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The Netherlands

Settling in: studying stress to support young children and their parents during and beyond the transition to center-based child care

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Citation

Vet, S. M. de. (2022, October 5). *Settling in: studying stress to support young children and their parents during and beyond the transition to center-based child care*. Retrieved from <https://hdl.handle.net/1887/3466091>

Version: Publisher's Version

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Note: To cite this publication please use the final published version (if applicable).



Chapter 1

General Introduction

Center-based child care settings, once founded to allow working-class mothers to work outside of the home, have become an established form of non-parental child care for many families all over the world, in which numerous children spend a large part of their early life (Clarke-Stewart & Allhusen, 2005). According to the Organization for Economic Cooperation and Development (OECD, 2021), center-based child care is even the most commonly used form of non-parental child care during early childhood in economically advanced societies, next to home-based child care, care at home provided by professional childminders, and informal care. The first large-scale and longitudinal study into the long-term effects of non-parental child care on the development of children was conducted in the United States by the National Institute for Child Health and Human Development Early Child Care Research Network (NICHD Early Child Care Research Network, 2006). The NICHD Early Child Care Research Network researchers found that out-of-home child care had both positive and negative effects on young children, and that these effects were moderated by several factors such as quality and quantity of care (NICHD Early Child Care Research Network, 2006). The positive effects of child care mainly lied in the domains of cognitive development and language skills, while the more negative effects of child care were related to behavioral problems (NICHD Early Child Care Research Network, 2006). Later studies also included the measurement of stress to capture the short-term effects of child care and daily experiences of children in child care, showing that the stress system is dysregulated when children are at child care, especially around transitions (Engel & Gunnar, 2020). Although the effects of attending child care on the stress system were rather showed to be rather small, they were found repeatedly and are applicable to a large group of children worldwide (Fukkink et al., 2017). Moreover, a dysregulation of the stress system has potential negative long-term consequences. However, it is not completely clear yet what factors play a role in this stress response, in particular for infants and around transitions to child care. Moreover, the role of parents, as well as the stress they might experience themselves around this transition, has been largely overlooked. These topics deserve further attention. Therefore, the aim of the current dissertation was to elucidate the correlates of physiological and behavioral stress (especially around transitions) for young children (aged 0 – 4 years, with a specific focus on infants) and their parents in the context of center-based child care, and to examine whether and how we can support families with the aim of reducing stress.

The child care context in the Netherlands

When cross-culturally comparing child care systems, it becomes immediately clear that child care systems differ substantially internationally when it comes to the age range of

the children cared for, and the rules and regulations that apply (OECD, 2021; UNICEF, 2008). In the Netherlands, estimates show that 353.000 families received child care allowance for center-based child care for children aged 0 to 4 years in the third quarter of 2021 (Rijksoverheid, 2021). Child care for children in the Netherlands is characterized by a high percentage of part-time attendance, with an average of 16 hours per week, as well as one of the highest enrollment rates of children aged 0 to 2 years old (OECD, 2021). In the Netherlands, infants can attend out-of-home child care from the very early age of six weeks onwards. However, in several other countries (such as in Germany and Scandinavian countries) it is common for children to start attending child care after having reached the age of one (Vermeer & Groeneveld, 2017b). In 2017, the Dutch government accepted the *Wet Innovatie en Kwaliteit Kinderopvang* (Rijksoverheid, n.d.). Some of the most important rules and regulations in this child care act that apply to the youngest children are the appointment of a mentor for each child to monitor development, more educational requirements for employees who work with infants, and stricter regulations concerning the stability of professional caregivers and the infant-caregiver ratio. The two latter changes entail the obligation for at least one familiar caregiver to be present during the day for each child, and an adaptation of the caregiver-infant ratio from 1:4 to 1:3 (Rijksoverheid, n.d.). Recent quality assessments demonstrated that the Dutch child care system is of average to good quality, and holds a position somewhere at the top in international rankings (Slot et al., 2019).

Physiological and behavioral stress of young children in child care

One of the most important objectives of modern child care settings is to provide children with a sense of emotional security (Riksen-Walraven, 2000), which can only be established when children experience a manageable amount of stress. Stress can be defined as “a real or interpreted threat to the physiological or psychological integrity of an individual that results in behavioral and/or physiological responses” (McEwen, 2000, p. 508). The developmental phase of an individual plays an important role in these behavioral and/or physiological responses: what stimuli are perceived as threatening depends for a great part on the regulatory capacities and earlier experiences of an individual (Engel & Gunnar, 2020). Behavioral responses that young children in distress might show are for example crying, fussing, overstretching, frowning, and increased muscle tension and movement, while well-being (which can be considered the opposite of stress) is characterized by laughter, relaxation, openness, and an appearance of vitality (De Kruif et al., 2007; Laevers et al., 2003). With regard to physiological stress responses, which have been studied more often in child care settings than behavio-

ral responses, one of the most important mechanisms that explains how stress can get “under the skin” is the hypothalamic-pituitary-adrenocortical axis (HPA-axis). The end product of an activated HPA-axis is the steroid hormone cortisol, as produced in the adrenal glands after the activation of several other organs and hormones. Cortisol peaks approximately 20 minutes after the presentation of a threatening stimulus, and can be measured most reliably in saliva samples (Engel & Gunnar, 2020; Kirschbaum & Hellhammer, 1994). However, cortisol is not only produced in response to threats, but follows a diurnal rhythm, as a normal production of cortisol is necessary for healthy functioning (Tryphonopoulos et al., 2014). This diurnal rhythm is characterized by a morning peak and followed by a gradual decrease over the day. Therefore, deviations of this typical diurnal pattern can be interpreted as an indicator of stress, although for young children these diurnal patterns are less stable and therefore somewhat more difficult to interpret (Gunnar & Donzella, 2002). A repeated and/or prolonged activation of the HPA-axis, characterized by high levels of cortisol, may have long-term consequences for physical and emotional well-being, especially during the first years of life, through alterations of the developing brain and the programming of regulatory systems (Engel & Gunnar, 2020; Levine, 1957).

The HPA-axis was one of the first mechanisms demonstrated to be influenced by early experiences in rat pups, which indicated the existence of a so-called sensitive period early in life, when systems are still highly plastic (Levine, 1957). In humans, the timing of such a postnatal sensitive period is slightly unsure, but estimates based on natural experiments point towards the first 1.5 to 2 years of life (Engel & Gunnar, 2020). The presence and co-regulation of attachment figures during these early years is vital for normal regulation of the HPA-axis, as young children are yet incapable of independently regulating their stress responses (Bowlby, 1969; Gunnar & Donzella, 2002). Attending a child care center was found to increase afternoon cortisol levels in young children compared to their own cortisol levels when staying at home (e.g., Geoffroy et al., 2006; Vermeer & Van IJzendoorn, 2006). This may at least partly be explained because children are separated from their primary attachment figures for a longer period of time at child care, but other factors could play a role in these cortisol elevations as well. Because of this separation, young children are deprived of the parental buffering of stress. However, unfamiliar yet sensitive professional caregivers can also become secure attachment figures for children over time, helping them regulating stress at child care (Gunnar et al., 1992).

A specific age group: Infants in child care

As especially infants are highly dependent on the care and support of sensitive caregivers to regulate their stress responses (e.g., Engel & Gunnar, 2020), out-of-home child care for infants is still quite a controversial topic. Several decades ago, researchers were concerned that child care facilities would prevent particularly infants from developing a secure attachment to their primary caregivers (Belsky, 1986). However, later studies found that child care does not necessarily form a threat to infant-parent attachment (e.g., Goossens & Van IJzendoorn, 1990), and that secure attachments with professional caregivers can even act as a buffer when the attachment relationship between parent and child is insecure (e.g., Howes et al., 1988). Some researchers however still argue that center-based child care is not suitable for young infants (e.g., Bossi et al., 2017; UNICEF, 2008). Moreover, in the Netherlands, the quality of child care groups for infants is in general lower than the quality of child care groups for toddlers and preschoolers (Slot et al., 2020). This finding is worrisome, considering the vulnerable position of infants and their dependence on sensitive care to help them regulate stress. In spite of this, infants are still an underrepresented group in child care research (Vermeer & Groeneveld, 2017b).

A specific time point: The (re)transition to child care

It has been argued that specifically the transition from home to child care can be stressful, since during this transition most children are separated from their primary attachment figures for the first time for a longer period of time, and attachment relationships with professional caregivers are not yet formed (e.g., Klette & Killén, 2019; Nystad et al., 2021). Several studies indeed showed that children experienced physiological stress around the transition to child care, such as elevated cortisol levels (Ahnert et al., 2004; Albers et al., 2016; Bernard et al., 2015; Nystad et al., 2021), and reduced activity of the vagus nerve, an important component of the parasympathetic branch of the autonomic nervous system (Ahnert et al., 2021). Furthermore, children were found to display behavioral stress around the transition, such as extensive crying and fussing (Ahnert et al., 2021), frequently seeking comfort from professional caregivers (Datler et al., 2010), appetite changes and resistance to sleep (Bossi et al., 2017), low levels of affect and explorative interest (Datler et al., 2012), and inhibited behavior (Fein et al., 1993). In a study into the transition to primary school it was found that such transitions can be stressful (as reflected by higher levels of cortisol in hair) even when children have been familiar with out-of-home child care settings before they made the transition (e.g., Groeneveld et al., 2013). The process of adjusting to the child care setting after a significant interruption of care, because of for example a prolonged closure (which occurred in many

countries during the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) outbreak in 2020), is likely to resemble the described adjustment from home to a new child care setting (Bossi et al., 2017).

Several studies have reported circumstances and behaviors that facilitate less stressful transitions for children. For example, parental presence during an adaptation phase promoted the regulation of cortisol levels (e.g., Ahnert et al., 2004). Furthermore, stability at child care (De Schipper, Van IJzendoorn et al., 2004), more employees and more adaptation time (Klette & Killén, 2019), and a clear goodbye ritual (Klein et al., 2010) were found to promote better child adjustment. However, it is still largely uncharted territory what other child care, parental, and child factors are related to individual variations in stress around transitions, such as the behavior of parents and professional caregivers, and child characteristics like temperament and age. Knowledge about the factors facilitating or hindering transitions to child care (e.g., caregiving behavior of professional caregivers) could be used to develop interventions for young children and their parents, and knowledge about moderators (e.g., child and parental characteristics) can provide insights as to who might benefit most from such an intervention. Interventions aiming to reduce stress during transitions (for specific groups) are lacking so far. However, as we know from the literature, sensitive caregiving behavior can help children to regulate stress (Engel & Gunnar, 2020). An example of an intervention that strives to enhance caregiver sensitivity is the attachment-based Video-feedback Intervention to Promote Positive Parenting (VIPP; Juffer et al., 2008), and this intervention was found to be effective in enhancing caregiver sensitivity in multiple contexts, also in the context of center-based child care (Werner et al., 2018). Considering the theoretical underpinnings of and empirical evidence for this intervention, we believe that such an intervention could also help enhancing the sensitivity of professional caregivers who work with infants, and through this increased sensitivity ease the transition to center-based child care for both infants and parents.

A specific focus: Parents and child care

Until recently, researchers have tended to focus mainly on child care and child characteristics when studying factors relating to children's stress in out-of-home child care. This is not surprising, since child care and child characteristics and the stress of children in child care settings manifest itself within the same context. However, in general, children spend most of their time with their parents, and the perceptions and experiences of parents can therefore be expected to have an impact on children's responses as well, even when

parents are not physically present. In this case, the feelings and behaviors of parents towards their child and the child care center might influence how children experience child care. For example, parental anxiety regarding child care may influence children's levels of stress through cross-over effects from parent to child (Deater-Deckard, 1998; Nelson et al., 2009). Proposed mechanisms are direct, via contagious physiological processes (Waters et al., 2014), or more indirect, via the adoption of unhelpful parenting practices when stressed, such as overprotective parenting (Cooklin et al., 2013) and insensitivity (Hsu, 2004). It should be noted that this relation might be bidirectional, in which the child also influences parental responses, both physiological and behavioral (e.g., Swartz et al., 2016; Waters et al., 2014). These findings in sum underline the importance of including parental factors (such as sensitivity and anxiety) when studying children's stress at child care.

In addition, most attention has been paid to the stress of children as an outcome when studying out-of-home child care. Lately, parental experiences have been taken into account as an outcome as well, since parents may also experience stress when their child attends center-based child care, as described above. This might especially be the case around transitions and when the child is still relatively young, which can be illustrated by several findings. First, among 366 first-time mothers, three months post-partum, non-parental child care and separation from the infant were the mothers' main concerns (Kaitz, 2007). The same picture arises from studies on mothers returning to the work force after maternity leave, struggling with feelings of not being a good enough parent, and with finding a balance between work and the care for their child (Alstveit et al., 2011; Millward, 2006; Spiteri & Xuereb, 2012). Finally, Swartz and colleagues (2016) found in their qualitative study on parental perspectives that more than one third of the mothers experienced the transition of their child to child care as challenging for themselves. In light of these findings, parental stress with regard to their child attending child care should be examined as a separate outcome as well. Finally, because of these findings, parents should be included as partners in interventions aimed at easing the transition to center-based child care for young children.

Outline of the dissertation

To conclude, this dissertation focuses on the physiological and behavioral stress of young children (especially infants) and their parents during and beyond the transition to center-based child care. In Figure 1, a visual overview of the factors that were studied in relation to children's and parents' stress is presented. Chapter 2 includes a meta-analysis on young children's (approximately aged 0 – 4 years) salivary cortisol levels in the child

care setting versus home, and what child care, child, and study factors are associated with elevated cortisol levels at child care, and explain for variance between studies. In Chapters 3 and 4, the results of a study on the transition of young infants (under six months of age at the start) to center-based child care are described. Chapter 3 specifically focuses on salivary cortisol patterns of infants before and after the transition to center-based child care, including both group-level and individual cortisol patterns. Furthermore, child care, parental and child characteristics were studied in relation to increasing versus decreasing cortisol patterns at the child care center. In Chapter 4, a study into the feasibility and potential indications for effectiveness of a video-feedback intervention for professional caregivers and parents is reported. This intervention is aimed at easing the transition to center-based child care for both infants and their parents. Chapter 5 concentrates on child care, parental and child correlates of stress in young children (aged 0 – 4 years) and parents when they re-entered the child care center after a 2-month lockdown in the Netherlands due to the first outbreak of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in 2020, which could be considered a transitional period. Lastly, in Chapter 6, the findings of all chapters are summarized and reviewed in an overarching discussion. Strengths and limitations of the dissertation, and implications for future research, child care practice, and policy will be considered as well.

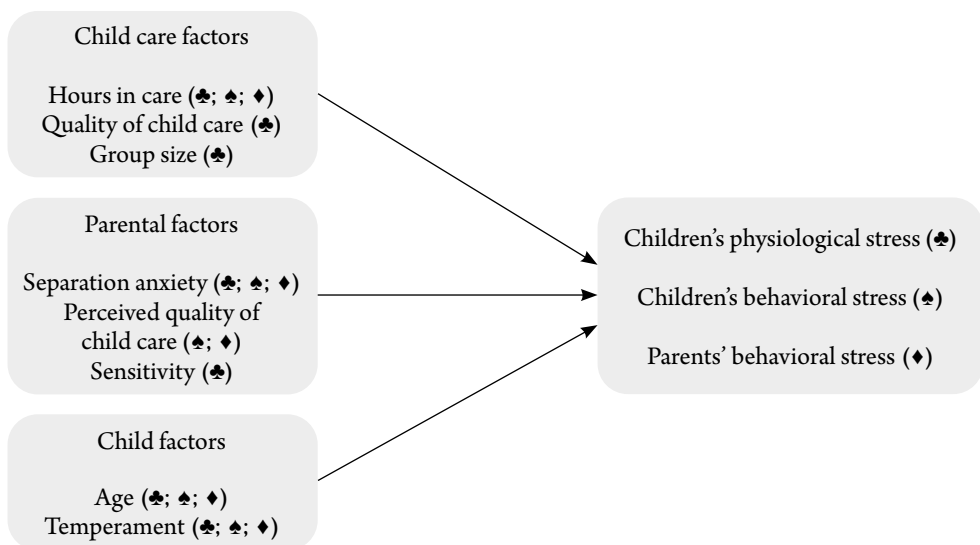


Figure 1. Visual overview of the factors that in the current dissertation were studied in relation to young children's physiological (♣), behavioral (♠), and/or parents' behavioral (♦) stress in the context of center-based child care.