

Enhancing Decision-Making Efficiency Among Youth Through Reflection

Підвищення ефективності ухвалення рішень в осіб юнацького віку засобами рефлексії

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Abstract

Aim. The aim of the study is to theoretically substantiate and empirically verify the impact of reflection development on improving decision-making efficiency among youth through the implementation of a specially designed program. **Methods.** Theoretical: analysis, comparison, and generalization of scientific sources; empirical: the “Self-Regulation of Behavior Profile” questionnaire (Yevdokimova, Kobylko, 2023), the “Self-Management Ability” questionnaire (Yevdokimova, Kobylko, 2023), J. Raven’s Progressive Matrices Scale (Lemak, Petryshche, 2012), the “Creativity” test (Lemak, Petryshche, 2012), the Melbourne Decision Making Questionnaire (Petrovska, 2021), the “Study of Volitional Personality Organization” method (Lemak, Petryshche, 2012); and statistical analysis methods. **Results.** Following the formative intervention, a statistically significant increase in the overall decision-making efficiency score ($z = -4.835$; $\alpha < .001$) with a large effect size ($d = -.614$) and the overall reflection score ($z = -4.870$; $d =$

Анотація

Метою дослідження є теоретичне обґрунтування та емпірична перевірка підвищення ефективності ухвалення рішень в осіб юнацького віку засобами рефлексії шляхом реалізації спеціально розробленої програми. **Методи.** Теоретичні: аналізування, порівняння та узагальнення наукових джерел; емпіричні: опитувальник “Стиль саморегуляції поведінки” (Євдокімова, Кобилко, 2023), опитувальник “Здатність до самоуправління” (Євдокімова, Кобилко, 2023), шкала прогресивних матриць Д. Равена (Лемак, Петрище, 2012), тест “Креативність” (Лемак, Петрище, 2012), Мельбурнський опитувальник ухвалення рішень (Петровська, 2021), методика “Дослідження вольової організації особистості” (Лемак, Петрище, 2012); методи статистичного аналізу. **Результати.** Після завершення формувального впливу в експериментальній групі зафіксовано статистично достовірне зростання загального показника ефективності ухвалення рішень ($z = -4.835$; $\alpha < .001$) з високою вираженістю розміру ефекту ($d = -.614$) та загального показника рефлексії ($z = -4.870$; $d = -.618$).

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-.618) was recorded in the experimental group. The most pronounced positive shift occurred in the volitional ($d = -.605$) and cognitive ($d = -.607$) domains. The abilities to model situations and evaluate outcomes improved significantly (mean values increased from 4.96 to 6.62 and from 5.75 to 7.1, respectively). Changes in intelligence and creative thinking scores exhibited a slightly smaller effect, which is explained by their relative stability at this age. Meanwhile, no statistically significant shifts were recorded in the control group ($\alpha > .05$). **Discussion.** The highest shift in the decision-making structure occurred in the volitional and cognitive domains, where the development of critical analysis enhanced youth's ability to model situations. The transition from an impulsive reaction to a structured reflective evaluation evidently enables young people to better realize problem situations and find internal resources to resolve them. The smaller yet positive dynamics in intelligence and creative thinking metrics are logical given their relative stability and confirm the high ecological validity of the study. **Conclusions.** The results of the formative experiment implementing the program to enhance decision-making efficiency among youth confirmed the research hypothesis and indicate the possibility of positioning reflection as a tool for improving their decision-making efficiency.

Keywords: decision-making, decision-making efficiency, youth, reflection development, creative thinking.

Introduction

The current conditions of personality formation and development in youth in the context of war, as well as the economic, political, and social crises in our country, require an exceptionally high level of development of both the process and outcome of decision-making. The need to identify and implement the most optimal option in decision-making, which determines the subsequent trajectory of an individual's life, necessitates the development of general abilities to orient oneself in the current situation, align one's needs with available resources, identify the optimal course of action, and evaluate outcomes.

The theoretical and methodological foundations of decision-making encompass several key

Найбільш виразний позитивний зсув відбувся у вольовій ($d = -.605$) та когнітивній ($d = -.607$) сферах. Здатності моделювати ситуацію та оцінювати результати значно покращилися (середні значення зросли з 4.96 до 6.62 та з 5.75 до 7.1 відповідно). Зміни в показниках інтелекту та творчого мислення мали дещо менший ефект, що пояснено їхньою відносною стабільністю в цьому віці. Водночас у контрольній групі статистично значущих зсувів не зафіксовано ($\alpha > .05$). **Дискусія.** Найбільший зсув у структурі ухвалення рішень відбувся у вольовій та когнітивній сферах, де розвиток критичного аналізу підвищив здатність юнаків моделювати ситуацію. Перехід від імпульсивної реакції до структурованої рефлексивної оцінки вочевидь дозволяє молоді краще усвідомлювати проблемні ситуації та знаходити внутрішні ресурси для їх вирішення. Менша, проте позитивна динаміка за показниками інтелекту та творчого мислення є логічною через їхню відносну стабільність і підтверджує високу екологічну валідність дослідження. **Висновки.** Результати формувального експерименту з впровадження програми підвищення ефективності ухвалення рішень в осіб юнацького віку, підтвердили гіпотезу дослідження та вказують на можливість позиціонувати рефлексію як засіб підвищення ефективності ухвалення рішень в осіб юнацького віку.

Ключові слова: ухвалення рішень, ефективність ухвалення рішень, юнацький вік, розвиток рефлексії, творче мислення.

areas: the managerial context (Wang & Ruhe, 2007); risk and uncertainty (Yilmaz & Kafadar, 2022; Marquez-Ramos et al., 2023; Zheng et al., 2020); heuristics and cognitive biases (Gilovich, Griffin, & Kahneman, 2002); clinical aspects of reflection (Bedford & David, 2014; Philippi & Koenigs, 2014), alongside rumination (Bucknell, Kangas, & Crane, 2022; Takano & Tanno, 2009); ethical and moral parameters (Vavra, Galvan, & Sanfey, 2024; Heyler et al., 2016); and the substantive content of the process itself (Gonzalez, 2017; Shevchenko & Obyskalov, 2023; Imani et al., 2021).

In addition to the basic components of decision-making (goals, alternatives, and criteria), decision effectiveness is determined by socio-

economic conditions and support (Fischhoff & Broomell, 2020), value orientations (Stepura, 2016), decisiveness as an integrative personality characteristic (Sannikov, 2020), needs and heuristic biases (Korokhod, 2020b), as well as volitional potential (Pomytkina, 2016).

The importance of reflective processes has been revealed in the concepts of CER cycles (Prezenski et al., 2017) and IBLT theory (Gonzalez, 2017). In particular, researchers C. Güss, J. Donovan, and D. Naslund identify the advantages of reflection in dynamic decision-making, including awareness of one's strengths and weaknesses, flexibility, reduction of errors caused by biases, and the development of curiosity (Donovan, Güss, & Naslund, 2015). In addition, reflection facilitates the understanding of others' intentions (Dimaggio et al., 2008) and the prediction of action outcomes (Zhu et al., 2015; Smallwood et al., 2011).

Despite the high level of development of the issue, the influence of the reflective process on decision-making among youth remains insufficiently studied, which necessitated the implementation of a formative experiment. In response to this challenge, a program to enhance decision-making efficiency through reflection among youth was developed. Its purpose was to systematically influence the decision-making process by targeting the components of its psychological structure through reflection.

The effectiveness of the implemented program was confirmed by positive changes in decision-making indicators across all structural levels (individual indicators, structural components, and overall indicators). In line with the aim of examining the presence and extent of the mediated influence of reflection on decision-making efficiency, indicators of both processes were studied during the formative stage.

Hypothesis. The study was based on the assumption that a specially designed program to enhance decision-making efficiency among youth through reflection would be effective. It was expected that the experimental group would demonstrate statistically significant positive shifts in decision-making parameters compared with the control group.

The aim of the study is to theoretically substantiate and empirically verify the enhance-

ment of decision-making efficiency among youth through the implementation of a specially designed program.

Methods

Methodology. Based on the methodological provisions identified previously (Obyskalov, 2024), the study employed the following methods and questionnaires to investigate indicators of reflection and decision-making processes. The "Self-Regulation of Behavior Profile" questionnaire (Yevdokimova & Kobylko, 2023) was used to assess the level of development of the abilities to "adequately describe a situation/event and identify the main aspects, as well as describe one's own thoughts and feelings," "adequately perceive and evaluate a problematic situation," and "formulate conclusions". The "Self-Management Ability" questionnaire (Yevdokimova & Kobylko, 2023) was used to determine the level of development of the abilities to "answer exploratory questions and become aware of the conditions of the situation in which this occurs," "describe specific plans and goals for future actions," and "formulate the purpose and objectives of an activity". Raven's Progressive Matrices Scale (Lemak & Petryshche, 2012) was used to assess the level of intelligence and cognitive abilities underlying the ability to "ask exploratory questions.". The "Creativity" test (Lemak & Petryshche, 2012) was used to investigate the level of individual creativity. The Melbourne Decision Making Questionnaire (Petrovska, 2021) was used to assess the level of vigilance development, which reflects the ability to "compare and identify the optimal option" and represents an integral form of organization of the decision-making process. The "Study of Volitional Personality Organization" method (Lemak & Petryshche, 2012) was used to investigate individual decisiveness and perseverance.

Within the framework of the formative experiment, a program to enhance decision-making efficiency among youth was implemented as the primary means of psychological intervention.

Main objectives of the program:

- To increase the overall indicator of decision-making efficiency;
- To develop young people's understanding

of the psychological structures of reflection and decision-making processes and their interrelationship;

- To improve effective decision-making skills through the organization of patterns of reflective activity;
- To develop the abilities involved in the psychological structure of reflection that demonstrate moderate and high correlations with the corresponding components of the psychological structure of decision-making.

In accordance with the stated aim and objectives of the program, three stages of its implementation were developed:

I. The stage of updating knowledge and forming an understanding of the processes of reflection and decision-making.

II. The stage of improving abilities underlying the reflective process.

III. The stage of consolidating patterns of effective decision-making.

Three cross-cutting areas of work were implemented throughout the program:

- Formation of conceptual understanding;
- Development of individual abilities;
- Psychological support.

The model of the program to enhance decision-making efficiency among youth is presented in Figure 1.

The methodological basis of the program was a combination of problem-based learning technologies, the project approach, and socio-psychological training. Based on the definition of socio-psychological training as “a multifunctional method of intentional changes in the psychological phenomena of an individual, group, and organization aimed at harmonizing an individual's professional and personal existence” (Afanasieva & Pereyhina, 2015), it can be argued that organizing sessions of a program aimed at enhancing decision-making efficiency through the development of reflection among youth in accordance with the principles and structure of training work is appropriate.

Such a format contributes to the development of reflection, since systematic consideration by participants of their behavior and the behavior of other people is one of the key characteristics of the training approach (Soshyna, 2014).

The proposed program contains components characteristic of socio-psychological training, including the actualization of personal motivation and goal setting, creation of an optimal level of working tension, gradual acquisition of new knowledge and skills, modeling of effective behavioral patterns, as well as development of the ability to move from impulsive reactions to reflective behavior and vice versa (Yevdokimova, 2014).

Organization of sessions according to the principles of socio-psychological training involves the use of a set of traditional methods, including mini-lectures, group discussions, brainstorming, training exercises, role-playing, and business games (Miliutina, 2004).

The characteristics of the training approach ensure simultaneous influence on the individual's cognitive, emotional, and behavioral spheres (Yevdokimova, 2014). This significantly increases the effectiveness of developing new behavioral models that gradually replace habitual, less adaptive behavioral stereotypes, with more constructive ways of responding (Miliutina, 2004).

The content of the second, key stage of the program, which is aimed at developing abilities that ensure the functioning of reflection, is based on the use of pragmatic learning methods. The American philosopher and educator John Dewey (Dewey, 1903) is considered the founder of this approach; he consistently substantiated the advantages of problem-based and project-based learning.

Participants. The experimental implementation of the program was conducted at the Department of Psychology of Zaporizhzhia National University during the first and second semesters of the 2024–2025 academic year. To obtain valid and reliable data from the formative experiment, an experimental group (EG) and a control group (CG) were formed. The experimental group, which participated in the program to enhance decision-making efficiency, consisted of 32 students aged 18–19 years. The control group, in which no targeted developmental work was conducted, also comprised 32 students of the same age group. Thus, the total number of participants in the formative experiment was 64.

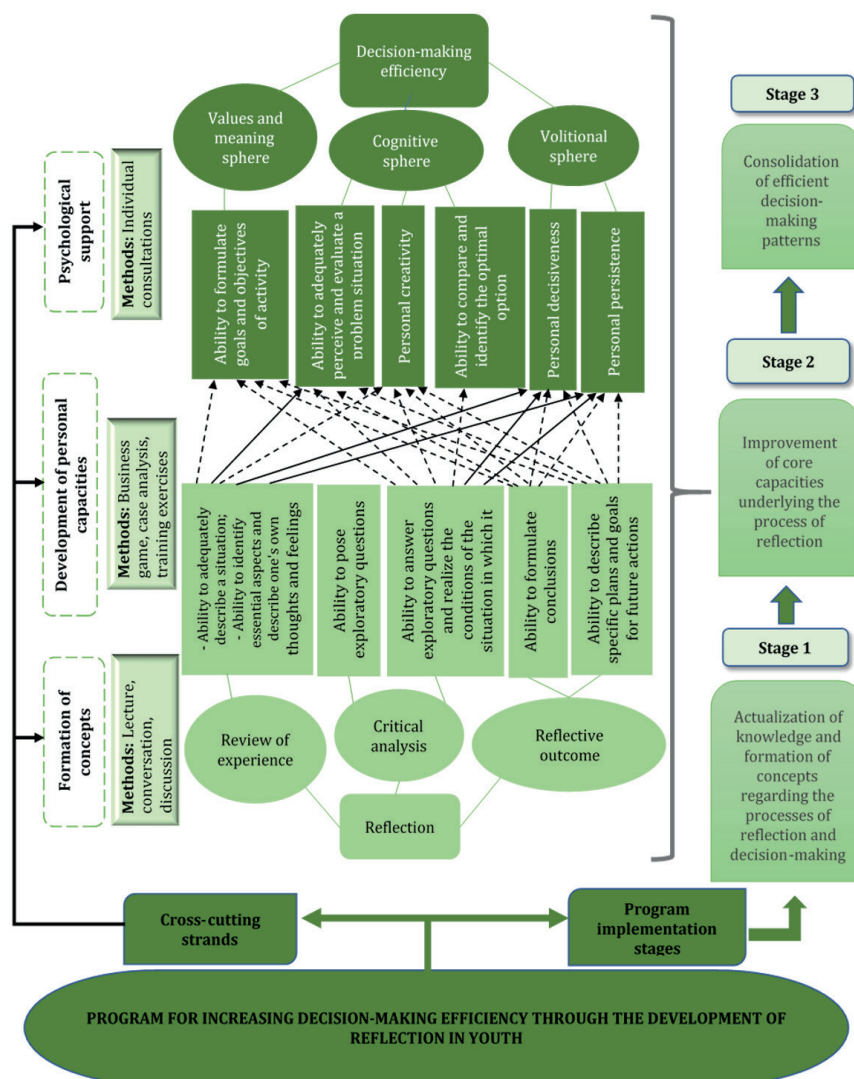


Fig. 1. Model of the program for increasing decision-making efficiency through the development of reflection in youth

The selected age range for the participants in the formative experiment (18–19 years) was determined to avoid additional influences that could reduce the reliability of the study. In particular, this concerned the recorded sharp increase in the development of reflection indicators at the stage of the ascertaining experiment (Shevchenko & Obyskalov, 2025).

Variables. The reflection process comprises three stages, which include the corresponding indicators: review of experience (the ability to adequately describe a situation/event; the ability to identify the main aspects and describe one's thoughts and feelings); critical analysis (the ability

to ask exploratory questions; the ability to answer exploratory questions and become aware of the conditions of the situation in which this occurs); reflective outcome (the ability to formulate conclusions; the ability to describe specific plans and goals for future actions). The decision-making process includes personality domains involved in its implementation: the value-semantic domain (the ability to formulate the purpose and objectives of an activity); the cognitive domain (the ability to adequately perceive and evaluate a problematic situation; individual creativity; the ability to compare and identify the optimal option); and the volitional domain (individual decisiveness; in-

dividual perseverance).

Research Design. Evaluation of the program's effectiveness involved conducting psychodiagnostic assessments at several stages, enabling an in-depth analysis of the changes. The first assessment was aimed at determining the baseline level of decision-making efficiency development among participants in the experimental and control groups. The second assessment reflected changes in the levels of development of reflection and decision-making processes across all levels of their organization after the implementation of the program. This stage enabled analysis of the specific changes resulting from its implementation and the recording of positive dynamics in the experimental group. To monitor changes in the indicators, the same psychodiagnostic methods were used as at the ascertaining stage (Shevchenko & Obyskalov, 2025). The emergence of statistically significant differences between the experimental and control groups in the dynamics of key parameter development was considered evidence of the program effectiveness.

Procedure and Instruments. In accordance with the previously presented model of the program to enhance decision-making efficiency through reflection among youth, eighteen sessions were conducted. At the first stage, participants in the formative experiment completed a psychodiagnostic questionnaire to assess their current levels of decision-making efficiency and reflection. They were introduced to the concepts of reflection and the decision-making process, their functions, psychological structures, relationships between key elements, and the influence of reflection on decision-making. The primary methods of work were lectures, conversations, and discussions. The main part of the work aimed at developing the necessary abilities was implemented during the second stage of the program. This stage was particularly rich in techniques, exercises, and discussions aimed at developing the reflective process. During the third stage of the program, participants were asked to develop a project entitled "Effective Decision-Making in Key Life Decisions." Work on the project aimed to consolidate patterns of effective decision-making by applying the knowledge and skills already acquired. Upon completion, all participants in the control and ex-

perimental groups underwent repeated questionnaire assessments to identify shifts in the indicators resulting from the decision-making efficiency enhancement program.

Statistical Analysis. The Wilcoxon signed-rank test and Cohen's *d* were used to assess the statistical significance of the changes observed in the groups and to measure effect size.

Results

To validate the recorded results concerning the influence of reflection on the decision-making process among young people, the correspondence of the initial indicators between participants in the control and experimental groups was analyzed. According to the data presented in Tables 1 and 2, seven indicators had nearly identical values, while the remaining indicators were slightly higher in the experimental group but did not exceed the standard deviation range in the control group. This provided a reliable basis for conducting a valid study.

Upon completion of the program for enhancing decision-making efficiency through reflection, the relevant indicators were measured again. The values presented in Tables 1 and 2 demonstrated that, at the level of individual indicators of the reflection and decision-making processes, the variables "Decisiveness," "Perseverance," "Modeling," and "Outcome Evaluation" in the experimental group exceeded the corresponding control-group indicators beyond the standard deviation range.

At the level of structural components, the variables "Review of Experience," "Reflective Outcome," "Cognitive," and "Volitional" in the experimental group already were multiple times higher than those in the control group.

The comparison of overall reflection and decision-making efficiency revealed a difference between the control and experimental groups in the overall reflection indicators, exceeding the standard deviation in both data sets. The difference in decision-making efficiency indicators exceeded the standard deviation for both data sets by almost twofold. These data indicate that after the implementation of the program, the experimental group showed a substantial increase in the indicators compared with the control group.

The next step in examining changes at the lev-

el of overall indicators clearly demonstrated an upward trend between the initial and repeated measurements. Moreover, the dynamics of decision-making efficiency development were more pronounced than the dynamics of the overall reflection indicator.

Based on the recorded data, it can be unequivocally stated that implementing the program to enhance decision-making efficiency through reflection among youth had the expected effect, increasing both reflection and decision-making indicators. At the same time, an important observation was that with each subsequent level of synthesis of the processes under study, the shift toward an increase became stronger. This corresponds to the identified pattern of increasing correlations between reflection and decision-making indicators as the level of synthesis in the study of these processes increased.

The final step of the formative experiment involved determining whether the shifts in the respective measurements were statistically significant. As argued above, the Wilcoxon test was selected for this purpose.

To determine the effect size (d) of the Wilcoxon test, the z value was divided by the square root of the total number of participants in both samples (n ; only cases without zero differences were included).

The interpretation of the effect-size level of the proposed d indices was conducted according to J. Cohen: $.00 \leq |d| < .10$ – negligible; $.10 \leq |d| < .30$ – small; $.30 \leq |d| < .50$ – medium; $.50 \leq |d| < .80$ – large.

To verify the significance of the shift in the experimental group, the absence of a statistically significant shift in the control group was first established. As demonstrated by the results of the Wilcoxon test (Table 1), in the most pronounced cases, the effect size was at the “small” level according to J. Cohen's interpretation. However, these results were not statistically significant because the α value exceeded .05. Therefore, the shifts observed in the control group were not statistically significant and most likely resulted from natural factors during the program implementation period.

We then examined the statistical results for the magnitude of shifts in the experimental group us-

ing the Wilcoxon test (Table 2). As shown in the table, all variables had large effect sizes, except for “Creative Thinking,” which had a medium effect size.

In all cases except the variables “Intelligence” and “Creative Thinking,” the level of statistical significance (α) was highly significant, as it was substantially lower than .01, indicating the reliability of the observed shift.

The significance levels of the variables “Intelligence” and “Creative Thinking” were intermediate between .05 and .01, indicating probable statistical significance of the recorded shift.

These results indicate that the shift observed in the experimental group relative to the control group was statistically significant and substantial, confirming the effectiveness of the program to enhance decision-making efficiency through reflection.

Table 1. Indicators of the Control Group Before and After the Experiment

CG 1	SD	M	CG 2	SD	M	α	z	n	d
Intelligence	4.53	46.06	Intelligence	4.28	46.19	.69	-.40	19	-.07
Vigilance	2.09	15.53	Vigilance	2.03	15.59	.67	-.42	15	-.08
Decisiveness	2.94	13.06	Decisiveness	2.30	13.25	.31	- 1.02	16	-.18
Perseverance	3.99	12.34	Perseverance	3.39	12.38	.81	-.25	12	-.05
Contradiction	1.39	3.22	Contradiction	.94	3.22	1.00	0	22	0
Analysis			Analysis						
Adjustment	1.15	2.97	Adjustment	.83	3.13	.28	- 1.09	21	-.17
Goal Setting	1.56	3.41	Goal Setting	1.29	3.59	.11	- 1.60	11	-.34
Modeling	2.17	4.53	Modeling	1.76	4.75	.18	- 1.35	24	-.19
Outcome	1.69	4.84	Outcome	1.29	4.78	.72	-.37	27	-.05
Evaluation			Evaluation						
Creative	1.95	6.50	Creative	1.58	6.59	.37	-.91	8	-.23
Thinking			Thinking						
Review of	2.17	4.53	Review of	1.76	4.75	.18	- 1.35	24	-.19
Experience			Experience						
Critical Analysis	4.75	49.28	Critical Analysis	4.48	49.41	.77	-.29	22	-.04
Reflective	2.05	7.81	Reflective	1.69	7.91	.59	-.55	19	-.09
Outcome			Outcome						
Value-Semantic	1.56	3.41	Value-Semantic	1.29	3.59	.11	- 1.60	21	-.25
Cognitive	3.22	26.56	Cognitive	2.86	26.94	.14	- 1.47	25	-.21
Volitional	6.13	25.41	Volitional	4.95	25.63	.50	-.67	11	-.14
Overall	5.00	61.63	Overall	4.87	62.06	.21	- 1.27	26	-.18
Reflection			Reflection						
Decision-	8.10	55.38	Decision-	6.24	56.16	.11	- 1.59	28	-.21
Making			Making						
Efficiency			Efficiency						

Note: CG 1 – control group before the experimental intervention; CG 2 – control group after the experimental intervention; SD – standard deviation; M – arithmetic mean; α – statistical significance level; z – Wilcoxon test statistic; n – total number of participants in both samples excluding zero differences; d – Cohen's effect size index.

Table 2. Indicators of the Experimental Group Before and After the Experiment

EG 1	SD	M	EG 2	SD	M	α	z	n	d
Intelligence	6.00	46.44	Intelligence	5.55	46.88	.014	-2.46	12	-.50
Vigilance	1.63	15.16	Vigilance	1.76	16.53	.000	-3.65	19	-.59
Decisiveness	3.68	14.56	Decisiveness	1.96	17.22	.000	-3.92	21	-.61
Perseverance	3.75	13.22	Perseverance	2.21	15.69	.000	-3.86	22	-.58
Contradiction Analysis	1.30	3.50	Contradiction Analysis	1.00	4.19	.000	-3.64	16	-.64
Adjustment	1.09	2.97	Adjustment	.95	3.84	.000	-3.76	17	-.64
Goal Setting	1.57	3.53	Goal Setting	1.11	4.44	.000	-3.80	19	-.62
Modeling	1.31	4.97	Modeling	1.18	6.63	.000	-4.14	23	-.61
Outcome Evaluation	1.93	5.75	Outcome Evaluation	1.07	7.22	.000	-3.95	21	-.61
Creative Thinking	2.28	6.81	Creative Thinking	1.50	7.25	.032	-2.14	10	-.48
Review of Experience	1.31	4.97	Review of Experience	1.18	6.63	.000	-4.14	23	-.61
Critical Analysis	6.07	49.94	Critical Analysis	5.44	51.06	.000	-3.79	20	-.60
Reflective Outcome	2.14	8.72	Reflective Outcome	1.64	11.06	.000	-4.59	27	-.63
Value-Semantic	1.57	3.53	Value-Semantic	1.12	4.44	.000	-3.80	19	-.62
Cognitive	3.73	26.94	Cognitive	2.89	30.41	.000	-4.79	31	-.61
Volitional	6.34	27.78	Volitional	3.35	32.91	.000	-4.36	26	-.61
Overall Reflection	6.50	63.63	Overall Reflection	6.10	68.75	.000	-4.87	31	-.62
Decision-Making Efficiency	9.49	58.25	Decision-Making Efficiency	5.33	67.75	.000	-4.84	31	-.61

Note: CG 1 – control group before the experimental intervention; CG 2 – control group after the experimental intervention; SD – standard deviation; M – arithmetic mean; α – statistical significance level; z – Wilcoxon test statistic; n – total number of participants in both samples excluding zero differences; d – Cohen's effect size index.

Discussion

The statistical data obtained from the formative experiment provide convincing and substantive support for the assumption put forward at the beginning of the study. The results of the comprehensive psychodiagnostic assessment, along with their subsequent mathematical and statistical processing, fully confirm the formulated hypothesis. The statistical findings demonstrate a precise correspondence with the expected outcomes: the experimental group showed a statistically significant increase in the overall decision-making efficiency indicator (Wilcoxon test, $z = -4.835$, $\alpha < .001$), accompanied by a large Cohen's effect size

($d = -.614$). At the same time, none of the overall or structural indicators in the control group reached statistical significance ($\alpha > .05$), thereby excluding the influence of incidental age-related or situational factors and demonstrating the effectiveness of the implemented training program.

An explanation of the obtained results in terms of the aim of the study reveals the underlying mechanisms of the relationship between the phenomena under investigation. The program, developed on the principles of pragmatic learning and socio-psychological training, purposefully stimulated the stages of reviewing experience and forming a reflective outcome.

As a consequence, the largest shift in the structure of decision-making occurred in the volitional ($z = -4.364$; $d = -.605$) and cognitive ($z = -4.785$; $d = -.607$) domains of personality. The development of the ability to answer exploratory questions (critical analysis) directly influenced young people's ability to model situations (the mean value increased from 4.96 to 6.62).

This means that the transition from an impulsive reaction to a structured reflective evaluation enables young people not only to become more aware of a problematic situation but also to identify internal resources to resolve it.

Particular attention should be paid to the results requiring deeper theoretical interpretation. The variables "Intelligence" and "Creative Thinking" showed smaller shifts ($\alpha = .014$, $d = -.502$ and $\alpha = .032$, $d = -.478$, respectively) compared with the other parameters. This statistical result is entirely logical and indicates the high ecological validity of the study: the level of basic intelligence is a relatively stable characteristic that is difficult to transform rapidly over a short formative-experiment period, whereas creativity requires more prolonged and specific stimulation. Nevertheless, even these indicators demonstrated positive dynamics, indicating a general broadening effect of reflection on the individual's cognitive apparatus.

A substantial body of research devoted to a broad range of obstacles to effective decision-making (Marin & Shkreli, 2019; Newman & Nezlek, 2016; Bucknell, Kangas, & Crane, 2022; Takano & Tanno, 2009; Lin & Dolan, 2024; Dey et al., 2018; Yang & van Vugt, 2024; Popovych et al., 2026) points to the relevance and theoretical and practical significance of the results obtained through the program to enhance decision-making efficiency among youth.

Conclusions

The importance and appropriateness of implementing a program to enhance decision-making efficiency among youth have been substantiated. The influence of the program on the decision-making efficiency indicator was assessed through a series of diagnostic measurements. Statistical analysis demonstrated a positive shift in the measurements of the experimental group, in contrast to the control group. The recorded shifts in the

indicators demonstrated a high level of statistical significance ($\alpha < .01$), except for the variables "Creative Thinking" and "Intelligence," whose significance levels were within the range of probable statistical significance (.032 and .014, respectively). According to Cohen's d , the effect sizes for all variables were interpreted as high, except for "Creative Thinking," which showed a medium effect. The results of the formative experiment verified the research hypothesis and demonstrated that reflection can enhance decision-making efficiency among youth.

Not Using AI Tools

No AI-assisted technologies were used in the writing, editing, or data analysis for this manuscript. All work is original and completed solely by the listed authors.

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