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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Chapter 6

General Discussion

The objectives of the current dissertation were 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 could support families around these transitions. We studied both physiological and behavioral stress in children, and behavioral stress in parents. The factors that were studied in relation to stress were subdivided into child care, parental, and child factors. A visual overview of the child care, parental, and child factors that in the current dissertation were found to be related to children's and parents' physiological and behavioral stress in the context of center-based child care, is depicted in Figure 1. Below, I will discuss how the results relate to each other, as well as implications for future research, child care practice, and policy.

Physiological stress of infants, toddlers, and preschoolers in child care

Chapter 2 and 3 focused on the physiological stress of infants, toddlers, and preschoolers at center-based child care settings. Both the meta-analysis in Chapter 2 and the empirical study in Chapter 3 illustrated that young children, on average, experience more physiological stress at child care compared to home. In Chapter 2, children were found to exhibit a cortisol decrease over the day at home and a cortisol increase over the day at child care. There is no consensus in the literature about what explains these elevated cortisol levels at child care, with possible explanations varying from the separation from parents and stressful peer interactions to allostatic overload, and most likely a combination of these factors (Vermeer & Groeneveld, 2017a). When specifically focusing on infants, as we did in Chapter 3, these differential patterns have not always been found (e.g., Albers et al., 2016). We also found that the infants showed a cortisol decrease over the day in both settings, although absolute cortisol levels were higher at child care (medium effect). The different findings in Chapter 2 and Chapter 3 with regard to children's cortisol levels are likely to be explained by maturational inequalities between age groups (Tollenaar et al., 2010), and children's cortisol patterns in child care thus seem to be moderated by child age. Beyond transitions, it appears that older children find it more challenging than younger children to spend time at the child care center (as concluded in Chapter 2). Higher stress levels in older children (especially toddlers) beyond transitions may be caused by more complex peer interactions for toddlers compared to infants, preschoolers, and school-aged children. Namely, preschoolers already gained (most of) the socioemotional and verbal skills necessary for successful peer interactions, while infants do not yet regularly interact with peers. On the contrary, toddlers do interact with peers but generally still lack the skills needed for these interactions (Geoffroy et al., 2006; Vermeer

& Groeneveld, 2017a; Vermeer & Van IJzendoorn, 2006). Ahnert and Lamb (2003) described that parents of infants and toddlers (as opposed to parents of preschoolers) prioritize the health and well-being of their child and thus seek child care settings likely to minimize stress rather than increase educational involvement. On the basis of the results concerning child age as a moderator of cortisol levels, this tendency of parents can be viewed as a positive trend, as for especially toddlers, too much tension-provoking educational activities and peer interactions at child care might elevate stress levels.

Furthermore, the difference in cortisol patterns over the day between home and child care (Chapter 2) applied solely to studies that were conducted in the United States. Remarkably, when meta-analytically combining results from different studies, the differences in cortisol patterns were not found in other countries (mainly in Europe). We hypothesized that the moderation by country was possibly an artefact driven by the moderation of child age and hours in child care, since the American studies included older children, and children in the United States on average attend child care for more hours per week (National Institute for Child Health and Human Development (NICHD) Early Child Care Research Network, 2005). Indeed, with regard to the correlates of increasing cortisol levels over the day at child care, more hours in child care were positively related, whereas child temperament and group size were not. The higher educational demands that are in general more present in American child care settings than in European settings could also be a possible explanation for the finding that the difference in cortisol between the home and child care setting was only significant for studies conducted in the United States.

The observed cortisol elevations at child care versus home seemed rather robust, such that not many correlates were found to significantly influence the strength of the effect. Surprisingly, child care quality did not show a main effect in Chapter 2, but the relation between child care quality and children's cortisol levels was moderated by type of care: an increase in cortisol over the day at child care was related to lower child care quality for home-based but not center-based child care settings. The same lack of a (strong) relation between children's cortisol levels and the child care quality of center-based child care (as measured by caregiver sensitivity) was found in Chapter 3, while a relation was expected on the basis of an earlier review (Vermeer & Groeneveld, 2017a). The current marginal role of child care quality in relation to children's cortisol levels might be related to the operationalization of child care quality, which was mainly dyad-focused for the majority of studies in the meta-analysis and the study in Chapter 3. In the context of child care quality research, some researchers suggest that the quality of child care should be defined by

caregivers' behavior directed towards the group as a whole rather than by interactions with individual children (Ahnert & Lamb, 2003). Others suggest that the total sum of received sensitivity from multiple caregivers is the best indicator of child care quality (e.g., Mesman et al., 2016). However, the lack of a significant correlation between cortisol levels and child care quality may also relate to the inclusion of mostly average to highly sensitive professional caregivers and moderate to high-quality child care centers in many studies, including our own. With low variation, significant relations are harder to find.

Settling in during transitional periods

In Chapter 5, we studied predictors of behavioral stress in young children and their parents during their return to the child care center after a 2-month lockdown due to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic. First, while the meta-analysis revealed that older children (especially toddlers) experience more physiological stress (as measured via cortisol) beyond transitions, Chapter 5 showed that the younger the child, the more behavioral difficulty settling in during transitional periods. The finding that younger children experience more stress during transitions is in accordance with results from other studies (e.g., Datler et al., 2012). A possible explanation is that during transitions, children are separated from their primary attachment figure(s) for the first longer period of time (or again after a significant interruption of care), which might be especially challenging for infants. Namely, infants are more dependent on the support of their primary caregiver(s) to help them regulate their stress responses (Gunnar & Donzella, 2002). This co-regulation from primary caregivers may become less important once children are familiar with the child care setting and have formed an attachment relationship with the professional caregivers. One should however keep in mind that we compare two different types of stress here, namely physiologically measured (Chapter 2) and reported behavioral stress (Chapter 5), and that these types of stress are not necessarily correlated (Gunnar, 1989).

Second, our empirical study in Chapter 5 revealed that less hours per week at child care were associated with more behavioral stress upon returning to the child care center after an interruption, while the meta-analysis in Chapter 2 showed that more hours in child care were related to higher cortisol elevations over the day at child care beyond the transition. During transitional periods, it might be beneficial for the adjustment process to spend more hours in child care. Since most children in the study in Chapter 5 attended the child care center for one to four days a week, the relation might not extend to full-time child care.

When we compare the results of the study described in Chapter 3 (in which children's physiological stress during the transition to child care was examined) with the meta-analysis in Chapter 2 (in which children's physiological stress beyond the transition in child care was measured), another conclusion regarding child characteristics can be drawn. Namely, while we did not find a relation between cortisol elevations and child temperament beyond the transition, we did find a relation between cortisol and temperament in the study in Chapter 3. More specifically, we found that infants scoring higher on negative emotionality were more likely to show a decrease in cortisol over the day at the child care center. This finding might be explained by professional caregivers giving more attention to temperamentally reactive children during transitions, helping those infants to regulate their stress responses. This assumption corresponds with results from other studies, in which researchers found that infants with a more difficult temperament had more trouble adjusting to the child care setting (De Schipper, Tavecchio et al., 2004), and that during transitions, professional caregivers maintained proximity to, and initiated interactions with unhappy infants more than with other infants (Ahnert & Lamb, 2003; Fein et al., 1993). Beyond transitions, the relation between cortisol and temperament might be the other way around, with professional caregivers showing less sensitive behavior during interactions with infants scoring higher on negative emotionality, as was found in other studies (e.g., Albers et al., 2007).

Taken together, transitional periods in child care seem to be a separate phase, during which stress in children may be differently related to important correlates such as hours in child care, child age and child temperament than beyond transitions. A final note concerns the statement of Ahnert and Lamb (2003) that it is surprising that stress during the transition to child care has been mostly studied in Europe, where child care quality is on average higher than in the United States. In general, there is also more attention for transitions in child care practice in Europe compared to the United States. In Italy, the adjustment period in child care centers even has a specific term, *inserimento*, which loosely translates into the process of "settling in" (Swartz et al., 2016). It is also important to note that the ideal length of the adjustment period in child care is hard to define, as the most desirable length might differ between individuals and situations (Bossi et al., 2017). In sum, more research into and attention for transitions to child care is necessary.

Towards the inclusion of parents

In Chapters 3, 4, and 5 we found that, next to children, parents can also experience behavioral stress and separation anxiety when their child (re)transitions to the child care

center. This finding is in accordance with earlier studies (e.g., Swartz et al., 2016). Factors that were found to relate to more behavioral stress of parents were mainly parent-focused, i.e., more parental separation anxiety and more fear of SARS-CoV-2, more stress during closure, and the female sex. Additionally, in Chapters 3 and 5, several parental factors were shown to be related to the amount of both children's physiological (Chapter 3) and behavioral stress (Chapter 5). In detail, we found that infants with mothers scoring higher on maternal separation anxiety and lower on maternal sensitivity were more likely to show an increasing cortisol pattern over the day at child care (Chapter 3), with a small to medium effect. More parental separation anxiety was also related to more child behavioral stress after the return to the child care center (Chapter 5). Although the direction of the relation between child and parental stress remains uncertain, the findings demonstrate that child stress and parental factors (such as separation anxiety and sensitivity) are associated, also in the context of child care.

In general, parental factors are thought to have the largest impact on child development in all contexts, including the context of child care (Ahnert & Lamb, 2003; NICHD Early Child Care Research Network, 2002; UNICEF, 2008), which puts the findings of child care effects on children in perspective, but also shows the ongoing importance of parental factors. Collectively, the aforementioned results in Chapter 3, 4, and 5 illustrate that it is recommended for child care researchers to move towards the inclusion of parental factors, both as predictor of child outcomes and as an outcome in itself. For child care practice the results with regard to parental factors demonstrate that professional caregivers should work on establishing more supportive partnerships with parents, especially when these partnerships are not yet present (Ahnert & Lamb, 2003).

Supporting children and parents during the transition to child care

To ease the transition to child care for infants and their parents, we developed a video-feedback intervention for professional caregivers, focusing on increasing caregiver sensitivity in child care, i.e. the Video-feedback Intervention to Promote Positive Parenting – Transition to Infant Child Care (VIPP-TICC; Chapter 4). The content, impact, and practical aspects of the VIPP-TICC as well as the alliance with the intervener were overall positively evaluated by both professional caregivers and parents. However, a small minority of caregivers (one) evaluated the practical aspects of the intervention somewhat less positive (e.g., too many visits). Descriptive comparisons between pre- and posttest data revealed no indications for potential effectiveness of the intervention with regard to caregiver sensitivity, infant well-being, and infant secure base behavior.

For parents, some minor indications for the decrease of parental separation anxiety over time and more positive perceptions of child care quality at posttest were found in favor of the intervention group. The lack of indications of effectiveness for caregiver sensitivity could lie in the fact that all caregivers were at least moderately sensitive, leading to a possible ceiling effect. A lack of effects on child outcomes may lie in potentially delayed effects on the child via effects on the parent and professional caregiver. More longitudinal research with a larger sample size is needed to further explore possible effects of such an intervention on caregiver, parent and child outcomes, as our study was only a feasibility study due of the small sample size. In sum, we were not able to find strong evidence that an intervention aiming to increase caregiver sensitivity helps to ease the transition for infants and parents. This conclusion corresponds with the findings of the meta-analysis in Chapter 2 and the empirical study in Chapter 3, in which no evidence of a relation between children's physiological stress response and child care quality was revealed.

Strengths and limitations

The current dissertation is characterized by some noteworthy strengths. First, we made use of various methodologies, such as the meta-analytic synthesis of earlier findings (Chapter 2), self-reported and other-reported questionnaires (several child and parental predictors and outcomes in Chapters 3, 4, and 5), physiological measures (child cortisol in Chapter 2) and observational methods (caregiver sensitivity in Chapter 3 and 4, and infant well-being in Chapter 4), leading to a comprehensive picture of young children's stress and its correlates in the context of center-based child care. Furthermore, several studies (Chapters 2, 3, and 4) consisted of repeated measures, either within one day (Chapter 2), both within one day and across multiple days and time-points (Chapter 3), or with a pre- and posttest design (Chapter 4). The inclusion of repeated measures increases the reliability of results and provides insight into developments over time. Moreover, most studies of this dissertation focused on understudied topics within child care research, namely transitional periods, infants, and parents. Finally, we were among the first to develop and study an intervention aimed at easing the transition to center-based child care for both infants and parents.

However, the dissertation also contains some limitations. The first and foremost limitation concerns the participation of families that mostly had a high socioeconomic status (SES). In the Netherlands, the majority of parents who make use of center-based child care are actually of high SES (Bennet & Tayler, 2006), thereby weakening the importance of the limitation. Nonetheless, including lower SES families could provide new in-

sights, since children from high risk families (for example low SES families) receiving low quality child care were found to have poorer socioemotional outcomes (NICHD Early Child Care Research Network, 2002). The latter finding from the NICHD Early Child Care Research Network study shows that child care attendance might have a different effect on children from low SES families, also when it comes to stress. Another limitation concerns the participation of primarily moderate to high-quality child care centers. In our study in Chapter 3, we measured the sensitive behavior of the professional caregivers, which is an important indicator of child care quality (Riksen-Walraven, 2000). We found, as expected, that all professional caregivers provided at least good enough care. It is very likely that children experience more stress in child care centers offering (very) low quality of care. In sum, both the inclusion of mainly high SES families and high-quality child care centers limit the generalizability of results. Therefore, future research should focus on including a more diverse sample of families and child care centers.

The small sample size of the study described in Chapters 3 and 4 also decreases the generalizability of the results. For this study, we were struggling with the recruitment of child care centers, professional caregivers, and parents, mainly because of the stricter rules and regulations in child care and staff shortages, which resulted in a rather small sample size. On top of this, the SARS-CoV-2 pandemic compelled us to stop data collection earlier than planned. As a result of this small sample size and reduced power, we were not able to statistically test for effects in all cases and had to be cautious with the interpretations of results.

Implications for future research

The current studies give direction to future research. A first suggestion for future research is the inclusion of other factors that might correlate with elevated stress in child care. Although we did not find many significant correlates of elevated cortisol levels, which shows that the finding that children experience stress at child care is presumably quite robust, there may be other factors that we overlooked. As proposed, received sensitivity by the child could be a legitimate recommendation, as this indicator might reflect the daily experiences of children at child care more accurate. It would also be interesting to study what specific moments during the child care day are most stressful for children (of different ages), such as the separation from the parent in the morning (perhaps specifically for younger children) and the nature and quality of peer interactions (perhaps especially for older children). When studying the separation from parents, one could also measure both behavioral and physiological responses in parents and investigate how these responses relate to children's responses, to get more of an idea of the underlying

mechanisms and how the constructs relate. With regard to the behavioral part, studies were already conducted by for example Klette & Killén (2019) and Klein and colleagues (2010). In their small-scale study, Klette and Killén (2019) found that all observed children between 13 and 15 months old showed behavioral signs of stress during the separation from their parent at the child care center. The results by Klein and colleagues (2010) demonstrated that separations initiated by the mother and characterized by a reoccurring ritual were linked to reduced child stress. On the contrary, more child crying was observed when mothers stayed to have a conversation with the professional caregiver after separation. Lastly, the study of potential predictors of parental separation anxiety and stress might be important for preventive purposes. In general, child care research that includes parental factors as predictors or outcomes is scarce, and more studies are thus needed to see if the results of the current dissertation are replicated.

On the basis of the results in Chapter 3, a next implication for future studies is the additional study of individual cortisol patterns besides group-level patterns. This additional examination of individual patterns holds particularly for cortisol studies including infants, as infants show large intra- and intervariability in cortisol responses (De Weerth & Van Geert, 2002; Ivars et al., 2015; Tollenaar et al., 2010). Other physiological measures of stress related to cortisol (e.g., cortisol reactivity) or other biomarkers (e.g., alpha-amylase, heart rate reactivity), could be included as well for a more comprehensive view on children's stress (e.g., Ali & Pruessner, 2021).

Another suggestion for prospective studies is mapping the long-term effects of elevated cortisol levels in child care. As mentioned, we do not yet know if and when cortisol elevations during child care days have a negative impact on long-term development. Researchers from the NICHD Early Child Care Research Network study did find that children who spent more hours in center-based child care in the first three years of life and had mothers who scored lower on sensitivity, showed lower awakening cortisol levels at age 15, which could indicate a hyporesponsive stress system (Roisman et al., 2009). As child care systems differ tremendously between countries and continents, the results of the NICHD Early Child Care Research Network study cannot be transposed to the Dutch situation. A comparable large-scale longitudinal cohort study would therefore be very interesting and important to set up in the Netherlands and other countries. In such a longitudinal cohort study, children are followed over time and the effects of different child care arrangements can be tracked (e.g., center-based, home-based, babysitter, informal, or only parental care), while controlling for multiple background variables.

Another avenue for future research is the inclusion of fathers. In the study described in Chapters 3 and 4, we did not specifically target mothers, but rather primary caregivers, which turned out to be the mother for all families. However, fathers might have different feelings regarding (their child attending) out-of-home child care, and including them might yield new perspectives. We for example indeed found a gender difference in the study described in Chapter 5, in which a minority of participants consisted of fathers.

Finally, we advise researchers to invest even more in recruitment strategies, mainly financially (e.g., compensating child care centers for having to arrange replacement for the participating caregiver) and procedural (e.g., shorter visits), to prevent including only highly motivated participants and high-quality child care centers.

Implications for child care practice and policy

In the current dissertation it was disclosed that a substantial part of children and parents experience stress during transitions to child care, and children also beyond transitions. For practice, these findings might imply that professional caregivers should pay special attention to and take time for the adjustment period and potential stressful moments during the child care day, such as the separation from the parent. Professional caregivers furthermore might inform and reassure parents that it is normal if children experience some stress at the child care center, that parents can help their child to unwind at the end of the child care day, and that with the current knowledge, some stress at child care does not seem to be detrimental in the long run. During transitions (to a new child care setting for the first time, after a significant interruption of care or even to a new child care group), it might be important for professional caregivers to pay some extra attention to the youngest children. Namely, the results of the dissertation showed that these children might struggle most with transitions, while beyond transitions, child care was found to be more challenging for older children. In addition to age, we also identified the number of hours at child care as a potential correlate of child stress. Beyond transitions, more hours might relate to more stress, while during transitions, fewer hours seemed to be less favorable for settling in. Therefore, although more research is needed, child care centers could on the one hand stimulate part-time or half-day child care, and on the other hand encourage or facilitate more hours in child care during transitional periods (for example for children who will only attend the child care center for one day a week), to help the child settle in more easily.

Another implication for practice concerns the findings regarding parental separation anxiety, stress and sensitivity. It is advisable for professional caregivers to notice parents'

feelings regarding their child attending child care, especially around transitions, as we found that some parents experienced stress themselves. Recognizing these emotions in parents is important for the well-being of parents themselves, but also because of the possible cross-over effect that their feelings might have on the emotions of the child (Deater-Deckard, 1998; Nelson et al., 2009). Namely, our results showed that parental separation anxiety and stress were related to children's stress. Therefore, it seems important for professionals to be aware of the potential influence of parental feelings and emotions on the child, and to stimulate and reassure parents if desirable.

An approach to try to alleviate both children's and parents' stress is to implement the first visit of the intervention that we developed and evaluated. As mentioned, we were not able to test for effectiveness because of the small sample, but the first visit was positively evaluated by both professional caregivers and parents. Furthermore, we found some indications for effectiveness with regard to parental separation anxiety and parental perception of child care quality. In the long run, these potential positive effects might cross over to the child. Although the intervention should be evaluated in a larger randomized controlled trial and tested for effectiveness before eventual large-scale implementation, child care centers could use the preliminary results as an inspiration to adapt their current policy. We think that especially the first visit, during which professional caregivers and parents discuss routines and watch a video recording of a parent-child interaction at home, might be fruitful to implement when children start at child care, for example during an intake interview. By paying attention to the start and experiences at home, parents feel seen and acknowledged, which might in turn affect their anxious feelings and perceptions of the child care setting for the better. Such an intervention might be implemented for all parents, but child care centers can also choose to focus on specific target groups, such as more anxious parents, first-time parents, or parents of temperamentally reactive children or children with special needs. The complete intervention could be offered to less sensitive professional caregivers, as the focus of the other visits mainly lies on increasing sensitivity, but again, the effectiveness has to be studied in a larger trial first.

Finally, based on the results of the current dissertation, some preliminary implications for policy can be formulated. As discussed, it is not necessarily detrimental that children experience stress when in child care or entering child care. However, repeated and prolonged episodes of physiological stress, especially during the first years of life, can take its toll on well-being and development in the long term. Therefore, it might be beneficial if both mothers and fathers are given the opportunity to care for their child at home

somewhat longer than is facilitated at the moment in the Netherlands, for example an extra few months. The parental leave does not need to last until the child is 12 months old, as an earlier study found that children had more difficulty adjusting to the child care center after the age of 12 months than under the age of 12 months (Rauh et al., 2000). The right for longer parental leave has already been implemented in some other European countries, and was cautiously found to be linked to positive child and maternal health outcomes (Aitken et al., 2015; Danzer et al., 2017). Moreover, the experiences with longer parental leave for both mothers and fathers in the Nordic countries showed that it contributes to more gender equality and stronger economies (Kaufman, 2020). Until longer and more equal parental leave policies are agreed upon, it is important for Dutch governments to invest in high-quality, available, and accessible child care facilities for all families, with special attention for the start of infants. There is a risk for child care policies to be strongly influenced by "the needs and pressures of the moment", but as UNICEF (2008) states, article 3 of the Convention of the Rights of the Child ("that in all actions concerning children the best interests of the child shall be a primary consideration") should be leading.

Conclusions

To conclude, this dissertation contributed to the existing literature on young children's stress responses in center-based child care settings by including a meta-analysis, a large-scale correlational and a small-scale longitudinal intervention study with multiple methods. Furthermore, three out of four papers focused on a transitional period and included the experiences of parents, which is not common, and therefore provided new insights. Finally, two papers targeted infants, an underrepresented group in child care research. In sum, the findings in the current dissertation largely confirm the assertion by Ahnert and Lamb (2003, p. 1047) who stated that "parents who use child care must recognize that they cannot keep their families stress free". The results namely showed that a significant part of children and parents experience stress during and beyond the transition to center-based child care, irrespective of the quality of child care, and that several child (age and number of hours in child care) and parental (sensitivity and separation anxiety) factors might be correlated. We also identified some promising clues as to what type of support can be helpful to assist families within this context, with the ultimate goal of promoting well-being in both young children and their parents.

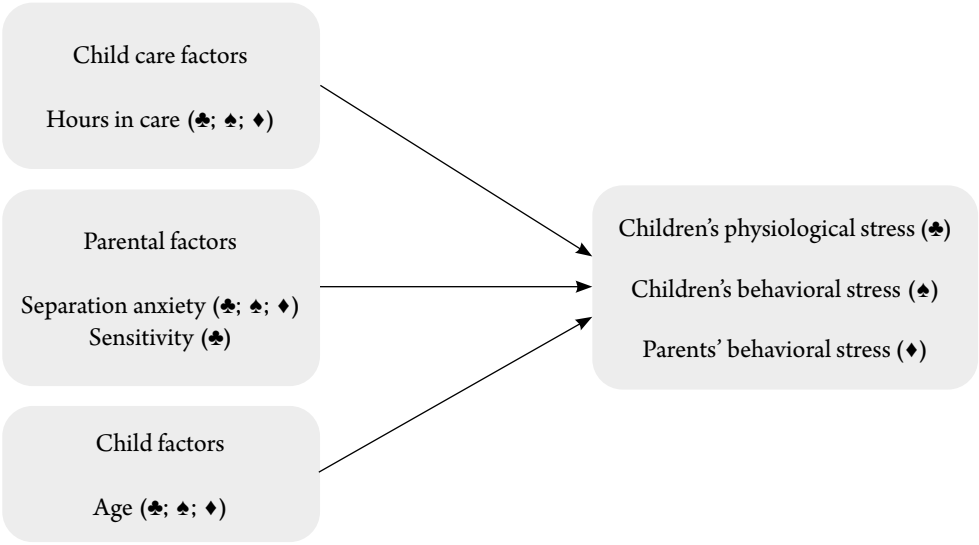

Figure 1. Visual overview of the factors that in the current dissertation were related to young children's physiological (♣), behavioral (♠) and/or parents' behavioral (♦) stress in the context of center-based child care.