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## ORIGINAL ARTICLE

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## CONSTRUCTION OF A SCALE OF THE LOCUS OF CONTROL IN SCHOOL SITUATIONS

### KONSTRUKCJA SKALI POCZUCIA UMIEJSCOWIENIA KONTROLI ZDARZEŃ SZKOLNYCH

**Keywords:**  
pedagogy, diagnosis,  
sense of location  
of control,  
school situation,  
pupil

**Summary:** In many studies it has been shown that the activity of individuals depends on such constructs as self-efficacy, self-esteem, motivation, learned helplessness, or relationships with the environment. These, in turn, are closely related to the placement of a sense of control. Because it is shaped by experience, past events are important in this process, so in the case of a student, special attention should be paid to school situations. As there is a lack of tools that pedagogues could use to study and diagnose the sense of the locus of control of students, an attempt was made to construct one. The research sample consisted of 449 students of the second grade of upper secondary schools in Bydgoszcz. The reliability of the tool was verified by the internal consistency and the split-half coefficient, and accuracy by examining the relationship with the selected variables. The tool can be considered accurate. In terms of the scale of failures, it has achieved satisfactory reliability, while the scale of successes needs to be refined.

**Słowa kluczowe:**  
pedagogika, diagnoza,  
poczucie umiejscowienia kontroli,  
sytuacja szkolna,  
uczni

**Streszczenie:** W wielu badaniach wykazano, że aktywność jednostek zależy m.in. od takich konstruktywów jak poczucie własnej skuteczności, samoocena, motywacja, wyuczona bezradność czy relacje z otoczeniem. Te z kolei pozostają w ścisłym związku z ułożeniem poczucia kontroli. Ponieważ kształtuje się ono pod wpływem doświadczeń, istotne w tym procesie są przeszłe zdarzenia, w przypadku ucznia należy więc zwrócić szczególną uwagę na zdarzenia szkolne. Jako że brakuje narzędzia, które pedagodzy mogliby stosować do badania i diagnozy poczucia umiejscowienia kontroli zdarzeń szkolnych u uczniów, podjęto próbę skonstruowania go. Próbę badawczą stanowiło 449 uczniów drugich klas bydgoskich szkół ponadgimnazjalnych. Rzetelność narzędzia weryfikowano współczynnikiem zgodności wewnętrznej oraz metodą połówkową, a trafność przez zbadanie związku z wybranymi zmiennymi. Narzędzie można uznać za trafne. W zakresie skali porażek uzyskało zadowalającą rzetelność, natomiast skala sukcesów wymaga dopracowania.

## The Concept of the Sense of Location of Control and Its Importance for Explaining Behavior

Intense changes in the labor market have led to a redefinition of the strategic goals set for education systems. Particular emphasis is placed on equipping students with key competences that enable lifelong learning (OECD, 2008). The effectiveness of this process depends on one's personality traits, attitudes and beliefs. Research also indicates a significant impact of the sense of location of control on one's functioning in self-education.

The sense of locus of control (LOC) is a relatively persistent feature of human personality, which is a generalized expectation related to one's subjectively perceived agency in life events. According to J.B. Rotter's theory of social learning, during their lives people learn to believe that they either manage their lives themselves or are driven by factors independent of them (Drwal, 1995). This allows one to describe people with a sense of internal control, i.e., convinced that events depend on their behavior, and those with a sense of external control – convinced that the results of their behavior are not influenced by them and depend on their destiny, fate or other people (Rotter, 1966).

Many studies indicate the decisive role of past experiences in the development of control perception (Bandura, 1977; Rotter, 1966; Seligman, Peterson, Kaslow, Tanenbaum, Alloy & Abramson, 1984). What is important is not so much the objective features of a given situation (event control), but the way people perceive it (sense of control) (Averill, 1973; Drwal, 1995; Kofta, 2001). As a result of repeated sequences of events, certain expectations are perpetuated and can be treated as a relatively persistent personality trait (Lumberjack, 1995; Forsterling, 2005; Krasowicz & Kurzyp-Wojnarska, 1990; Wong & Weiner, 1981).

According to the achievement motivation theory, people analyze the causes of events, and the belief that they had an influence on the obtained effect builds motivation, which manifests itself in a positive correlation between internal LOC and motivation (Weiner, 1985). It is also closely associated with the belief that they are able to realize their goals and, therefore, with the perception of their own effectiveness (Bandura, 1977). However, as a result of the feeling of having no control over events (external LOC), learned helplessness arises (Abramson, Seligman & Teasdale, 1978; Duckworth & Seligman 2017; Meier & Seligman, 1976).

It has also been shown that people with an inner sense of control have higher self-acceptance and self-esteem, thanks to which they are better adapted emotionally and socially (for: Dzwonkowska et al., 2007). A review of research (Baumeister et al., 2003) indicates that someone with high self-esteem perceives themselves in a better light, which results from the internal locus of control. Therefore, people with an external LOC, who feel that what is happening in their lives is the result of the actions of others, do not establish close and cordial relationships or are not satisfied with the relationships already established. This is confirmed by the positive correlation between a sense of loneliness and the external sense of control (Dykstra et al., 2011; Hojat, 1982; Yinghua & Lin, 2015).

Students with internal LOC are more persistent in solving puzzles and experimental tasks (Crandall et al., 1965), devote more time to homework (Rotter, 1966) and have higher self-esteem (Nowicki & Strickland, 1973) and a more real picture of themselves (Maqsud, 1980); they can postpone gratification thanks to the belief that with time they can obtain more valuable prizes (Drwal, 1978). Importantly, research (Klein & Wasserstein-Warnet, 2000; Skinner, Zimmer-Gembeck, Connell, Eccles & Wellborn, 1998) indicates the possibility of shifting the locus of control. In order to prepare children and

young people for functioning in a knowledge-based society, it is necessary to support students in building the belief that they are able to influence the results of their activities (Hejnicka-Bezwińska, 2008; Maciąg, 2018; Wojnar, 2000).

## LOC Measurement Tools

According to the idea of a generalized sense of control, many tools for measuring this feature treat it as one-dimensional, i.e., they combine the beliefs of the respondents related to different spheres of life.

A popular tool for measuring LOC is the Rotter Locus of Control Scale, used for adults (Internal-External Control Scale; I-E) with the measured accuracy of Cronbach's  $\alpha$  at the level of 0.69–0.73 (Rotter, 1966). In the original version based on factor analysis, LOC was treated as a one-dimensional construct. Subsequent analyses of the Rotter I-E scale, however, showed that the sense of control measured by this scale is not one-dimensional (Drwal, 1995).

One-factor tools (concerning generalized LOC) include:

- a tool developed by S. Nowicki and B.R. Strickland (1973), constructed in versions for different age groups (<9 years, 9–18, 18 <), whose reliability, determined with the use of the split-half method, is estimated from 0.63 to 0.81;
- Delta questionnaire, with measurement reliability from 0.38 to 0.83, depending on the method and group of respondents (Drwal, 1995).

The LOC test for children and adolescents (grades III to XII), which, apart from providing the overall result, distinguishes the results for successes (I+) and for failures (I-), is the IAR (Intellectual Achievement Responsibility Questionnaire) by V. Crandall and colleagues (1965). Its reliability measured by the split-half method in the sample of students ranged from 0.54 to 0.60.

A Polish questionnaire, or the Questionnaire for the Study of the Feeling of Control for youth aged 13–17, explores LOC in four areas: school, peer group, parents and others. The reliability of the test, measured by Cronbach's  $\alpha$  coefficient is 0.54 for failures, 0.40 for successes and 0.62 for the whole scale. It was created in 1983 on the basis of research from 1981 (Krasowicz & Kurzyp-Wojnarska, 1990).

The revised version of the tool consists of 43 items, including 38 diagnostics (15 success subscales, 10 failure subscales and 13 not subscribed to any of the subscales). The tool, like the original version, refers to four spheres of functioning: school (14 items), parents (9 items), colleagues (7 items) and

“non-specific” (9 items). The reliability of the revised version of the questionnaire (Krasowicz-Kupis & Wojnarska, 2017) amounted to 0.80 (girls) and 0.86 (boys) for the overall score, with 0.63 for the success subscale and 0.64 for the failure subscale. The authors do not provide the reliability of individual spheres of functioning. However, due to the number of questions in individual spheres and the properties of the Cronbach’s  $\alpha$  coefficient, it should be concluded that the reliability of detailed scales is lower than the subscales of failures and successes.

Bearing in mind that the majority of existing tools were constructed in other cultures or socio-economic conditions, and that the latest Polish tool accepts  $\alpha$  values authorizing research and diagnosis only at the highest level of aggregation, an attempt to construct a new tool has been made for examining students’ sense of locus of control in specific school situations.

## Method

The study<sup>1</sup> was attended by 506 pupils (including 45.0% girls) from the second grade of upper secondary schools in Bydgoszcz, aged 17–19. The sampling was based on MOEN data for upper secondary schools in the city of Bydgoszcz and classes in these schools. The sample was collected distinguishing three layers (school type: high school, technical secondary school, basic vocational school). In each stratum, schools and then classes were drawn. However, not all participants responded in the right way (e.g., they did not mark any answer in a given question or marked two different ones). In the end, 449 people were analyzed (214 from high schools, 169 from technical secondary schools and 66 students from basic vocational schools), in which the percentage of correct answers exceeded 80.

The students filled out standardized psychological questionnaires on their own effectiveness, self-esteem, loneliness, school helplessness and motivation, as well as a questionnaire constructed for the use of research to measure the sense of location of control in school situations.

The sense of efficacy was examined by the General Self-Efficacy Scale (GSES) in the adaptation of Juczyński (2001; Schwarzer, 1998), whose reliability measured by Cronbach’s  $\alpha$  is 0.84. The empirical coefficient of the sense of

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<sup>1</sup> The study was conducted under the leadership of Barbara Ciżkowicz, in cooperation with the Municipal Teacher Education Center in Bydgoszcz in the first quarter of 2015.

efficacy ranges from 10 to 40 points (the higher the score, the higher the self-efficacy of the subject).

The sense of loneliness was measured by De Jong Gierveld's Loneliness Scale (DJGLS) in the Polish adaptation of Grygiel and colleagues (2013). The result ranges from 11 to 55 points. The higher the score on the scale, the worse the testimony of the respondents is. The internal consistency of the scale position is high (Cronbach's  $\alpha = 0.89$ ).

Rosenberg's Self-Esteem Scale (SES), in the Polish adaptation of Dzwonkowska and colleagues (2007), was used to measure self-esteem. The higher the score, which takes values from 10 to 40 points, the higher the self-esteem. The internal consistency of the scale position is high (Cronbach's  $\alpha = 0.84$ ).

The sense of helplessness was measured by the School Helplessness Scale (SBS) by Ciżkowicz (2009). The reliability of the measurement estimated by the internal consistency method is high (Cronbach's  $\alpha = 0.84$ ). The helplessness rate is in the range of 20–100 points, (the higher it is, the higher the helplessness).

The motivation to learn was studied with the use of the Statistics Learning Scale (Ciżkowicz, 1999). The level of motivation to learn so measured can take values from 38–190; the higher the score, the higher the motivation to learn. The consistency of the scale is at the level of 0.91.

## **The Scale of the Sense of Locus of Control in School Situations**

In the construction of the tool, previous studies were taken into account, in which factor analyses indicated that people have different explanations in relation to different spheres of life. Because the tool was constructed to be used for the diagnosis of a student's locus of control that could be carried out in school conditions, the focus was on the most common school-related events, i.e., situations experienced by a student in the course of learning directly related to the school environment.

The second important aspect in the design of the tool was that people perceive and explain situations differently, depending on whether the effect of the event is positive or negative (Abramson et al., 1978; Crandall et al., 1965). Therefore, the questionnaire consists of two subscales: the location of control in the case of successes and failures.

The first version of the questionnaire consisted of 20 sentences describing school situations (10 positive and 10 negative events) conditionally constructed.

Each of the sentences ended with an internal or external explanation (randomly assigned to letters A or B). The respondents were able to choose which reasons in their opinion are more frequent. A sample question was as follows:

|  |                      |              |                  |                 |                 |   |
|--|----------------------|--------------|------------------|-----------------|-----------------|---|
| If I did not understand the lesson, it is usually because: |                      |              |                  |                 |                 |   |
| A:<br>I did not listen<br>carefully enough                 | Much more<br>often A | More often A | I do not<br>know | More<br>often B | More<br>often B | B:<br>The teacher could not<br>explain the material<br>well |

The empirical coefficient of locating the sense of control of failures or successes is the average of the points obtained for the respective positions (the higher the score, the stronger the internal LOC).

The basic criteria that must be met by research tools in social sciences include reliability and accuracy (Brzeziński, 2004). Reliability, defined as the degree to which test results can be attributed to the impact of systematic sources of variance (APA, 2007), was evaluated using the method based on the analysis of test item properties (Brzeziński, 2004), based on Cronbach's  $\alpha$  (1951) reliability coefficient. The reliability analysis was conducted separately for the failure subscales and success subscales.

Table 1  
*The results of the analysis of the reliability of the failure subscale*

| Question  | All items included |          | Selected items included |          |
|---|--------------------|----------|-------------------------|----------|
|   | r                  | $\alpha$ | r                       | $\alpha$ |
| 1P If I did not understand the lesson, it was mostly because:<br>A: I did not listen carefully enough<br>B: The teacher could not explain it well       | 0.46               | 0.61     | 0.43                    | 0.64     |
| 3P If I wrote the test poorly, it was mostly because:<br>A: it was too difficult<br>B: I did not prepare enough for it                                  | 0.42               | 0.62     | 0.46                    | 0.63     |
| 4P If I did not know the answer to the teacher's question, it is mostly because:<br>A: I did not pay attention to the lesson<br>B: it was too difficult | 0.41               | 0.62     | 0.40                    | 0.65     |

| Question   | All items included |          | Selected items included |          |
|--|--------------------|----------|-------------------------|----------|
|  | r                  | $\alpha$ | r                       | $\alpha$ |
| 6P If I'm late for the lesson, it's mostly because:<br>A: I left too late<br>B: I missed the bus <sup>2</sup>  | 0.22               | 0.66     | –                       | –        |
| 8P If the teacher reprimanded me, it was mostly because:<br>A: he does not like me<br>B: I did not behave as I should  | 0.25               | 0.65     | 0.28                    | 0.68     |
| 13P If I did not do my homework, it's mostly because:<br>A: I had more important matters<br>B: There was not enough time for that  | 0.16               | 0.67     | –                       | –        |
| 15P If I got a bad grade, it's mostly because:<br>A: the teacher was unfair<br>B: I have not prepared myself well enough   | 0.38               | 0.63     | 0.44                    | 0.64     |
| 16P If the project in which I participated was not successful, it is mostly because:<br>A: I did not adapt to the group's work<br>B: other members of the project group did not do what they should do         | 0.16               | 0.67     | –                       | –        |
| 18P If I did not do the exercises correctly, it's mostly because:<br>A: I did not listen to the teacher's explanations enough<br>B: the teacher did not explain the task in a way that is understandable to me | 0.38               | 0.63     | 0.35                    | 0.66     |
| 20P If I did not remember the material, it's mostly because:<br>A: it was too complicated<br>B: I did not spend enough time on it  | 0.41               | 0.62     | 0.42                    | 0.65     |
| Cronbach's $\alpha$  | 0.66               |          | 0.72                    |          |
| Spearman-Brown coefficient   | 0.67               |          | 0.71                    |          |

r – correlation between a given position and the rest of the scale

$\alpha$  – Cronbach's  $\alpha$  after removing the item from the scale

Positions selected based on Cronbach's  $\alpha$ . reliability coefficient

Source: own research.

<sup>2</sup> In Polish, literally, “the bus escaped me.”



Table 2  
*Results of the reliability analysis of the success subscale*

| Question   | All items included |          | Selected items included |          |
|--|--------------------|----------|-------------------------|----------|
|  | r                  | $\alpha$ | r                       | $\alpha$ |
| 25 If I was active in the lesson, it's mostly because:<br>A: the lessons were interesting<br>B: I knew the answers to the questions                            | 0.04               | 0.34     | -                       | -        |
| 55 If the teacher praised me, it's mostly because:<br>A: he just likes me<br>B: I deserve praise   | 0.16               | 0.28     | 0.24                    | 0.49     |
| 75 If I remember correctly what was in the lesson, it's mostly because:<br>A: I listened carefully and understood a lot<br>B: the teacher explained it well    | 0.03               | 0.34     | -                       | -        |
| 95 If I could do my homework with ease, it's mostly because:<br>A: I was careful and that's why I knew how to do it<br>B: it was easy                          | 0.09               | 0.31     | -                       | -        |
| 105 If I got a good grade, it's mostly because:<br>A: I was lucky<br>B: I learned  | 0.25               | 0.24     | 0.34                    | 0.42     |
| 115 If I succeeded in the undertaking in which I participated, it is mostly because:<br>A: others did what they needed<br>B: the whole team worked effectively | 0.12               | 0.29     | 0.27                    | 0.47     |
| 125 If I answered a teacher's question correctly, it's mostly because:<br>A: I was lucky<br>B: I had enough knowledge  | 0.29               | 0.22     | 0.38                    | 0.40     |
| 145 If I have understood the issue well, it is mostly because:<br>A: it coincides with my interests<br>B: I studied on my own                                  | 0.11               | 0.30     | -                       | -        |
| 175 If a friend asked me for help, it's mostly because:<br>A: common learning is more effective<br>B: he knows I can help him                                  | 0.18               | 0.27     | 0.20                    | 0.51     |
| 195 If I solved the task correctly, it's mostly because:<br>A: it was well explained by the teacher<br>B: I prepared for it in advance                         | -0.04              | 0.37     | -                       | -        |
| Cronbach's $\alpha$ of the subscale  | 0.32               |          | 0.55                    |          |
| Spearman-Brown coefficient   | 0.36               |          | 0.51                    |          |

r – correlation between a given position and the rest of the scale

a – Cronbach's  $\alpha$  after removing the item from the scale

Positions selected based on Cronbach's  $\alpha$ . reliability coefficient

Source: own research.

As a result of the analysis of the differentiating power of the scale position (table 1 for the failure subscale, and table 2 for the success subscale), three questions from the failure subscale and five questions from the success subscale were rejected. The value of Cronbach's  $\alpha$  for failures (7 items) was 0.72, and for successes (5 items) 0.55. This means that the success subscale should be refined and re-examined.

Cronbach's  $\alpha$  coefficient for the whole tool is 0.81, whereas the Spearman-Brown formula is 0.78.

In order to verify the analysis and select the best test items, an exploratory factor analysis was carried out (Zakrzewska, 1994). The fulfillment of the data reduction assumptions using factor analysis was confirmed by Bartlett's test for sphericity ( $c^2 = 921.86$ ,  $df = 190$ ,  $p < 0.01$ ), and the Kaiser-Meyer-Olkin index (0.734). On the basis of the above results, one can reject the hypothesis that the correlation coefficient matrix is a unit matrix and conclude that the expected reduction will be significant, which proves the appropriateness of the analysis.

The factors were extracted using the varimax rotation method. On the basis of the Kaiser criterion, two factors were determined which, considering all items, explain 65% of the total variance (first scale 37%, second 28%), while taking into account the positions selected on the basis of Cronbach's reliability coefficient – they explain 72% of the total variance (the first scale 41%, and the second 31%).

Taking into account all items of the questionnaire, eight of them (PK2, PK6, PK7, PK9, PK13, PK14, PK19), those whose removal from the scale was associated with an increase in Cronbach's value, did not load any of the factors at a satisfactory level (above 0,4). This confirmed the need to remove these items from the scale. One position (PK 15) more heavily loaded onto the opposite factor to its subscale. Taking into account only items left in the scale, all items load onto the factor loaded by other questions from the given subscale. This confirms both the legitimacy of including these questions in the tool, and the division into the subscales of failures and successes.

Table 3  
Factor loads

| Question number | Failure/success | All items included |          | Included items selected on the basis of Cronbach's $\alpha$ -reliability coefficient |          |
|-----------------|-----------------|--------------------|----------|--|----------|
|                 |                 | Factor 1           | Factor 2 | Factor 1   | Factor 2 |
| PK1             | P               | 0.06               | 0.69     | 0.68   | -0.19    |
| PK2             | S               | -0.08              | -0.11    |  |          |
| PK3             | P               | 0.35               | 0.49     | 0.63   | 0.16     |
| PK4             | P               | 0.24               | 0.52     | 0.61   | 0.006    |
| PK5             | S               | 0.45               | -0.08    | 0.05   | 0.45     |
| PK6             | P               | -0.06              | 0.39     |  |          |
| PK7             | S               | -0.11              | 0.24     |  |          |
| PK8             | P               | 0.35               | 0.46     | 0.44   | 0.21     |
| PK9             | S               | 0.37               | 0.08     |  |          |
| PK10            | S               | 0.52               | -0.25    | -0.07  | 0.63     |
| PK11            | S               | 0.52               | -0.09    | 0.06   | 0.55     |
| PK12            | S               | 0.52               | -0.19    | -0.01  | 0.61     |
| PK13            | P               | -0.04              | 0.32     |  |          |
| PK14            | S               | 0.08               | -0.15    |  |          |
| PK15            | P               | 0.61               | 0.33     | 0.53   | 0.46     |
| PK16            | P               | -0.217             | 0.41     |  |          |
| PK17            | S               | 0.42               | -0.21    | -0.05  | 0.48     |
| PK18            | P               | <0.001             | 0.63     | 0.61   | -0.22    |
| PK19            | S               | -0.33              | -0.09    |  |          |
| PK20            | P               | 0.34               | 0.5      | 0.59   | 0.18     |

Source: own research.

The accuracy of the tool allows one to determine how faithfully the measurement results reflect the examined feature (APA, 2007). On the basis of the literature on the subject, it can be expected that people with internal LOC will be characterized by high global self-assessment (SES), motivation to learn (MOTYW), high self-efficacy (GSES), low helplessness (SBS), and low sense of loneliness (DJGLS).

Table 4 presents descriptive statistics of all quantitative variables included in the analysis and the value of the Shapiro-Wilk test.

Table 4  
*Descriptive statistics and values of the Shapiro-Wilk test (N = 449)*

| Variables     | M     | SD    | Min. | Max. | W     | p      |
|---------------|-------|-------|------|------|-------|--------|
| LOC failures  | 3.2   | 0.71  | 1.0  | 5.0  | 0.990 | 0.005  |
| LOC successes | 3.7   | 0.67  | 1.4  | 5.0  | 0.979 | <0.001 |
| DJGLS         | 23.6  | 8.25  | 11   | 52   | 0.959 | <0.001 |
| GSES          | 30.3  | 4.65  | 10   | 40   | 0.981 | <0.001 |
| SES           | 29.7  | 6.00  | 10   | 40   | 0.977 | <0.001 |
| SBS           | 53.3  | 10.29 | 24   | 87   | 0.996 | 0.356  |
| MOTYW         | 125.4 | 19.56 | 57   | 179  | 0.992 | 0.016  |

Source: own research.

The relevancy analysis was carried out in two ways: by verifying the correlation between the analyzed variable and the criterion variables, and by varying the level of the criterion variables by the variable analyzed. Because almost all analyzed variables (except for helplessness) were characterized by a different than normal distribution (see Table 4), non-parametric tests (Spearman's rank correlation and the U Mann-Whitney U test) were used for the analysis of validity.

The average score on the scale of failures (see table 4) was lower than on the scale of successes (more strongly externally oriented). In statements concerning successes, only 20.5% of respondents (i.e., 92 people) were in the external LOC group and 79.5% (357 people) in the internal LOC group. In contrast, in sentences concerning failures, as many as 182 people (or 40.5% of respondents) explain them by referring to external causes. In order to confirm criterion validity, correlations between particular variables were calculated (Table 5).

Table 5  
*The values of the Spearman rank correlation coefficient*

| Variables     | LOC successes | DJGLS   | GSES     | SES      | SBS      | MOTYW    |
|---------------|---------------|---------|----------|----------|----------|----------|
| LOC failures  | 0.12*         | -0.14** | 0.04     | 0.06     | -0.09    | 0.12**   |
| LOC successes | 1.00          | -0.04   | 0.17***  | 0.12*    | -0.33*** | 0.51***  |
| DJGLS         |               | 1.00    | -0.34*** | -0.47*** | 0.26***  | -0.10*   |
| GSES          |               |         | 1.00     | 0.51***  | -0.39*** | 0.24***  |
| SES           |               |         |          | 1.00     | -0.45*** | 0.19***  |
| SBS           |               |         |          |          | 1.00     | -0.61*** |

Source: own research.

The above results show that the stronger the internal explanation of failures, the less lonely and the more motivated the respondents feel. The more successes they attribute to themselves, the more they feel effective, and the better they perceive their own self. They are also more strongly motivated and less helpless. The directions of dependencies between variables are therefore in line with expectations.

The criterion validity test was carried out, additionally checking whether the criterion variables differ in the groups with internal and external LOC. To this end, the LOC variable was dichotomized (both in terms of failures and successes), the value of which is the average of the points obtained for positions concerning failures or successes. The criterion for the division was the value of 3, according to the accepted scale of responses: respondents whose result was below 3 were classified as external LOC (182 people for the scale of failures and 92 people for the scale of successes), and subjects with a score above 3 – as persons with internal LOC. In the given scope (267 people for the scale of failures and 357 for the scale of successes), there were no people who obtained the result equal to 3.

The analysis of differences in the level of criterion variables between persons with internal and external LOC was carried out with the Mann-Whitney U test (Table 6 and 7).

Table 6  
*Direction of explaining failures and criterion variables*

| Variables | LOC failures | N   | Me  | M     | SD    | Rank average | U     | Z     | p     |
|-----------|--------------|-----|-----|-------|-------|--------------|-------|-------|-------|
| DJGLS     | ext.         | 182 | 24  | 25.2  | 9.20  | 203.34       | 20354 | -2.92 | 0.003 |
|           | int.         | 267 | 21  | 22.4  | 7.34  | 239.77       |       |       |       |
| GSES      | ext.         | 182 | 30  | 30.0  | 5.21  | 220.30       | 23441 | -0.64 | 0.525 |
|           | int.         | 267 | 30  | 30.5  | 4.21  | 228.21       |       |       |       |
| SES       | ext.         | 182 | 29  | 28.9  | 6.43  | 209.74       | 21519 | -2.06 | 0.039 |
|           | int.         | 267 | 31  | 30.1  | 5.64  | 235.40       |       |       |       |
| SBS       | ext.         | 182 | 54  | 54.7  | 10.60 | 239.81       | 21601 | -2.00 | 0.046 |
|           | int.         | 267 | 52  | 52.4  | 9.97  | 214.90       |       |       |       |
| MOTYW     | ext.         | 182 | 119 | 122.1 | 20.69 | 203.14       | 20318 | -0.23 | 0.003 |
|           | int.         | 267 | 127 | 127.5 | 18.46 | 239.90       |       |       |       |

Source: own research.

People explaining failure internally feel significantly less lonely than people explaining failures externally. People explaining failures with internal causes have a higher sense of effectiveness, but the difference in relation to people explaining defeat by external causes is not statistically significant. The analysis shows that people who take an internal direction of explaining failures have significantly higher self-esteem than those who take the outside direction. Higher helplessness characterizes people choosing external explanations; lower helplessness characterizes people choosing internal explanations. On the basis of the conducted research, it is possible to say with the probability of 0.3% error that persons accepting the responsibility for their failures are more motivated.

Table 7  
*Direction of explaining successes and criterion variables*

| Variables | LOC successes | N   | Me  | M    | SD   | Average rank | U       | Z     | p      |
|-----------|---------------|-----|-----|------|------|--------------|---------|-------|--------|
| DJGLS     | ext.          | 92  | 23  | 24.2 | 7.88 | 210.61       | 15098.5 | -1.19 | 0.233  |
|           | int.          | 357 | 22  | 23.4 | 8.34 | 228.71       |         |       |        |
| GSES      | ext.          | 92  | 29  | 2.9  | 0.55 | 190.98       | 13292.5 | -2.83 | 0.005  |
|           | int.          | 357 | 31  | 3.0  | 0.43 | 233.77       |         |       |        |
| SES       | ext.          | 92  | 30  | 2.8  | 0.59 | 205.47       | 14625.5 | -1.62 | 0.105  |
|           | int.          | 357 | 31  | 2.9  | 0.60 | 230.03       |         |       |        |
| SBS       | ext.          | 92  | 57  | 2.8  | 0.50 | 281.84       | 11192.5 | -4.71 | <0.001 |
|           | int.          | 357 | 52  | 2.6  | 0.50 | 210.35       |         |       |        |
| MOTYW     | ext.          | 92  | 114 | 2.9  | 0.45 | 140.05       | 8606.5  | -7.04 | <0.001 |
|           | int.          | 357 | 128 | 2.9  | 0.45 | 246.89       |         |       |        |

Source: own research.

External success interpreters are less satisfied with their relationships, but the differences are not statistically significant. An analogous relationship occurs in the case of self-evaluation. However, in relation to the sense of efficacy, this difference is highly significant – people assigning success to themselves feel much more effective than those who do not. The same direction is taken by the difference between persons who explain success in a different way – those who give control to the outside are more helpless. Also, those who attribute success to themselves are significantly more motivated than those who do not. The above dependencies are in line with expectations.

## Conclusion

A structured tool for examining the sense of locus of control in school situations is considered to be useful in the daily work of the pedagogue, allowing for an efficient diagnosis of LOC in school situations. Therefore, the large percentage (11%) of respondents who did not complete the scale correctly is worrying, especially since this does not apply to other scales used for validity testing. This may be due to the unusual scale construction, or location at the end of the tool (decreasing involvement of respondents). However, this requires further research.

The advantages of the tool include the fact that it applies only to school situations, is suited to the 17–19 age group and is short, so it can be easily used in the efficient diagnosis of students' beliefs.

The reliability of the entire tool and the scale of failures is satisfactory. The accuracy of the measurement with the scale of successes is worse. Although this is an imperfection not limited to the constructed scale (low reliability of this subscale also applies to other LOC measurement tools), it is necessary to continue research on the improvement of the scale.

People accepting responsibility for failures are more satisfied with interpersonal relationships, have higher self-esteem, feel less helpless and more motivated, and respondents who attribute successes to themselves believe that they are more effective, less helpless, and more motivated. Based on the above analysis, it can be said that the reported relationships were in line with expectations, but not all of them proved to be statistically significant.

Thus, it can be assumed that the tool is accurate, although due to psychometric parameters it needs to be refined. Most probably, this will entail the simplification of the way of providing answers, so that youth from all social groups and attending all types of schools would understand its construction and be able to correctly complete it, as well as the clarification of some of the questions and answers, especially on the scale of successes.

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