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Research paper

Dynamics of professionals' daily negative emotions and assessments of the emotional climate among children in Finnish early childhood education and care

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ABSTRACT

This study examined dynamics between Finnish early childhood education and care (ECEC) professionals' ($N = 77$) daily negative emotions and both harmonious and discordant climates in the child group using a mobile diary during five consecutive working days. Professionals' negative emotions and their assessments of the emotional climate were associated within the workday, but the previous day's interpretation of the emotional climate predicted next-day negative emotions only from Monday to Tuesday. Professionals' negative emotions alone showed day-to-day continuity. The findings highlight the need to improve professionals' awareness of the effects of their negative emotions on the child group.

1. Introduction

While teaching and educating young children in early childhood education and care (ECEC) classrooms,[1] ECEC professionals are faced with diverse emotions on a daily basis due to the dynamic and interactive nature of their work (Frenzel et al., 2021; Jennings & Greenberg, 2009). It is essential to understand the emotions of ECEC professionals in the child group for various reasons. First, professionals' emotions have multiple effects on their own professional outcomes, such as influencing their behaviors (Frenzel, 2014; Frenzel et al., 2021), shaping teacher–child relationships (e.g., Ansari et al., 2022; Jennings, 2015; Liu et al., 2025), contributing the emotional climate of the child group (Jennings, 2015; Shewark et al., 2018), and affecting their well-being at work (Denham et al., 2017; Jennings, 2015). Second, research has demonstrated associations between professionals' and children's emotions (Denham & Bassett, 2019), including emotional contagion (Rodrigo-Ruiz, 2016), and the effects of children's behaviors (Denham & Bassett, 2019; Denham et al., 2017) on professionals' emotions, attributions and occupational well-being (Panthi et al., 2025). Third, ECEC professionals' emotions also influence children's outcomes, as professionals' function as models for children in emotion expression and regulation (e.g., Denham et al., 2012, 2017). Moreover, professionals' emotions can have direct transmission effects on children's emotions, cognitions, and behaviors (Frenzel et al., 2021), with implications for children's social-emotional development (Arace et al., 2021; Denham et al., 2017).

Despite growing interest in ECEC professionals' emotions and their associations with child and child group outcomes, previous research has not revealed how these emotions fluctuate or how they may be associated with professionals' assessments and decisions in their daily work related to relationships and climate among children. To address these gaps, intensive assessment strategies are essential for advancing research in this area. Accordingly, our study examines the continuity of Finnish ECEC professionals' ($N = 77$) day-to-day negative emotions and their assessments of the emotional climate among children, as well as the associations between professionals' negative emotions and their assessments of the emotional climate using mobile diary data.

Studying ECEC professionals' negative emotions are particularly relevant due to their intense, attention-grabbing nature (e.g., Tugade et al., 2016), as well as their comprehensive impact on professionals' attention direction, perception of children's behavior, their own behavior within the child group, interpersonal dynamics with children,

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[1] The present article uses the term "child group" instead of "classroom", as in the Finnish ECEC context, the concept of "child group" is commonly employed.

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and both their own and the children's well-being (e.g., Frenzel et al., 2021). Furthermore, ECEC professionals have a multifaceted role in shaping peer social experiences and the emotional climate within the child group through the quality of their relationships with individual children and through daily pedagogical practices related to peer interactions (Chen et al., 2020; Wang et al., 2019).

1.1. ECEC professionals' negative emotions and their assessment of the emotional climate among children

The work of ECEC professionals is deeply intertwined with their interactions with children that evoke a wide range of emotions including also negative emotions, such as frustration, irritation, stress, anger, and nervousness (de Ruiter et al., 2019; Jennings & Greenberg, 2009). Emotions profoundly impact our learning, functioning, and attentional focus (Conway et al., 2013; Fredrickson & Branigan, 2005; Frenzel et al., 2021). While diverse emotional experiences and negative emotions are essential aspects of our well-being (Quoidbach et al., 2014), negative emotions tend to narrow one's focus and perception, as well as temporarily impede the ability to adopt flexible patterns of thought and action, both on the individual level and when interacting with others (Tugade et al., 2016).

The emotional distress of ECEC professionals may affect their ability to provide high-quality care and education (Jennings et al., 2020). Professionals who are emotionally exhausted or overwhelmed by negative emotions are at risk of becoming less caring, less involved, more rigid, and even cynical and callous, which can lead to burnout over time (Ansari et al., 2022; Frenzel et al., 2021; Jennings & Greenberg, 2009; Musson Rose & Loomis, 2024). For example, Buettner and colleagues (2016) found that pre-school teachers' psychological load (i.e., stress, depression, and emotional exhaustion) was associated with more negative responsiveness to children and lower levels of engagement in the profession. In turn, Jeon and colleagues (2019) discovered that early childhood teachers experiencing higher levels of personal stress perceived their children to have more anger-aggression challenges. Additionally, higher levels of job-related emotional exhaustion were positively related to their perception of children's anxiety-withdrawal challenges and negatively related to their perception of children's social competence.

The emotions that professionals experience and express in the child group influence the relationships they establish with the children (Frenzel et al., 2021; Glüer & Gregoriadis, 2017; Jennings & Greenberg, 2009; Paes et al., 2023; Shewark et al., 2018). In a qualitative study by Shewark et al. (2018), pre-school teachers considered their own emotions to be key determinants of child group climate. Expressing negative emotions in the child group can be considered contrary to the "ideal" of professional competence, that is, competent professionals should be able to suppress their negative emotions in the child group to maintain a good emotional climate (Shewark et al., 2018), whereas caring and supportive relationships between professionals and children are considered important in establishing a safe, caring, and positive emotional climate in the child group (Jennings & Greenberg, 2009; Shewark et al., 2018). In addition, close relationships with professionals, positive interactions with peers, and a caring climate play a crucial role in shaping children's present and long-term social, emotional, behavioral, and academic development (Arace et al., 2021; Chen et al., 2020; Denham & Bassett, 2019).

In previous studies, different concepts have been used to describe features of emotional climate (e.g., Chen et al., 2020; Evans et al., 2009; Harvey et al., 2012; La Paro et al., 2004) in the child group. For example, in the observational tool, the Classroom Assessment Scoring System (CLASS), one domain of classroom characteristics is emotional climate, which includes the dimensions positive climate and negative climate (La Paro et al., 2004). These dimensions examine interactions and emotional connection between the teacher and children as well as among children (La Paro et al., 2004; Pianta et al., 2008). According to Pianta et al. (2008, pp. 3, 22), positive climate is evident through warmth, respect, and enjoyment in both verbal and nonverbal interactions. In contrast, negative climate reflects the overall degree of expressed negativity–such as anger, hostility, or aggression–in the classroom. The frequency, quality, and intensity of teacher and peer negativity are central to this dimension. Partly aligning with CLASS, in the current study, we use the terms *harmonious climate* and *discordant climate* to describe the climate in relationships among children. A harmonious climate refers to a climate that is warm-hearted, humorous, and considerate of others; a discordant climate is characterized by a restless, quarrelsome, and tense climate. We considered the terms harmonious and discordant to better capture the essence of emotional climate than the terms positive and negative.

1.2. Negative emotions and emotional climate as daily phenomena

In several theories (see e.g., the sociodynamic model developed by Mesquita and Boiger [2014] and the appraisal theories of emotions from Moors [2014]), emotions are considered dynamic phenomena, which fluctuate in the flow of everyday activities, more so than other human characteristics, such as values, personality, or attitudes (Kuppens, 2015). However, in most empirical studies, teachers' emotions are considered trait-like constructs and, therefore, teachers' habitual tendency to experience specific emotions generally is assessed through cross-sectional surveys (e.g., using teacher emotion scales [TES]; Frenzel et al., 2016) or interviews, which means that trait-reports capture only differences between teachers in their levels of emotions (Frenzel et al., 2021; Keller et al., 2014a). Far less research has operationalized teachers' emotions as state-like constructs that emphasize emotions as brief, situation-specific momentary experiences that enable the study of both changes within the same professional and differences between professionals over time (i.e., within-person processes and between-person differences) (Keller et al., 2014a; Lischetzke & Könen, 2020). Then, researchers have often employed intensive longitudinal repeated measures data collection techniques (e.g., daily diaries) with relatively short time intervals between the assessment points (Bolger & Laurenceau, 2013; see e.g., empirical studies by Becker et al., 2015; Chang & Taxer, 2021; Frenzel et al., 2015; Lavy & Eshet, 2018; Wang & Burić, 2023) to capture the situational specificity of emotions in elementary or secondary school teachers' everyday lives. However, despite these advances, daily assessments of ECEC professionals' emotions remain scarce in prior research.

As ECEC professionals' daily work lives are highly interactional and active, they generate various emotions, thoughts, and behaviors influenced by professionals' own attributes and competencies, as well as work-related factors, such as children's behavior, group dynamics, activities, and interactions with children, colleagues, and parents (see e.g., Acar et al., 2017). To comprehend the dynamic nature of these emotions and experiences in ECEC professionals' work, intensive research methodologies are needed, as they can produce more ecologically valid results than trait-reports (Lischetzke & Könen, 2020, p. 2) and minimize the risk of retrospective biases (Keller et al., 2014b). Furthermore, such approaches offer insights into different patterns of short-term dynamics of emotions, including the range of a person's emotional states over time, the magnitude of emotional changes from one moment to another, and the extent to which an emotional state at one moment predicts the same state at the next (Houben et al., 2015) as well as potential within-person transfer between emotional states and cognitive processes (i.e., spillover, Bakker & Demerouti, 2013). To the best of our knowledge, repeated assessment studies on ECEC professionals' assessments are lacking. However, it is reasonable to assume that the short-term dynamics of ECEC professionals' assessments of the emotional climate in the child group may follow similar principles as observed in previous research regarding emotional processes (Houben et al., 2015).

1.3. Continuity in negative emotions and emotional climate and spillover between them

While emotions change and fluctuate throughout the course of daily life (Kuppens, 2015), they may also show short-term continuity, as subsequent thoughts and actions of an individual can cause negative emotional states to linger and carry over from one day to the next (Leger et al., 2018). This is due to the tendency to process negative information more thoroughly than positive, and in general, negative emotions and experiences have more impact on us than positive ones (i.e., negativity bias, Baumeister et al., 2001). Additionally, the individual might repetitively think about the past event (i.e., rumination, e.g., Leger et al., 2018) or have ineffective emotion regulation or coping strategies (Jennings et al., 2020; Liu et al., 2025). Together, all these factors may cause the daily negative emotions of the ECEC professional to show day-to-day continuity, meaning that a professional's previous-day levels of negative emotions positively predict similar levels of negative emotions the next day making the level of daily negative emotions remain similar. It can also be assumed that professionals' assessments of the emotional climate in the child group show day-to-day continuity, as despite some daily variations, assessments generally might not fluctuate significantly for the same group of children. For example, if a professional's underlying view of the climate is harmonious, then even if they perceive the climate in the child group to be more discordant than usual on a particular day, their underlying assessment may still remain consistent.

ECEC professionals' daily negative emotions and their assessments of relationships and the climate within the child group are closely intertwined and, thereby, might influence each other in profound ways, as suggested by research on elementary and secondary school teachers' lesson-specific perceptions of student performance, motivation and discipline, and their own emotional states (Frenzel et al., 2009). Emotions guide our judgment and thinking, meaning that, in general, individuals' judgments and thoughts reflect their current moods (Clore & Huntsinger, 2007; see e.g., the affect infusion model of Forgas [1995]). Due to the narrowing effect of negative emotions, individuals are more likely to perceive threats, focus on specific details rather than the bigger picture (Tugade et al., 2016; Zadra & Clore, 2011), and possibly invalidate their accessible cognitions (Clore & Huntsinger, 2007). In practice, ECEC professionals' negative emotions can lead to a heightened focus on negative events and conflicts in the child group, potentially coloring and biasing their interpretations of children's behavior, interactions, and the emotional climate in the child group to appear more discordant rather than recognizing moments of harmonious climate. In other words, a professional's emotional state spills over, transferring negative emotions to their assessments of the emotional climate. This spillover effect can occur during the same day, as emotions can quickly guide and impact professionals' cognitive processes, such as thought, attention, perception, and judgment (Clore & Huntsinger, 2007; Zadra & Clore, 2011). Moreover, spillover can extend from day to day, as indicated in a study examining spillover between family affect and work-related cognition (Du et al., 2018). Misinterpretations of the emotional climate in the child group may harm professional–child interactions (see e.g., Shewark et al., 2018).

Likewise, professionals' perceptions and cognitive interpretations, whether biased or not, might be seen as determinants of their daily negative emotions (Yeo & Ong, 2024; see e.g., the appraisal theories of emotions from Moors [2014]). If the professional interprets the emotional climate among children to be more harmonious than discordant, this might elevate their levels of daily positive emotions. Conversely, assessments of a more discordant climate might lead to higher levels of daily negative emotions. Professionals' assessments of the emotional climate might spill over to their daily negative emotions both throughout the same day, as people tend to experience emotions immediately upon perceiving emotionally evocative stimuli (Zadra & Clore, 2011), but also from day to day, as found in studies examining associations between teachers' emotions and their perceptions of student behavior among elementary school teachers (de Ruiter et al., 2020). This study suggests that professionals' past perceptions and interpretations might influence their emotions for a longer period of time than just the same day.

1.4. The present study

The aim of this study was to examine daily processes related to the negative emotional experiences of Finnish ECEC professionals and their assessments of the emotional climate among children in their child group. The focus was on negative emotions due to their potential harmful effects on professionals' well-being, perceptions, and interactions, and most importantly, on children's well-being and development (see e.g., Jennings et al., 2020). It was considered crucial to study both harmonious and discordant emotional climates because they capture different dimensions of the phenomena, even though they are related to each other. Based on previous findings on the carryover of emotions (e.g., Leger et al., 2018) and assessments, as well as the interconnections and spillover among emotions, perceptions, and interpretations (e.g., Clore & Huntsinger, 2007; de Ruiter et al., 2020; Du et al., 2018; Yeo & Ong, 2024; Zadra & Clore, 2011), our research questions (RQs) and hypotheses (Hs) were as follows:

(RQ1) Do professional's negative emotions, as well as their assessments of emotional climate in the child group, exhibit daily continuity when explored with the same ECEC professional?

We formulated a tentative hypothesis (H1a) suggesting that an ECEC professional's higher (lower) levels of negative emotions on the previous day predict their higher (lower) levels of negative emotions on the following day. Additionally, we set an exploratory hypothesis that there would be daily continuity occurring in the professional's assessments of the harmonious (H1b) and discordant (H1c) climate between consecutive days.

(RQ2) Does ECEC professional's negative emotions spill over to their assessments of the emotional climate in the child group during the same day, and vice versa?

We set a tentative hypothesis that on the same day, negative emotions are negatively associated with a harmonious climate (H2a) and positively associated with a discordant emotional climate (H2b). In other words, lower (higher) levels of negative emotions within an ECEC professional are expected to be associated with a more (less) harmonious climate, whereas higher (lower) levels of negative emotions are linked to a more (less) discordant climate.

(RQ3) Does ECEC professional's negative emotions spill over to their assessments of the emotional climate in the child group from day to day, and vice versa?

We formulated the following tentative hypotheses. We hypothesized that ECEC professional's lower (higher) levels of negative emotions on the previous day predict assessments of a more (less) harmonious climate the next day (H3a), and similarly, higher (lower) levels of negative emotions on the previous day predict assessments of a more (less) discordant climate the next day (H3b). Furthermore, we hypothesized that assessments of a more (less) harmonious climate on the previous day predict lower (higher) levels of negative emotions the next day (H3c), while assessments of a more (less) discordant climate on the previous day predict higher (lower) levels of negative emotions the next day (H3d).

2. Methods

2.1. Participants and data collection

This study is a part of the TUIKKU – emotional skills and participation in early childhood education and care development and research project, funded by the Ministry of Education and Culture in Finland. The project aimed to advance and explore social-emotional skills and

possibilities for participation in ECEC from the perspectives of professionals, children, and their parents. The participants were recruited from municipal ECEC centers in Finland involving size, geographical, and socioeconomic variation in municipalities. In total, 12 municipalities were selected, of which four were large cities (>100,000 inhabitants), four medium-sized towns (20,000–100,000 inhabitants), and four small municipalities (<20,000 inhabitants). This resulted in 37 child groups from 24 ECEC centers in which the professionals worked. From each ECEC center, one to three child groups participated in the study. In the current study, professionals from 33 child groups in 21 ECEC centers participated.

In Finland, daily work in ECEC child groups is grounded in multiprofessional teamwork, typically involving a team of three professionals with different educational backgrounds (Kumpulainen et al., 2023). In Finnish ECEC the qualifications of ECEC professionals are defined by the Act on Early Childhood Education and Care (540/2018). The professionals working in the child group have a Bachelors' or Masters' degree from a university (ECEC teacher), a degree from a university of applied sciences (social pedagogue in ECEC) or vocational school training (ECEC childcarer). In addition to professional qualifications, the Act on ECEC also constitutes staff ratios in ECEC centers and composition of team of professionals in a child group (i.e., 2/3 of professionals working in a child group need to be either ECEC teachers or ECEC social pedagogues). Daily work at ECEC is demanding as teaching is an emotional practice that requires professionals to manage their emotions during interactions with children (Jiang et al., 2016). Despite the centrality of emotions in daily ECEC work, there is a shortage of research on the linkages between ECEC professionals' daily emotions and emotional climate among children, both internationally and, in particular, within the Finnish context.

Our research utilizes mobile diary data collected in January 2022 with the eKoutsi mobile diary tool, a web-based application adapted for mobile devices (Rönkä et al., 2015). Professionals answered the same 24 mobile diary questions using a Likert scale, assessing daily emotions, emotional agency, relationship quality, and emotional climate once a day for five consecutive working days (from Monday to Friday). This kind of fixed once-a-day reporting is suitable for recalling experiences at work that occurred during the day (see Lischetzke & Könen, 2020).

A daily invitation to answer questions was sent to the participants via an SMS as a web link. The SMS was sent at 3 p.m., but the participants were asked to answer the questions right after the end of their work shift. The daily web link was closed at 10 p.m., and a reminder SMS was sent 1 h before the closing time in case the participant had not yet answered. As the first question of the diary, participants were asked whether they had worked in a child group during the particular day, and if not, they were instructed not to answer the rest of the diary questions on that day.

In total, 77 professionals (74 females, 3 males) responded to the diary. They provided 312 diary entries in total, representing 81.0% of the possible maximum of 385 entries. On average, participants completed about 4 out of 5 daily questionnaires ($M = 4.1$, $SD = 1.1$). The proportion of participants who completed the questionnaire varied by day: Monday 68.8%, Tuesday 85.7%, Wednesday and Thursday 84.4%, and Friday 81.8%. The proportion of missing data ranged from 14.3% to 31.2%.

The participants worked in child groups with children aged 3–6 years. The participants were on average 43.7 years old ($SD = 10.8$, range: 23–62). Their profession, educational background, and ECEC work experience can be found in Table 1.

Table 1
Participants' work experience in ECEC, profession, and educational background (N = 77).

Background characteristics	
Work experience in ECEC	
<5 years	16 (20.8 %)
5–15 years	31 (40.3 %)
>15 years	30 (39.0 %)
Profession	
Director in ECEC	4 (5.2 %)
Teacher or social pedagogue in ECEC	34 (44.2 %)
Childcarer in ECEC	39 (50.6 %)
Educational background	
University degree	28 (36.4 %)
University of applied sciences degree	8 (10.4 %)
Vocational upper secondary qualification or other	41 (53.2 %)

2.2. Measures and variables

Participants assessed their daily *negative emotions* by answering the question "To what extent did you feel (emotion) during your work shift today?" on a 7-point scale (1 = *not at all*, 7 = *extremely*). The three negative emotions were angry, nervous, and a sense of inadequacy. The angry and nervous items were chosen from the PANAS-X scale (Watson & Clark, 1994), and "inadequacy" was modified from the adjective "guilty" to better reflect the ECEC context in Finland (Ahola & Valkonen, 2024). However, "angry" was excluded from further analyses as it did not correlate with the inadequacy variable on Monday and Thursday.

Participants evaluated daily *emotional climate* (i.e., climate in the relationships among children) *in their own child group* with three adjectives describing a harmonious (i.e., considerate of others, warm-hearted, and humorous) and three adjectives depicting a discordant (i.e., restless, quarrelsome, and tense) climate. Participants were asked to rate the items: "The climate among children in our child group today was (adjective)" on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). These items were developed by the authors for this study to measure the characteristics of the daily levels of emotional climate. The two-factor structure of emotional climate was checked via confirmatory factor analysis and found to be satisfactory (see Appendix A).

A mean score for negative emotions as well as harmonious and discordant climate was computed on each day. The descriptive statistics and reliability for each scale are shown in Table 2.

2.3. Data analysis

To investigate possible daily within-person processes between ECEC professional's negative emotions and their assessments of emotional climate in one's child group, we applied random-intercept cross-lagged panel modeling (RI-CLPM; Hamaker et al., 2015). This method separates variation in negative emotions and the harmonious and discordant emotional climate into between- and within-person variation. This allowed us to capture more accurately the processes in daily negative emotions and emotional climate. Due to the small sample size, we simplified the analyses by conducting them based on mean scores for negative emotions (NE), harmonious climate (HEC), and discordant climate (DEC) for five consecutive days.

We analyzed emotional climate in two separate RI-CLPM models: Model A focused on NE and HEC while Model B examined NE and DEC. Each RI-CLPM included two latent factors on the between-person level (BP): the ECEC professional's NE_{BP} and either HEC_{BP} or DEC_{BP} across time. They are random intercepts in which all factor loadings on the corresponding mean score variables were fixed to 1 (Hamaker et al., 2015). These random-intercept factors capture the systematic differences (i.e., rank-order stability) between ECEC professionals on their levels of NE and HEC/DEC over the diary week. To account for the overall associations between the constructs, the random-intercept factors were allowed to correlate (i.e., NE_{BP} and HEC_{BP} in Model A and NE_{BP} and DEC_{BP} in Model B).

At the within-person level, we specified 10 latent factors in each model (i.e., one factor per day for each variable) based on the residual variances in the mean score variables of NE and HEC/DEC that were not captured by the random-intercept factors specified at the between-level. These within-level factors measured the extent to which an ECEC professional deviated from their personal average on a given day (Hamaker

Table 2
Items of negative emotions and emotional climate, reliability (Cronbach's α/McDonald's ω), intra-class correlations, between-level means, and between- and within-level variances for the variables (N = 77).

Variables and their items	Reliability α/ω	Intra-class correlation	Between-level mean	Between-level variance	Within-level variance
Negative emotions	.81	.34***	2.38***	0.58***	1.14***
1. Nervous					
2. Sense of inadequacy					
Harmonious climate	.86	.43***	4.92***	0.38***	0.49***
1. Considerate of others					
2. Warm-hearted					
3. Humorous					
Discordant climate	.72	.34***	2.52***	0.46***	0.90***
1. Restless					
2. Quarrelsome					
3. Tense					

Note. Response scale for negative emotions from *1 (not at all)* to *7 (extremely)* and for emotional climate from *1 (strongly disagree)* to *7 (strongly agree)*. ***$p < .001$.

et al., 2015). Each model included at the within level all autoregressive paths denoting the continuity hypotheses (i.e., H1a, H1b, and H1c) and cross-lagged paths representing the predictive spillover hypotheses (i.e., H3a, H3b, H3c, and H3d), all being predictions from one day to the next. We did not include either continuity or spillover predictions over several days (i.e., lag-2, lag-3, and lag-4 paths) in our models, as it was assumed that effects would not directly transfer over several days (meaning e.g., direct predictive path from Monday to Thursday) in the ECEC context. Finally, we estimated the covariances between the Day 1 measures and same-day correlations between the residual variances of the within-level factors in each model. These bidirectional associations denoted our same-day spillover hypotheses (i.e., H2a and H2b).

As our hypotheses focus on the within-person level, we only report them in the results section. However, inclusion of the between-level in the modeling was statistically essential to obtain valid within-level estimates (Hamaker et al., 2015). The between-level results are presented in Appendix B. The sizes of the day-to-day effects are interpreted according to the benchmark values of .03, .07, and .12 that indicate small, medium, and large effects, respectively (Orth et al., 2024). The sizes of the same-day effects are interpreted according to Cohen (1988): an effect size of 0.2 is considered small, 0.5 medium, and 0.8 large.

Both modellings (Model A and Model B) began by estimating a fully constrained RI-CLPM (Model 0 in Table 3), in which all the aforementioned paths were constrained to be equal across time. We then tested a particular hypothesis by releasing a set of these time-invariance constraints (See Models 1, 2, 3a, and 3b in Table 3) and checking the global fit of the model and changes in the fit statistics. If the release of the constraints resulted in a significant improvement in fit compared to the fully constrained model, then the model including fewer constraints was favored. Otherwise, the fully constrained Model 0 was favored. After conducting all these phases for each hypothesis, the results showed that model 3b (Table 3) fit the data best in Model A examining the associations between NE and HEC: $\chi^2(41, N = 77) = 67.65$, $p < .01$, comparative fit index (CFI) = .843, Tucker–Lewis index (TLI) = .828, and root-mean-square error of approximation (RMSEA) = .092. Also, in Model B (negative emotions and discordant climate), model 3b (Table 3) fit the data best ($\chi^2(41, N = 77) = 50.78$, $p = .141$, CFI = . 939, TLI = .933, RMSEA = .056).

The goodness-of-fit of the estimated RI-CLPMs was evaluated using the χ^2 test, RMSEA, CFI, and TLI. A model was considered to be acceptable if the χ^2 test was nonsignificant, RMSEA <.08, and CFI and TLI >.90. The nested RI-CLPM models were compared using the χ^2 difference test (Satorra & Bentler, 2001) and the change (Δ) in the RMSEA, CFI, and TLI (Chen, 2007). The statistically nonsignificant χ^2 difference test, ΔRMSEA ≤.015, ΔCFI ≤.01, and ΔTLI ≤.01 support the model with more equality constraints over time rather than the less

Table 3
Goodness-of-fit indices and their comparisons for the different specifications of the models.

Models (freely estimated paths)	χ^2(df) p value	$\Delta\chi^2$ p value	RMSEA	ΔRMSEA	CFI	ΔCFI	TLI	ΔTLI
Model A (negative emotions and harmonious climate)								
0. Fully constrained model	81.353 (44)***	-	.105	-	.780	-	.775	-
1. Continuity free								
($NE_{t-1} \rightarrow NE_t$; $HEC_{t-1} \rightarrow HEC_t$)	81.409 (38)***	.610	.122	.017	.744	.036	.697	.078
2. Same-day free								
($NE_t \leftrightarrow HEC_t$)	77.656 (41)***	.279	.108	.003	.784	.004	.763	.012
3a. Cross-lagged paths free								
($NE_{t-1} \rightarrow HEC_t$)	76.740 (41)***	.192	.106	.001	.789	.009	.769	.006
3b. Cross-lagged paths free								
($HEC_{t-1} \rightarrow NE_t$)	**67.654 (41)** **	**.000**	**.092**	**.013**	**.843**	**.063**	**.828**	**.053**
Model B (negative emotions and discordant climate)								
0. Fully constrained model	61.082 (44)*	-	.071	-	.893	-	.890	-
1. Continuity free								
($NE_{t-1} \rightarrow NE_t$; $DEC_{t-1} \rightarrow DEC_t$)	57.611 (38)*	.489	.082	.011	.877	.016	.854	.036
2. Same-day free								
($NE_t \leftrightarrow DEC_t$)	56.401 (41)	.198	.070	.001	.903	.010	.894	.004
3a. Cross-lagged paths free								
($NE_{t-1} \rightarrow DEC_t$)	60.116 (41)*	.763	.078	.007	.880	.013	.868	.022
3b. Cross-lagged paths free								
($DEC_{t-1} \rightarrow NE_t$)	**50.781 (41)**	**.001**	**.056**	**.014**	**.939**	**.046**	**.933**	**.043**

Note. The chosen final models are bolded. In each model, only one set of parameters was left free to vary across time. Each model was compared to model 0. $\Delta\chi^2$ p values, ΔRMSEA, ΔCFI, and ΔTLI refer to comparison of each model with model 0. NE = Negative emotions, HEC = Harmonious emotional climate, DEC = Discordant emotional climate. Final Model A: $HEC_{t-1} \rightarrow NE_t$ free. Final Model B: $DEC_{t-1} \rightarrow$ NEt free. $\Delta\chi^2$ p values: Satorra-Bentler χ^2 difference test p value. RMSEA: Root Mean Standard Error of Approximation. CFI: Comparative Fit Index. TLI: Tucker-Lewis Index. Δ: Change in the χ^2 value, RMSEA, CFI, and TLI. *$p < .05$, **$p < .01$, ***$p < .001$.

constrained model.

All analysis were conducted using Mplus version 8.11 (Muthén & Muthén, 2017, 1998–2017). As our variables were skewed, we estimated the models using a maximum likelihood estimator with robust standard errors. Owing to the missing data, the number of ECEC professionals varied according to the daily number of respondents. Missingness was handled by using the full information maximum likelihood procedure, which employs all the information in the data without imputing the missing values (Enders, 2010). The hierarchical nature of the data by ECEC center was considered by employing the COMPLEX option in Mplus to estimate unbiased standard errors.

2.4. Ethical considerations

The study was conducted according to the ethical guidelines of the Finnish Advisory Board on Research Integrity (2019). The TUIKKU study was approved by The Human Sciences Ethics Committee at the University of Jyväskylä (no: 1520/13.00.04.00/2021). Prior to the mobile diary data collection, informed consent was obtained from the participants, who were told about their right to withdraw from the study. Participation was voluntary, and before the mobile diary week, the participants received an instruction letter informing them of the response procedure and timeframe.

3. Results

3.1. Daily continuity in negative emotions and emotional climate assessments

First, we studied whether negative emotions and assessments of emotional climate in the child group showed continuity from day to day. Our findings revealed a statistically significant autoregression in negative emotions, which recurred across the whole study week (Fig. 1). Namely, ECEC professional's negative emotions on the previous day positively predicted their negative emotions on the next day, meaning that ECEC professionals who reported higher (lower) negative emotions relative to their own expected mean level on one day were also likely to report higher (lower) negative emotions relative to their own expected mean level the next day. The effect size for these estimates was large. However, we did not find continuity in the assessments of the harmonious climate or in discordant climate (Appendix C). Thus, our findings supported H1a, but not H1b and H1c.

3.2. Same-day spillover between negative emotions and emotional climate

Second, we investigated whether ECEC professional's negative emotions were related to their assessments of emotional climate in the child group during the same day (i.e., same-day spillover). Our findings showed that professionals' negative emotions and their assessments of a harmonious climate were statistically significant and negatively associated with each other every day except on Monday (Fig. 1). Moreover, professionals' negative emotions and their assessments of discordant climate were statistically significant and positively associated with each other every day during the study week. Thus, the results indicate that on the days when ECEC professionals reported higher (lower) negative emotions than usual, they also assessed a less (more) harmonious climate and more (less) discordant climate in the child group than usual. The effect size for these estimates was medium. Our findings supported the same-day spillover hypotheses H2b and partially H2a.

3.3. Day-to-day associations between negative emotions and emotional climate

Finally, we investigated day-to-day reciprocal associations (i.e., predictive spillover) between ECEC professional's negative emotions and their assessments of emotional climate in the child group. We found two statistically significant predictive associations that both occurred from Monday to Tuesday. A harmonious climate on Monday negatively predicted negative emotions on Tuesday, while a discordant climate reported on Monday positively predicted negative emotions on Tuesday (Fig. 1). ECEC professionals who assessed a more (less) harmonious climate relative to their own expected mean level on Monday were also likely to report lower (higher) negative emotions relative to their own expected mean level on Tuesday. Furthermore, ECEC professionals who assessed a more (less) discordant climate relative to their own expected mean level on Monday were also likely to report higher (lower) negative emotions relative to their own expected mean level on Tuesday. The effect size for these estimates was large. Furthermore, no associations between ECEC professional's previous-day negative emotions and their assessments of the next day's harmonious or discordant climate in the

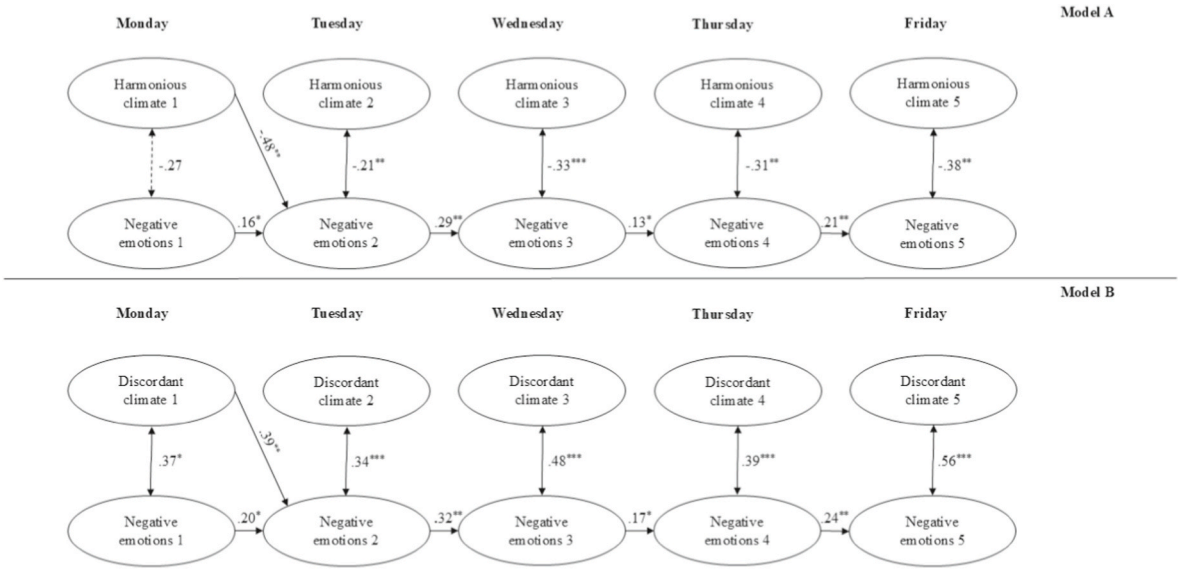


Fig. 1. Results of same-day effects and statistically significant day-to-day effects of negative emotions and emotional climate
Note. *$p < .05$, **$p < .01$ ***$p < .001$. The nonsignificant same-day effect is indicated with a dashed line. Statistically nonsignificant day-to-day effects are depicted in Appendix C.

child group were found (Appendix C). Thus, our findings lent some support to spillover hypotheses H3c and H3d, but not H3a and H3b.

4. Discussion

The purpose of the current study was to contribute to existing research and advance knowledge on daily variance or stability in ECEC professionals' daily negative emotions and their assessments of the emotional climate among children in the child group during five consecutive days. Additionally, associations between these variables were explored. Research on the ECEC context is scarce, and so, by employing a daily diary method, our study provides new evidence on these relationships. Our hypotheses were partly supported as daily continuity occurred in negative emotions and associations were found between ECEC professionals' daily negative emotions and their interpretations of the emotional climate both within the same day and between consecutive days.

4.1. Daily continuity occurred in negative emotions but not in the emotional climate assessments

We examined daily continuity in professional's negative emotions and their assessments of the emotional climate in the child group for the same ECEC professional. In line with our hypothesis (H1a), continuity was found in negative emotions over the week as higher (or lower) negative emotions relative to the professional's own mean on the previous day predicted higher (or lower) negative emotions relative to their own mean on the following day. Negative emotions can linger and carry over through consecutive days due to factors such as negativity bias (Baumeister et al., 2001), rumination of negative emotions (Leger et al., 2018), or ineffective skills for regulating emotions and coping (Jennings et al., 2020). In addition to affecting the well-being of ECEC professionals by increasing the risk of experiencing stress, emotional exhaustion, and burnout (see e.g., Jennings et al., 2020; Musson Rose & Loomis, 2024), professionals' negative emotions, especially if prolonged, have numerous harmful short- and long-term effects on children's emotions, behavior, development, and academic performance in the child group (Glüer & Gregoriadis, 2017; Jennings & Greenberg, 2009; Paes et al., 2023).

When professionals are in the grips of their own negative emotions, they may not be able to consider the consequences of shared teacher–-child negativity (Denham, 2023). Professionals who experience predominantly negative emotions, such as anger, anxiety, and frustration, may be less sensitive to children's needs, demonstrate lower levels of emotional and instructional support, engage less in diverse activities with children, and fail to act as good role models for children in fostering their emotional and social development and competence (Arace et al., 2021; Blewitt et al., 2020; Jeon et al., 2019). Previous studies have indicated that teacher–child conflict is negatively associated with children's social skills (Paes et al., 2023) and pro-social behavior, and it is positively associated with externalizing behavior (Glüer & Gregoriadis, 2017) in preschool-aged children. Therefore, it is essential to support professionals in establishing close and supportive relationships with children.

Contrary to our hypothesis (H1b), daily continuity was not found in ECEC professional's assessments of harmonious and discordant emotional climates. One possible reason for this may stem from the nature of ECEC professionals' work, which is highly interactional. According to Li's (2017) *cognition-in-interaction* perspective, professionals' perceptions, decisions, and feelings are shaped and evolved by the context and by ongoing interaction. Therefore, professionals' assessments of the emotional climate may be considered fluid and changing in response to daily interactions and situational factors. Additionally, the emotional climate in the child group is a multifaceted construct influenced by several individual and environmental factors, including children's social and emotional skills, their behavior and group dynamics, the type and nature of activities, as well as factors related to ECEC professionals, parents, and the child group environment (see e.g., Acar et al., 2017). Together, these factors may cause professionals to assess the emotional climate differently each day. To more fully understand this phenomenon, further research is needed in the ECEC context.

4.2. Spillover between negative emotions and emotional climate

We found some support for both the expected same-day and day-to-day spillover associations between ECEC professional's negative emotions and their assessments of the emotional climate in the child group. In terms of the *same-day* spillover, lower (higher) levels of daily negative emotions relative to their own mean were associated with their assessments of a more (less) harmonious climate in the child group (H2a). Similarly, higher (lower) levels of daily negative emotions relative to their own mean were related to their assessments of a more (less) discordant climate in the child group every day of the week as expected (H2b).

Consistent with previous studies on the reciprocal spillover between emotions and cognitions (Clore & Huntsinger, 2007; Zadra & Clore, 2011), our findings suggest that, within the same day, professional's daily negative emotions spill over to the interpretations of the emotional climate in the child group and vice versa. Therefore, professionals should be mindful of the interrelation between their daily negative emotions and assessments. It is essential to manage and regulate negative emotions in a way that prevents them from spilling over into interpretations of relationships and the climate within the child group (see e.g., Jennings & Greenberg, 2009; Liu et al., 2025). Likewise, professionals should reflect on their assessments of the emotional climate to avoid misinterpretations (Dang, 2018). Both high levels of daily negative emotions and misinterpretations of the emotional climate may negatively affect the relationship quality with and among children (see e.g., de Ruiter et al., 2020; Jennings et al., 2020; Musson Rose & Loomis, 2024; Shewark et al., 2018).

Regarding *day-to-day* spillover between ECEC professional's negative emotions and their assessments of the emotional climate in the child group, our hypotheses (H3c, H3d) were only partly supported as we found a predictive association between the emotional climate and negative emotions, but this occurred only from Monday to Tuesday. Specifically, a more (less) harmonious climate relative to the professional's own mean predicted lower (higher) negative emotions relative to their own mean, while a more (less) discordant climate relative to their own mean predicted higher (lower) negative emotions relative to the professional's own mean.

One potential explanation for this "start-of-the-week-effect" could be that, compared to the other weekdays, Monday might be a day of adjustment for children and ECEC professionals after the weekend. This adjustment process can be extended to Tuesday, but by midweek, daily routines might be re-established. However, because this finding was unexpected, further research is needed to replicate the same pattern of results. The absence of the association on other days might also result from some level of psychological detachment from work between previous and subsequent working days (Aulén et al., 2022; Türktorun et al., 2020). A study by Aulén and colleagues (2022) demonstrated that teachers' job stress hindered their detachment, which in turn, resulted in a more negative affect and job stress. Although participants in our study experienced daily continuity in negative emotions, it seems that they exhibited low levels of work-related rumination (Türktorun et al., 2020) related to the emotional climate of the child group. Detachment from their assessments of the emotional climate might be better compared to their daily negative emotions because the emotional climate may feel less personal and emotionally charged than negative emotions. Additionally, detachment from work-related daily negative emotions might be more demanding due to their intense and attention-grabbing nature (e.g., Tugade et al., 2016).

Contrary to our hypotheses (H3a, H3b), ECEC professional's negative

emotions relative to one's own mean on the previous day were not related to their next-day assessments of the emotional climate. This could also be due to psychological detachment from work (e.g., Aulén et al., 2022), as well as the professionals' social and emotional competence (Jennings & Greenberg, 2009), such as effective emotion regulation and coping strategies (e.g., Lavy & Eshet, 2018), which might mitigate the spillover effects of their daily negative emotions from the previous day on their next day's assessments of the emotional climate. Further research is essential to deepen our understanding of spillover effects and identify protective factors that mitigate the negative spillover effect while enhancing positive outcomes.

4.3. Practical implications

Regarding the adverse consequences of ECEC professionals' daily negative emotions, focus should be placed on their well-being. ECEC center leaders are central to fostering organizational cultures that support emotional reflection and provide opportunities for training in social and emotional skills. This enables professionals to offer high-quality care and education while maintaining their own well-being (Jennings et al., 2020; Liu et al., 2025). Socially and emotionally competent teachers exhibit high levels of self- and social awareness, and they can recognize, regulate, and manage their emotions and behavior (Jennings & Greenberg, 2009).It is crucial to identify those who exhibit daily continuity in high levels of negative emotions and support them in recognizing their emotions, developing effective strategies to regulate these negative emotions, and thereby helping them achieve a healthier balance between negative and positive emotions. Team members and the entire work community also play an important role in this process.

Professionals should adopt adaptive ways to maintain daily negative emotions at their usual level or below it without compromising emotional well-being. This includes avoiding excessive suppression and hiding of negative emotions or faking positive emotions (see e.g., Taxer & Frenzel, 2015; Wang & Burić, 2023). Nurturing and caring professional–child interactions (see e.g., Shewark et al., 2018) have an impact not only at the individual level but also at the group level, as peers observe these interactions and model the professional's behavior. This can affect how a child is accepted by peers and the child's feelings of engagement and inclusion within the child group (Chen et al., 2020; Hughes & Im, 2016). Therefore, training should enhance professionals' awareness of how their negative emotions and interpretations of children's behavior, and the emotional climate in the child group are interrelated, as well as their possible consequences for their own and the children's well-being. These interpretations and emotions can be modified by adapting their interpretations, for example through cognitive reappraisal (Becker et al., 2015).

Beyond in-service training, it is important not to overlook the need to educate early childhood education students on these topics during their studies. Finally, researchers could collaborate with ECEC center leaders and professionals to develop evidence-based well-being programs for ECEC professionals that are tailored to the realities of ECEC everyday practice.

4.4. Limitations and future directions

This study has its limitations, particularly related to sample and research design. First, our study may suffer from limited statistical power related to the small sample size ($N = 77$). These issues regarding sample size may have partly contributed to our statistically nonsignificant findings (e.g., the same-day within-level covariance between negative emotions and harmonious climate on Monday, when the response rate was lowest). Second, excluding the "angry" item from further analysis may introduce potential bias to the measurement of negative emotions. Third, the data were collected during one random working week (i.e., from Monday to Friday). Because of this, we cannot conclude to what extent the effects we found (e.g., the possible "start-of-the-week" effect) are generalizable from one week to another. Fourth, although the intensive repeated measure research design and the application of RI-CLPM modeling enhanced the validity of our study, they still only allowed us to draw suggestive causal conclusions about daily processes in ECEC professionals' work (Hamaker et al., 2015). Fifth, the lack of results related to the continuity of emotional climate may be partly due to the chosen measurement interval of once a day. This might have been too infrequent to capture more situational phenomena in the assessments of the emotional climate. For example, measuring three times a day could have more accurately captured such phenomena. Sixth, contextual factors not included in the analysis, such as the number of children and professionals working in the child group each day, may also have influenced our findings. Seventh, reliance on self-reported data from the same source may lead to interpretation bias. Future studies could address this issue by employing hetero-evaluative assessment methods, such as systematic observations or surveys carried out by ECEC colleagues or external researchers. Additionally, studies could integrate physiological ambulatory measures, such as heart rate variability, heart rate, and salivary cortisol to complement other assessment methods and capture objective indicators of emotional reactivity. Finally, future research with larger and more diverse samples is necessary to enhance the reliability of results. Nevertheless, our study is filling the gap in existing research by exploring professionals' daily negative emotions and their interpretations of the emotional climate in the ECEC context with daily diary data.

5. Conclusions

The work of ECEC professionals is strongly characterized by emotions and interactions (Frenzel et al., 2021; Jennings & Greenberg, 2009). As our results showed, daily continuity was observed in negative emotions, as higher (or lower) negative emotions on the previous day predicted higher (or lower) negative emotions the following day. Additionally, professionals' daily negative emotions and their interpretations of the emotional climate in the child group are interconnected. Within the same day, ECEC professional's negative emotions were negatively related to a harmonious climate and positively related to a discordant climate among children in the ECEC child group. Between consecutive days, interpretations of the emotional climate in the child group predicted negative emotions only from Monday to Tuesday. By using the daily diary method, this research advanced our understanding of the dynamics of the daily negative emotions of ECEC professionals and their assessments of the emotional climate in the child group. Furthermore, our findings underscored the significant role of professionals' emotional well-being in enhancing occupational well-being and ensuring truthful interpretations of the emotional climate within the child group. This, in turn, fosters positive interactions and relationships in ECEC.

CRediT authorship contribution statement

Mari Laakso: Writing – original draft, Project administration, Investigation, Conceptualization. **Emmi Lindroos:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis. **Merja Koivula:** Writing – review & editing, Writing – original draft, Project administration, Funding acquisition, Conceptualization. **Eija Räikkönen:** Writing – review & editing, Methodology, Formal analysis, Conceptualization. **Kaisa Malinen:** Writing – original draft, Methodology, Investigation, Conceptualization. **Eija Sevón:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Funding acquisition, Conceptualization.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tate.2026.105442.

Data availability

The data that has been used is confidential.

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