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Worksheet for Observing the Effects of Development in the Scope of Autonomy in 2- to 3-year-old Children (WOA)

This article presents the results of an assessment of the psychometric values of a tool intended to assess the developmental changes occurring in 2- to 3-year-old children spending most of the day in early childhood education and care institutions. An assessment of the developmental achievements of small children was an element of an empirically validated diagnostic concept of the conditions created for children in such institutions. The worksheet for observing the effects of development in the scope of autonomy in 2- to 3-year-old children was one of five tools used in longitudinal studies, with two measurements carried out in the period from December 2017 to July 2018. The studies were conducted using a quantitative strategy and included 131 children attending 10 groups in 4 establishments and 20 caregivers working full time in these groups. The article also discusses the theoretical underpinnings adopted to build the scale and provides its detailed characteristics. Data on the reliability of the scale has also been presented: the value of Cronbach's alpha coefficient and the mean inter-item correlations in both measurements along with data on the agreement between two judges determined as Pearson's correlation coefficient (r). The data collected demonstrates the high reliability of the scale in the two presented measurements, while data concerning validity confirms its psychometric value. Factor analysis became the basis for adjustments in the allocation of indicators to given subscales measuring manifestations of autonomy.

Keywords: early childhood education and care, psychosocial development, scale to observe the effects of development in the scope of autonomy, the toddler age

Arkuszy do obserwacji efektów rozwoju w zakresie autonomii u dzieci w wieku 2-3 lat (AOA)

W tym artykule przedstawiono wyniki oceny wartości psychometrycznych narzędzia przeznaczonego do oceny zmian rozwojowych zachodzących u dzieci w wieku 2-3 lat przebywających przez znaczną część dnia w placówkach wczesnej opieki i edukacji. Ocena osiągnięć rozwo-

jowych małych dzieci była elementem weryfikowanej empirycznie koncepcji diagnozy warunków tworzonych w tych placówkach małym dzieciom. Arkusz do obserwacji efektów rozwoju w zakresie autonomii u dzieci 2-3-letnich był jednym z pięciu narzędzi zastosowanych w badaniach podłużnych z dwoma pomiarami zrealizowanych w okresie od grudnia 2017 roku do lipca 2018 roku. Badania prowadzone były w strategii ilościowej i objęły 131 dzieci uczęszczających do 10 grup w 4 placówkach oraz 20 opiekunek na stałe pracujących w tych grupach. W artykule omówiono podstawy teoretyczne przyjęte do budowy skali i szczegółowo ją scharakteryzowano. Przedstawiono dane o rzetelności skali: wartość współczynnika Alfa Cronbacha i średnie korelacje między pozycjami w obu pomiarach oraz dane dotyczące zgodności dwóch sędziów określone współczynnikiem r – Pearsona. Zgromadzone dane świadczą o wysokiej rzetelności skali w dwóch przeprowadzonych pomiarach, a jej wartość psychometryczną potwierdzają dane dotyczące trafności. Wykonana analiza czynnikowa stała się podstawą korekty przyporządkowania wskaźników do poszczególnych podskal mierzących przejawy autonomii.

Słowa kluczowe: wczesna edukacja i opieka, rozwój psychospołeczny, skala do obserwacji efektów rozwoju w zakresie autonomii, wiek poniemowlęcy

Introduction

The research tool presented in this article is part of the author's article and empirically validated diagnostic concept of the conditions of psychosocial development created in early childhood education and care institutions for children of toddler age and the effects on the development of children who spend most of their day (from 7 to 8 hours per day)¹ in these conditions.

The work on the diagnostic concept and research tools was preceded by a review of non-serial publications and scientific journals covering the period from 2000 to 2015, with a high impact factor in the English language, as well as articles in scientific journals published in the Polish language². A total of 5 diagnostic

¹ The diagnostic concept of the conditions of psychosocial development created for children of toddler age in early childhood education and care institutions was developed within the prepared doctoral dissertation titled: *A diagnosis of the conditions of psychosocial development created for children of toddler age in selected early childhood education and care environments*, under the supervision of dr hab. Maria Deptuła. The doctoral dissertation submission was approved and accepted by the Faculty of Pedagogy and Psychology at the Kazimierz Wielki University. The research was co-funded by a research grant for young scientists and participants of doctoral study programmes, awarded in 2017 by the Ministry of Science and Higher Education to the Faculty of Pedagogy and Psychology at the Kazimierz Wielki University. The author presents a fragment of the research on the conditions of development in one of the establishments in the work: Deptuła and co-authors (2018).

² The full communication from this literature review was published in the following article: Przegląd narzędzi do badania kontekstu rozwoju dzieci do lat 3, *Teraźniejszość – Człowiek* –

tools were found, designed to investigate the conditions of psychosocial development and selected effects thereof observed in toddlers.

The *Affordances in the Home Environment and Motor Development in Children* (Rodrigues, 2009) tool was designed to assess the number and the quality of opportunities for motor development provided in the home environment to a child in early childhood (from 3 to 18 months and from 18 to 42 months). It is theoretically underpinned by Gibson's theory of affordances. Thanks to the research carried out by Elżbieta Hornowska, Anna I. Brzezińska, Karolina Appelt and Katarzyna Kaliszewska-Czeremska (2014), it was adapted to Polish conditions and called the *AHEMD/PL Questionnaire* (Hornowska et al., 2014).

The next tool: the *Infant/Toddler Home Observation for Measurement of the Environment* (Caldwell & Bradley, 1984), is used to assess the stimulation value of the child's closest environment from birth to 3 years of age. It also factors in the family's use of the resources available to it that support the child's development, the presented way of functioning of the parents in relation to the child and their involvement in interactions with the child. The theoretical basis for this scale is the ecological systems theory of child development by Urie Bronfenbrenner. Its Polish adaptation was also developed by a research team under the supervision of Hornowska and was called the *IT - Home/PL Inventory* (Hornowska et al., 2014).

The next scale is called the *Maternal Behaviour Q-Sort* (Pederson, Moran & Bento, 1995) and is used to explore the conditions contributing to the social and emotional development created for a child in their home environment, which can be identified on the basis of an assessment of maternal sensitivity in interactions between a mother and her child of up to 26 months of age. The researcher observes maternal behaviour while carrying out various tasks together with the child that were requested by researcher (e.g.: maternal interventions – the adjustment of the tasks performed to the child's capabilities, behaviours supporting the child in the performance of a task, the adaptation of the mother to the child's pace of doing tasks and following the child's lead), as well as natural forms of play in the home environment. The research procedure also involves an interview carried out with the mother of the child concerning her relationship with him/her (Bernier, Carlson & Whipple, 2010). According to the author of the article, the sub-scale of the observation worksheet, called the *Maternal Autonomy Support*, is interesting from the point of view of the criteria adopted in the search for diagnostic tools.

Two tools originating in America are valuable from the perspective of studying the conditions for psychosocial development created in early education in-

stitutions. The first, the *Early Childhood Environmental Rating Scale, Revised Edition* (Harms, Clifford & Cryer, 2005), can help caregivers and teachers working with children aged from 2.5 to 5 years to assess the teaching and educational environment. It can also be carried out by an independent researcher during observations performed in establishments providing psychoeducational services. The second tool, the *Early Childhood Environment Rating Scale, 3rd Edition* (Harms et al., 2015), is a revised version of the *ECERS-RE* scale and is used to measure the number and the quality of the environmental provisions for a child. The scale allows for an assessment of the manner in which the teacher or caregiver uses the available materials and spatial arrangements to stimulate the child's development. Furthermore, the scale is also used to evaluate the way in which caregivers communicate with children, their reactions to the spontaneous behaviours of children and in accompanying them during the performance of tasks. No information was found on the theoretical framework of these tools. The above-mentioned tools may, in the view of the author of this article, be applied in research on the conditions of psychosocial development of small children. Some scales included in the tools relate to the measurement of the social and emotional environment of small children from the perspective of supporting their development in the scope of autonomy and self-regulation. However, no tool was found within the literature review that could be the basis for a detailed individual assessment of the material, spatial and social and emotional conditions created for children to develop autonomy and self-regulation. Furthermore, no tools were discovered to investigate the effects of the psychosocial development of children aged 2 to 3 years, i.e. to measure the level of autonomy and self-regulation.

Contrary to other countries like Denmark, Sweden, Great Britain and Italy, no comprehensive research on the conditions for the psychosocial development of small children has been carried out so far in Poland. Apart from the previously mentioned research by the team led by Hornowska (2014) leading to an initial assessment of the social and physical factors stimulating the development of small children, studies adopting a qualitative strategy were carried out by Lucyna Telka (2009). The subject of her research was the social space of the establishment, i.e. the events and relationships between the establishment's participants – children and adults, caregivers and parents – occurring in that space, as well as the social ideations that provide the basis for these events and relationships. The studies involved an analysis of the transformation process of an establishment's social space understood this way, including the reconstruction of the framework of the educational actions and ideations about such actions presented by the establishment's staff. It would be true to say that the proposal of a new model of early care and education implemented across Poland is an effect of these studies (ibid.).

It may, undoubtedly, become an alternative to the directive-oriented concepts of working with small children based on the instrumentalisation of early education or, on the other hand, concepts arising from its idealisation or infantilisation present in modern childcare establishments for children up to the age of 3 in Poland.

Another example of research using qualitative strategies in the area of early childhood education is that of Katarzyna Sadowska (2018) concerning the identification of the perception of early childhood education in a modern crèche. Its aim was to create the theoretical and methodological framework for early childhood education and their practical implications that may contribute to enhancing the education process in a crèche (*ibid.*). The author recreated the image of early childhood education presented in literature on the subject, legislation governing the functioning of crèches and other forms of childcare for children up to the age of 3. She collected information about the way it is perceived by educators of small children working in crèches, experts in the field of early childhood education and establishments responsible for providing this form of care over small children in selected Polish cities (*ibid.*). She confronted the material collected concerning knowledge on the development of small children, the most important needs for their successful development and education, as well as psychological knowledge about developmental tasks. She pinpointed the targets for early childhood education and characterised them in detail from the perspective of selected pedagogical concepts of working with small children. She also discussed the experiences of countries implementing an integrated system of early education built on the conviction that it is the most significant and demanding of the utmost attention element of lifelong learning and human development. In effect, in the conclusions, she provided extensive recommendations concerning the determinants for construing the early childhood education process in a crèche. She emphasises that they should be set by the developmental tasks characteristic of those of the infant and toddler age that have been described in the theory of psychosocial development by Erik H. Erikson (1997). Alongside the objectives concerning the development of locomotion, manipulation and communication, the author highlighted the meaning of supporting the emotional development of a small child. She described the conditions that are important for the fulfilment of the goals of early childhood education, dividing them into those that are significant in the period up to the age of 1 and those that are key to the post-infant period. She characterised the physical space conducive to achieving the goals of early childhood education. She also gave examples of actions that are to contribute to achieving specific goals and characterised the profile of an educator of a small child who supports their development using the methods proposed by Aleksandra Kram

and Monika Mielcarek (2014), namely: the method of free and unrestricted exploration, spontaneous play, occasion-specific learning and educating by creating opportunities for the imitation of an adult. The author formulated an important conclusion from the point of view of the aims of this article that it is impossible to construe the desired yet absent pedagogical process in crèches without performing a systematic diagnosis of the developmental capabilities of a child, their needs and resources (Sadowska, 2018).

The result of the performed review of literature and the conclusion concerning the absence of a sufficient set of diagnostic instruments has spurred the author of this article to develop a new tool to observe the effects of development in children aged 2 to 3 years, one of which is presented in this article.

The assumptions determining the structure of the worksheet for observing the effects of development in the scope of autonomy in 2- to 3-year-old children

The presented worksheet for carrying out the observations may be used by educators working in various care institutions for children up to the age of 3. The choice of autonomy as a variable that has to be tested in children of this age results from Erikson's theory of psychosocial development (1997). According to this theory, development during this period in life is focused on striking a balance between autonomy and a sense of shame and doubt (*ibid.*). A child becomes ready to confront the need to be an autonomous individual with an environment that is imposing its own concept of independence on them. The needs that dominate this life stage are the consequence of a child becoming aware of what they want and what does not suit them and the ability to signal this to the surroundings. This is facilitated by an increasing ability in locomotive, speech and self-control terms, manifesting in growing control over their behaviour and surroundings. It is also these competences that make possible the escalation of the strive to satisfy the need for autonomy (Brzezińska, Appelt & Ziółkowska, 2016).

The child, on the one hand, feels the need to function independently and on their own at a certain distance to the nearest surroundings and, on the other hand, measures up to the pressure coming from the surroundings to adapt to specific rules of behaviour or conduct. They also become aware that they have not fully mastered the abilities that give them complete independence. The overlapping of situations that could give rise to feelings of disorientation in the period between 2 and 3 years of age is the reason for the emergence of a crisis in development (Erikson, 2004). Indeed, the need to express one's own will has its

beginnings in the surfacing ability to control the actions of release and retention connected with development of the muscular system occurring at this stage. A child in whom a sense of distinctness appears along with the need to conceal oneself confronts themselves with the social pressures directed at adapting to the requirements stemming from the course of toilet training. They measure up to the challenges that her/his body, and adults, put before them (Erikson, 2004). The experiences of this period are considered decisive to achieving a balance between fulfilling only one's own will and stubbornness and cooperation with the surroundings; between excessive self-expression and restraint (Erikson, 1997). The achievement of a relative equilibrium between a sense of autonomy and a sense of shame and doubt by coping with the tension appearing between these states will be significant for the functioning of a child in the social environment and the relationships the child establishes with peers and adults. In the situation when the individuation process does not receive approval, the child begins to doubt in their ability to be an autonomous individual who can cooperate with the surroundings. The doubt that is appearing may hinder or prevent their further successful psychosocial development.

Structure of the scale to measure autonomy using observation

The ability to be autonomous means presenting one's will and putting it into action while, at the same time, the child fine-tunes their desires to the will and actions of other people (Brzezińska et al., 2016). Autonomy is understood by Błażej Smykowski (2012) as the ability to find the area for the expression and the development of one's own will in a space filled by external and internal determinants. In a broader sense, autonomy is a "healthy independence, self-reliance, ability to work independently and with others, assertiveness when the situation so requires and resistance to influences" (Czub & Matejczuk, 2015, p. 33). Such an understanding of the concept of autonomy has been taken as the basis for the operationalisation of the variable at the start of the tool construction process. The worksheet for observing the effects of development in the scope of autonomy in 2- to 3-year-old children is built of twenty-eight statements on five subscales that will be characterised hereinbelow. The tool is intended for caregivers permanently working with children of toddler age attending crèches and using other forms of childcare up to the age of 3. The caregiver assesses the frequency of the behaviours manifest by a child, described in the statements comprising the scale, using five options: *1 – never, 2 – rarely, 3 – sometimes, 4 – often, 5 – always*. The instructions entail a request to try and recall the past month of a given child's

functioning in the crèche and specifying whether the examples of behaviours provided in the statements correspond to those manifested by the child in question. The instructions also contain an explanation of how to approach the assessment of the frequency of behaviour manifested by a child. If a given description:

- constitutes a permanent element of the child's behaviour, put an next to the *always* response,
- is consistent with the child's regularly appearing behaviours, but they cannot be deemed a fixed pattern of their behaviour, put an next to the *often* response,
- is consistent with the child's behaviours appearing from time to time, put an next to the *sometimes* response,
- constitutes a relevant behaviour that appears sporadically, place an next to the *rarely* response,
- does not completely fit the child's behaviour, put an next to the *never* response.

The scale is built so that the higher the result obtained, the higher the level of autonomy development the child whose behaviours their caregiver has assessed has achieved. The worksheet does not contain reverse-scored items. The dimensions of the scale identified within the work on its construction and the items comprising the scale have been discussed below.

According to literature describing the specificity of manifesting the need for autonomy by children of this age, it has been assumed that the indicators create five dimensions (subscales), which will be presented in turn below.

The first refers to the child demonstrating his/her needs and the readiness to independently satisfy them, as well as revealing their will and expectations. It also includes self-awareness, which is also reflected in the emerging sense of ownership and the tendency to possess things like their own stuff, especially toys and/or their own place (Appelt, 2013). This component of autonomy developing in the child is measured using the dimension called: *Expressing own will and deciding about one's possessions*, built from three statements shown in Table 1.

Table 1
 Items of the 'Expressing own will and deciding about one's possessions' dimension³

Item no.	Statement content
1	The child uses statements expressing his/her own will, e.g.: "I'm not going to play this game", "I want to colour in with a different crayon", "I'm not eating tomato soup", "Give me a different building block", "I only want to drink", "I don't want to wear this hat".
2	The child uses gestures expressing her/his own will, e.g.: uses his/her finger to point to objects that he/she wants to play with, pushes a plate of food away from themselves, places an empty cup to be filled, takes her/his hat off, pulls the adult's hand to show them what he/she wants.
14	The child signals to their peers their own will and that they decide about their own possessions either verbally or using gestures, e.g.: their desire to share their toys, their reluctance to share, offering their own food to others, distributing possessions used by them.

Erikson (2004) writes that striving for independence is characteristic of the actions of a child in the period of fulfilment of the developmental task that falls within this stage in psychosocial development. Thanks to the development of the abilities of performing everyday and personal care activities on their own with growing precision, a child starts to feel a strong need to be independent. Even if they have not sufficiently mastered the pattern of performance of a given activity, they still attempt to cope on their own without the caregiver's assistance. This particularly concerns being independent in activities relating to using the toilet and during the toilet training that has just started. There is a feeling of separateness, a desire to be alone and to hide. Which is related with the readiness to independently control the processes of holding and elimination. It has been recognised that the area of behaviours demonstrating this component of autonomy developing in a child should be investigated separately. This is why statements were phrased that refer to different activities performed individually by the child, or those that reveal that they are making attempts at doing activities independently when it comes to food, personal hygiene, getting dressed and undressed and using the toilet (toilet training). The subscale: *Self-care activities* is built of 11 statements, which are presented in Table 2.

³ All the tables and figures included in this article were developed by the author.

Table 2
 Items of the 'Self-care activities' dimension

Item no.	Statement content
3	The child undresses on their own, e.g.: takes their hat off, takes off their socks, takes off their scarf, takes off untied shoes.
4	The child takes the initiative when dressing, e.g.: puts their arms in the sleeves, pulls a loose jumper over their head, puts on a hat, puts on their slippers on their own.
5	A child is capable of dressing and undressing on their own, e.g.: puts on their shoes with the help of an adult, puts on and takes off a hat, undoes the zip of their jacket, unbuttons large buttons, takes their jumper or shirt off, puts on and takes off a scarf, puts their slippers on.
6	A child tries to wash their hands and face on their own.
7	A child washes and then dries their hands and face.
8	A child, encouraged by their caregiver, takes the initiative when using a spoon and fork, trying to eat on their own despite spilling soup and having difficulties with getting food onto the fork.
9	A child uses a spoon and fork on their own, scooping soup into the spoon and bringing it to their mouth without spilling, getting food onto the fork and into their mouth.
10	A child signals their physiological needs to their caregiver and, with their help, carries out activities related to toilet use.
11	The child independently decides whether or not they will use their potty, toilet seat trainer or grown-up toilet seat.
12	A child independently flushes the toilet or empties the contents of their potty.
13	The child controls their own physiological needs and uses a toilet, remaining in the cubicle on their own.

The next dimension is used to capture those behaviours of a child that demonstrate their persistence in doing as they please, going against the will and decisions of other people and breaking rules set by other people that could hinder or stop their desires (Appelt, 2013). This subscale was called: *Expressing objection to imposed principles, rules and the imposed will of others*. All 4 of the indicators that make up this subscale have been presented in Table 3.

Table 3

Items of the 'Expressing objection to imposed principles, rules and the imposed will of others' dimension

Item no.	Statement content
22	The child objects to their peer or their caregiver carrying out tasks for them.
23	The child objects to the caregiver interfering in the activities being performed by the child, e.g.: when the caregiver is trying to help them perform a given activity or modifies the way that it is being carried out.
24	A child uses statements and gestures to go against their caregiver's will, e.g.: saying "no" and/or "I don't want to", saying "not now" and/or "later" "when I finish..." when the caregiver gives a command, shakes their head or flaps their hands in disagreement when the caregiver is expecting them to follow a command.
28	While playing and/or engaged in activities with others, they do not follow the instructions given by the caregiver, e.g.: they change the course of the play activity or add their own elements to the play activity.

A child at this stage in development of autonomy is striving to fulfil their own ideas and plans in the way that he/she creates there and then or thinks up just before. This leads to the emergence of an individuation of actions and the child taking the initiative, which is new in their day-to-day activities (Appelt, 2013). Expressions of this are the behaviours creating the following dimension: *Deciding about one's own activities during unrestricted play activities, organised play activities, task performance and taking the initiative*, comprising the 5 statements that have been included in Table 4.

Table 4

Items of the 'Deciding about one's own activities during unrestricted play activities, organised play activities, task performance and taking the initiative' dimension

Item no.	Statement content
15	The child independently decides what they will do and what activities they will undertake during unrestricted play activities.
16	The child shows joy at doing different activities on their own.
19	The child arranges the play activities on their own, giving the idea for the play activities.
20	The child gets involved in fulfilling their own idea, e.g.: an idea for a play activity or an idea for the way a task will be performed.
26	The child independently joins their peers who are playing, e.g.: approaches a chosen peer and gets involved in the play activities or asks if they can join in.

The autonomy achieved by a child in the second stage of psychosocial development is also expressed in the desire to decide and make choices. The newly emerging behaviours manifest the need to exert an influence on the surroundings in which the child is functioning. The demonstration of one's own will by deciding and making choices allows the child to become differentiated from their surroundings (Appelt, 2013). The dimension: *Making choices* was prepared to study this component of autonomy and is built of the 5 statements presented in Table 5.

Table 5
Items of the 'Making choices' dimension

Item no.	Statement content
17	The child individually chooses the place where they will rest, do some art work or other activities.
18	The child independently chooses the way a given activity or play is performed, e.g.: chooses the crayon or paint colours, the shapes and colours of building blocks, the instruments and other props it uses.
21	The child independently chooses a playmate, dance partner, or task partner from among their peers.
25	The child makes choices on their own, e.g.: pointing their finger to one of two objects that they need or want to play with, saying "I want this toy".
27	The child shows joy at making choices on their own.

Validation of the psychometric properties of the scales in longitudinal studies of children aged 2-3 years old

The data for the assessment of the developed scale was collected within a more extensive research project to empirically verify the diagnostic concept of the conditions of psychosocial development created for children of toddler age in the selected early childhood education and care institutions mentioned in the introduction. The author used a quantitative strategy for this in the form of longitudinal studies with two measurements taken in the relevant group of children at a 5-month interval between the first and the second measurement. The entire project ran from December 2017 to July 2018 in public establishments in Toruń and in Sępólno Krajeńskie⁴. A total of 10 groups of children were encompassed

⁴ The author of this article would like to express her sincere gratitude and appreciation to the Director of the Department of Health and Social Policy for the City of Toruń, the Director of the Centre for Small Children and Families in Sępólno Krajeńskie and the directors of the establishments, caregivers and parents who gave their consent to participate in the research, as well as for their involvement and assistance throughout the research.

by the studies, of which 131 children were identified as meeting the age criterion adopted in the methodological assumptions. This means that children who were not less than 19 months or were over 2 years old during the first measurement of the variables but under 3 years old at the anticipated time of the second measurement were included in the study. The studies were conducted with the consent of the parents of the children. The data collection method consisted of indirect observations from the perspective of two main (permanently working with the children) caregivers, who completed an observation worksheet for the effects of development in the scope of autonomy, twice for each child from their group, at 5-month intervals independent of each other, in the presence of the author of this article. Before the commencement of the studies, an application was filed with the Scientific Research Ethics Committee at the Institute of Pedagogy, Kazimierz Wielki University, requesting the issue of an opinion regarding the planned research involving small children. The submitted documentation contained a description of the research assumptions, the study group, the course of the studies, as well as all the research tools. The Scientific Research Ethics Committee issued a favourable opinion for the research project submitted by the author of this article, approving the research project.

Due to the fact that data was collected from two caregivers both in the first and in the second measurement for each child, once the interrater reliability of the caregivers was established, further analyses were performed after the average mean of these two evaluations of behaviour of each child for each worksheet item was calculated. All the statistical analyses were performed using the tools available in the Statistica software environment (TIBCO Software Inc. (2017). Statistica (data analysis software system), version 13. <http://statistica.io>).

The first stage of the psychometric assessment of the scale involved Pearson's correlation coefficient (r) to determine the degree of agreement between the independently rated behaviours of each child by the two caregivers. In the first and the second measurement, the values of Pearson's correlation coefficient were high⁵ and amounted to: $r = 0.90$ and $r = 0.86$, respectively. Further analyses were performed on average rating values from both caregivers. The basic statistics for the dependent variable performed separately for the first and second measurement have been presented in Table 6.

⁵ The interpretation of the values of the correlation coefficients was adopted after Andrzej Stanisiz: $r_{xy} = 0$ – no correlation for variables; $0 < r_{xy} < 0.1$ negligible correlation; $0.1 \leq r_{xy} < 0.3$ weak correlation; $0.3 \leq r_{xy} < 0.5$ mean correlation; $0.5 \leq r_{xy} < 0.7$ high correlation; $0.7 \leq r_{xy} < 0.9$ almost complete correlation; $0.9 \leq r_{xy} < 1$ complete correlation (Stanisz, 2006, p. 293).

Table 6
Basic statistics for the variable of autonomy

Variable	<i>P</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SKE</i>	<i>K</i>
Autonomy	I	131	1.78	0.77	0.24	- 0.14
	II	131	2.38	0.70	- 0.12	- 0.58

P – measurement; *N* – number; *M* – mean; *SD* – standard deviation; *SKE* – skewness; *K* – kurtosis

The statistically insignificant ($p > 0.05$) value for the Shapiro-Wilk test for the variable in the first measurement ($W = .98767$, $p = .290$) and in the second measurement ($W = .98466$, $p = .148$) means that the distribution for the dependent variable is not different from the normal distribution. Next, the reliability coefficient and the mean inter-item correlations for the scale for both measurements were calculated, and the results have been presented in Table 7.

Table 7
Cronbach's alpha coefficient and mean inter-item correlations for the scale

Tool	Data on the scale based on the results obtained from the first measurement		Data on the scale based on the results obtained from the second measurement	
	Cronbach's alpha	Mean correlation	Cronbach's alpha	Mean correlation
Questionnaire assessing the fulfilment of the developmental task between ages 2 and 3 – Autonomy	0.97	0.56	0.96	0.53

The table shows that Cronbach's alpha coefficient is high for both measurements, confirming scale reliability. The mean correlation between the scale items for both measurements are very similar and fall within the high correlation category. Thus, the developmental achievements of children aged between 24.23 months (mean value of age in the first measurement) and 29.21 (mean value of age in the second measurement) can be measured reliably using this scale.

In order to verify the validity of the scale, the correlations between the age measured in months and the effects of development achieved by the studied children in the scope of autonomy were analysed. The obtained correlation coefficients amounted to, respectively: in the first measurement: $r = 0.46$; in the second measurement: $r = 0.45$. This means that the strength of the relationship between age and the effects of development in the scope of autonomy is average, and age explains approximately 20.2% of the variability in the results in the scope of autonomy (interpreted after: Stanisz, 2006). The positive value of the coefficient signifies that the level of autonomy increases with the age of the children, which is consistent with the data obtained from literature and confirms the theoretical validity of the scale applied.

The use of factor analysis enabled the scale structure to be determined and for subscales to be identified, enabling a more detailed analysis of the achievements of children in the autonomy dimension. The analysis was performed separately for data from the first and the second measurement. Table 8 shows the number of factors and their eigenvalues obtained on the basis of data from the first measurement, identified through an analysis of the principal components.

Table 8
Eigenvalues of factors – 1st Measurement

Value	Eigenvalues. Separated main components.			
	Eigenvalue	% of total variance	Cumulative eigenvalue	Cumulative %
1	15.99310	57.11822	15.99310	57.11822
2	2.44084	8.71730	18.43395	65.83552
3	1.53485	5.48160	19.96879	71.31712
4	1.25678	4.48848	21.22557	75.80561

An analysis of the principal components revealed that four factors meet the Kaiser criterion, reaching an eigenvalue greater than 1, and explain 75.8% of the input variable variances. The scree test was then carried out.

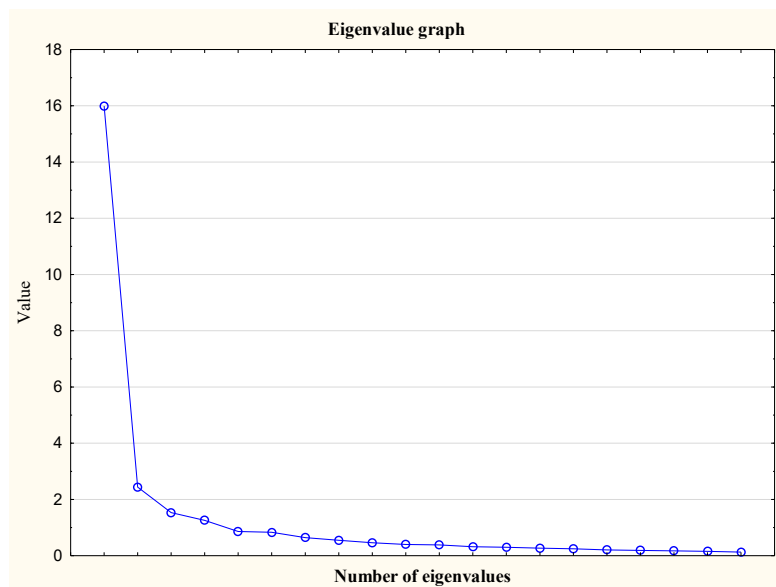


Figure 1. Scree plot, 1st measurement

The line plot of the eigenvalues in the scree test begins to level off after the fourth factor. Based on an analysis carried out using the data from the first measurement and the two criteria to determine the number of factors, it can be stated that the statements in the scale make up 4 and not 5 dimensions, as was adopted in the assumptions underlying its construction.

Using the data obtained from the second measurement, the principal components were analysed once again. Table 9 shows the number of factors and their eigenvalues.

Table 9
Eigenvalues of factors – 2nd Measurement

Value	Eigenvalues. Separated main components.			
	Eigenvalue	% of total variance	Cumulative eigenvalue	Cumulative %
1	15.13702	54.06079	15.13702	54.06079
2	2.62950	9.39108	17.76652	63.45187
3	2.12986	7.60664	19.89638	71.05851
4	1.28161	4.57718	21.17799	75.63570
5	1.08178	3.86350	22.25978	79.49920

In this case, five factors achieved eigenvalues greater than 1, fulfilling the adopted Kaiser criterion. Together, they explain 79.5% of the variances of the input variables. An analysis of the principal components may suggest the validity of the adopted assumption when building the scale that the fulfilment of the developmental task in the scope of autonomy can be investigated in 5 dimensions. However, the eigenvalue of the fifth factor is just slightly greater than 1. As before, the scree test was also performed in this case.

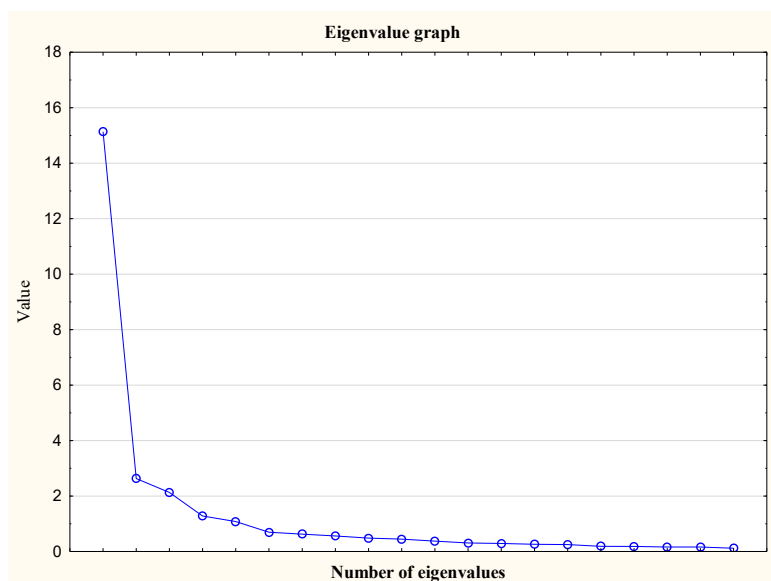


Figure 2. Scree test, 2nd measurement

The line plot in the scree test confirms the number of five factors, the eigenvalue of which is greater than 1; a levelling off occurs after the fifth factor.

Acknowledging the Kaiser criterion as the most objective and decisive, it has been assumed that the scale had 4 dimensions in the first measurement and 5 dimensions in the second measurement. Table 10 shows the adopted assumptions on the stage of scale construction in terms of the allocation of relevant statements to factors (dimensions) and the results obtained. The allocation of a statement to a given dimension has been marked by grey shading in the table cells corresponding to the item number. An X marks the allocation of a given statement to the scale dimension based on the factor loading size. Bold type marks the consistency of the factor analysis result with the assumptions adopted on the scale construction stage. An analysis of the values of the factor loadings was carried out using the factor axes rotation method (Varimax with normalisation). In the analysis based on the data from the first measurement, all the indicators obtained the acceptable size of factor loading of 0.50. Whereas, in the analysis performed on the basis of the data from the second measurement, indicator no. 25 (The child makes choices on their own, e.g.: pointing with their finger to one of two objects that they need or want to play with, saying “I want this toy”) obtained a loading size of 0.48, failing to meet the adopted criterion. Bold type marks the numbers of statements where the same factor was loaded in both measurements.

Based on the factor analysis performed, it must be stated that the theoretical assumptions only partially coincide with those that were identified during the dimension analysis. Out of the assumed eleven indicators for testing the *self-care activities* dimension, four obtained confirmation in two measurements, all of which refer to the course of the child's toilet training. The result obtained may suggest that these items jointly investigate the development of a child during the post-infant period in the scope of carrying out toilet training and should independently create the dimension called: *Toilet Training*. The creation of a separate dimension comprised exclusively of indicators of the course of toilet training derives its justification in the theoretical framework adopted for the research. It is reasonable to assume that it is precisely the activities related to toilet training, as one of the more important components of autonomy and, certainly – as Erikson (2004) himself writes – the area creating the backdrop to this developmental stage crisis and the intense socio-emotional development of the child, that have to be studied separately. The remaining indicators from the subscale: *Self-care activities* in the first measurement split up; 2 of them relating to washing hands and face on their own, loaded factor no. 3. The next 3 indicators (statement no. 3, 4 and 5) graduating the level of skills in the activities of dressing/undressing and taking the initiative in this scope and 2 indicators (statements no. 8 and 9) assessing the level of abilities and taking the initiative in the scope of eating on their own together loaded factor no. 4. The author assumes that this could be due to the limitations that children are subject to in most of the studied establishments. During the study of the developmental conditions, it was found that in some of them, children were not allowed to do certain activities independently, like hand washing, eating or getting dressed, especially if they were just crossing the threshold of the post-infant period. Children's attempts at undertaking such behaviours in these establishments could have been interpreted by their caregivers as, for instance, opposing the principles imposed or their will (factor no. 3) or the desire to decide about the way a task is performed (factor no. 4). In the second measurement, these items together loaded factor no. 5. There is a similar interpretation for the distribution of positions no. 22, 23, 24 and 28. There is a similar interpretation for the distribution of positions no. 22, 23, 24 and 28. Which, as accepted at the time of construction of the scale, were to form one dimension together, however, these assumptions were not confirmed in the two measurements. In the first measurement, these indicators loaded factor no. 1 (dimension: *Expressing own will and deciding about one's possessions*), whereas in the second measurement, they loaded factor no. 3 (dimension: *Expressing objection to imposed principles, rules and the imposed will of others*), as was assumed at the time of construction of the scale.

The only partial reconstruction of the adopted scale structure in empirical research may result from 2-year-old children (just entering the period of autonomy development) not manifesting assertive behaviours in its initial phase, which are indicative of going against the will of other people. One reason for this may be the limitations resulting from the fact that certain skills have not been fully developed yet, which forces them to remain relatively dependent on their caregiver. The first manifestations of defiance could have been interpreted by caregivers as attempts to express their own will. Whereas, during the breakthrough period at this stage of development, as children approach the age of 3, behaviours manifesting the non-observance of the imposed rules are becoming a more permanent element of the child's functioning (item no. 28: "While playing, engaged in activities with others, they do not follow the instructions given by the caregiver, e.g.: they change the course of the play activity or add their own elements to the play activity") or an open defiance – also thanks to developed speech (item no. 24: "A child uses statements and gestures to go against their caregiver's will, e.g.: saying "no" and/or "I don't want to", saying "not now" and/or "later" "when I finish..." when the caregiver gives a command, shakes their head or flaps their hands in disagreement when the caregiver is expecting them to follow a command").

In the second measurement, item no. 6 loaded two factors at once with a slight difference and low strength of factor loading; this was 0.57 for factor no. 1 and 0.53 for factor no. 5. Item no. 7 also loaded these two factors with the same low strength of factor loading and came to 0.57. Statement no. 16 also loaded two factors at once, achieving a low strength of factor loading, namely 0.52 for factor no. 1 and 0.54 for factor no. 4. There was a similar situation in the case of statements no. 19 and 20, which loaded two factors at once (factor no. 1 and no. 4). However, statement no. 25, from the *Making choices* dimension, as mentioned earlier, failed to load any factor. For this reason, these statements will be omitted in the reliability calculations for the dimensions.

The next step involved calculating the reliability coefficient and the mean correlations between subscale items separately, based on the results of the analysis from the first and second measurement, in order to formulate the final conclusions as for the structure of the scale and to undertake further analyses for the effects of the development of the studied children in the scope of autonomy. The indicator values have been presented in Table 11.

Table 11

*Cronbach's alpha coefficient and mean inter-item correlations for the scale:
1st measurement*

Dimensions [no. of items: 28]	Item no.	Cronbach's alpha	Mean correlation
<i>Expressing own will and deciding about one's possessions</i> [11]	1, 2, 14, 15, 16, 22, 23, 24, 25, 27, 28	0.95	0.65
Self-care activities [4]	10, 11, 12, 13	0.89	0.71
<i>Expressing objection to imposed principles, rules and the imposed will of others</i> [3]	6, 7, 17	0.92	0.82
Deciding about one's own activities during unrestricted play activities, organised play activities, task performance and taking the initiative [10]	3, 4, 5, 8, 9, 18, 19, 20, 21, 26	0.95	0.68

Due to the fact that the factor analysis-based scale to study 30-month-old children was abridged to include 22 statements, the reliability for this version of the scale was calculated. Information on the reliability of the subscales can be found in Table 12.

Table 12

*Cronbach's alpha coefficient and mean inter-item correlations for the scale:
2nd measurement*

Dimension [no. of items: 22]	Item no.	Cronbach's alpha	Mean correlation
Expressing own will and deciding about one's possessions [3]	21, 26, 27	0.92	0.79
Self-care activities [4]	10, 11, 12, 13	0.91	0.74
Expressing objection to imposed principles, rules, and the imposed will of others [4]	22, 23, 24, 28	0.85	0.62
Deciding about one's own activities during unrestricted play activities, organised play activities, task performance and taking the initiative [5]	2, 14, 15, 17, 18	0.92	0.72
Making choices [6]	1, 3, 4, 5, 8, 9	0.92	0.70

The Cronbach's alpha coefficients obtained for specific dimensions are similar and demonstrate satisfactory reliability. The mean correlations between items building these dimensions, identified separately in the first and second measurement, are similar and fall within the high correlation category and almost complete correlation category (interpreted after: Stanisiz, 2006).

Conclusion

The Cronbach's alpha coefficient obtained and the mean inter-item correlations turned out to be satisfactory, and it was established on this basis that the scale for observing the effects of development in the scope of autonomy in 2- to 3-year old children is a reliable tool. The strength of the relationship between autonomy and the age of the children treated as an external criterion shows the criterion-related validity of the scale (Hornowska, 2007). The positive value of the correlation coefficient indicates that the level of autonomy increases with the age of the studied children; such a consistency is an indication that the scale has predictive validity, in that it can predict the capacity for autonomy in small children. Further work involved testing the theoretical validity using an analysis of the factor structure of the scale (Łaguna, Lachowicz-Tabaczek & Dzwonkowska, 2007). Factor analysis only partially confirmed the assumptions adopted at the scale construction phase in relation to its comprising dimensions. The reason for these discrepancies may be the age of the studied children and the associated interpretation of the behaviour of the children by their caregivers. The tool to measure the performance of a developmental task by children of toddler age in the scope of autonomy was developed with a view to its practical application in establishments providing various forms of early childcare services for children up to the age of 3. The validated psychometric values of this tool lead to the conclusion that it may be a valuable proposal for diagnosing the psychosocial development of small children. The tool can also offer support to staff taking care of children up to the age of 3 in carrying out observations and periodic assessments of the development of these children. The main purpose of the tool is to provide caregivers with knowledge on the current level of development of children so as to consequently facilitate the planning of actions supporting the fulfilment of developmental tasks, i.e. creating better conditions for the psychosocial development of the children. In the conducted studies, the tool was used to collect responses from two caregivers working in each studied group concerning the developmental changes of children. However, due to the fact that the correlation coefficient of the evaluation of behaviour of a given child is high, the author recommends the evaluation of the child's development in the scope of autonomy

to be carried out by one principal caregiver working full time with the child. In further work on constructing the scale, provisions have been made to enable the abridgement of the scale with a view to applying it to evaluate the level of autonomy of younger children (aged between 2 and 2.5 years), whereas, in the context of the developmental changes of 3-year-old children, consideration should be given to rephrasing the statements that failed to meet the adopted factor analysis conditions in the second measurement. The author of the article is not, however, inclined to categorically remove them, since older children manifest a much broader spectrum of behaviours demonstrating their ability to be autonomous, they have higher skills of expressing this ability, and their behaviours are becoming a more permanent construct in their day-to-day behaviour. This is why the use of a longer scale in studies on older children is justified. In the context of the studies conducted to empirically validate the diagnostic concept of the psychosocial development conditions created for children in early childhood education and care institutions, it was decided to conduct further analyses that, based on the collected data, will allow for the evaluation of the developmental changes in the scope of autonomy as the complete capacity achieved at this stage of psychosocial development.

References

- Appelt K. (2013). Wiek poniemowlęcy. Jak rozpoznać potencjał dziecka [The Toddler Age. How to Identify a Child's Potential]. In: A.I. Brzezińska (ed.), *Psychologiczne portrety człowieka. Praktyczna psychologia rozwojowa* [Psychological Portraits of Man. Practical Developmental Psychology]. Sopot: Gdańskie Wydawnictwo Psychologiczne.
- Bernier A., Carlson S.M., Whipple N. (2010). From External Regulation to Self – Regulation: Early Parenting Precursors of Young Children's Executive Functioning. *Society for Research in Child Development*, 81/1, 329–330.
- Brzezińska A.I., Appelt K., Ziółkowska B. (2016). *Psychologia rozwoju człowieka* [Human Developmental Psychology]. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.
- Czub M., Matejczuk J. (2015). *Rozwój społeczno-emocjonalny w pierwszych sześciu latach życia. Perspektywa jednostki, rodziny i społeczeństwa* [Social and Emotional Development in the First Six Years of Life. The Perspective of a Single Family Unit and of Society as a Whole]. Warszawa: Instytut Badań Edukacyjnych.
- Deptuła M., Potorska A., Borsich Sz. (2018). *Wczesna profilaktyka problemów w rozwoju psychospołecznym i ryzykownych zachowań dzieci i młodzieży*

- [*Early Prevention of Problems in Psychosocial Development and Risky Behaviour of Children and Adolescents*]. Warszawa: Wydawnictwo Naukowe PWN.
- Erikson E.H. (1997). *Dzieciństwo i społeczeństwo* [*Childhood and Society*]. Transl. P. Hejmej. Poznań: Dom Wydawniczy Rebis.
- Erikson E.H. (2004). *Tożsamość a cykl życia* [*Identity and the Life Cycle*]. Transl. M. Żywicki. Poznań: Wydawnictwo Zysk i S-ka.
- Harms T., Clifford R.M., Cryer D. (2015). *Early Childhood Environment Rating Scale – third edition*. New York and London: Teachers College Press, Columbia University.
- Hornowska E. (2007). *Testy psychologiczne. Teoria i praktyka* [*Psychological Testing. Theory and Practice*]. Warszawa: Wydawnictwo Naukowe Scholar.
- Hornowska E., Brzezińska A.I., Appelt K., Kaliszewska-Czeremska K. (2014). *Rola środowiska w rozwoju małego dziecka – metody badania* [*The Role of the Environment in the Development of a Small Child*]. Warszawa: Wydawnictwo Naukowe Scholar.
- Kram A., Mielcarek M. (2014). Wczesna edukacja dziecka. Wiek 0-2/3 lata [Early Childhood Education. Ages 0-2/3 Years]. In: A.I. Brzezińska (ed.), *Niezbędnik Dobrego Nauczyciela. Seria 1 Rozwój w okresie dzieciństwa i dorastania* [*The Toolbox of a Good Teacher. Series 1 Development in Childhood and Adolescence*], vol. 1. Warszawa: Instytut Badań Edukacyjnych.
- Łaguna M., Lachowicz-Tabaczek K., Dzwonkowska I. (2007). Skala samooceny SES Morrisa Rosenberga – polska adaptacja [*The Rosenberg Self-Esteem Scale – Polish Adaptation*]. *Psychologia Społeczna*, vol. 2 02(04), 164–176.
- Smykowski B. (2012). *Psychologia kryzysów w kulturowym rozwoju dzieci i młodzieży* [*Psychology of Crises in the Cultural Development of Children and Adolescents*]. Poznań: Wydawnictwo Naukowe Uniwersytetu im. Adama Mickiewicza.
- Stanisz A. (2006). Przystępny kurs statystyki z zastosowaniem Statistica Pl na przykładach z medycyny [An Approachable Course in Statistics using Statistica Pl Based on Examples from Medicine]. *Statystyki podstawowe* [*Basic Statistics*], vol. 1. Kraków: Wydawnictwo StatSoft.
- Telka L. (2009). *Przekształcanie przestrzeni społecznej placówki. Studium społeczno-pedagogiczne na przykładzie żłobków* [*Transforming the Social Space of Facilities. A Social and Pedagogical Study based on the example of Crèches*]. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.
- Sadowska K. (2018). *Wczesnodziecięca edukacja w żłobku. Obraz i postrzeganie* [*Early Childhood Education in a Crèche. Image and Perception*]. Poznań: Wydawnictwo Naukowe Uniwersytetu im. Adama Mickiewicza.