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Daily rhythms of young children in the 24/7 economy: A comparison of children in day
care and day and night care

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Abstract

The study explored temporal variation in children's moods, and compared children in regular day care with those in day and night care in Finland. To examine variation in children's experiences, a mobile diary was used. The participants comprised 32 young children and their parents and day care personnel. Adults evaluated children's moods three times daily over one week. A clear weekday-weekend rhythm was found among children in day care, who displayed more negative moods, due to frequent hurried mornings. Children in day and night care had more irregular mood rhythms. Boys were evaluated as displaying more negative moods than girls.

Keywords: mobile diary method, young children, daily emotional well-being, 24/7 economy, day care

Over the last decades, early childhood education and care during non-standard hours (day and night care) has been a noteworthy part of day care services in Finland (Verhoef et al., 2016). Although there is – at least to some extent – flexible care during extended hours in many countries (see e.g. Halfon and Friendly, 2015; Statham and Mooney, 2003), systematic public day and night care is a Finnish particularity. Compared to regular day care, day and night care differs in variability of children’s weekly and daily care schedules. Due to the varying work schedules of parents, children in day and night care centres enter and leave day care at individual times (Jordan, 2008; Rönkä et al., 2016; Statham and Mooney, 2003). However, as variously noted (e.g. Halfon and Friendly, 2015; Statham and Mooney, 2003), there is a dearth of research on child care during non-standard hours. Particularly lacking is research examining day and night care from the point of view of young children’s daily lives.

Work and care during non-standard hours, i.e., early mornings, evenings, nights and weekends or in shifts, have been linked to the so-called 24/7 economy, a term that refers to societies in which services are open around the clock (Presser, 2003). One reason for the scarcity of knowledge about the daily lives of children in the 24/7 economy derives from the methodological challenges of capturing daily temporalities and practices (see Rönkä and Korvela, 2009). Diary methodology, with its frequent reporting of moods, interactions and key events, has allowed researchers better possibilities to study short-lived events, daily and weekly variation and the transmission of emotions and well-being (Bolger et al.,

2003; Sevón et al., 2014). Yet, along with technological development, diaries facilitate to obtain data on diverse groups of participants than earlier. Our interest in utilising the diary method with young children was to explore ways of capturing their daily well-being at home and in care. Our first aim was to explore young children's daily well-being in terms of daily rhythms and routines and the temporal fluctuation of their daily moods. Second, we compared the children in regular day care and day and night care.

Children's daily well-being, chains of care and rhythms at home and in care

Statistics by Eurostat (2014) indicate that many parents of young children in Finland work during non-standard hours. Around 30 % of mothers with under-school-aged children in Finland work non-standard hours, such as during evenings, weekends and nights, which means that their children require day and night care. The increased need for flexible child care during non-standard hours has been widely noted by researchers from different countries (e.g. De Schipper et al., 2003; Halfon and Friendly, 2015; Statham and Mooney, 2003). In Finland, in 2010, seven percent of young children in municipal day care were in day and night care (Säkkinen and Kuoppala, 2011). The availability of day and night care is based on Finnish children's legal right to day care (for more details, see Verhoef et al., 2016).

Parents' working hours and conditions affect their parenting and their children's daily lives. Previous studies on families working non-standard hours have reported specific challenges such as time scarcity, the unpredictability of daily schedules and the difficulty

of maintaining and creating daily routines (Halfon and Friendly, 2015; Gassman-Pines, 2011; Strazdins et al., 2004). Concern has been expressed over the quality of atypical childcare hours and the possible negative effects of this on children's well-being (Statham and Money, 2003). Furthermore, there has been concern over children from disadvantaged backgrounds (Boyd-Swan, 2015; Gassman-Pines, 2011) and over the high number of hours children whose parents work long shifts might have to spend in day and night care (Statham and Mooney, 2003). Earlier research also indicates benefits for work-family reconciliation from such factors as flexible time schedules, parental time for children and a more equal division of time between mothers and fathers (Li et al., 2014; Mills and Täht, 2010). Child care during atypical hours, when only a few children are present, may offer more possibilities for intimate relationships between children, parents and care personnel, more flexible routines, and may also give children more of a say in what do (Halfon and Friendly, 2015; Statham and Mooney, 2003).

For children, both family and day care are important social settings in which they have been shown to be active participants who contribute to, negotiate and influence routines, rules, roles and responsibilities (Alcock, 2007; Sevón, 2015; Spagnola and Fiese, 2007). The *chain of care* is a key concept linking daily rhythms and routines and children's daily emotional well-being at home and in care. It refers to the continuity of care when children transfer between home and day care and how these different contexts support or challenge their well-being (Andenas, 2011). This chain of care is especially important in the context

of day and night care, which is characterised by the individual, and changing, schedules of families, which may cause unpredictability and instability in children's daily routines and relationships (De Schipper et al., 2003; Salonen et al., 2016).

The daily diary approach to studying children's daily well-being

The diary approach emphasises the importance of day-to-day moments for well-being (Almeida, 2005; Gassman-Pines, 2011). In our mobile diary study, titled the Illi study (Rönkä et al., 2016), we sought to acquire knowledge about the daily rhythms, moods and key events affecting young children's daily emotional well-being in the 24/7 economy. Daily routines play a significant role in both individual and family well-being and in adaptation to the changes and demands of the environment (Wildenger et al., 2008). From the perspective of children, family routines offer possibilities for participation, decision-making and a sense of control (Spagnola and Fiese, 2007). We understand daily emotional well-being as arising from the emotional atmosphere generated by daily routines and rhythms as well as through the interchange of emotions between the people involved (see Rönkä and Korvela, 2009; Sevón et al., 2014).

Earlier research shows that daily routines, stressors and hassles have serious implications for emotions and, in the long term, through their accumulation, for wellbeing (Almeida, 2005; Wildenger et al., 2008). Daily stressors and hassles include routine and unexpected, minor challenges encountered in daily life, such as hurriedness or arguments between family members (Almeida, 2005; Repetti, Wang, & Saxbe, 2009). In families

with children, set routines and times, such as family ‘rush hours’ or ‘hot spots’ (Southerton, 2011), become especially burdened with diverse actions, negative emotions and conflicting time schedules. Negative emotions have been shown to be more crucial for well-being and more easily transmitted from one family member to another than positive emotions (Sevón et al., 2014). However, other moments in daily family life, known as ‘cold spots’, remain more peaceful and relaxing (Southerton, 2011). Having enough time may facilitate the building of resilience to daily hassles and stressors, and thus hamper the birth of negative emotions (Almeida, 2005; Sevón et al, 2014). Further, studies on adults’ temporal mood fluctuation show more positive and less negative moods on weekends compared to weekdays (Zuzanek, 2014). Furthermore, time of day seems to have an impact on moods. People tend to be more relaxed during evenings than other occasions and feel more energetic during the day than in the mornings or evenings (Rönkä et al., 2010). However, the societal change towards flexible working hours and deregulated opening hours may have changed the weekly cycles of individuals and families (see Southerton, 2011; Zuzanek, 2014), as is the case of the families in the present study.

Temporal mood variations have also been found among children, although diary studies on children are scarce (see Plowman and Stevenson, 2012), and knowledge lacking especially with respect to children in day and night care. In their mobile diary study of school-aged children ($N = 60$), Malinen et al. (2015) found that mood fluctuations followed the structure of the school week: irritability was at its lowest on Fridays and

highest on Sundays. They did not find any differences between boys and girls in the frequency of negative or positive moods, but children in non-intact families reported positive moods less often and negative moods more often than children in intact families.

Lämsä et al. (2012) used a paper and pencil diary to study children's ($N = 54$, ages 1 to 6) daily interactions and moods, evaluated by parents and day care personnel, at home and in day care. The children's moods were assessed as more positive on Fridays compared to other days (this analysis was restricted to weekdays). They expressed less positive moods during mornings compared to afternoons and evenings. Moreover, the children were reported to have more positive moods when in day care than at home. It thus seems that children tend to express a greater diversity of emotions when at home with their parents. This is also the time when they feel tired after day care. The study further found a gender difference in moods: boys were evaluated as having more negative moods than girls (Lämsä et al., 2012).

Most children do not like early morning awakenings and transitions to day care, although these have not been found detrimental to their well-being (De Schipper et al., 2003; Lämsä et al., 2012). Secure and regular rhythms, care practices and routines, the company of and playing with peers and familiar adults positively affect children's well-being, especially in the context of flexible care (De Schipper et al., 2003; Salonen et al., 2016; Wildenger et al., 2008). Moreover, children find long care hours tiresome, especially if frequently repeated, and some studies regard this as posing a risk to children's well-

being (see De Schipper et al., 2003). There is also evidence suggesting that overnight care might be harmful to young children (De Schipper et al., 2003). The organisation of day and night care may comprise characteristics, such as changing care schedules, variation in the composition of groups, and greater levels of change in care personnel, who often work in shifts, that threaten the daily care structure and thus children's sense of stability (De Schipper et al., 2003; Salonen et al., 2016).

Aims of the study

We first aimed at examining temporal variation in children's positive and negative moods. On the basis of earlier studies on mood fluctuation (Malinen et al., 2015; Lämsä et al., 2012), we assumed that individual moment-to-moment variation in both positive and negative moods would be greater than variation between children.

Second, we examined how various contextual factors, such as form of care, gender and type of family, are associated with this temporal variation in children's moods. Based on previous research (e.g., De Schipper et al., 2003; Halfon and Friendly, 2015; Salonen et al., 2016), we assumed that children attending day care would have a clearer temporal rhythm and that they would experience more positive moods than children in day and night care. Further, in line with Lämsä and colleagues (2012), we expected boys to experience more negative moods than girls. Also, in light of earlier research that has found non-standard working schedules to have greater negative impact on the children in single-

parent or in non-intact families (Gassman-Pines, 2011; Li et al., 2014), we expected children in intact families to experience more positive moods than those in non-intact families. In addition, we sought to gain a fuller picture of young children's daily rhythms and routines and the associations found in the quantitative analyses by utilising qualitative data gathered via mobile diaries.

Method

Sample

The children, their parents and their day care personnel were recruited to participate in the study via day care centres and day and night care centres as part of two multi-method research projects: 'Young children's daily life and positive parenting' and 'Children's socio-emotional wellbeing and daily family life in a 24h-economy' (see Rönkä et al., 2016). The data collection took place between April and September 2012. Purposive sampling of families with two sets of working time patterns and day care arrangements was utilised. The sample comprised families in which parents worked standard hours and children participated in regular day care ($n = 15$), and families in which parents worked non-standard hours (mostly in two or three shift work) and children needed day and night care ($n = 17$). The care hours of the children in the latter group included evenings, weekends and nights (half of the children in the day and night care group sometimes overnights in care). Participant socio-demographics, elicited in a separate paper

questionnaire before the diary week, are shown in Table 1. The children were aged 4–7, their mothers 23–44, and fathers 30–44. The two groups did not differ in age. The proportion of non-intact families (one-parent families, stepfamilies and dual-residence families) was higher among children recruited from day and night care centres than among children in the day care group (Table 1). This suggests that families only get a place in such a day care centre if both parents, or a single parent, work non-standard hours. Moreover, the proportion of mothers with at least an upper secondary education was higher in the day care group than day and night care group. The groups did not differ in family financial situation.

-----Table 1 about here-----

Illi – mobile diary

The diary method has several advantages when studying young children in the context of a 24/7 economy (Rönkä et al., 2016). First, it makes visible children's and their parents' varying schedules and rhythms. Further, the diary method gives access to daily situations, transitions and moods. The method also enables the study of children in their varying contexts: at home, in day care or while visiting relatives or friends (see Plowman and Stevenson, 2012).

A mobile diary application was specially developed for collecting data from children under age seven and from their carers (parents, day care personnel). The application sent questions to adults and children three times a day (morning, afternoon, evening) over a

one-week period. The number of possible observations was 32 children x 7 days x 3 times = 672. None of the participants dropped out and the number of missing answers was reasonable for an intensive diary study. Five children had no missing values for the mood variables during the diary week. The mean percentage of missing values for the mood variables was 11.04 ($SD = 0.56$; range 10.57–12.20). The application made answering in different contexts possible, depending on where the child was at the time of answering, i.e. either at home (or with grandparents) or in day care. The development of the application has been explained elsewhere (Rönkä et al., 2016).

Variables and measures

Positive and negative moods. Adults' perceptions of children's moods were examined three times a day (morning, afternoon, evening), over one week, using seven questions: *Has the child been happy/sad/angry/worried/restless/tired/enthusiastic this morning/afternoon/evening?* The responses were given on a scale from 1 (not at all) to 7 (very). Mean scores for positive moods (including happy and enthusiastic) and negative moods (including sad, angry, worried, restless and tired) were computed. Cronbach's alphas for the mood scores were .74 and .55, respectively.

The results of our earlier study showed that on average, children's and adults' evaluations of children's moods correlated significantly at all three times of day (correlations ranged from .52 to .93) (see Rönkä et al., 2016). The reason for selecting adult's evaluations of children's moods was that, compared to children, adults were asked

to evaluate a wider range of moods.

Independent variables. We utilised two within-level variables: *phase of week* (0 = weekend, 1 = weekday) and *time of day* (i.e. morning, afternoon, evening), which was divided into three binary variables: morning (0 = other time of day, 1 = morning), afternoon (0 = other time of day, 1 = afternoon) and evening (0 = other time of day, 1 = evening). In addition, we used between-level background knowledge about the *form of day care* (0 = day and night care, 1 = day care), children's *gender* (0 = girl, 1 = boy) and *type of family* (0 = other, 1 = intact) in order to ascertain whether there were differences between the children.

Qualitative questions. We utilised two open-ended questions for adults (parents and day care personnel) drawn from the diary: *Describe the atmosphere with the child in the morning; What made today good or bad (and why)* (day care personnel, asked in the afternoon).

Data analysis

Statistical analyses. The quantitative data were analysed using multi-level modelling. Child was used as a clustering variable. To determine what proportion of the variance in the children's moods, as reported either by their parent(s) or a member of the day care personnel, was due to differences between children (between-level variation) and what was due to differences reported by each individual on different days (within-level variation), intra-class correlations (ICCs) and variance estimates at the between- and within-levels

were calculated. In addition, between-level means for the mood scores were reported. The closer the ICC is to one, the greater the variance between individuals in a particular mood (i.e. between-level variation). Conversely, the closer the ICC is to zero, the greater the daily variation in a particular mood (i.e. within-level variation).

Second, a set of random coefficient multi-level regression models were conducted. Daily variation in positive and negative moods at the individual level (within-level) was predicted by time of day and phase of week (Figure 1). Variation between persons (between-level) was predicted by form of care, gender and type of family. By combining these within- and between-level independent variables, six models (2 within-level variables x 3 between-level variables) were estimated. Only statistically significant findings are reported in the results section.

-----Figure 1 about here-----

All statistical analyses were performed using the Mplus statistical package (version 7; Muthén and Muthén, 1998–2012) with the missing data method, that is, the standard missing at random approach to missingness. This missing-data method uses all available data to estimate the model without imputing data. As the variables were skewed, the parameters of the models were estimated using maximum likelihood estimation with non-normality robust standard errors (MLR).

Qualitative content analysis. The fourth author performed the preliminary categorisation while the other three authors collaborated on the final version. The first step

was to identify temporal variation in the two written answers: *Describe the atmosphere with the child in the morning; What made today good or bad (and why)?* We extracted the routines and related moods described during the mornings, afternoons and evenings throughout the week. For each description, all distinct thematic expressions were initially coded as separate sub-categories and subsequently into main categories. We performed the content analysis separately for the day and night care group and for the day care group, for boys and for girls, and for the children in intact families and for those in non-intact families, and reported the perceived differences between the groups.

Results

Fluctuation in moods and differences between children in two types of care

The average levels of positive and negative moods during the one-week-period for the children in day care and for the children in day and night care are presented in Figure 2. Children in both groups showed high positive moods and low negative moods during the period.

---Figure 2 about here---

Intra-class correlations (Table 2) were generally low, denoting wide day-to-day variation. For positive moods, seven percent of the total variation was due to differences between children whereas ninety-three percent was due to the variance between days. For negative

moods, fourteen percent of the total variation in children's negative moods was due to the variation between children.

-----Table 2 about here-----

The results on temporal fluctuation in positive and negative moods between children in day care and those in day and night care showed that the children in the two groups differed in the level of positive ($\beta_{\text{between}} = -0.23, p = .05$) and negative moods ($\beta_{\text{between}} = 0.16, p = .05$). During the morning, compared to the other times of the day, the children in day and night care showed more positive moods than the children in day care (Figure 3). A similar result was found for negative moods during the evening compared to other times of day: the children in the day care group were reported to have more negative moods than those in the day and night care group.

-----Figure 3 about here-----

Moreover, differences in fluctuation between weekdays and the weekend were observed between the two groups of children ($\beta_{\text{between}} = 0.25, p = .03$). The children in day care showed more negative moods during the weekdays compared to the weekend (Figure 4). No such difference between weekdays and the weekend was found for the children in day and night care.

--- Figure 4 about here---

The qualitative data revealed that the children in day care differed from the children in day and night care in the regularity of care times and daily rhythms. The regularity of eight-to-five, Monday-to-Friday work and care times was reflected in the more regular weekly rhythm experienced by the children in the day care group. For the day and night care group, the daily and weekly rhythms differed from one family to another. A typical week for a child in day and night care could include days off during the weekdays and care days during the weekend. It also encompassed daily arrivals to and stays in day and night care during early mornings, evenings or, in some cases, night time.

The analysis of the descriptions of the atmosphere at home in the morning also showed differences between these groups of children. The dissimilarities were related to the hurriedness or unhurriedness on mornings. Half of the families of the day care group mentioned hurriedness on one or more mornings during the week. In writing about hurry, its normality and repetition were alluded to: 'A busy morning *again*' (mother, Tuesday morning, boy in day care, Family 14); or parents wrote about the exceptionality of the unhurriedness in the morning: 'A calm weekday morning for once (mother, Wednesday morning, boy in day care, Family 8). During the one-week cycle, the descriptions of hurriedness were always situated during the weekdays, contrary to the descriptions of unhurriedness, which were typical of weekend mornings. The hurriedness reported by the adults in the family also affected how they evaluated their children's actions in the morning, when children were described as slow and in need of chivvying in their morning

routines: 'The child woke up seemingly tired; all the morning routines go very slowly, rushing and hurrying, makes me tense when nothing gets done (mother, Wednesday morning, boy in day care, Family 15).

Rush or hurriedness during mornings was not mentioned by any of the day and night care families. Instead, unhurriedness was especially pronounced in families in which one or both parents had several evening shifts or free days during the week. Long hours spent sleeping and lack of early starts from home diminished rush and irritation, as shown in the morning descriptions of one mother in the day and night care group, Family 26: 'Evening shift again. After a good night's sleep, everybody's in a good mood' (Tuesday); 'Evening shift again. Just woke up' (Wednesday); and 'Evening shift. We've woken up again without the alarm clock, and no whining (Thursday).

It should be noted, however, that several children in the day and night care group had exceptionally early morning starts. In all these cases, the diaries were filled later at the day care centre. For most of these children, according to the day care personnel, their morning was peaceful and easy-going, with no mention of tiredness. There were also exceptions: some children who had experienced several early awakenings were evaluated as tired during the study week: 'She is tired. I'm trying to persuade her to come along but she's too tired' (early educator, Wednesday morning, girl in day and night care, Family 27). There were also descriptions of a child as sad or restless during early mornings: 'She has been a bit tired and sad, but she has been talking and was in need of some tenderness' (early

educator, Tuesday morning, girl in day and night care, Family 4); or ‘He was restless, and I had to tell him to let the other children sleep in peace’ (early educator, Tuesday morning, boy in day and night care, Family 5). Furthermore, two children overnighted at the day and night care centre.

Gender differences between girls’ and boys’ moods and peer relationships

Child gender played a role in the temporal fluctuation in positive ($\beta_{\text{between}} = -0.33, p = .03$) and negative moods ($\beta_{\text{between}} = 0.29, p = .03$). Girls showed more positive moods in the evening compared to other times of day. No difference was observed in boys. Furthermore, boys were reported to have more negative moods during the afternoon whereas girls showed less negative moods during the afternoon compared to other times of day (see Figure 5).

---Figure 5 about here---

To take into account the differing contexts in relation to moods, we qualitatively analysed the differences between boys’ and girls’ moods at home and in day care. Analyses of the written answers to the question ‘What made today good or bad (and why)?’ in day care revealed seven negative and 40 positive utterances for boys and eight negative and 45 positive utterances for girls. Thus, the number of qualitative answers alluding to negative or positive descriptions was similar for both genders. In the case of positive descriptions, the importance for both genders of good peer relationships in care was highlighted by the

adults: ‘Good peers and nice play’ (early educator, Friday noon, girl in day and night care, Family 24), or ‘A good mood and peers’ (early educator, Wednesday afternoon, boy in day care, Family 15). However, in the case of negative descriptions, conflict situations between peers were more frequently emphasised when adults evaluated boys, as in the following quotes: ‘Bullying made it a bad day’ (early educator, Thursday afternoon, boy in day and night care, Family 31) or ‘Restlessness in play situations. Relationships with peers complicated. Difficult to choose the most agreeable play mate’ (early educator, Friday afternoon, boy in day care, Family 18). Such situations may involve many negative moods (e.g. anger, restlessness, sadness) that might explain boys’ more negative moods during the afternoons. For girls, compared to boys, tiredness and concern were more frequently described; for example: ‘The lack of a play mate was troubling’ (early educator, Tuesday afternoon, girl in day care, Family 13).

Children’s mood fluctuations in different types of families

The children from the two types of families differed only in the level of positive moods ($\beta_{\text{between}} = 0.22, p = .05$). During the morning, compared to other times of day, the children from non-intact families showed more positive moods than those from intact families (Figure 6).

---Figure 6 about here---

In the qualitative analysis we found a similar tendency as when comparing children in day care and children in day and night care: children from non-intact families more often participated in day and night care and their mornings were more often characterised as calm and peaceful. However, we found a larger variation in daily rhythms in a few children from non-intact families. These children were living either in a one-parent or a dual-residence family, i.e. the children lived alternately with each divorced parent. It is possible that these children were vulnerable to the variation in their parents' working hours. In these children's diaries, the alternation between their mother's and father's homes and the day and night care centre presented challenges for the chains of care, such as long care hours or dual-residence parents not knowing how the child had spent time with the other parent or in day and night care. Children in one-parent families, in turn, did not experience the kind of flexibility resulting from split-shift parenting, but needed to accommodate to the work schedules of their lone parent.

Discussion

Main findings of the study

The challenges linked with flexible care did not become apparent in children's general mood fluctuation and negativity in the present study (cf. De Schipper et al., 2003; Halfon and Friendly, 2015). Interestingly, and conversely to our hypothesis, the children in day and night care were evaluated as demonstrating more positive moods during the evenings

and less negative moods during the mornings compared to the children in day care. Our qualitative analyses revealed that daily life in families with parents working non-standard hours may entail fewer care hours and days and fewer early mornings. This may be due to the hours worked, to tag-team or split-shift parenting and possibly also to reliance on relatives. All these issues might be beneficial from the perspective of children (see Li et al., 2014; Mills and Täht, 2010).

Furthermore, it is noteworthy that a clear weekly cycle – less negative moods at weekends than on weekdays – was found only among the day care children. The children in day and night care did not follow this regular cycle; instead, they exhibited more individual cycles of mood. The qualitative results also showed variation in care times from extremely early hours to overnighting in care among children in day and night care, which is in line with earlier reports (Halfon and Friendly, 2015; Stathan and Moonely, 2003). It can be argued that both the day and week cycles were more individualised and unstructured among the children and families utilising day and night care. This may result in more changes and ruptures in the maintenance of daily routines at home and in care, which have also been found to have an impact on children's well-being (see De Schipper et al., 2003; Salonen et al., 2016; Wildenger et al., 2008).

We also found a minor difference between boys' and girls' moods: boys showed more negative moods during afternoons (cf. Lämsä et al., 2012; Malinen et al., 2015). Most of the mood evaluations during afternoons were carried out in day care settings, and the

qualitative reports indicated greater levels of conflicts and related negative emotional interactions for boys and, more worrying, ‘bad mood’ and withdrawals for girls in their peer relationships. Our study shows the importance for children, especially in the day care context, of peer relationships, the maintenance of which has been shown to be one of the challenges of day and night care due to the individual care times of each child (see De Schipper et al., 2002; Salonen et al., 2016). Young children’s peer relationships therefore merit further study.

Further, the positive moods of children in the different family types were evaluated differently. The children in non-intact families exhibited more positive moods in the mornings than those in intact families. It could be that the children in the non-intact families had more varying care hours due to their parent’s solo responsibility and non-standard working times, which meant they had fewer early mornings. This difference resembled that between the children in the day and night care group and those in the day care group. However, the observation concerning highly individual and changing daily rhythms also applies to children in one-parent and dual-residence families, as they are more vulnerable to the variation in the working hours of their parents.

Limitations

Some limitations of this study should be acknowledged. First, the small sample size ($N = 32$), with its low statistical power, restricted the statistical analyses of a multi-level setting. For example, it was not possible to study interactions between gender and forms of day

care. Although the proportion of girls and boys did not differ statistically between the two groups of children, there was a trend towards the overrepresentation of boys in the day care group and their underrepresentation in the other group. This might have biased the results comparing children in day care and in day and night care. Further, the reliability of negative moods was relatively low. Adults' evaluations of the children's moods, however, correlated with the children's own mood ratings (see Rönkä et al., 2016), indicating good reliability of the method and mood items.

It is possible that the participating families were selected. On the basis of earlier studies (Rönkä et al., 2014), one can assume that families with a challenging life situation are more likely to decline participation in family studies. It is possible that some parents who were overburdened from working non-standard hours decided against participating in the study. Thus, the results may reflect only the situation of children whose parents are more resourceful and able to cope with the demands of the 24/7 economy. On the other hand, in another study among the same population with a larger sample the participant socio-demographics of parents were similar (Rönkä et al., forthcoming). It is also noteworthy, that the high quality early childhood education and care (also) during non-standard hours provided in Finland may buffer against the harmful impacts of the 24/7 economy on children and family life (see Turja et al., forthcoming; cf. Gassman-Pines, 2011).

Conclusions

In sum, for the sake of the emotional well-being of young children participating in day (and night) care, knowledge about specific mood fluctuations connected to the weekly cycle and time of day would be important for parents and educators in early childhood education and care. The mundanity of everyday routines and temporalities should not deter us from recognising the significance of daily routines and rhythms for children's emotional well-being. Daily routines facilitate a sense of belonging and harmony inside families and create continuity, predictability and security, especially for children. Conversely, malfunctioning or inflexible routines and lack of personal control over routines may also eat into resources, result in hassles and be harmful to family well-being (Spagnola and Fiese, 2007; Sevón et al., 2014; Southerton, 2011; Zisberg et al., 2007; Wildenger et al., 2008). It might also be worth talking to children about their routines at home or during day (and night) care and how these might be planned together with adults so as to be agreeable for everyone. In the same way, chains of care can also be a topic of shared discussion between children, parents and day care personnel (cf. Andenaes, 2011; Wildenger et al., 2008).

Altogether, the positivity of children's moods in day care and day and night care indicates that emotional and daily well-being can flourish in these families. The diary method, as used here, offers possibilities for identifying families and children who might be in less favourable situations. The method can also be applied to gain knowledge about the daily challenges of young children's lives and relationships. Our study shows that

variability of working time patterns impacts on children's lives and shapes their daily routines. It is important to consider the effects of the 24/7 economy and parental non-standard working hours for daily well-being of each child individually, as for some children, the effects might be beneficial while for others they may be highly troubling and burdensome.

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Table 1. Socio-demographic information about the two groups of participants. Percentages (%) are presented for categorical variables and means (*M*) and standard deviations (*SD*) for continuous variables.

Participant socio-demographics		Form of care		Difference in distributions between the care groups		
		Day care	Day and night care	<i>t/χ</i> ² -test	<i>df</i>	<i>p</i> -value
		<i>M(SD) / %</i>	<i>M(SD) / %</i>			
Child's age ^b		5.87(0.83)	5.65(0.70)	0.78	29	<i>ns</i>
Mother's age ^b		35.93(5,34)	34.69(5.86)	0.61	29	<i>ns</i>
Economic situation ^b		3.33(0.90)	3.31(0.60)	0.08	29	<i>ns</i>
Child's gender ^a	Girl	40.00	64.71	1.95	1	<i>ns</i>
	Boy	60.00	35.29			
Family type ^b	Intact family	86.67	37.50	7.89	1	.01
	Other family type	13.33	62.50			
Mother's education ^b	Secondary	26.70	75.00	7.24	1	.01
	Upper secondary or higher	73.30	25.00			

Note. ^a*N* = 32; ^b*N* = 31; missing information for one child in day and night care group

Table 2. Intra-class correlations and variance estimates of children’s positive and negative moods, evaluated by adults.

Variable	Intra-class correlation	Between-level mean	Child (Between)-level variance (Standard error)	Day-to-day (Within)-level variance (Standard error)
Positive moods ^a	0.07**	5.56***	0.07 (0.02)**	0.93 (0.07)***
Negative moods ^a	0.14***	1.73***	0.06 (0.02)***	0.39 (0.04)***

Note. ^aResponse scale 1–7. ** $p < .01$, *** $p < .001$.

Number of observations was 672 (= 32 children x 7 days x 3 times).

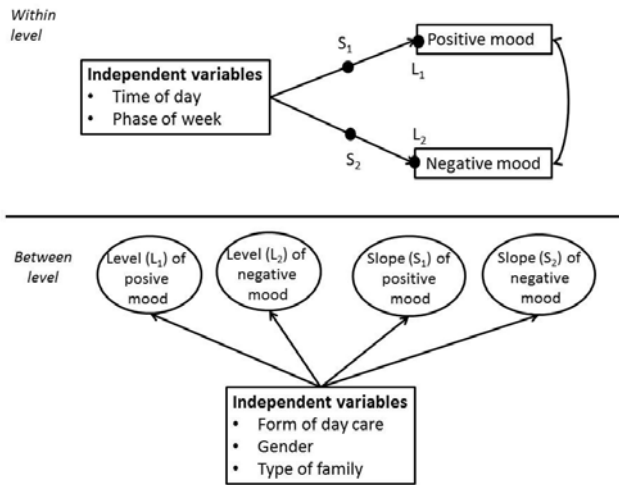


Figure 1. Hypothetical model of the study.

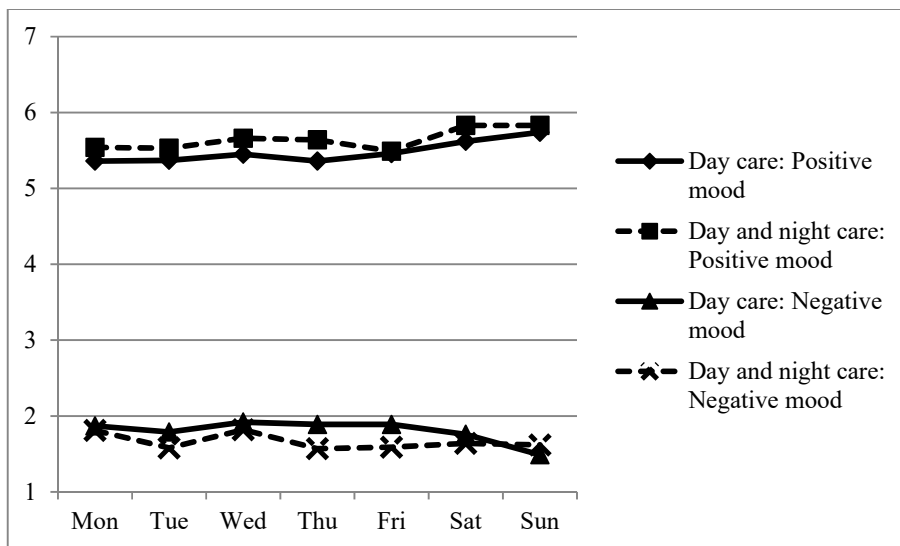


Figure 2. Average level of positive and negative mood during the one-week study period by form of day care.

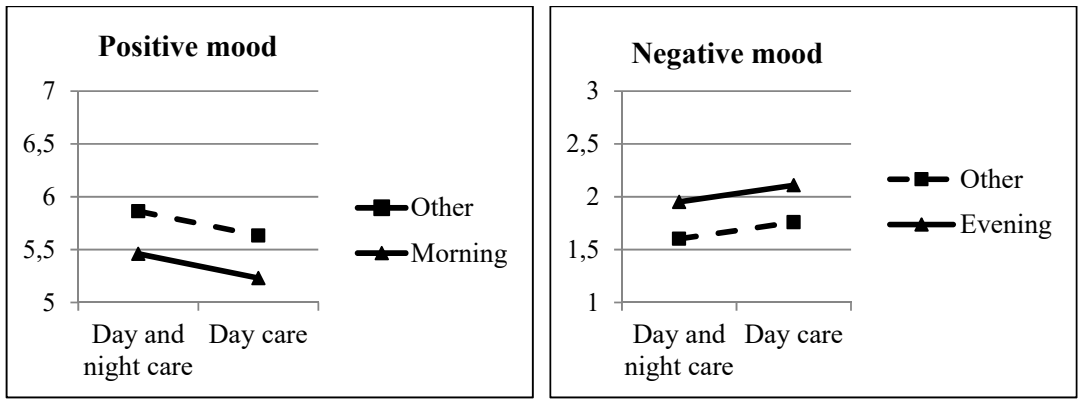


Figure 3. Level of positive mood in the morning (left column) and level of negative mood in the evening (right column) by form of day care.

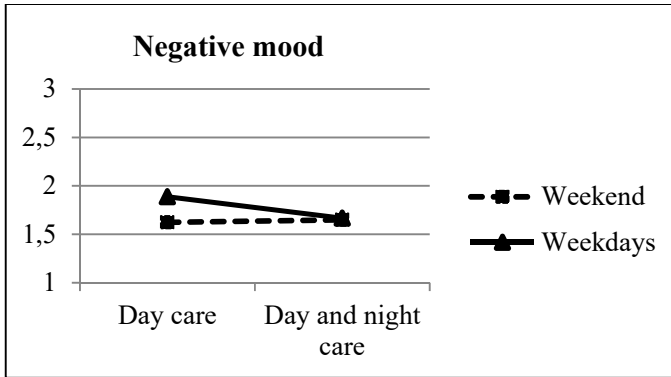


Figure 4. Form of care and phase of week in relation to negative mood.

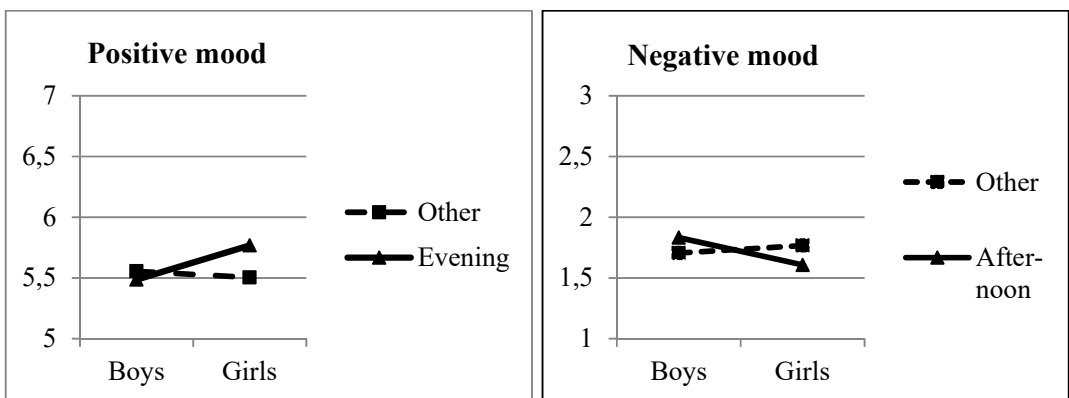


Figure 5. Time of day and child's gender in relation to positive (left column) and negative (right column) mood.

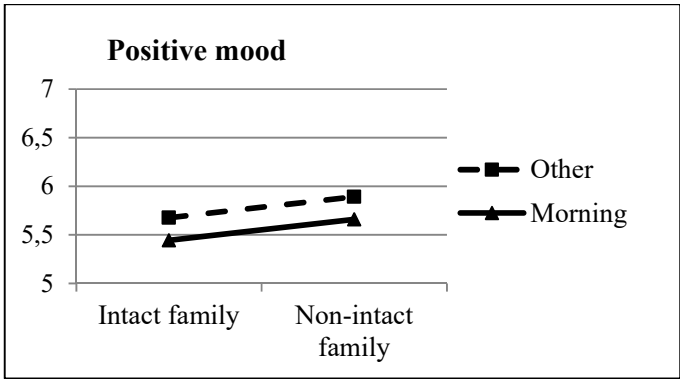


Figure 6. Level of positive mood in the morning among children from different types of families.