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## **Educational Strategies of Teachers with Various Senses of Efficacy**

### **Abstract**

The main objective of this study was to verify the hypothesis about the relationship between a sense of efficacy and educational strategies for teachers, conceptualized as a heteronomy – autonomy dimension. A move towards autonomous strategies should be linked to a strong sense of efficacy in teachers. The study, planned in this manner, was to verify the concept of education strategy discussed in this article, and the ability to predict educational strategies in schools based on the knowledge of the sense of efficacy in the teachers implementing them. The results positively verify these hypotheses, but also show the problematic ruling which of the strategies (heteronymous or autonomous) is more effective in the perception of teachers.

**Keywords:** *education strategies, reinforcement, development, adaptation, ideology, sense of efficacy, the study of teachers*

### **The Problem**

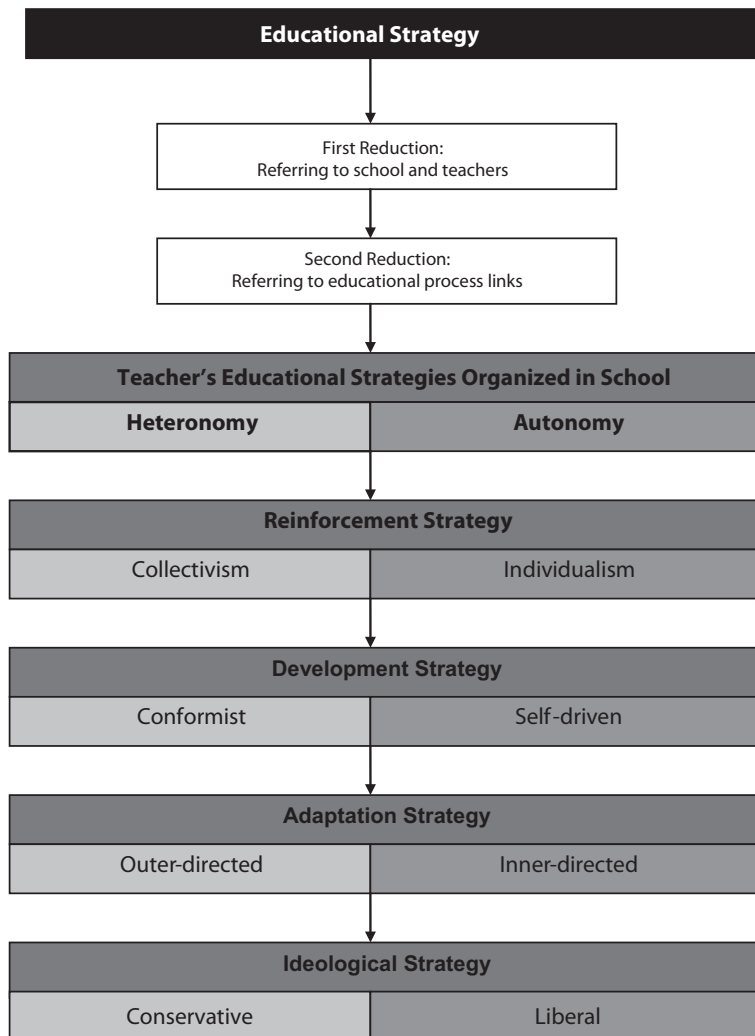
Educational strategies and teachers' sense of efficacy are two theoretical categories that describe and explain the educational practices of schools. As they are presented in the following text, these categories constitute a concrete proposal for conceptualizing educational practices in schools, one which is set in a functionalistic paradigm, more specifically in a socio-cognitive theory and in contemporary progressivism. The main categories of analysis are educational strategies, within the purview of which teachers' sense of efficacy has been included. The latter vari-

able makes up a criterion for verifying the accuracy of theoretical concepts and educational strategies, since it has been well established in socio-cognitive theories, and repeatedly and positively verified in empirical studies (cf. Bandura, 1994), while the concept of educational strategies is only at the stage of empirical verification (Chomczyńska-Rubacha, Rubacha 2007, pp. 35–48 and 73–80). For theoretical reasons (see below) there is the possibility of predicting variability for educational strategies based on the knowledge of teachers' sense of efficacy. This fact was used to empirically verify not only the educational strategy (though this is an important goal), but also the whole theoretical model: teachers' sense of efficacy – educational performance. Let us begin with the conceptualization of educational strategies.

The concept of strategy refers to the construct that comprises the overall concept of what strategy should entail and to the plan of its implementation in activity. There are thus two levels in the concept of strategy: the level of operation, activity through which the strategy is carried out, and the level of the concept pertaining to this activity, or in other words, the idea for its effective performance. If we apply this construct to education, the strategy will include its concept, but also a plan of implementation, a plan of concrete actions. For instance, a rewarding educational strategy includes an idea for a definite reward (what to do?) based on a general conception of raising the child to become an honest adult. In order to fully relate the idea of strategy to educational practices, i.e., to speak of an education strategy, we should also address the theoretical context of education, and therefore the practices with which, in a formal sense, strategy is concerned. However, as educational activity is structurally complex, it requires reduction so that we may refer to its axial – though to some extent homogenized – dimensions. The first reduction will apply to persons engaged in educational activities – thus teachers, and if this is so, then education shall simultaneously be reduced to school practices. Thus, as shown in Figure 1, our strategies are strategies for teaching, for education in school. The second reduction will apply to the main nexus of the educational process: the purpose of education understood from within conventional contemporary progressivism, the creation of conditions for student activity, a micro-social framework of educational processes, and an axiological space for educational practises. From these nexuses four educational strategies can be deduced respectively: reinforcement, development, adaptation, and ideology. Through a detailed analysis of the theories of reinforcement, development, adaptation and educational ideology (cf. Chomczyńska-Rubacha, Rubacha 2007, pp.39–48) a general dimension in which we can identify educational strategies in terms of content was distinguished: heteronomy – autonomy. In the space between the edges of this continuum lie most of the conceptualizations of the process of education: from the concept emphasizing

compulsion in education to the concept emphasizing autonomy in education. In the next step, we related the dimension of heteronomy – autonomy to specific strategies, introducing for each one its detailed version: reinforcement strategy (collective – individualistic), development strategy (conformist – self-driven), adaptation (outer-directed – inner-directed), and ideology (conservative – liberal).

**Diagram 1.** Order of the Construction of Educational Strategies.



Finally we offer the following definition of educational strategies:

1. Reinforcement strategies are teaching actions which allow for the stimulation and maintenance of some forms of behaviour, and the suppression and extinguishing of others, on the collectivism-individualism continuum of standards.
2. Development strategies are teaching concepts and actions that lead pupils to the achievement of behaviour standards, characterized by a higher level, in terms of quantity and quality, than baseline standards.
3. Adaptation strategies are concepts and actions which enable the teacher to monitor students' compliance with the social norms, as well as restore equilibrium to the educational processes. We recognize these strategies as belonging to the dimension of inner-direction – outer-direction.
4. Ideological strategies are concepts and actions which allow the teacher to link his/her own orientations regarding all the elements of the educational process (goals, methods, content, relations with pupils) with the general political worldview and ethical orientations. The latter create – as Meighan stated (1993, p.200) – formal frameworks for education, especially higher education. An understanding of ideology, on which we base the above-mentioned definition, is derived from O'Neill's analysis (1981). Based on O'Neill's typology of ideology, we are putting our educational strategy on the conservatism-liberalism dimension (following Chomczyńska-Rubacha, Rubacha 2007, pp. 40–46).

We contrast the educational strategies understood in this way with the socio-cognitive understanding of the sense of efficacy. Bandura defined this variable as an individual's conviction on the topic of personal ability to meet a variety of task conditions, leading to the achievement of desired results. Consequently, the situational character of the sense of efficacy was stressed. On the other hand, in addition to situational circumstances, a sense of efficacy is largely based on an individual's previous experience and competence, something which Bandura also brought up (Bussey, Bandura 1999, p.691). Specifically, what is mentioned are cognitive-behavioural and motivational competencies. And in this respect, a sense of efficacy can be understood as a construct based on personal experience in the disposal of cognitive and motivational resources to solve everyday problems. Thus, we will not relate the sense of efficacy to concrete task situations, but to action in general. In this study, we rely on the dispositional conception of the sense of efficacy.

Collating the two concepts discussed, we can expect that educational strategies will be verified by the sense of efficacy if movement to their autonomous

variants (individualism, self-direction, inner-direction, liberal ideology) is linked with a strong sense of self-efficacy in teachers. The categories responsible for such a relation – as it arises from the concept of the sense of efficacy – could be the respondents' previous experience or their personal resources, which are associated with the sense of efficacy.

## **Method**

The study was carried out using quantitative strategies in a quasi-experimental scheme as a theoretical verification type. The sample was randomized. Data were collected using paper and pencil testing methods, and the results were analyzed using the one-way analysis of variance model (ANOVA).

The study is guided by a hypothesis which aims to verify the accuracy of claims about educational strategies in relation to the examined teachers' sense of efficacy. Based on the premises derived from the autonomous characterization of educational strategies, one should predict that the average from the educational strategies test should increase (towards autonomy) with the movement toward higher averages for the sense of efficacy test. In short, statistical analyses should reject all the null hypotheses regarding a difference between the averages of each of the educational strategies in the three groups of the sense of efficacy (low, average, high).

To measure the grouping variable, Test Poczucia Skuteczności (Test of the Sense of Efficacy) (developed by the authors of this article) was used. This tool was designed to measure the generalized sense of efficacy, although its psychometric properties were related to two populations: the general population and the population of teachers (Chomczyńska-Rubacha, Rubacha 2013). The discriminatory power of the test items was measured using the point byserial correlation coefficient, ranging from .26 to .86, with an average of .50 in the version for teachers. Reliability, calculated with the use of Cronbach's alpha formula, averaged .88. The test also has verified diagnostic, prognostic, and theoretical validity accuracy, estimated by means of factor analysis and cluster analysis. The sten norms were also worked out for the sample of teachers, to which the raw scores were related in the presented study, establishing three levels of self-efficacy (cf. Chomczyńska-Rubacha, Rubacha, 2013).

To measure the educational strategy, defined above, Test Strategii Wychowawczych (TSW) was used (Chomczyńska-Rubacha, Rubacha 2007, pp. 73–80). The test consists of four descriptions of educational situations, containing reinforcement strategy indicators (collectivism-individualism; development strategy (conformism – self-direction); adaptation (outer-directedness – inner-directedness); ideo-

logical strategy (conservatism-liberalism). The subjects of the study responded to these descriptions on a four-point scale, revealing their position on the continuum of a given strategy. The raw score can be calculated cumulatively for all of the strategies (dimensions: heteronomy-autonomy) or separately for each of the strategies. We developed the indicators of this test in such a way, as to simultaneously diagnose the subject's concept of education, as well as the guidelines for his/her pedagogical performance. We acquired the concept effect by placing the indicators of concrete strategies, reflecting the dimension of the individual's conception of education, into the descriptions of situations. This dimension was encoded into the referent of the concept of strategy. However, we obtained performance guideline effects through the scale of responses which required a decision from the subject as to the manner of behaving in the situation described. As can be seen, this approach is diagnostically more sensitive than an approach focused on the study of teachers' views, which – as demonstrated in other studies (Konarzewski 1992) – rarely coincides with their later activity. TSW is not fully standardized (N=189), though enough so to be considered as an accurate, temporary research tool. The calculated point byserial correlation coefficients (.52-.69) sufficiently ensure the discriminatory power of the test. Similarly, TSW meets standards in terms of reliability, which in units of Cronbach's alpha falls between .89 and .92. However, we know least when it comes to the issue of theoretical validity. So far, we have succeeded in calculating the indicator of HIT Loevinger, which assumes that if a given position is consistent with the test as a whole (indicator of internal validity), then all of the subjects studied who responded to it in accordance with the key at the same time receive higher overall scores than those who answered contrary to the key (Guilford 1988). The ideal homogeneity of the test is a HIT coefficient equal to unity. Our results fell between .88 and .90. TSW is, therefore, a valid test with regard to its internal compatibility. In addition to the indicators shown, the test was subjected to temporary normalization using the average formula and standard deviation (cf., Chomczynska-Rubacha, Rubacha 2007, p. 79).

## **Discussion of Results**

The highest average describes the adaptation strategy, revealing minimum negative skewness, thus a tendency towards inner-directedness. It is, however, so minute that we should rather talk about a distribution closer to a normal one. Moreover, this interpretation applies to almost all of the strategies. In this situation, the direction of skewness is not important. Teachers revealed the lowest average with regard

to development strategy, having at the same time the highest (though, also, not a very high) asymmetry in the direction of conformity strategy. The obtained results should come as no surprise, as orientations in the direction of autonomous strategies seem to be very challenging for teachers. To a certain degree, they have to give up on the repertoire of compulsion in exchange for practice in negotiating, establishing rules and their democratic observance. It is worth taking a look, here, at the standard deviations. They are not very low and indicate that the obtained strategy averages are quite multi-faceted, although also bereft of extreme values. This could mean that the average conceals the picture of inner variations, which could be interpreted as inconsistencies in educational strategies. After all, there is no clear trend towards heteronomy, but a trend towards autonomy does not exist, either. And it is the standard deviation that suggests that it is more a matter of teachers' "strategic chaos" than entrenching oneself in "safe-centric" positions. Of course, these deviations are not very high, so this finding should be treated with great caution.

**Table 1.** Averages of educational strategies (not very high)

	N	Minimum	Maximum	Average	Standard Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Error
SOE	170	1.00	3.00	1.9882	.,0491	.016	.186
ESG	170	1.00	3.75	2.3721	.63563	.129	.186
RS	170	1.00	4.00	2.3529	1.07369	.330	.186
AS	170	1.00	4.00	2.5765	.87539	.,023	.186
DS	170	1.00	4.00	2.0647	1.09406	.748	.186
IS	170	1.00	4.00	2.5588	1.15105	-.087	.186
N	170						

Source: own research.

Legend: SOE – sense of efficacy; ESG – Educational strategy – general result; RS – Reinforcement Strategy; AS – Adaptation strategy; DS – Development strategy; IS – Ideology strategy; N – Number of Studied Subjects

The sense of efficacy has a similar distribution to educational strategies, with almost zero asymmetry, i.e., with an average in the vicinity of the median, with the smallest standard deviation. This last observation means that the grouping variable is relatively homogeneous in its three variants. Generally, however, the studied group reveals slightly lower values for the sense of efficacy than the studied groups of teachers from the normalization sample of the test, although on the other hand, slightly higher values than the general population.

Arriving at the verification of statistical hypotheses, we tested the error variance for homogeneity (Levene's test), and unfortunately it turned out that only ideological and reinforcement strategies met the assumption of homogeneity. In these circumstances, there are two options. One is to give up the analysis of variance in exchange for its non-parametric counterpart – the Kruskal-Wallis test.

**Table 2.** Homogeneity of Variance Test

	Levene's Test	df1	df2	Significance
ESG	22.637	2	167	.000
RS	2.407	2	167	.093
AS	4.301	2	167	.015
DS.	23.836	2	167	.000
IS	1.380	2	167	.254

Source: own research, legend v.s.

In such a situation, however, the inability to perform post-hoc tests eliminates the opportunity to comment on the direction of the differences. And this is precisely what our research hypothesis requires. Thus, it leaves us with a second way, that is, to perform the analysis of variance, yet choose such post-hoc tests that would take into account the lack of homogeneity of variance. This is, however, a questionable decision, and concerns the elasticity of the ANOVA test with regard to a lack of homogeneity of variance. According to Lindman (1974), univariate ANOVA is sufficiently resistant to this lack under the condition that in the data set there appear no extreme cases (outlying from the rest). We do not have this situation. Ultimately, following Lindman's directive with regard to heterogeneous variance we used T3 Dunnett's test as a post-hoc test.

The results obtained from the analysis allow us to reject the null hypothesis in its entirety, and indicate that the average of each strategy differs from the others due to the variations of the sense of efficacy. Thus, the sense of efficacy modifies teachers' educational strategies. This is true for all the strategies.

**Table 3.** One – way ANOVA

		Sum of squares	df	Mean square	F	Significance
RS	Between groups	29.421	2	14.711	14.853	.000
	Within groups	165.402	167	.990		
	Total	194.824	169			



		Sum of squares	df	Mean square	F	Significance
ESG	Between groups	18.456	2	9.228	30.930	.000
	Within groups	49.824	167	.298		
	Total	68.280	169			
AS	Between groups	12.333	2	6.166	8.788	.000
	Within groups	117.173	167	.702		
	Total	129.506	169			
DS	Between groups	20.840	2	10.420	9.590	.000
	Within groups	181.448	167	1.087		
	Total	202.288	169			
IS	Between groups	35.358	2	17.679	15.658	.000
	Within groups	188.554	167	1.129		
	Total	223.912	169			

Source: own research, legend – Table 1.

This may mean that there is a general principle at work here which can be combined with the universal dimension of heteronomy-autonomy. This is an argument for the validity and internal consistency of Test Strategii Wychowawczych, which is, however, at present not particularly important. The relation between the sense of efficacy and educational strategy still requires interpretation. Undoubtedly, teachers' educational performance belongs to heuristic behaviour, saturated with interpersonal openness, tolerance for cognitive discrepancy, readiness for confrontation, emotional tensions. The strength of these factors increases when strategies approach autonomous ones, because pupils' freedom of action increases. Bandura's research (1994), in turn, shows that the more difficult and more complex social situations in which the subjects are involved are, the more difficult it is for subjects to form specific expectations with regard to their situations. In such situations there is a rise in significance of the sense of self-efficacy.

Even if we were now to refer to the sense of educational efficacy, it can be expected that those who use autonomous strategies have more reason than others to believe in the possible success of their own actions. It may be that their experience – one of the sources of the sense of efficacy – is highly diversified, saturated with difficult instances and confrontational, educational situations.

Whether this interpretation is accurate can be checked by looking at the table containing post-hoc analyses. The analyses show that, generally, differences appear more often between a high, average, and low level of the sense of efficacy than between a low and average level. However, in many cases there are essential differ-

**Table 4.** Multiple Comparisons Dunnett's T3 Test

Dependent Variable	(I) TPS	(J) TPS	Differences in mean (I-J)	Standard error	Significance
RS	1.00	2.00	-.33721	.17967	.178
		3.00	-1.14180*	.19512	.000
	2.00	1.00	.33721	.17967	.178
		3.00	-.80459*	.18198	.000
	3.00	1.00	1.14180*	.19512	.000
		2.00	.80459*	.18198	.000
ESG	1.00	2.00	-.41570*	.10731	.001
		3.00	-.93590*	.14591	.000
	2.00	1.00	.41570*	.10731	.001
		3.00	-.52021*	.11582	.000
	3.00	1.00	.93590*	.14591	.000
		2.00	.52021*	.11582	.000
AS	1.00	2.00	-.36047	.17249	.115
		3.00	-.76631*	.19492	.001
	2.00	1.00	.36047	.17249	.115
		3.00	-.40584*	.14905	.024
	3.00	1.00	.76631*	.19492	.001
		200	.40584*	.14905	.024
DS	1.00	2.00	-.08140	.19385	.965
		3.00	-.86897*	.27317	.006
	2.00	1.00	.08140	.19385	.965
		3.00	-.78758*	.22767	.003
	3.00	1.00	.86897*	.27317	.006
		2.00	.78758*	.22767	.003
IS	1.00	2.00	-.88372*	.18718	.000
		3.00	-1.23483*	.23774	.000
	2.00	1.00	.88372*	.18718	.000
		3.00	-.35111	.21608	.289
	3.00	1.00	1,23483*	.23774	.000
		2.00	,35111	.21608	.289

\*. Difference in mean is Essentials for level 0.05.

Source: own research, legend – Table 1.

ences between every variant of the sense of efficacy. This supports the hypothesis formulated above. The averages of educational strategies rise with the rise of subjects' sense of efficacy. However, looking at the values pertaining to each individual educational strategy we realize that even a strong sense of efficacy is not a factor that would significantly stimulate the use of autonomous strategies. There are probably more factors at work here at the same time. Or perhaps teachers' practical experience shows them that extreme adherence to an autonomous strategy is not educationally effective. Without a doubt, this problem is worth examining, especially since analyses regarding the heteronomy-autonomy dimension in education are – so far – more saturated with ideology than with empirical data.

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