, S. J. (1978) *Ontogeny and Phylogeny*, Cambridge, MA, Harvard University Press

Greenspan, S. I. (1997) *The Growth of the Mind*, New York, Addison-Wesley

Greenspan, S. I., Wieder, S., Lieberman, A., Nover, R., Lourie, R., & Robinson, M. (1987) *Infants in multirisk families: Case studies in preventive intervention.* Clinical Infant Reports, (3), New York, International Universities Press

Greenspan, S. I. and Salmon, J. (2001) *The four-thirds solution: Solving the childcare crisis in America today*, Perseus Books

Greenspan, S. I. and Shanker, S. (2004) *The first idea: How symbols, language, and intelligence evolve, from primates to humans,* Reading, MA, Perseus Books

Greenspan, S. and Shanker, S. (2006) "A Developmental Framework for Depth Psychology", *Handbook of Psychoanalysis*, American Psychiatric Press

Greenspan, S.I. and Shanker S. G. (in press) "Emotions and the formation of consciousness, the mind and the brain: A developmental depth psychological framework for understanding the pathways to mental health and mental illness", *American Psychologist*

Gregg, P. and Waldfogel, J. (2005) "Symposium on parental leave, early maternal employment and child outcomes: Introduction", *The Economic Journal*, 115 (February), F1–F6

Paul Gregg, P., Washbrook, E., Propper, C. and Burgess, S. (2005) "The effects of a mother's return to work decision on child development in the UK", *The Economic Journal*, 115 (February), F48 – F80

Hart, B Risley, T. F. (1995) *Meaningful differences in the everyday experience of young American children*, Brookes Publishing

Heckman J. (2006) "Skill formation and the economics of investing in disadvantaged children", *Science* 312, pp. 1900-1901

Hill, J. L., Waldfogel, J., Brooks-Gunn, J. and Han, W. J. (2005) "Maternal employment and child development: A fresh look using newer methods", *Developmental Psychology,* Vol. 41, No. 6, pp. 833–850

Hoffman, J. (2008) *Daddy I need you: A father's guide to early childhood brain development,* Father Involvement Initiative – Ontario Network

Kahn, P. H. and Kellert S. R. (2002) *Children and nature: Sociocultural and evolutionary investigations*, Cambridge, Mass., MIT Press

Keon, W. J. (2008) *Maternal health and early childhood development in Cuba,* Report of the Canadian Senate Subcommittee on Population Health of the Standing Senate Committee on Social Affairs, Science and Technology

Kirp, D. (2007) *The Sandbox investment*, Boston, MA, Harvard University Press

Lewis, M.D. (2005) "Self-organizing individual differences in brain development", *Developmental Review, 25,* pp. 252-277

Lewis, M. and Todd, R. (2007) "The self-regulating brain: Cortical-subcortical feedback and the development of intelligent action", *Cognitive Development*, 22 (2007) pp. 406–430

Louv, R. (2005) *Last child in the woods,* Chapel Hill, Algonquin books of Chapel Hill

Marshall, K. (2003) “Benefitting from extended parental leave”, *Perspectives on Labour and Income*, March, 4, 3

Messer, D. (1994) *The development of communication: From social interaction to language*, New York, John Wiley & Sons

Mustard, J. F., McCain, M. & Shanker, S. G. (2007) *Early Years Study II*, Toronto, The Council of Early Child Development

National Institute of Child Health and Development (2006) *The NICHD Study of Early Child Care and Youth Development,* Washington, DC, US Department of Health and Human Services

Nomaguchi, K. M. (2006) “Maternal employment, nonparental care, mother-child interactions, and child outcomes during preschool years”, *Journal of Marriage and the Family, 68*, pp. 1341-369

Oddy, W. H., G. E. Kendall, E. Blair, N. H., de Klerk, F. J. Stanley, L. I. Landau, S. Silburn and S. Zubrick. (2003) “Breastfeeding and Cognitive Development in Childhood: A Prospective Birth Cohort Study”, *Paediatric and Perinatal Epidemiology* 17, pp. 81-90

Olds, D. L**.** (2002) “Prenatal and infancy home visiting by nurses: From randomized trials to community replication”, *Prevention Science* 3(3), pp. 153-172

Olfman, S. (2005) *Childhood lost: How American culture is failing our kids*, New York, Praeger Publishers

Panksepp, J. (1998) *Affective neuroscience*, New York, Oxford University Press

Porter, C. L. (2003) “Coregulation in mother-infant dyads: Links to infants’ cardiac vagal tone”, *Psychological Reports,* 92, pp. 307-319

Ratey, J. R. (2008) *Spark: The revolutionary new science of exercise and the brain*, London, Little, Brown & Co.

Rothbart, M. K., Derryberry, D. & Hershey, K. (2000) Stability of temperament in childhood: Laboratory infant assessment to parent report at seven years. In FJ Molfese & DL Molfese (Eds.), *Temperament and personality development across the life span.* Hillsdale, NJ, Erlbaum, pp. 85-119

Sammons, P. Sylva, K. Melhuish, E. Siraj-Blatchford, I. Taggart, B. & Elliot, K (2003) *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 8b - Measuring the Impact of Pre-School on Children's Social/behavioural Development over the Pre-School Period*, Institute of Education, London

Sakardi, A. (2008) “Children who have an active father figure have fewer psychological and behavioural problems”, *Acta Paediatrica Email Alert*, Tuesday 12 February, 2008

Sakardi, A., Kristiansson, R., Oberklaid, F., Bremberg, S. (2007) Fathers’ involvement and children’s developmental outcomes: a systematic review of longitudinal studies. *Acta Paediatrica,* 97, pp. 153–158

Schore, A. (1994) *Affect Regulation and the origin of the self*, NJ, Lawrence Erlbaum Associates Publishers

Shanker, S. G. (in press). In Search of the Pathways that Lead to Mentally Healthy Children, *Journal of Developmental Processes*

Shanker, S. G. and King, B. J. (2002) “The Emergence of a new paradigm in ape language research”, Target Article, *Behavioral & Brain Sciences,* 25, pp. 605-626

Sroufe, L. A. (1996). *Emotional development: The organization of emotional life in the early years*, New York, Cambridge University Press

Sroufe, L. A. (2000) “Early relationships and the development of children”, *Infant Mental Health Journal*, 21, pp. 67-74

Toschke A. M., Vignerova J., Lhotska L., Osancova K., Koletzko B., von Kries R. (2002) “Overweight and obesity in 6- to 14-year-old Czech children in 1991: protective effect of breast-feeding”, *J Pediatr* ,141(6), pp. 764-769

Trevarthan, C. (1979) Communication and cooperation in early infancy: A description of primary intersubjectivity. In M. M. Bullowa (Ed.), *Before speech: The beginning of interpersonal communication*, New York, Cambridge University Press

Tronick, E. Z. (1989) “Emotions and emotional communication in infants”, *American Psychologist,* 44, pp. 112-119

Tucker, D. (2007) *Mind from body: Experience from neural structure*, New York, Oxford University Press

Tucker, D. M., Derryberry, D., & Luu, P. (2000) Anatomy and physiology of human emotion: Vertical integration of brainstem, limbic, and cortical systems. In J. C. Borod (Ed.), *Handbook of the neuropsychology of emotion* (pp. 56–79), New York, Oxford University Press

Waldfogel, J. (2006) *What Children Need*. Cambridge, MA, Harvard University Press

Williams, M. (1998) *Our babies, Ourselves: How biology and culture shape the way we parent,* New York, Anchor Books

Winberg, J. (2005) “Mother and newborn baby: mutual regulation of physiology and behavior – a selective review”, *Dev Psychobiol,* 47, pp. 217-229

Wise, S. (2003) *Family Structure, Child Outcomes and Environmental Mediators: An Overview of the Development in Diverse Families Study,* Research Paper No. 30, Melbourne, Australian Institute of Family Studies

World Health Organisation (2007) *Fatherhood and Health Outcomes in Europe*, Denmark, WHO Regional Office for Europe