



TEMPERAMENTAL CORRELATES AND PREDICTORS OF TODDLER ADAPTATION TO NURSERY

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Abstract/Izveček

This study aimed to analyse the relationship between children's adaptation to nursery and children's temperament. The results show a statistically significant relationship between children's shyness and emotionality and the time of adaptation to nursery. Shy children displayed more negative and less positive behaviours during adaptation. Children with less control over their emotional reactions showed more negative emotions and behaviours during separation from their parents. Moreover, further statistical analysis divided by sex showed that the older and shier the boys were, the more negative behaviours they displayed—as perceived by the nursery staff—during nursery adaptation.

Keywords:

nurseries, early
childhood, adaptation,
temperament.

Temperament kot dejavnik prilagoditve otroka na jasli: korelati in napovedovalci

Namen študije je bil analizirati razmerje med prilagajanjem otrok na jasli in temperamentom otrok. Rezultati raziskave kažejo na statistično pomembno povezavo med sramežljivostjo in čustvenostjo otrok ter časom prilagajanja na jasli. Sramežljivi otroci so med prilagajanjem pokazali več negativnega in manj pozitivnega vedenja. Otroci z manj nadzora nad svojimi čustvenimi reakcijami so med bivanjem v vrtcu pokazali več negativnih čustev in vedenja. Nadaljnja statistična analiza, razdeljena po spolu, je pokazala, da so starejši in bolj sramežljivi fantje med prilagajanjem na jasli – tako so jih zaznali vzgojitelji – kazali več znakov negativnega vedenja.

Ključne besede:

jasli, zgodnje otroštvo,
prilagajanje,
temperament.

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Introduction

A nursery is the first non-family environment that a child may attend as a toddler. In EU countries, 47.9% of children aged 1 to 2 received formal care or education as of 2023. In Poland, this rate was below 20%, which means that the European Commission will strive to increase the percentage of children in care to 23.3% by 2030 (EUROSTAT, 2024). According to Statistics Poland, 216 out of 1,000 children under the age of 3 attend a nursery (SP, 2024). Despite the availability of daycare centres and relatively low fees, few parents decide to entrust their child to nursery care. The reasons may be varied. First, toddlers tend to be strongly attached to their parents, and being in an unfamiliar environment can cause stress and unpleasant emotions (Dettling, 2000; Nystad, 2021). Moreover, Polish culture often negatively stereotypes nurseries as institutions that provide only basic care, without supporting the child's development, especially in terms of emotional or mental growth. Parents often consider a nursery only when no other childcare option is available while they are at work. Scientific research is therefore needed to familiarize society with the realities of children's everyday functioning in daycare settings.

Adaptation in Nurseries: Key Concepts and Research Findings

One of the key issues in nursery care is the adaptation process experienced by children and their families. According to *Colman's Dictionary of Psychology*, adaptation is a general term referring to any process whereby behaviour or subjective experience changes to fit a different environment or circumstances or in response to social pressure (Colman, 2009, p. 11). Therefore, a child's task during adaptation to the nursery is to adjust to the conditions imposed by the new environment. The author of this article defines adaptation of the youngest children to nursery care as both a process and its outcome, reflected in children's behaviours and emotional expressions that indicate a more or less successful adjustment (Świdrak, 2020). In the literature, it is emphasized that adaptation to nursery is a social and relational experience in which not only the child actively participates, but also parents and caregivers (van Trijp, 2025).

Based on available research, adaptation to nursery lasts from a few days to several weeks or months (Świdrak, 2020; Andonova, 2024; van Trijp et al., 2025). During the first days, children display behaviours and emotions typical or atypical of adaptation.

These include intense crying, anxiety, withdrawal, reluctance to play, clinging to the caregiver, sleep or eating disturbances, and changes in cognitive and play activity. A successful adaptation is visible through participation in nursery activities, contact with peers, and adjustment to the daily routine (Shin and Yun, 2016; Świdrak, 2020). Świdrak's research distinguishes between positive and negative behaviours. Negative behaviours and emotions – undesirable from the nursery staff's perspective – indicate stress or crisis related to separation and the stay in the new environment. They also include behaviours used by the child to cope with stress. Positive behaviours reflect adaptation and describe the child's engagement in the new environment. The first weeks in nursery are associated with difficulties, and overcoming them is necessary for the child to engage in play and the activities offered by the facility.

The Multifactorial Nature of the Adaptation Process in Nurseries

Theoretical approaches emphasize that adaptation is a complex and multifactorial process (Rapoport and Piccinini, 2001; Georgieva, 2016), explained in physiological, biological, pedagogical, psychological and social terms. Some researchers claim that it is impossible to predict the course of adaptation based on a single factor (Rapoport and Piccinini, 2001). This corresponds with opinions of caregivers and parents who, while observing children, cannot predict how they will react in a new environment. Parents often experience uncertainty, sadness or guilt, while at the same time hoping the nursery will support their child's development and socialization. Caregivers also face an emotional burden—they want to ensure children's safety, build bonds, and support families (White et al., 2020). Despite this uncertainty, observing children in the first days allows adults to adjust their behaviour, because adaptation is not a passive process, but a form of active interaction (Sumsion, 2011). Sumsion et al. (2011) demonstrated that children's experience depends on the quality of their relationships with caregivers and on how adults introduce them to new situations. This supports the need for adaptation programmes and allows planning support for children and parents even before the child enters a nursery group.

Only a few studies have examined the importance of parental and caregiver behaviour. Andonova (2024) found that active parental involvement shortened the adaptation period. Children whose parents strictly followed the procedure met the criteria of successful adaptation within two weeks.

In Korean research (Hwang et al., 2012), factors important for adaptation included the child's age and the caregivers' professional experience and age. Mothers' parental attitudes were not significant. In another Korean study (Bang, 2014), teacher-caregivers believed that their programmes facilitated adaptation, emphasizing the importance of caregivers as programme providers. Some focused specifically on children's emotions and individual needs. Croatian research (Tatalović Vorkapić et al., 2015) indicated that most children securely attached to their main caregiver experienced a normal course of adaptation, contradicting public beliefs that nurseries disrupt attachment.

White et al. (2022) indicated that successful adaptation does not depend on a single factor but on a network of small actions, such as careful observation of the child, gradual separation, safety rituals (greetings, favourite toys, routine), calm communication with parents, and flexible pedagogy tailored to individual needs.

Few studies concern temperament. Klein (1991) found that shy and withdrawn children or those with difficult temperaments were more vulnerable to emotional and social difficulties. Zajdeman and Minnes (1991) showed that mood predicted adaptation—children perceived as happier reacted more positively.

Research linking cortisol levels with temperament shows that cortisol increases are associated with negative emotionality and low self-control (Dettling et al., 2000). Albers et al. (2016) confirmed that children have higher cortisol levels during daycare days than at home, but high-quality care lowers stress. Children with reactive temperament show greater fluctuations, but sensitive caregiving can mitigate them. These findings were supported by German (Ahnert, 2023) and American research (Bernard, 2015).

Based on these results, one may assume that individual patterns of emotional and social functioning in early childhood may be important for the adaptation process. This corresponds with Buss and Plomin's theory of temperament (1984).

The Theory of Temperament by A. H. Buss and R. Plomin

Arnold H. Buss and Robert Plomin (1984) define temperament as a set of hereditary personality traits that are revealed in early childhood (in the first year of life). They form the basis for the formation and development of personality.

In the theory of Buss and Plomin (1984), temperament plays a vital role in a person's interaction with the environment. For example, active people seek situations in which they can use their energy, while sociable people prefer teamwork and activities

but also strive to organize their environment in such a way as to provide themselves with the greatest possible number of social interactions. Temperament traits can also be a source of difficulty in the functioning of an individual. Excessive emotionality negatively affects the quality of a person's relations with the environment. The authors distinguish three components of temperament: Emotionality, Activity and Sociability. The last of these is associated with the fourth trait—Shyness—which is treated by the authors as a derivative of temperament associated with Sociability or as a separate trait. Emotionality is a dimension which ranges from a lack of reaction at one end to intense, difficult-to-control or uncontrolled reactions at the other end, including fear and anger (Buss and Plomin, 1984, pp. 50-54). Activity is the only feature of the EAS temperament theory that refers to the style of behaviour. The main components of activity are tempo (speed of action) and vigour (related to the strength or intensity of reaction) (Buss and Plomin, 1984, p. 84) Sociability, the third temperament feature according to the EAS theory, manifests itself in a general tendency of a person to seek out other people and spend time with them and avoid loneliness. People characterized by a high intensity of this feature are strongly motivated to seek the company of other people. They tend to be frustrated and unbalanced in conditions of isolation and want, above all, to remain in long-term contact with other people. The source of this tendency is specific social rewards, such as shared activities, attention from others and not feeling isolated (Buss and Plomin 1984, p.63). Shyness refers to behaviours displayed in the presence of random people or strangers. It manifests itself as inhibition and embarrassment, which are accompanied by a sense of tension and discomfort and a desire to withdraw from social interactions. The presence of little-known people or strangers facilitates the emergence of this feature (Buss and Plomin, 1984 pp. 77-80).

From the analysis of the previous literature on factors that may be significant for the adaptation process and the importance of temperament for social relations, it can be assumed that temperament revealed in behaviours and emotional expression may play a significant role in toddlers' adaptation to nursery. On the other hand, the complexity of the adaptation process awareness leads to the assumption that it may also be regulated by other factors at different process stages.

This study aimed to analyse the relationship between toddlers' temperamental traits and their time of adaptation to nursery.

Based on the literature, the following hypotheses were made:

H1. Increased emotionality and shyness are positively correlated with the duration of negative emotional and behavioural responses during adaptation.

H2. Increased sociability and activity are negatively correlated with the duration of negative emotional and behavioural responses during adaptation.

Method

To verify the hypotheses, research was conducted in Polish nurseries, in the city of Lublin. Before the study began, parents and caregivers were informed about the purpose, procedure, and method of the study. Parents were asked for consent to their children's participation in the study and informed about the privacy policy for their children. Caregivers were trained in the use of the researcher's observation technique. At the research planning stage, the internal grant committee, which was also the ethics committee at the John Paul II Catholic University of Lublin, gave its consent to the research. The study included 109 children (60 girls and 49 boys) aged 8 to 33 months (average age: 18.68 months). The children were observed during their first 20 days of nursery stay by their caregivers. The study took place in the second half of 2024. A limitation of the study was the failure to include factors such as the quality of the caregiver-child relationship, including caregiver responsiveness and familiarity with the children, among the intervening variables. However, considering the children's safety and the possibility that the presence of a stranger—i.e., the researcher—might exacerbate their difficult emotional state, the choice of the caregiver as an observer was justified.

The time of adaptation of children to nursery was examined using the observation scale described in Świdrak's article "Adaptation of children up to three years of age to institutional forms of care based on the example of Lublin nurseries" from 2020. The scale consists of 2 parts. In the first part, caregivers were asked to estimate the number of days during which the child showed specific behaviour while separated from parents, and in the second part, the number of days during which the child showed specific behaviour or emotion in the nursery room. Each part considered positive and negative behaviours and emotions. The variable that described negative behaviours observed during separation included four items: crying -sadness, anger, reluctance to enter the room, and taking a long time to separate from the parent. This variable was abbreviated as "neg1". The variable that described positive behaviours experienced before entering the room included four items: smiling, establishing contact with the caregiver and entering the room calmly and without problems, taking a short time to separate from the parent and making a "bye-bye" gesture. This variable is named and abbreviated as "poz1".

Negative behaviours displayed during the nursery stay were described using four items: crying—sadness, isolation and a lack of contact with peers and caregivers, clinging to the caregiver (e.g., sitting on the lap), recalling and searching for mom/dad/other relatives. As part of the work on the tool, the item “sleeping difficulties” was removed, because it reduced the reliability of the scale. All negative behaviours and emotions during the nursery stay form a general variable named “neg2”. There were three items among the positive behaviours observed during the nursery stay: establishing contact with peers and staff, participating in nursery games and activities and displaying joy. This variable is abbreviated as “poz2” in the description of the research results. As regards the psychometric properties of the measure, the collected empirical data made it possible to analyse the reliability of the schedule. The reliability was assessed using Cronbach’s α coefficients of positive and negative groups of behaviour. The reliability coefficients are given in Table 1. Psychometric validation of this instrument suggests a satisfactory level of reliability.

Table 1

Reliability Coefficients (Cronbach’s α) for negative and positive behaviours during separation and nursery stay

Adaptation observation scale	Cronbach’s α
Negative behaviour and emotions during separation (neg1)	.65
Positive behaviour and emotions during separation (poz1)	.63
Negative behaviour and emotions during nursery stay (neg2)	.69
Positive behaviour and emotions during nursery stay (poz2)	.78

Children’s temperament was examined using the EAS scale—the TS version for children—which refers to observational data yielded from parents, as authored by Arnold H. Buss and Robert Plomin and adapted into Polish by Włodzimierz Oniszczenko (1997). The questionnaire consists of 20 items forming 4 scales: Emotionality (E), Activity (A), Sociability (S) and Shyness (Sh). Each scale contains 5 items. Using a 5-point scale, parents or teachers determine to what extent each statement describes the child, on a scale from 1 to 5. The results are converted to a STEN score.

The results obtained in the study were statistically analysed using SPSS Statistics, version 29.0. Bilateral Pearson’s r correlations were calculated between variables for the entire group of respondents as well as for the girls’ and boys’ subgroups. Additionally, models that would make it possible to predict the adaptation process based on selected variables were sought using linear regression analysis.

Results

The first stage of the analysis yielded the results of the correlation between the individual scales of temperament and adaptation. Additionally, the age variable was also subjected to correlation. The results are presented in Table 2.

Table 2

Correlations Between Temperament, Child Age and Adaptation (N=109)

Adaptation		Age	E	A	S	Sh
neg1	Pearson's r	.011	.236*	-.008	.104	.305**
	p	.906	.013	.933	.281	.001
poz1	Pearson's r	.133	.086	-.063	-.009	-.275**
	p	.169	.373	.515	.927	.004
neg2	Pearson's r	.065	.193*	-.076	-.072	.339**
	p	.501	.044	.431	.458	<.001
poz2	Pearson's r	.052	.087	.032	.017	-.224*
	p	.588	.371	.744	.862	.019

(E) Emotionality (A) Activity (S) Sociability (Sh) Shyness

* $p < 0.05$

** $p < 0.01$

The correlation coefficients indicate that there is a relationship between children's adaptation in nurseries and their shyness. The higher the level of shyness, the more negative behaviours the children displayed, both when separating from their parents ($r = .305^{**}$) and during the nursery stay ($r = .339^{**}$). As their shyness decreased, the children showed more positive behaviours both when separating from their parents ($r = -.275^{**}$) and during the nursery stay ($r = -.224^*$). Negative behaviours such as crying or reluctance to play also correlated with the child's emotionality, both when separating from their parents ($r = .236^*$) and during the nursery stay ($r = 0.193^*$). In the girls' group, statistically significant correlations were similar to those in the entire group of observed children (Table 3). Shyness, as one of the girls' temperamental features, had a significant relationship with both positive and negative behaviours and emotions during adaptation. Additionally, a statistically significant relationship occurred between the girls' negative behaviours during separation and emotionality ($r = .287^*$). The higher the level of Emotionality (E), the more negative behaviours and emotions occurred during the separation of girls from their parents in the nursery hall ($r = .287^*$).

In the boys' group, statistically significant correlations were different than in the girls' group. Negative behaviours and emotions observed during the nursery stay significantly and directly correlated with the age of boys ($r=.389^{**}$) and with their shyness ($r=.349^*$). In the boys' group, correlations in the remaining areas of adaptation were statistically insignificant.

Table 3

Correlations Between Temperament, Child's Age and Adaptation in the Groups of Boys and Girls

Sex	Adaptation		Age	E	A	T	NS
Girls (N=60)	neg1	Pearson's r	-.178	.287*	-.013	.164	.326*
		p	.172	.026	.921	.212	.011
	poz1	Pearson's r	.044	-.048	-.064	-.023	-.310*
		p	.740	.717	.630	.860	.016
	neg2	Pearson's r	-.180	.215	-.035	.091	.297*
		p	.168	.099	.793	.487	.021
poz2	Pearson's r	-.022	.029	-.006	-.047	-.262*	
	p	.870	.829	.964	.719	.043	
Boys (N=49)	neg1	Pearson's r	.199	.160	.008	.088	.239
		p	.170	.271	.958	.547	.098
	poz1	Pearson's r	.252	.258	-.067	-.007	-.222
		p	.081	.073	.645	.963	.125
	neg2	Pearson's r	.389**	.135	-.113	-.226	.349*
		p	.006	.354	.438	.118	.014
poz2	Pearson's r	.161	.176	.067	.072	-.154	
	p	.270	.225	.648	.621	.291	

(E) Emotionality(A) Activity(S) Sociability(Sh)
Shyness

* $p < 0.05$

** $p < 0.01$

All statistically significant correlations in the entire group, as well as in the girls' group, show a small relationship between variables. In the separate boys' group, statistically significant correlations showed a slightly higher level in relation to the girls' group and the group comprising all children. Therefore, a linear regression analysis was performed in the boys' group, where the child's age and shyness were assumed as independent variables, and the dependent variable was the number of days in which the children showed negative behaviours in the nursery (neg2). The regression results are shown in Table 4.

Age and shyness proved to be significant predictors of negative behaviour in boys during their adaptation to nurseries. The older and the shyer a boy was, the more negative behaviours he showed during adaptation (Model 3). The analysed variables explained 32% of the variance in the dependent variable ($\Delta R^2=.320$). Moreover, the

model with two variables (Model 3) had greater predictive power than models in which only one variable (Sh or age) was analysed.

Table 4

Predictors of Negative Behaviours During Adaptation to Nursery in the Group of Boys.

Predictors	Model 1		Model 2		Model 3	
	B	p	B	p	B	p
Age	.389	.006			.415	.001
Shyness			.349	.014	.450	<.001
F (df)	8.396 (1)		6.536 (1)		10.835 (2)	
ΔR^2	.152		.122		.320	

*p < .05; **p < .001

Dependent variable—neg2

Discussion

The results indicate a statistically significant relationship between children's shyness, emotionality, and the duration of their adaptation to nursery settings, thereby confirming the first hypothesis. Shy children demonstrated more negative and fewer positive behaviours during adaptation. Shyness was apparent in relation to strangers and little-known people, and this is exactly the type of contacts that take place during adaptation.

Hypothesis 2 was not confirmed. There was no statistically significant correlation between children's sociability and activity and the duration of negative emotional and behavioural responses during adaptation. Importantly, sociability—a feature related to shyness—was not related to adaptation. Therefore, it should be assumed that prior familiarization with the nursery staff and children could reduce the experience and expression of negative emotions in shy children during adaptation. Moreover, children with less control over their emotional reactions showed more negative emotions and behaviours when separating from their parents. Therefore, it seems that if the nursery staff were to make efforts to prevent children's strong emotional reactions, especially during separation from parents in the nursery lobby, this would help facilitate the adaptation process. Based on the author's observations and conversations with nursery carers, it appears that they often ask parents to part with their children as quickly as possible and not to escalate feelings such as sadness, regret or fear.

Further statistical analysis with a breakdown into boys and girls showed that the older and shyer the boys were, the more negative behaviours they displayed, as

perceived by the nursery staff. All significant covariations showed weak relationships between the variables, which prompts the search for other factors that may be important in the adaptation process, e.g., nursery staff or the child's family.

Awareness of the importance of individual temperamental differences between children in the adaptation process encourages paying special attention to the needs of shy and emotionally vulnerable children. Therefore, the teachers' task in the adaptation process is to respond to the child's individual needs; however, this is not always possible, given the size of nursery groups. It also seems that any kind of action aimed at familiarizing new children with the nursery, staff and children in advance can shorten the adaptation period because shy children react with increased anxiety only in new situations and when encountering people they do not know very well.

The above research findings support the need for adaptation programs for children in daycare, considering the individual needs of the child and the role of parents. The research by White et al. (2020), mentioned in the article, confirms that adult emotions have a real impact on the adaptation process: a calm, confident adult helps the child feel safe. Therefore, facilities should support parents in this process, create relationships based on trust and cooperation, and demonstrate flexibility and sensitivity to the child's individual needs and previous experiences.

Moreover, research conducted by Ahnert, Pinquart, and Lamb (2006) demonstrates that children's sense of security in non-parental care settings is strongly associated with the quality of caregiver-child interactions. Caregiver sensitivity, attentive observation of children's behavioural signals, and flexible, responsive caregiving contribute to a smoother process of adaptation to the new environment. Findings from this meta-analysis further indicate that systematic staff preparation and structured adaptation programmes can effectively reduce separation-related stress and enhance children's overall well-being during the initial days of attendance.

Therefore, the responsibility for the children's well-being during the adaptation process rests with the caregivers, whose role is to consider the children's temperamental differences, especially their shyness and emotionality and to cooperate with the child's parents.

Data Availability Statement

The article is based on data fully presented and discussed within the article itself; therefore, no additional data archiving is required.

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