Edukacja 2023, 3(166), 153–181
DOI 10.24131/3724.230306
ISSN 0239-6858

Early Beginnings: From Extracurricular Activities to Adult Education

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This paper examines the significance of intensive training, manifested through participation in extracurricular activities during primary and secondary school, on the engagement in formal and nonformal educational activities in adulthood. To delve into the mechanism of this influence, the theoretical framework of the dualstep model was employed. We demonstrate that participation in these activities impacts non cognitive aspects, which contribute to the achievement of success markers (educational attainment and occupational position), subsequently fostering adult learning. The hypotheses were tested and confirmed using structural equation modeling (SEM) on data obtained from a nationwide random sample of the Polish adult population.

KEY WORDS: lifelong learning, educational attainment, participation in adult education, dual step transfer; extracurricular activities

Wczesne doświadczenia edukacyjne. Jak udział w zajęciach dodatkowych oddziałuje na podejmowanie uczenia się w życiu dorosłym?

W artykule przeanalizowano znaczenie intensywnego treningu w postaci uczestnictwa w zajęciach dodatkowych w okresie szkoły podstawowej, gimnazjum i szkoły średniej, dla podejmowania aktywności edukacyjnych w życiu dorosłym. W celu zgłębienia mechanizmu tego oddziaływania, wykorzystano teoretyczne podstawy modelu transferu. W tekście potwierdzono hipotezy, że uczestnictwo aktywnościach dodatkowych oddziałuje na kształtowanie poza kognitywnych kompetencji, które przyczyniają się do osiągnięcia wskaźników sukcesu, w postaci wyższego wykształcenia i wysokiej pozycji zawodowej, a następnie sprzyjają uczeniu się w dorosłości. Hipotezy sprawdzono i potwierdzono za pomocą modelu analizy strukturalnej (SEM) na podstawie danych z ogólnopolskiego badania sondażowego pn. "Uczenie się dorosłych Polaków".

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SŁOWA KLUCZOWE: uczenie przez całe życie, osiągnięcia edukacyjne, uczestnictwo w edukacji dorosłych, teoria transferu, zajęcia dodatkowe

Adult education is a field of great importance, especially in public policy-making, including policies for social cohesion and the development of social and human capital. European policy documents, which include numerous analyses and studies on learning in adulthood, emphasize that striving for continuous development, acquiring new competencies, or attaining qualifications in areas other than those acquired through formal education, are strategies that are becoming increasingly desirable and profitable in the job market (e.g, Borg & Mayo, 2005; Delors, 1993; European Commission, 2001; Parent, 1999; Worek, 2019). In public policies, the main focus is on participation indicators, measuring the level of engagement in various forms of adult learning. Despite many solutions implemented in Poland and funded by EU resources, the participation rates of adults in education are rather low compared to other OECD countries. Recent data from the EU Labour Force Survey, updated on April 24, 2024, show that 8.7% of Poles aged 25-64 participated in education and training over the past four weeks, compared to an EU-27 average of 12.7% (Eurostat, 2024). As reported by Adult Education Survey 2022, the participation rate in education and training in the past 12 months for Poles aged 25-64 is 24.3% (the EU-27 mean 46.6%) (Eurostat, 2024b).

Comparative studies and analyses of the connections between various factors conditioning adult learning at the micro-social level usually focus on socio-demographic issues, such as age, gender, education, employment status, or place of residence (Boeren 2017; Desjardins 2015). In the area of research on adult education, little attention is focused on the factors influencing an individual in the earlier years of life, especially those that could become the subject of solutions designed in public policies concerning lifelong learning. Specifically, this

refers to the significance of the socialization context for engaging in educational practices in adulthood, including the influence of the family of origin and past educational experiences (Cincinnato et al., 2016; Kocór & Worek, 2016; Petelewicz & Pieńkosz, 2023). We aim to bridge the gap in existing research and analyses on the phenomenon of adult learning, focusing on exploring the nature of the association between past educational experiences during compulsory education and participation in adult education.

Participation in extracurricular activities organized both within and outside of school is an important aspect of childhood and adolescence (Larson & Verma, 1999, as cited in Eccles, Barber, & Hunt, 2003). There is rich literature on the perceived and presumed benefits of participating in those activities for the development and educational achievements of children and adolescents (Bratko et al., 2006; Laidra et al., 2007; O'Connor & Paunonen, 2007; Smrtnik-Vitulic & Zupancic, 2011). Some studies also show the significance of engaging in such activities for increasing job quality later in life, increasing participation in politics, affecting ongoing engagement in volunteer activities or better mental health in adulthood. (Bradley & Conway, 2016; Darling et al., 2005; Eccles et al., 2003; Silliker & Quirk, 1997). However there are very few studies showing the significance of an individual's background, including previous engagement in extracurricular activities, for participation in learning during adulthood. In this paper, we present and justify the concept that individuals' past experiences, particularly the training gained through participation in extracurricular activities, impact the likelihood of engaging in both formal and non-formal education in adulthood.

Referring to findings from the dual step transfer model (Bradley & Conway, 2016), we test the hypotheses of the relationship between past experiences and

adult learning as well as the mechanisms through which this relationship occurs. This paper aims to answer the questions:

– Is there an association between the intensity of participation in extracurricular activities during primary and secondary education and an individual's attitudes and approach towards learning later in life? And if yes, what is the mechanism of this relationship?
– What role does participation in extracurricular activities during primary and secondary education play in building an individual's social status, as reflected in educational attainment and occupational position, later in life? And do achievements in these areas mediate the relationship between participation in supplementary activities during school years and engagement in formal[1] and non-formal[2] learning in adulthood?

Theoretical framework

In the literature, extracurricular activities are defined as non-obligatory, voluntary forms of spending free time within or outside of school by children and adolescents, serving to broaden and deepen knowledge, and to develop interests in science, art, sports, technology, and social life (Okoń, 1998; Panek, 2002). On the one hand, participation in extracurricular activities may enhance the acquisition and practice of social, physical, and intellectual skills; strengthen the sense of belonging to a social group and positively affect the development of social

[1] Formal learning is usually understood as purposeful and planned learning that takes place within a specific organization and structure (kindergarten, primary and secondary school, university, technical college, on-the-job training). It can lead to formal recognition (diploma, certificate)" (Szlęk, 2014).
[2] Non-formal education – an organized educational activity that may result in a certificate but does not raise the level of completed education (Dada et al., 2006).

networks with peers and adults (Eccles & Barber, 2003; McNeal, 1999). On the other hand, studies show that participation in extracurricular activities influences the educational success of children and adolescents, resulting in higher grade point averages, greater engagement in school activities, higher school attendance, and higher educational and career aspirations (Elder & Conger, 2000; March & Kleitman, 2002; Eccles et al., 2003, Silliker & Quirk, 1997). The impact of extracurricular activities on the achievement of success in other areas of life and at later stages can be explained by the theory of transfer.

The theory of transfer and the dual step model

The concept was developed within the field of psychology. Transfer is defined in it as the direct application of previously acquired knowledge or skills (in a specific area of life) to solve a new problem or perform a new task (in another area) (Bransford & Schwartz, 1999). Classical studies on transfer from the early 20th century conducted by Thorndike and Woodworth (1901) led to the development of the so-called concept of transfer through principles. It assumes that the learner can apply a previously learned principle in a new context with a full awareness of what they are doing. For example, principles of reasoning learned in mathematics can also be applied in logic. Transfer is possible not due to the objective identity of elements in two tasks, but rather through the proper application of previously learned principles or generalizations in new situations. Because cases where no transfer occurred were observed in some conducted studies (e.g., Bransford et al., 1989), the concept itself was expanded beyond the direct application of prior knowledge (Greeno, 2006; Lobato, 2006). Research began, for instance, to explore the role of socio-cultural factors in transfer (Greeno,

2006) and transfer as preparation for future learning understood as the capacity to learn new information, to use resources effectively and innovatively, and to invent new strategies for learning and problem solving in practice (Bransford & Schwartz, 1999). In this paper, we investigate the significance of participating in extracurricular activities for learning in adulthood through the lens of the modified transfer theory, specifically the dual step transfer model proposed by Bradley and Conway (2016). The authors, while examining the significance of participation in extracurricular activities for achieving educational benefits in school, concluded that involvement in various activities in life provides certain non-cognitive capacities that are not necessarily related to the specific field of activity. Through participation in extracurricular activities, non-cognitive skills such as self-esteem, motivation, perseverance, self-control, and social competencies are developed, which are crucial for forming the attitudes and strategies considered foundational for success in school and work (Gutman & Schoon, 2013). Acquiring these skills is essential for successful transfer, which in this context means achieving educational success in school. These metacognitive skills developed through participation in extracurricular activities can be seen in terms of what Bransford and Schwartz (1999) describe as, ‚preparation for future learning' (PFL).

Participation in extracurricular activities, among other things, enhances and shapes specific individual dispositions, i.e., attitudes, intentions, expectations, and beliefs, which condition one's practices.

Based on these findings, first, we propose that a predisposition to learning, along with attitudes toward learning, including emotional associations, can be internalized at a very early stage of an individual's life and are deeply embodied (Kalenda et al., 2023). We can also call them embodied schemas (Lizardo, 2017) and emotional associations relating to a particular phenomenon, which are shaped in the family of

origin but also by other early experiences of the individual. In this paper, we define those attitudes as a type of metacognitive/non-cognitive characteristics. While the family background undoubtedly plays a significant role here (Petelewicz et al., 2023; Cincinatio et al., 2016), in this paper, we focus on past experiences associated with individuals' functioning outside of the family context, which, in turn, renders them more receptive to social policies. Specifically, we assume that a positive attitude toward learning can also be strengthened through prolonged and intensive engagement in various extracurricular activities during school years. These activities may include involvement in scientific circles, participation in sports, volunteering, or engagement in church organizations. This long-term training operates on the principle of transfer, primarily shaping various metacognitive competencies such as motivation, perseverance, self-efficacy, but also attitudes toward learning, which subsequently influence the undertaking of educational activities in adulthood. It's worth mentioning that the attitude toward learning is more malleable. On the one hand, it increases the chances of obtaining higher education, but also higher education itself, which is an extension of the period of functioning in educational institutions, additionally influences the attitude.

By using the term transfer and the importance of shaping metacognitive/non-cognitive capacities, we focus primarily on the factors that are most crucial for engaging in the learning process in adulthood. As different studies show, educational attainment and occupational position are the main predictors of participation in adult education (Petelewicz et al. 2023, Kocór & Worek 2016). In our analysis, we examine the significance of extracurricular activities on educational attainment and occupational position. According to the findings of transfer theory this training leads to better adaptation in educational environments, improves school engagement and attendance, and fosters positive educational patterns,

ultimately enhancing job quality later in life. Therefore, this training primarily impacts educational success in the form of higher educational attainment, and then unlocks access to better occupational positions in later stages of life. This way, a mechanism for influencing the undertaking of institutionalized educational activities in adulthood is developed.

Research hypotheses

Based on our literature review and the analysis of the dualstep transfer model assumptions, we claim that participation in extracurricular activities shapes metacognitive competencies. These competencies manifest in individuals' attitudes and achievements, including educational attainment and occupational position. Subsequently, such competencies positively affect one's propensity to engage in further activities associated with education and training, thereby increasing the likelihood of continued learning in adulthood. Moreover, as the metacognitive competencies developed through intensive training operate in a similarly beneficial way in the studied context, and due to the relationship described above between attitudes towards learning in adulthood and educational attainment, we expect them to be positively associated.

To verify this general concept and answer the research questions presented at the beginning of the paper, two main hypotheses were formulated. Additionally, H1 was further developed by a subsidiary hypothesis.

H1 The intensity of participation in extracurricular activities positively affects participation in formal and non-formal learning in adulthood indirectly through the individual's educational attainment.

Subsidiary hypotheses H1a

H1a The above specified indirect effect is additionally mediated by the individual's occupational position, which is influenced by one's educational attainment and affects the likelihood of engaging in adult learning.

H2 The intensity of participation in extracurricular activities positively affects participation in formal and non-formal learning in adulthood indirectly through the individual's attitude towards adult learning.

Operationalisation of Variables

Dependent Variable: Learning in Adulthood

Learning in adulthood is operationalised as a binary variable, taking the value 1 for each person who declared participation in at least one of the non-formal or formal education activities either during the study period or within the 12 months preceding the study, and 0 for those who did not declare participation in any of these activities. This indicator comprises engaging in activities such as courses (both online and in-person), training sessions, lectures, private lessons, conferences, internships, as well as adult education schools and undergraduate and postgraduate studies. A detailed list of items is presented in Table 1.

Table 1

Question: In the previous 12 months, have you participated in…?	
Item	Answer options
Courses, training, workshops – in person, not online, do not include OSH Courses and training online, do not include OSH Conferences, lectures, speeches, thematic meetings Private lessons, courses (with a teacher or instructor for one or more persons) Coaching or mentoring Second and Third Age University courses Paid practicums or apprenticeships Unpaid practicums or apprenticeships	0. no 1. yes

Source: (Pieńkosz et al., in press)

Independent Variables

As mentioned earlier, the metacognitive/non-cognitive competencies indicated in transfer theory are diverse. One of them can be the attitude towards a particular phenomenon, while others include the self efficacy in functioning within specific structures or institutions, as well as perseverance and motivation. In our study the former were measured declaratively, while the latter can be inferred indirectly by observing the individual's achieved social position, measuring by educational attainment and occupational position.

This approach not only brings us closer to identifying factors rooted in the past that increase the likelihood of engaging in adult learning but also helps us understand how these factors interact with each other, forming a particular pattern.

Intensity of the participation in extracurricular activities. In the study, respondents indicated whether they participated in non-obligatory, organized activities for at least one semester during their primary and secondary education, providing information on which educational stages this participation occurred. The questions covered activities related to knowledge development, as well as sport,

scouting, and engagement in religious organizations, are presented in Table 2. Participation in at least one extracurricular activity during a specific educational stage was coded as ‚1'. Two general levels of education, primary and secondary school, were taken into consideration.[3] Therefore, the variable can have three possible values: 0, 1, or 2.

Table 2
Extracurricular Activities Included in the Survey

Item	Answer options
tutoring foreign language courses sports training scientific, artistic (music, dance, art, theatre, etc.), technical (modelling, photography, etc.) circles/groups scouting participation in religious associations (oasis, church choir) and non-religious organizations and associations (e.g., junior volunteer fire department)	0. no 1. yes

In our analysis, we deliberately did not differentiate between extracurricular activities based on the cognitive benefits they might bring. In analyses conducted by Bradley and Conway, and in line with the assumptions of the dual-step transfer model, regardless of whether the activities were sports-related or non-sports-related, the mechanism for acquiring metacognitive benefits is similar. However, we assume that the more intensive the training, the higher the potential metacognitive benefits may be.

[3] Between 1999 and 2019, after primary school, education in Poland continued in a middle school called 'gimnazjum.' It was a three-year school that prepared students for high school (secondary level of education) or vocational education. Since only a small part of our respondents attended 'gimnazjum', this stage of education was not treated separately but was combined in the analyses with primary school.

Attitude Towards Learning in Adulthood.

According to the theory, metacognitive competencies exhibit diversity. Among them, one aspect is the attitude towards a specific type of activity or object. It is a latent variable with eight indicators measuring the expressed attitudes towards different aspects of learning in adulthood (see Table 3). The statements used include an emotional dimension, such as beliefs, dispositions, and embodied episodic feelings internalized through the past experiences of an individual, as well as declarative statements acquired throughout life via cultural codes.

Table 3
Items Used to Measure Attitudes Towards Learning in Adulthood

Variable name	Item	Answer options
AttLearn1	People who are professionally successful no longer need to learn (reversed)	1. strongly disagree 2. tend to disagree 3. somewhat agree somewhat disagree 4. tend to agree 5. strongly agree
AttLearn2	If I have free time, I like to spend it on learning	
AttLearn3	Only people who have a lot of free time can afford to learn (reversed)	
AttLearn4	I value people who are constantly learning new things	
AttLearn5	I don't want to engage in learning anymore (reversed)	
AttLearn6	At my age, learning is not beneficial (reversed)	
AttLearn7	Learning gives me pleasure and satisfaction	
AttLearn8	Enriching my knowledge and/or skills is important to me	

Educational Attainment. A dummy variable that takes the value 1 for individuals who declared completion of tertiary education (i.e., obtaining a bachelor's degree or higher) and 0 for those with lower levels of education.

Occupational Position. This variable refers to both the current status in the job market (i.e., self-classification as a working person) and the type of occupation held, specifically whether a person had a white-collar job or not. Occupations were measured using open-ended questions and were categorized using the

ISCO classification. Being employed at the time of the study and holding a higher occupational position, defined as a high-skilled white-collar job,[4] was coded as ,'2'. Working in another type of occupation was coded as ,'1', and self-classifying as non-employed (e.g., being unemployed, a student, retired, on maternity leave, etc.) was coded as ,'0'. In the model, this variable is declared as an ordered factor.

Sample and Data Gathering Procedure

The data used in the analyses were gathered as part of a study entitled "The Learning of Adult Poles".[5] The survey was conducted between August and November 2020 on a nationally representative sample of Poles aged 25 to 64. The sample (N = 7194) was randomly drawn from the PESEL (Universal Electronic Registration System of the Population).

Prior to the main survey, both quantitative and qualitative pilot studies were conducted. Data collection adhered to high ethical standards and was conducted in compliance with the ESOMAR (European Society for Opinion and Marketing Research) guidelines. Although the original plan was to use the CAPI (computer-assisted personal interview) technique exclusively, the rising number of SARS-CoV-2 cases necessitated that 21% of interviews be conducted via telephone. An analysis of interview durations and missing data revealed no significant differences between the two methods used.

The main goal of the study was to explore the phenomenon of adult learning in Poland and diagnose its determinants.

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[4] This includes managers, professionals, technicians and other mid-level professionals.

[5] Research conducted as part of the project "Support to central government administration, awarding bodies and quality assurance institutions in implementing stage II of the Integrated Qualifications System" by the Educational Research Institute in 2020.

Data

A net sample completion rate of 39% (after deducting erroneous contacts from the total drawn) was obtained (N = 2571). The observations were weighted with post-stratification weights, constructed using publicly available data[6] on the distribution of gender, age, size of place of residence and education level.

In the analyzed sample (N = 2254, after excluding cases with missing data), 29% of adults (aged 25–64) declared participation in learning in adulthood within the 12 months preceding the study (28% took part in non-formal and just under 3% in formal education).[7] About 41% of the respondents did not participate in extracurricular activities during their school years, and 29% declared attending extracurricular activities both during the primary and secondary education. Basic descriptive statistics of the variables' distributions and the measures of the bivariate associations are presented in Table 4.[8]

[6] From Statistics Poland and Eurostat (Labour Force Survey).

[7] As the study was conducted during the COVID-19 pandemic, the possible effect of lockdown and other factors associated with the spread of the virus could of course influence the level of participation in educational activities. However, the result presented here is consistent with outcomes obtained in other studies (Eurostat, 2024b). Moreover, our survey included questions regarding the pandemic's effects. Among the surveyed adults, 7.3% reported that they had either discontinued or not initiated a course or training due to the pandemic, while 6.3% indicated that the pandemic had prompted them to pursue new educational activities.

[8] Weighted statistics were calculated using the R= 'survey' package (Lumley, 2024).

Table 4

Descriptive Statistics and Bivariate Correlations

	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1	Participation in non-formal or formal education (0/1)	.29	.45	-											
2	Intensity of the participation in extracurricular activities	.88	.83	.26**	-										
3	Educational attainment (0/1)	.29	.45	.34**	.27**	-									
4	Occupational position – white collar (0/1)	.31	.46	.29**	.21**	.52**	-								
5	Occupational position – non-employed (0/1)	.20	.40	-.16**	-.03	-.16**	-.33**	-							
6	AttLearn1	3.48	1.18	.15**	.24**	.25**	.18**	-.07**	-						
7	AttLearn2	3.01	1.12	.29**	.15**	.30**	.24**	-.09**	.22**	-					
8	AttLearn3	2.87	1.15	.15**	.13**	.23**	.18**	-.03	.39**	.22**	-				
9	AttLearn4	4.07	.84	.18**	.25**	.23**	.20**	-.07**	.29**	.33**	.14**	-			
10	AttLearn5	2.90	1.22	.29**	.23**	.34**	.26**	-.12**	.45**	.46**	.43**	.30**	-		
11	AttLearn6	3.49	1.23	.21**	.32**	.27**	.20**	-.10**	.49**	.24**	.39**	.31**	.52**	-	
12	AttLearn7	3.46	1.05	.28**	.18**	.33**	.24**	-.12**	.32**	.57**	.26**	.40**	.51**	.35**	-
13	AttLearn8	3.74	.97	.29**	.25**	.31**	.24**	-.13**	.33**	.49**	.26**	.46**	.46**	.38**	.65**

Note. $N = 2254$. The table presents the values of Pearson's r coefficients. All items measuring attitudes towards learning (AttLearn) had the minimum value of 1 and maximum of 5. (0/1) indicates a *dummy* variable.

** $p < .001$.

Structural Equation Model. The formulated hypotheses included both direct and indirect effects; therefore, structural equation modeling (SEM) (Bollen, 1989) was applied. This approach allowed us to test the mediating effects derived from the theory of the dualstep transfer.

All analyses presented in this paper were conducted using R Statistical Software (R Core Team, 2023). The parameters of the model were estimated with the 'lavaan' package (Rosseel, 2012) using diagonally weighted least squares (DWLS) estimation due to the binary nature of the dependent variable.

Results

As can be seen in Tables 5 and 6, as well as in Figure 1, all of the formulated hypotheses were confirmed. The fit of the model was assessed with several indicators, and the results were compared with the thresholds recommended by Schumacker and Lomax (2004) and Hu and Bentler (1999). The values of Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) equal or exceeding .95, Root Mean Square Error of Approximation (RMSEA) lower than .60 and Standardized Root Mean Square Residual (SRMR) lower than .80 provide the overall support for the good fit of the model.

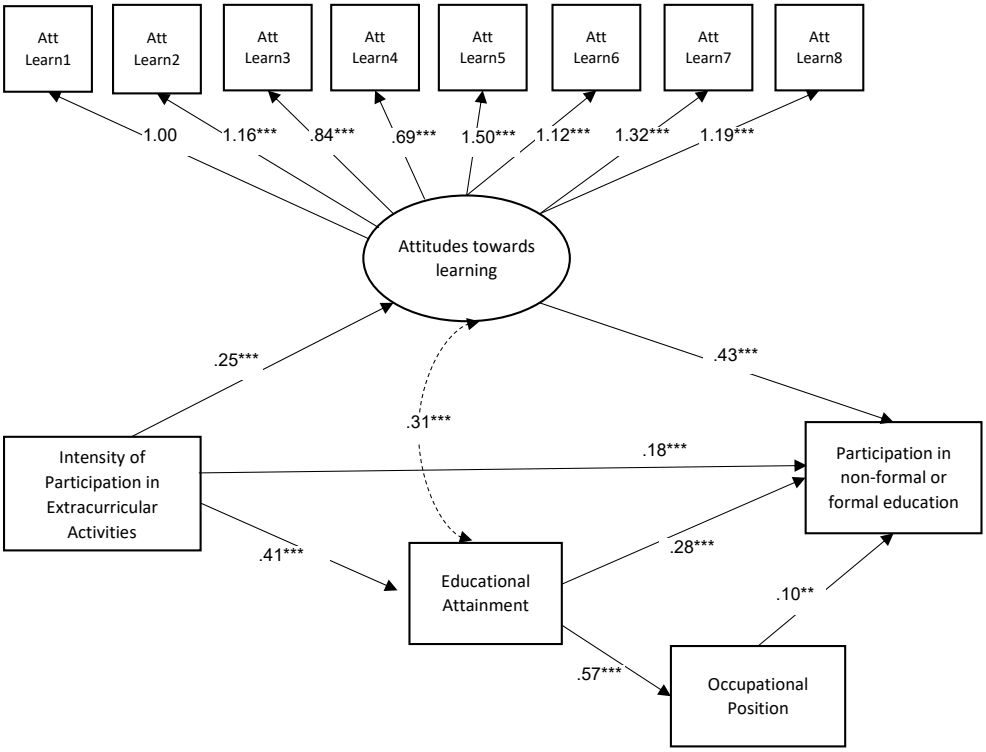

Figure 1. Results of the analysis – parameter estimates of the SEM model. The arrows present the unstandardised values of the path coefficients.
Note: ** indicates p < .01, *** indicates p < .001

Table 5

SEM Results: Parameter Estimates and Fit Measures

	From	To	Est	SE	p	Std Est
Path coefficients	Intensity of the Participation in Extracurricular Activities	Participation in non-formal or formal education	0.175	0.038	< .001	0.130
	Educational Attainment		0.283	0.054	< .001	0.268
	Attitudes Towards Learning		0.433	0.078	< .001	0.231
	Occupational Position		0.097	0.028	.001	0.102
	Participation in Extracurricular Activities	Attitudes Towards Learning	0.250	0.021	< .001	0.348
		Educational Attainment	0.414	0.036	< .001	0.326
	Educational Attainment	Occupational Position	0.573	0.022	< .001	0.519

	From	To	Est	SE	p	Std Est
Latent variable: factor loadings	Attitudes Towards Learning	AttLearn1	1.000	0.000		0.513
		AttLearn2	1.161	0.007	< .001	0.611
		AttLearn3	0.844	0.055	< .001	0.434
		AttLearn4	0.689	0.043	< .001	0.497
		AttLearn5	1.495	0.081	< .001	0.728
		AttLearn6	1.121	0.066	< .001	0.564
		AttLearn7	1.322	0.075	< .001	0.740
		AttLearn8	1.194	0.068	< .001	0.738
Covariance	Attitudes Towards Learning	Educational Attainment	0.308	0.023	< .001	0.550

Fit measures	χ^2	df	p	TLI	CFI	RMSEA	RMSEA 90% CI	SRMR
	8552.210	55	< .001	.950	.955	.059	[0.054, 0.064]	.062

Note. N = 2254. Est = estimate; CI = confidence interval.

The estimated coefficients supported the main research hypotheses, which posited indirect effects of childhood extracurricular activities on participation in adult learning. Both the indirect effect through educational attainment (b = 0.117, p < .001; H1) and through attitudes towards learning (b = 0.108, p < .001; H2) were positive and statistically significant. The more complex pathway — through educational attainment and occupational position to participation in adult learning was also confirmed (b = 0.023, p = .001; H1a). Considering the direct effects, participation in extracurricular activities during childhood was primarily associated with participation in learning during adulthood (b = 0.175, p < .001). Moreover, statistically significant effects of participation in extracurricular activities were observed on educational attainment (b = 0.283, p < .001), attitudes towards learning (b = 0.433, p < .001), and occupational position (b = 0.097, p = .001). In line with the expectations, an individual's education attainment was positively associated with their attitudes towards learning (b = 0.308, p < .001).

Discussion

The presented analyses are, on the one hand, part of the international literature concerning the significance of extracurricular activities for educational success, such as achieving higher grade point averages, greater engagement in school activities, higher school attendance, etc. They also complement limited national studies showing the significance of participation in extracurricular activities as a factor conducive to achieving higher levels of education (Kotowska et al., 2014). The analyses indicate that participation in extracurricular activities during primary and secondary education not only contributes to an individual's educational attainment but also to other indicators of success, such as their occupational position.

On the other hand, the article demonstrates the significance of engaging in extracurricular activities during school years in later stages of life, thereby contributing to expanding the scope of research on the determinants of the phenomenon of participating in adult education.

First, the paper delves deeper into the topic of the determinants of engaging in educational activities, which in the literature on adult education are highlighted as among the most crucial for engaging in learning. The correlation between educational attainment and participation in learning is prominently recognized and frequently confirmed in studies of adult learning (Boeren, 2017; Hovdhaugen & Opheim, 2018; Kosyakova & Bills, 2021; Lee & Desjardins, 2019). Moreover, engaging in higher education amplifies the impact of educational institutions and contributes to a broader range of experiences, which strengthens positive associations with learning. Achieving a higher education degree often leads to better job positions. Furthermore, the connections between job characteristics and participation

in adult learning are complex, but research indicates that skilled employment encourages continued involvement in learning activities (Desjardins, 2020).

The analyses enabled us to examine the significance of individuals' past experiences for adult learning, particularly participation in extracurricular activities during school years. However, it primarily addresses the question of how these experiences influence the factors conducive to adult learning, such as educational attainment and the occupational position of an individual, which, in turn, facilitate participation in adult learning. The presented model confirms that achievements in educational and professional areas mediate the relationship between participation in supplementary activities during school years and engagement in formal and non-formal learning in adulthood. The theory of transfer provides the explanation and description of this mechanism. It also builds the ground for the identification of the metacognitive competencies that can be acquired through participation in extracurricular activities as identified by Gutman and Schoon (2013): self-perception, motivation, perseverance, self-control, meta-cognition, social competencies. These competencies are initially crucial for achieving success indicators such as educational attainment and occupational position, and, as our analyses confirmed, subsequently for engaging in adult learning.

However, it is important to note that in our research, the dependent variable was solely the very fact of engaging in educational activities in adulthood. Further exploration is needed to understand how competencies like motivation, perseverance, resilience, and coping contribute to effective learning in adulthood. Motivation may propel learners to pursue their educational goals despite challenges, while perseverance can help them stay focused and overcome obstacles. Additionally, resilience and coping skills might enable adults to adapt to difficulties and maintain a positive outlook.

The analysis also allowed us to answer the question about the association between the intensity of participation in extracurricular activities during primary and secondary education and an individual's attitudes and approach towards learning later in life/in adulthood.

The use of structural modeling has enabled us to verify the mechanism of those relationships in the form of the transfer of those metacognitive characteristics and to confirm the influence of the intensity of participation in extracurricular activities on learning in adulthood through attitudes towards learning.

Participation in supplementary activities can foster the building of learning potential and create opportunities for leisure time. Additional learning outside of school, through various extracurricular activities, may increase the importance of education, creating positive associations relating to this sphere, as well as reinforcing the perception of education as a value and a way to achieve the desired social position. This fosters positive emotions associated with learning, contributes to a favorable disposition towards acquiring knowledge, and subsequently influences attitudes towards learning in adulthood. This mechanism is confirmed by the presented model.

At the same time, it should be noted that these types of metacognitive competencies are shaped both in the past and can be also reinforced through achieving higher education.

Pursuing a university degree extends the influence of educational institutions, reinforcing positive associations and attitudes toward learning. Studying at a higher education institution is also an experience of a mature student-teacher relationship, which may lead to increased competencies in acquiring knowledge. Desjardins, Rubenson, and Milana suggest that formal education prepares individuals for continued learning by providing them with the necessary

theoretical knowledge, tools, and intrinsic motivation to transform further education into practical skills. (2006).

Another issue worth emphasizing is that the disproportion between higher and lower educated individuals accessing adult education contributes to broader patterns of social inequality. The conducted analyses allow us to identify the conditions of this mechanism rooted also in past experiences. The observed patterns may help explain the paradox of unequal demand for lifelong learning, where those most in need of education tend to participate less (Boeren et al., 2010). Cultural and educational disadvantages not only persist but are intensified by the selective nature of adult education, highlighting its failure to address social inequalities effectively. As E. Boeren (2017, p. 165) notes, while lifelong learning is often seen as a means of upward mobility and improving life chances, in practice, it predominantly benefits those who already have the ability to accumulate advantages over time, rather than those who might use it to make up for missed opportunities earlier in life. This illustrates the so-called ‚Matthew effect'—those who have already accumulated more resources benefit further, leading to an even greater accumulation of capital. The conducted analyses indicate that this problem, rooted also in the past, lies in the opportunities to engage in additional activities that strengthen competencies, which subsequently contribute to achieving success indicators in individuals' lives, including the uptake of adult learning.

Family background also plays an important role here. Studies indicate the enduring influence of social background capital on educational practices, which manifest over the course of a lifetime (Cincinatio, 2016, Petelewicz & Pieńkosz, 2023). However, as the analyses presented in this paper focus on the role of participation in extracurricular activities in explaining the differences between adults with respect to educational practices, we treat extracurricular activities as

a starting point for the mechanisms under study. We also have no hypotheses on the nature of the influence of family background on the effects specified in the model—the theory of dualstep transfer on which we build does not cover this area.

For these reasons, while not neglecting the importance of factors such as parents' socioeconomic status on a child's participation in extracurricular activities, we did not include them in the analyses presented here. It is worth mentioning, however, that to verify the role of family background in predicting a person's participation in formal and non-formal education in adulthood, we conducted separate analyses, based on the variables considered in our research using logistic (logit) regression. Adding the level of education and job position of both parents to the analysis did not reduce the statistical effect of the intensity of participation in extracurricular activities in childhood.[9] on adult learning.[10] Moreover, the effects of parents' socioeconomic status in this analysis were weak, mostly statistically insignificant, and their inclusion did not visibly change the regression model fit. This supports the notion that attendance in extracurricular activities during school years can enhance the chances for participation in learning in adulthood regardless of one's family background.

The analyses presented in this paper can contribute to the discussion on the role of public policies in increasing the accessibility of adult education. However,

[9] Other independent variables in the model were: attitudes towards learning in adulthood (calculated as the arithmetic mean of the values of the respondent's answers to the eight questions listed in Table 3), educational attainment and occupational position (both coded the same as in the analyses presented here).

[10] Effects of participation in extracurricular activities were as follows: in the model without parents' characteristics, the average marginal effect (*AME*) was 0.075 with an odds ratio (*OR*) of 1.558 ($p < 0.001$). After controlling for both mother's and father's employment in a white-collar job (yes/no) and their completion of tertiary education, the *AME* was 0.073 with an *OR* of 1.536 ($p < 0.001$). Models were estimated using the R 'survey' package (Lumley, 2024) and for computation of average marginal effects, the R 'margins' package was utilized (Leeper, 2024).

our research supports the notion that acting in favor of raising adults' participation in learning activities should start much earlier. It is essential to emphasize the role of systemic intervention during childhood aimed at increasing the participation of children and adolescents in additional activities. It can be assumed that greater effectiveness of public policies in supporting lifelong learning as a means of reducing inequalities is linked to early intervention. While appropriately designed and supported systemic actions targeted at adults are crucial, higher effectiveness of mechanisms compensating for deficits within educational trajectories is associated with early intervention and reinforcement of lifelong learning. It is primarily recommended to support access to extracurricular activities for children and adolescents through the development of school offerings and the school environment, including other local educational institutions (cultural and community centers, non governmental organizations, religious organizations). Additionally, it suggests exploring the reasons why some young people may have limited access to such activities.

At the end, it is worth noting that while discussing the benefits of participating in extracurricular activities during school years, it is easy to conclude that engaging in more diverse activities is better. However, it is important to emphasize that this is not the conclusion we intend to support. Our analyses focused on the importance of the continuity of participation (i.e., the number of school stages during which respondents took part in activities). The longer such training lasted, the greater the chance of transferring metacognitive competencies and achieving success in adult life. However, the increasing number of extracurricular activities and their widespread availability in Poland can lead to an excessive burden on children. Participation in too many extracurricular activities may result in fatigue, lack of time for studying and homework, and disruptions in the balance between school and

personal life. Another significant aspect is stress and pressure to succeed, which can be consequences of participating in numerous extracurricular activities. Therefore, it is important to maintain a balance between the quantity of extracurricular activities and time allocated for studying, relaxation, family relationships, and personal development. This issue is definitely worth further exploration.

In our study, there were both individuals who participated in extracurricular activities and those who did not. According to the theory, we assumed that regardless of the type of activities, they are significant for shaping metacognitive competencies. It is definitely worth delving more deeply into the types of activities undertaken and the motivations behind engaging in them.

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