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Bolesław Niemierko\*

### Psychology Students Try on the Role of Educational Diagnosticians. Preliminary Studies

**Abstract:** The aim of the studies was to ascertain how far psychology students are ready to learn the vocation of education assistants to children and youth. Four general ways of acquiring knowledge and skills – by assimilation, by doing, by discovering, and by impression – were distinguished and interpreted with regard to the students' prospective employment in educational institutions. Learning by doing (model Beta) and by impression (model Delta) turned out to be more expressive in the student self-reports than learning by assimilation (model Alpha) and by discovering (model Gamma).

A proof that the Nosal/Paluchowski typology of diagnosticians applies to psychology students was also in search. However, the pertinent Educational Diagnostician Inventory appeared satisfactorily valid only for those psychology sophomores who manifested the best-shaped attitudes towards educational diagnoses. They belonged mostly to concrete-objective (Proceduralist) and global-subjective (Intuitionist) attitude categories. Transactional analysis partly supported these findings of the survey.

**Key words:** educational diagnostics, educational diagnostician, learning model, ego state, Educational Diagnostician Inventory

#### The Growing Need for Psychologists in Education

**Educational diagnostics** will be conceived here as the theory and practice of recognizing environments, processes, and outcomes of learning. It comprises both informal and standardized procedures to help out learning disorders as well as general developmental needs of children, youth, and adults (Niemierko, 2009).

As a method of human learning assistance, educational diagnostics is essentially psychological task to be performed by suitably qualified personnel. There are two kinds of background to serve the want: (a) education completed with some psychology courses, and (b) psychology completed with education practice. All teachers have been trained in their subject matters and in specific instructional methods but only psychologists are substantially proficient in psychometrics, interviewing, counseling, tutoring, and other competencies required by the role of individual aid to learners.

*The methods of teaching are apt to be group methods, and the methods of counseling are more apt to be individual*

*methods* (Stefflare & Grant, 1972: 25). It is particularly topical for the centralized educational systems where the goals of instruction and school curricula are state-determined and the needs of individual as he/she sees them is at most secondary. Such systems still exist in many developing countries.

Occasionally teachers do counseling and psychologists do teaching but playing both roles is difficult because the teacher is required to operate as a representative of an educational institution, and the psychologist has primary responsibility to the individual and can be more tutelary. Susan Brookhart (1993) suggests that teachers function as a *judge* and as an *advocate* to their students but the roles are incompatible and mixing them has limited utility.

Student achievement assessments take on meaning when the **referencing scheme** of learning outcomes is clearly specified. Three schemes for referencing performance are available (Nitko, 1983: 343–350):

1. *Norm-referencing*. In this approach, continually dominant in psychometrics, a *pupil's performance compares with others* in a population. Standardized tests are regarded as the most accurate tools for

\* SWPS University of Social Sciences and Humanities

professional measurement of learning outcomes. They are widely used in external examinations and yield valid rankings of student and school achievement.

2. *Task-referencing*. It uses absolute standards to compare a student's performance to well-defined set of tasks to be done. *Pupils who acquire more of the objectives are given the better grades, regardless of how other students perform, or whether they have worked up to their potential*. This approach prevails in everyday teaching practice in most countries.
3. *Self-referencing*. Here *grades are assigned by comparing a pupil's performance with the teacher's perceptions of the pupil's capability*. This approach relies heavily upon teacher's judgments on the pupil's capability and effort which are notoriously unreliable. Nevertheless, self-referencing is considered the most promising evaluation scheme for truthfully democratic education.

Psychologists are supposed to guide judgments of educators on the learners' aptitudes, motivations, and gains. Educational diagnostics is designed not just to deal with learning disabilities and disorders but also to advance regular learning in a normal situation (Katra & Sokółowska, 2010). The demand for psychologists inclined to perform educational services is constantly growing in Poland and in other East-European countries.

The job of helping a pupil grow needs counsellor's predispositions to keen observation of developmental paths and inhibitions about methods of effective learning. One way of screening candidates to the role of educational diagnosticians is to ask them self-report their learning and communication habits.

### How Psychology Students Remember Their Own Learning

An assumption that personal experience in school learning may influence a student's attitude toward the role of educational diagnostician was adopted at the start of the studies. In order to prove the assumption, Wincenty Okoń's general classification of learning ways (1967) shaped and

instrumented by Bolesław Niemierko (2009) was applied to 60 students in their sophomore year of psychological study. The Questionnaire *How I learn* included four learning models:

Form *alpha*. *Learning by assimilation* which leads to *know-what* knowledge, reproduction of existing information on the world outside.

Exemplary questionnaire items:

1. I try my best in learning at school and at home.
2. I prefer having learned everything to taking a risk of errors.

Form *beta*. *Learning by doing* which leads to *know-how* knowledge, solving real-world problems and performing serviceable activities.

Exemplary questionnaire items:

3. I like practical task requiring cleverness and good reflexes.
4. I prefer real actions to long contemplations.

Form *gamma*. *Learning by discovering* which leads to *know-why* knowledge, theory building and verification, looking for general truths.

Exemplary questionnaire items:

5. I may work several days on difficult problems.
6. I prefer historic or scientific books to schoolbooks.

Form *delta*. *Learning by impression* which leads to *know-who* knowledge, emotional gains, value clarification, personal commitment.

Exemplary questionnaire items:

7. I enjoy discussing general issues during classes.
8. I prefer everyday matters to theoretical problems.

Student learning models were identified as the form of the highest score in the four questionnaire subscales. Psychology students were asked to recall their learning style while in general-education school. In Table 1 their preferences are compared to middle-school students (Niemierko, 2009), the only population examined in a nation-wide representative study of learning models.

The data displayed in Table 1 suggest the following characteristics of psychology students in comparison with their counterparts in middle schools:

1. The knowledge-oriented learning styles, Alpha and Gamma, are relatively less frequent in psychology

**Table 1. Distribution of learning models in three populations: middle-school students (n = 1483), psychology resident students (n = 29) and psychology non-resident students (n = 31), in percentages**

Population	Alpha (assimilation)	Beta (doing)	Gamma (discovering)	Delta (impression)	Total
A. Middle-school	31	14	42	13	100
B. Psychology – residents	27	31	21	21	100
C. Psychology – non-residents	16	26	23	35	100
B + C. Psychology – both groups	22	28	22	28	100
Difference: (B + C) - A	-9	+14*	-20**	+15*	0

\*  $p < 0.05$ , \*\*  $p < 0.01$

students population than in the action-oriented styles, Beta and Delta.

2. The greatest difference, 20 percentage points, is observed in learning by discovering (Gamma), what would mean that psychology candidates see their discipline as practical rather than theoretical science but diminishing number of 'discoverers' were also found in some minor studies of Polish high-school students. Therefore, the difference should be attributed to high-school instructional defects rather than to auto-selection processes.
3. The hypothetical increment of action-oriented learning styles, Beta and Delta, may be caused either by natural selection of psychology students or by the way they were treated in workshops in their freshman year of academic studies.

To search for the answer to the question of internal vs. external grounds of psychology student inclination to applied knowledge, their attitudes were interpreted in terms of transactional analysis.

### The Ego-States of Psychology Students

**Transactional analysis** is a personality theory and psychotherapy serving personal development of humans (Berne, 1961). Its basic model of *ego states* is following:

1. *The Parent* who frequently and automatically fills the position of initiator and decision-maker responsible for activities of others being treated as children. This attitude is learned from one's own parents or from persons acting the part of parents.
2. *The Adult* who is rational, autonomic, self-governing, who understands the reality of situations and maintains partnership relations. This attitude is neither influenced by parents nor a repetition of childish behaviours and feelings.
3. *The Child* is governed by uncontrolled emotions and yields to those who fills the position of parents. This attitude reproduces the spontaneous behaviours, thoughts, and feelings of childhood when nature and people were originally learned to know.

This fundamental typology was afterwards multiplied into a large group of subcategories in which a kind of fractal phenomenon (self-reproducible pattern) plays the crucial part. Accordingly, the Parent in the Parent, the Adult in the Parent, the Child in the Parent, etc., is recognized and described (Jagiela, 2012). The so-generated nine subcategories of ego states compose

*Egogram*, a questionnaire to self-assessment of ego states (Pierzchała & Sarnat-Ciastko, 2012), which was applied to the study.

From among the nine subcategories of Egogram the following five were selected as positively correlated with particular learning forms and diagnostic styles in feasibility studies (Niemierko, 2014; Niemierko, 2015):

1. The Parent in the Parent, called also the *Critical Parent* called also the *Controlling Parent*, who is exacting, judicial, and dominant, usually displaying deep-rooted severity of his own parents.
2. The Adult in the Parent, called also the *Practical Parent*, who is pragmatic, operative, and efficient in actions imitating the ones performed first by parents and then by knowledgeable and significant persons.
3. The Parent in the Adult, called also the *Ethical Adult* or *Ethos*, who learns and transforms values and capacities from all the sources recognized as trustworthy.
4. The Adult in the Adult, called also the *Logical Adult* or *Logos*, who carefully and systematically accumulates and composes needful information.
5. The Adult in the Child, called also the *Creative Child* or the *Little Professor*, who represents original strategies of exploration the reality and problem solving.

Coefficients of correlation (Pearson  $r$ ) between four types of diagnosticians and five ego states in the examined group of psychology students are presented in Table 2.

Indices laid down in Table 2 are somewhat disappointing. One would expect clearly marked relations between non-Alpha learning styles and particular ego states of psychology students. However, only Alpha-learners seem to have some background in the Parent and the Adult attitudes. Gamma-learners gained all coefficients negative except the one for Creative Child but Delta-learners have closer positive connection to this ego-state, particularly in non-resident student population ( $r = 0.50$ ,  $p < 0.01$ ).

A lesson learned from the transactional interpretation of psychology student diagnostic readiness is to turn our concern to their future rather than to their past.

### Attitudes Disclosed during Diagnostic Workshops

In progress of the introductory course of educational diagnostic all the psychology sophomores were asked to analyze some real-world events presented in the form of anecdotes. One of the anecdotes was (in translation into English) as follows:

**Table 2. Correlations between learning styles and selected ego states (n = 60)**

Learning form	<i>Critical Parent</i>	<i>Practical Parent</i>	<i>Ethical Adult</i>	<i>Logical Adult</i>	<i>Creative Child</i>
<i>Alpha</i> (assimilation)	0.20	0.30*	0.30*	0.32*	-0.21
<i>Beta</i> (doing)	0.12	0.02	0.03	-0.17	-0.03
<i>Gamma</i> (discovering)	-0.12	-0.02	-0.18	-0.11	0.12
<i>Delta</i> (impression)	0.04	0.11	0.09	-0.12	0.20

\*  $p < 0.05$

### Educational Diagnostics

#### Creative work # 4

A student of education has brought to a college seminar the poem written by a twenty-year old prisoner during the theatrical-literary classes in a house of correction for juvenile delinquents:

*Empty walls tightened  
Sorrow that I wasn't right  
And there's your view beloved  
Though we are out of sight  
I wish I felt your lips  
And saw your lovely eyes  
But I've got loneliness  
And sufferings of nights  
I will survive it all  
And overcome despair  
Just stand by me, stand by me  
Then I'll manage the way*

Describe this prisoner's *social adjustment* in the house of correction and his *emotional maturity*. As the psychological protector of the prisoner propose three questions in order to help him in the process of socialization.

The students' solutions to the problem appeared to be classifiable in four categories:

1. *Document-oriented* students (about 15%) complain of being deprived of the prisoner's judicial and psychological documentation. Any supposition on his social adjustment and emotional maturity they consider precluded before seeing and interviewing him. They will ask the prisoner calmly of the most important facts about his past and his stay in the house of correction.
2. *Action-oriented* students (about 20%) pay their attention to the prisoner's attendance to the theatrical-literary classes. It means for them that his socialization is in progress and his future after leaving the house of correction becomes promising. They will ask the young man of his favourite activities and his plans for future.
3. *Theory-oriented* students (about 25%) reflect on the concepts of social adjustment and emotional maturity and find some indices of the concepts in lines of the poem. However, they warn against general conclusions before the propositions are verified. They will ask the young man of some specific opinions, feelings and behaviours validating their tentative conclusions.
4. *Empathic* students (about 40%) notice that the poem expresses deep and candid feelings. The prisoner lacks support in the correction house and he depends upon a person who stays outside but her connection with him remains uncertain. They tend to ask the adolescent about his fascinations, about the person the poem is addressed to, and about

the oncoming day of release from the house of correction when he starts to live in his own way.

The above standpoints may also be comprehended as various assessments of the case under consideration. The document-oriented students interpret it in a *norm-referenced* manner—they try to place it among similar cases of juvenal delinquency and penitence. The action-oriented and theory-oriented students interpret it by means of *criterion-referenced* standards, the former by subjective appreciation, and the latter by rational argumentation. The empathic students are fascinated by the poem and ready to believe his emotional maturity in spite of his despair and dependence. They are closer to *self-referencing* the author's socialization progress than any other type of the case commentators.

The exploration of student essays is persuasive but purely qualitative and more structuralized research methods are needed. Therefore, we return to questionnaire studies.

### Psychology Students' Diagnostic Attitudes Measured

The *Educational Diagnostician Inventory* (EDI) is based on Czesław Nosal's typology of human minds (Nosal, 1990) applied by Jacek Paluchowski (2001: 82–85) to psychological diagnostics. Paluchowski distinguished four types of psychological diagnosticians:

Type 1: the cool logician who persistently looks for particular facts, precise observations, and measurements, to generalize them into consistent and fully justified categories.

Type 2: the diagnostician who uses the smallest possible number of assumptions, productive models, and general rules to explain recorded phenomena and to include them into certain determinative categories.

Type 3: the diagnostician sensitive to emotional interactions, disposed to taking immediate hazardous but positive and useful actions in order to gather necessary information.

Type 4: the impressionist who strives for deep understanding of personally appreciated problems and valuing his/her own feelings higher than particular facts.

In EDI, type 1 of diagnostician is given a label *Proceduralist* and is represented by items of the kind:

1. In diagnosing, I carefully avoid emotions.
2. I need much data to make a diagnosis.

Type 2 of diagnostician is given a label *Theoretician*.

Here are exemplary items of the subscale:

3. In diagnosing, I care for full notional correctness.
4. Through my diagnoses, I verify psychological theories.

Type 3 of diagnostician is given a label *Gambler*.

Exemplary items are following:

5. I fearlessly undertake diagnostic actions.
6. In diagnosing, I appreciate speed of decision making.

Type 4 of diagnostician is given a label *Intuitionist*.

Exemplary items:

7. I deeply experience every diagnosis I perform.
8. I readily get back to my diagnoses in discussions.



**Table 3. Distribution of four diagnostician types in two student groups: pedagogues (n = 30) and psychologists (n = 60), derived from two versions of the Educational Diagnostician Inventory**

Students/Version		<i>Proceduralist</i>	<i>Theoretician</i>	<i>Gambler</i>	<i>Intuitionist</i>	Total
Pedagogues/I	A. Percentage	36	25	3	36	100
	Reliability ( $\alpha$ )	0.46	0.63	0.52	0.38	Median 0.49
Psychologists/II	B. Percentage	31	19	21	29	100
	Reliability ( $\alpha$ )	0.76	0.58	0.68	0.56	Median 0.63
Difference B - A		-5	-6	18**	-7	0

\*\*  $p < 0.01$

Judging the inventory content, the Proceduralist bears a resemblance to Document-oriented students, the Theoretician is much like Theory-oriented students, the Gambler is like Action-oriented students, and the Intuitionist is like Empathic students. The similarities could be taken for granted in EDI *content validity* considerations.

The introductory version of EDI (version I) has been applied to non-stationary students of education in a private university. It consisted of 4 x 10 items. After item analysis, reconstruction, and extending the total to 4 x 12 items (Version II), psychology students answered the final form of the inventory. Student preferences identified as the form of the highest score in the four questionnaire subscales in both versions are presented in Table 3.

The distribution of four preferences in Table 3 is more equalized than the outcomes of the holistic creative work. Yet the two most distinctive categories, document-oriented Proceduralist and empathic Intuitionist, preserved an advantage (60%) over the remaining two categories (40%) but the former gained some percentage and the latter left some percentage. The anecdote-based judgments are strongly case-dependant and we certainly need more data to make exact comparisons between qualitative and quantitative methods of examining diagnostic attitudes.

We can also see in Table 3 that Version II of the EDI became considerably more reliable in relation to the Version I but the coefficients are still too low to discriminate diagnostic preferences of individuals. At the group level, the only significant difference between two populations was appearing adherents of Gambler's diagnostic style among psychologists, more courageous in diagnostic decisions than pedagogues.

### Background Explanations to Students' Diagnostic Attitudes

Anticipation of positive correlations between student diagnostic attitudes and their own learning models seems well grounded both with common sense logic and definition scrutiny. In Table 4 we can see appropriate coefficients.

**Table 4. Correlations between psychological student diagnostic attitudes and their learning styles (n = 60)**

	<i>Alpha</i>	<i>Beta</i>	<i>Gamma</i>	<i>Delta</i>
<i>Proceduralist</i>	0.29*	0.01	0.22	-0.13
<i>Theoretician</i>	0.22	0.09	-0.01	0.01
<i>Gambler</i>	0.01	0.30*	-0.19	0.06
<i>Intuitionist</i>	-0.13	0.11	0.00	0.44**

\*  $p < 0.05$ , \*\*  $p < 0.01$

Students who learn by assimilation (*Alpha*) tend to adopt procedural approach to diagnostic tasks, students who learn by doing (*Beta*) tend to take risky Gambler attitude, and students who learn by impression (*Delta*) tend to use empathic, intuitive attitude. Unfortunately, Theoreticians, supposedly global-objective thinkers (Nosal, 1990), do not exhibit any correlation with *Gamma* learning by discovery, what may be caused either by erroneous assumption of the characteristics or by the questionnaire items defects.

We may gather also some background information from correlations between student EDI scores and their ego states indices. The data are presented in Table 5.

**Table 5. Correlations between psychological student diagnostic attitudes and their ego states (n = 60)**

	<i>Critical Parent</i>	<i>Practical Parent</i>	<i>Ethical Adult</i>	<i>Logical Adult</i>	<i>Creative Child</i>
<i>Proceduralist</i>	0.32*	0.44**	0.17	0.43**	-0.06
<i>Theoretician</i>	0.15	0.07	-0.06	0.25	0.03
<i>Gambler</i>	0.36**	0.31*	0.19	0.36**	0.18
<i>Intuitionist</i>	-0.13	0.11	-0.05	-0.12	0.33*

\*  $p < 0.05$ , \*\*  $p < 0.01$ .

Both Proceduralist and Gambler are substantially anchored in the Parent and Adult characteristics. On the other hand, Intuitionists preserve some features of Creative Child. Criterion validity of Theoretician remains unconfirmed though reliability of the subscale is comparable to other EDI categories.

### Students' Individual Profiles

Insufficient reliability of measurements reported in Tables 1–5 doesn't exclude a few cautious steps towards students' individual profile interpretation. In Table 6, six most distinct combined student characteristics are presented. All concern stationary students since median EDI subscale variance in this group (42.3) was significantly ( $p < 0.05$ ) greater than the one estimated for non-stationary group (22.8). Symbol  $z$  indicates a student's standard score. Bold-faced types indicate characteristics which seem consistent with sensible assumptions.

Student *Alpha*, who deliberately adopted this self-defining pseudonym, appeared consistent to his nickname as Proceduralist but not as Theoretician. There is no such consistency in student *Beta* who evidently doesn't like to become educational diagnostician. *Mary* shapes like declared *Theoretician* but rejects appropriate ego states. *JC* presents clear Gambler attitude and *Flower* presents mixed Gambler-Proceduralist preferences. Finally, both *Claudia* and *Ka Pe* appear Intuitionists, the former more creative, the latter more practical.

### Discussion

It should be kept in mind that the studies under consideration explored a newly recognized area of the personal input of young psychologists into their projected function of education assistants to children and youth. Their position on everyday events and critical incidents in education may add to educators' understanding the processes of learning (Tripp, 1993).

On the assumption that educational standpoints and argumentation is much differentiated, typologies of learning, ego-states, and diagnostic attitude characteristics were applied to psychology students, prospective educational diagnosticians.

Limited reliability of measurement tools and little size of the sample ( $n = 60$ ) forbade us from far-reaching conclusions on students' attitudes. Their learning by impression (*Delta*) and by doing (*Beta*) seem to outweigh their learning by assimilation (*Alpha*) and by discovering (*Gamma*). The Alpha-learners become mostly conscientious *Proceduralists*, the Beta-learners become hazardous *Gamblers*, the Delta-learners become empathic *Intuitionists*, but we cannot tell anything about the Gamma-learners potential diagnostic attitude. Proceduralists and Gamblers tend to behave more like the Critical and Practical Parents as well as the Ethical and Logical Adults, and Intuitionists tend to behave more like the Creative Children.

Real-world events should be analyzed and discussed in the course of educational diagnostic classes and the Educational Diagnostician Inventory may be used to recognize and develop appropriate attitudes. The variety of opinions expressed both ways would help students to

**Table 6. Diagnostic styles, learning ways and ego states of seven students**

Student's pseudonym	Diagnostic style		Learning way		Ego state	
	Attitude	$z$	Model	$z$	Form	$z$
<i>Alpha</i>	<i>Theoretician</i>	+1.40	<b><i>Alpha</i></b>	<b>+2.20</b>	<b><i>Logical Adult</i></b>	<b>+1.55</b>
	<b><i>Proceduralist</i></b>	<b>+0.89</b>	<i>Gamma</i>	-2.34		
<i>Mary</i>	<b><i>Theoretician</i></b>	<b>+1.60</b>	<b><i>Gamma</i></b>	<b>+1.89</b>	<i>Practical Parent</i>	-2.46
			<i>Alpha</i>	-1.09	<i>Logical Adult</i>	-1.55
<i>Beta</i>	<i>Theoretician</i>	-1.44	<b><i>Beta</i></b>	<b>+1.28</b>	<i>Ethical Adult</i>	+1.35
	<i>Gambler</i>	-0.91				
<i>JC</i>	<b><i>Gambler</i></b>	<b>+1.29</b>	<b><i>Beta</i></b>	<b>+1.28</b>	<b><i>Creative Child</i></b>	<b>+1.89</b>
<i>Flower</i>	<i>Proceduralist</i>	+2.11	<b><i>Beta</i></b>	<b>+1.49</b>	<b><i>Critical Parent</i></b>	<b>+2.30</b>
	<b><i>Gambler</i></b>	<b>+1.98</b>			<b><i>Practical Parent</i></b>	<b>+1.94</b>
<i>Claudia</i>	<b><i>Intuitionist</i></b>	<b>+1.90</b>	<b><i>Delta</i></b>	<b>+0.86</b>	<b><i>Creative Child</i></b>	<b>+1.48</b>
					<i>Ethical Adult</i>	-1.73
<i>Ka Pe</i>	<b><i>Intuitionist</i></b>	<b>+1.51</b>	<b><i>Delta</i></b>	<b>+1.54</b>	<i>Practical Parent</i>	-1.67
			<i>Alpha</i>	-1.71		

appreciate their own preferences and discussions on the opinions will be a good training to the future team-work in educational institutions.

The studies will be continued. Next steps should show us how students' attitude toward educational diagnostics change after (1) they graduate as psychology masters and (2) they take on the positions of educational counsellors.

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