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Effects of a career education classroom course on high school students' career management competencies and career orientation in Hungary

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RESEARCH ARTICLE

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ABSTRACT

Several researchers have highlighted the need to strengthen school-based career education in Hungary. After reviewing the international literature on similar programs, this study reports on the impact of an innovative, multi-method career education course. It aimed to support Hungarian high school (ISCED 344) students in grades 10–11 in making decisions on further education and career choices, and in dealing with related uncertainties and difficulties, mainly through developing career management competence. Using a quasi-experimental design, the intervention group of 92 students showed significantly better results on half of the 20 career orientation variables assessed six months after the end of the intervention of 12 three-quarter-hour sessions, with low effect sizes compared to the pre-intervention assessment, and the 96-student control group. In addition to a self-developed questionnaire, the CDDQ Career Decision-Making Difficulties Questionnaire; and the CFI Career Factors Inventory were used. The effectiveness of the intervention was independent of factors such as gender, age, academic performance, and parental education. The study concludes with the suggestion that an enhanced version of the course could be an officially recommended supplementary career education program in Hungarian high schools.

KEYWORDS

career guidance, lifelong guidance, career education, career intervention, program effectiveness, high schools, career management skills, career choice

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INTRODUCTION

The difficult task of deciding on the further education and career choices of high school students must be prepared by thorough information, exploration, and careful reflection. Making a well-informed and considered decision is important not only for the individual but also for society. Such a decision requires the career choice maturity of the individual, which can be achieved through a long process of career orientation activities. In our time, an individual's career is determined by a series of decisions that become relevant at different points in his or her life. Accelerating changes in the world of work will increasingly require career adjustment in the adult lives of today's young people, making it less and less adaptive to link an individual to a single occupation (Sultana, 2012). The aim is to achieve and maintain career choice maturity as far as possible and, if necessary, to re-establish it in new life situations in line with new requirements and opportunities. This ability is needed throughout one's life in our rapidly changing world and is called career adaptability. The term refers to the ability of individuals to cope with transitions, adapt smoothly to change, and maintain a balance in their career roles (Chen et al., 2020; Super & Knasel, 1981). The lifelong guidance (LLG) (EU, 2004) approach, associated with the paradigm of lifelong learning (LLL), is, therefore, the appropriate response to the challenges of our time (Barnes, Bimrose, Brown, Kettunen, & Vuorinen, 2020; Borbély-Pecze, 2010; Borbély-Pecze, Gyöngyösi, & Juhász, 2013; Jackson, 2014).

There are several complementary theoretical approaches to career guidance, of which Savickas' (2005) theory of career building is particularly noteworthy in today's fast-changing times. Lifelong career development requires the management of a series of transitions, and therefore the concept of career management skills and the need to develop these skills becomes essential (Sultana, 2012). The need for life-career construction enhances the importance of career decision self-efficacy, which is the individual's belief in his or her ability to successfully perform the decision-related activities of self-evaluation and career awareness, goal selection, planning, and problem-solving during career development (Taylor & Betz, 1983; cited in Török, 2016, p. 20). This belief is attitudinal in nature but may be underpinned by the necessary competence system.

According to the ELGPN Glossary career management skills (CMS) include "a range of competencies which provide structured ways for individuals (and groups) to gather, analyze, synthesize and organize self, educational and occupational information, as well as the skills to make and implement decisions and transitions." (Jackson, 2014, p. 16) Career education aims to develop the CMS by applying targeted "programs and activities of learning to help people to develop the skills necessary to manage their career and life pathway. These include accessing and making effective use of career information and guidance." (Jackson, 2014, p. 15)

In this study, instead of CMS, we use the broader concept of career management competence (CMC). The term "competence" implies more than mere skill or knowledge, but involves values and attitudes as well (Sultana, 2009). The Hungarian Qualification Framework defines it as a set of components of knowledge, skills, attitudes, autonomy, and responsibility. It is based on the European Qualifications Framework, but slightly expands its descriptors (Lukács & Derényi, 2017). In our view, CMC should be defined with these dimensions in mind. In general, CMC is the set of all traits, characteristics, qualities, attributes, and constructs in an individual that enable them to develop and manage their career effectively throughout their life.

Several models are known for what the development of CMC should be aimed at. These frameworks can therefore be seen as structural models reflecting the content of CMC. The four-element DOTS model (Law & Watts, 1977) is widely known and accepted, the components of which are: the development of decision-making skills; opportunity awareness; transition learning (such as job-search skills); and self-awareness. The four components of this basic model can be considered as minimum requirements for all other approaches. The new version of DOTS extends this concept by defining a "career-learning space" (Law, 1999). King (2004) developed a framework based on positioning, influence, and boundary management behaviors. According to his view, the development of these competencies ensures that individuals have the connections, preparation, and experience necessary for their chosen career. Another example is the model of Hawkins and Winter (1995), which highlights the following components: self-awareness, self-promotion, access to opportunities, action planning, networking, decision-making, negotiation, political awareness, coping with uncertainty, development focus, and transfer skills. Driesel-Lange, Kracke, Hany, and Kunz (2020) build their matrix-structure CMC model on four phases of career choice: turning in, exploring, deciding, and attaining; while each phase is associated with three identical areas of competence: knowledge, motivation, and action. Looking at the 12 cells resulting from this matrix structure, further details can be broken down.

Several Hungarian authors pointed out that the effectiveness of career guidance and career education in schools needs to be improved in the everyday practice of public education; that more attention needs to be paid to it in teacher education; and that the operational conditions for career guidance services in Hungary need to be improved (Borbély-Pecze et al., 2013; Borbély-Pecze & Suhajda, 2017; Fazakas, 2009; Hegyi-Halmos, 2016; Kenderfi, 2019; Olteanu, 2022; Pogátsnik, 2018). This area often receives insufficient attention in the everyday practice of public education in Hungary. In this situation, the question of whether (and how) career education programs can be designed to develop certain CMC elements of students is of increased importance. Regardless of the current situation of career guidance for school-age learners in other countries, this question is of concern to many authors around the world. Several international studies confirm the effectiveness of career education interventions in schools.

Folsom (2005) reviewed 50 studies on the effectiveness of career courses offered in US higher education, 90% of which showed positive effects in career planning, career decision-making, career ability, professional identity, internal locus of control, and professional/career development maturity.

A review of a larger number and variety of publications from our research shows the purpose of experimental career training courses accompanied by impact measurement. The following typical examples can be mentioned at the level of secondary and higher education without claiming to be exhaustive. We limit ourselves to relatively short courses of a few days, up to a maximum of one semester (and do not look at comprehensive and complex solutions implemented across education systems in different countries). The majority of researchers are satisfied with finding a significant improvement without examining the effect size. Where effect sizes are identified, they tend to be small, which is not surprising for such limited interventions. A more detailed overview of the cited literature sources can be found in Appendix.

- Enhancement of career decision-making skills (Lam & Santos, 2018; Miles & Naidoo, 2017; Reese & Miller, 2006; Wei, 2021);

- Positive impact on school-to-work transition (Jackson & Wilton, 2016; Koen, Klehe, & Van Vianen, 2012; Sávoly & Dost, 2020);
- Enhanced self-efficacy and confidence (Falco & Summers, 2019; Glessner, Rockinson-Szapkiw, & Lopez, 2017; Shea, Ma, Yeh, Lee, & Pituc, 2009; Török, 2016);
- Career development competencies enhancement (Jackson & Wilton, 2016; Kim & Lee, 2023; Scott & Ciani, 2008; Wei, 2021);
- Emotional intelligence and well-being improvement (Di Fabio & Kenny, 2010; Freeman, Lenz, & Reardon, 2017; Glessner et al., 2017; Sullivan & Mahalik, 2000);
- Reduction in career indecision and anxiety (Olteanu, 2022; Shea et al., 2009; Sullivan & Mahalik, 2000; Thrift, Ulloa-Heath, Reardon, & Peterson, 2012);
- Improved career decision states and commitment (Babarovic, Devic, & Blazev, 2020; Miller, Osborn, Sampson, Peterson, & Reardon, 2018; Peng, 2001);
- Enhanced life satisfaction and adaptability (Ferrari, Nota, & Soresi, 2012; Gulsen, Secim, & Savickas, 2021; Sávoly & Dost, 2020).

RESEARCH QUESTIONS

The present research is part of a larger project, which aims to answer the following three research questions:

RQ-1: What are the relationships between students' background characteristics and the career orientation variables used, in particular students' career decision state, their level of career management competence, and their career choice uncertainty and difficulties in the sample studied?

RQ-2: Can the available data identify students who need more intensive career guidance support?

RQ-3: Can the career orientation characteristics of students be improved by a 12-session career education program, and what differences and patterns emerge?

The results related to the first two research questions above have been reported in a previous publication. In that paper, we identified several specific difficulties faced by high school students and identified groups that need more intensive career guidance support (Pálvölgyi, 2022). The present study focuses exclusively on the third research question. Based on previous observations, experience, and the goal-oriented design of the intervention used, the hypotheses related to RQ-3 are:

H-3-1: There will be a significant improvement in the student's assessed career orientation characteristics compared to baseline, and control group, even six months after the intervention.

H-3-2: There are no significant differences in the impact of the intervention according to the demographic variables examined and the level of students' academic achievement.

METHODS

This section describes the sample, the questionnaires and variables used, and the career education program whose impact was studied.

Sample

Using a quasi-experimental design, measurements were taken in a pre-test in February 2022 and a post-test in December 2022, six months after the intervention, which was completed in June 2022. Participants were 10th and 11th-grade Hungarian high school (ISCED 344) students who had already reached 11th and 12th grade at the time of the post-test.

As we could not oblige any institution to participate in the research, we worked with high schools that showed a willingness to cooperate (volunteer sampling). The pilot (experimental) group and the control group were organized in two different but otherwise very similar schools. Both schools were medium-sized four-grade high schools in various outlying residential districts of the capital on the Pest side, with very similar average scores on the National Assessment of Basic Competencies (NABC) having very similar average family background indicators. Only a very small difference is detected for the latter two values, and this is in favor of the control group. On this basis, both schools can be considered approximately average Hungarian high schools in a large city. The sample characteristics are summarized in Table 1.

Variables and tools

The unit of analysis is the student in this study. The pre-test and post-test data were collected using online questionnaires. Below is a brief description of the independent and dependent variables.

The independent (background) variables are gender, age, and grade of the student; academic performance average of the previous year; father's and mother's educational attainment (highest level of education with five response options).

In the first part of the survey, a self-developed career orientation questionnaire was used to collect data on several dependent variables, including certain CMC components. In contrast to other similar questionnaires, the assessment of the level of competence is not based on subjective self-assessment, but on knowledge assessment and task solving, i.e. it is not aimed at estimating the perceived competence, but the actual possessed CMC concerning the competence elements under examination. The questionnaire was piloted in December 2021, when 27 students at a high school in Budapest not participating in the study completed it (with discussion of questions in some cases).

Table 1. Sample characteristics

Characteristics	Pilot group	Control group
Headcount pre-test	100	106
Headcount post-test	92	96
Female (%)	64%	54%
Age group (year)	15–19	16–21
Age M/SD (year)	17.44/0.93	17.61/0.93
Upper cohort (grade 11/12) (%)	50%	48%
Academic performance (1–5) M/SD	3.97/0.56	3.99/0.51
National Assessment of Basic Competencies (NBAC) school mean aggregated score*	1,666	1,695
Family background index school mean value *	0.53	0.55

Source: National Assessment of Basic Competencies (NABC) 2021 10th grade site database.

All dependent variables used in the study are collectively referred to as career orientation variables and are listed below:

- Career orientation activity. Based on a one-item question: "Have you gathered information/ experience through the following activities?" The respondent could tick any of the 12 activities listed and could also tick any other activity. The value of the variable is the number of activities.
- Career decision state (process progress). Six questions were asked about the further education and career path envisaged, and a composite indicator was formed based on all the answers, considering how confident the respondent was in his/her answers (five-point Likert scale). A higher value indicates a more precise and confident vision.
- Career choice awareness. This variable tries to describe the soundness of the link between preferred career direction and self-awareness (applied self-awareness, based on 4 items). Example: the previous question asked what the respondent thinks his/her occupation will be at the age of 30. This question takes this further: "If you have indicated an occupation here, could you explain why this is?" (Open question)
- Career decision self-efficacy (confidence). Based on a one-item question: "When I think about the fact that I will have to decide in grade 12 how my life will develop after finishing high school (further education, career choice), I am confident that I will be able to make a good decision." Answer on a 9-point Likert scale (1 = not at all true for me; 9 = absolutely true for me).

CMC components. Nine items deal with different elements of CMC, using a variety of questioning techniques. This composite indicator is based on the answers and solutions, with a higher score value indicating a higher level of competence. Example: "Your classmate asked you, which are the best places on the Internet to find useful information on career opportunities, further education, and/or self-awareness. Which websites would you recommend?"

The next part of the questionnaire consisted of the Hungarian version of the CFI Career Factors Inventory (Chartrand et al., 1990), adapted by Lukács (2012). The following dependent variables were derived from the subscales of the questionnaire:

- Career choice anxiety (5 items, five-degree semantic differential scale)
- Generalized indecisiveness (3 items, five-degree semantic differential scale)
- Need for career information (5 items, five-point Likert scale indicating the level of agreement)
- Need for self-knowledge (4 items, five-point Likert scale indicating the level of agreement)

The last part of the questionnaire was made up of the Hungarian version of the CDDQ Career Decision-Making Difficulties Questionnaire (Gati, Krausz, & Osipow, 1996) adapted by Olteanu (2022). Each question is answered using a nine-point Likert scale (1 = not at all characteristic of me; 9 = well characteristic of me). A higher value of the variable in each case indicates a higher level of difficulty. Some of the variables below overlap to some extent with one or other of the variables in the CFI questionnaire. This could not be avoided in this case, but it helps to assess the validity of the data collection. The following dependent variables were derived from the ten subscales of the questionnaire:

- Readiness
  - Lack of motivation (3 items)
  - General indecisiveness (3 items)
  - Dysfunctional beliefs (4 items)

- Lack of Information about
  - The decision process stages (3 items)
  - Self (4 items)
  - Occupations (3 items)
  - Ways of obtaining additional information (2 items)
- Difficulties related to Inconsistent Information
  - Unreliable information (3 items)
  - Internal conflicts (5 items)
  - External conflicts (2 items)

In addition to the above, an extra variable is the response to the CDDQ's final summative one-item question on how difficult the respondent finally feels in making a career choice (9-point Likert scale).

Intervention

The career education program aimed to develop certain elements of the CMC and, in connection with this, to support current career orientation activities, to help students explore the further education path, and to increase their self-awareness. It was designed with a lifelong guidance approach, following active learning (Bonwell & Eison, 1991) based understanding of learning and teaching. The content was based on the concept of CMC expressed in the DOTS model (Law & Watts, 1977). The sessions covered topics such as self-awareness, career awareness, further learning opportunities, exploration methods, and steps and difficulties of career decision-making. We have tried to design the targeted outcomes to fit the cognitive items of the measurement tools used. The design aimed to be consistent with the career construction theory (Savickas, 2005); and Lent, Brown, and Hackett's (1994) social cognitive career theory.

The classroom course consisted of 12 sessions and ran from February to June 2022. The 45-min sessions took place during selected class teacher lessons for the whole participating class and were conducted by the program developer researcher, partly with the assistance of two graduate students in education (teaching team). A mixed method approach was applied, using short teacher and student presentations, discussions, Kahoot quizzes, individual and pair work, games and exercises, online exploration, watching and discussing videos, etc. The class work was mainly based on small groups formed permanently according to the student's interests, to allow the group members to get to know each other better and to give feedback to each other at the end of the program.

The work was completely paperless, using only digital media. The learning aids and multimedia content for each session were available in a Google Classroom system. All 100 students from the two cohorts and four classes were registered in the same Classroom. Group works were also uploaded to the common Classroom interface, alongside regular news and communication on the message board. In addition, the individual classes and the groups within them used exclusively their own Google Drive platforms and documents for their work. Pupils used school tablets and their smartphones via the school Wifi network.

In the final part of the program, each group carried out a mini-project, in which they completed self-awareness tests available on the Internet, and used the knowledge gained in the sessions to identify the further education and career paths that suited their interests. In the final session, they gave short presentations on their ideas for further education and

careers at the start of the program, what they have done since then, what their current (not yet final) ideas are, and what they plan to do in the next period.

The project work was supported by a detailed individual digital workbook, which can be used as a guide for self-awareness and individual career exploration work, with several practical instructions and fillable templates. Here, pupils could record their notes and results on an ongoing basis, exclusively for themselves, using information, tools, and opportunities available on the Internet. Students were given many tips to help them with their career guidance, various additional experiential activities were suggested during the sessions, and individual counseling was offered. However, there was little demand (8%) for the latter.

In particular, several difficulties were encountered during the first sessions. Logistical difficulties have arisen, partly due to increased demand for digital equipment. The external teaching team had no local knowledge and did not know the students. It was unrealistic to expect to learn the names of many pupils in relatively few sessions. The course would have benefited from a 90-min double-hour schedule, which was not feasible. Based on initial feedback and suggestions from class teachers and students, the methods used were modified to increase the proportion of practical sessions, further increasing interactivity and group work.

Ethical permission

The Research Ethics Committee of ELTE Faculty of Education and Psychology permitted the research under No. 2021/480-2.

RESULTS

Statistical analyses were performed using IBM SPSS Statistics Version 28. The first step was to examine the distribution of the dependent variables. The Kolmogorov-Smirnov test did not confirm the normal distribution of any variable. For the CFI Career Factors Inventory and the CDDQ Career Decision-Making Difficulties Questionnaire tests, we also estimated the McDonald's Omega values, in addition to the usually estimated Cronbach's alpha values, therefore. The two reliability measures showed very similar values, ranging between 0.691 and 0.943, i.e. they can be judged as acceptable. The only exception is the CDDQ Dysfunctional Beliefs subscale with an Omega value of 0.587. Although this value cannot be judged as critical, since there are only four items in the scale, we argue here that a high value cannot be expected when judging different beliefs, since one is less dependent on the other, and so a lower value does not indicate poor reliability. (For two subscales of the CDDQ questionnaire, Mcdonald's Omega value could not be estimated, because the number of items is less than three.)

The pre-test measured the baseline condition at the beginning of the intervention. The two groups also appeared quite similar in terms of the dependent variables. Using the Mann-Whitney U Test for independent samples, only three of the 20 dependent variables tested were significantly different. Two of those were to the detriment of the pilot group. As shown in Table 2, these were the Career orientation activity and the CMC components variables. The third variable showed a slight difference in favor of the experimental group, but this is not considered relevant as no significant change was subsequently observed for this variable in either group between pre- and post-test.

Table 3 gives an overview of all pre-test and post-test results for the pilot group. 13 variables show significant change compared with the baseline. Higher mean values are better for the first

Table 2. Significant pre-test differences

Variables	Pre-test						
	Pilot group		Control group		Mann-Whitney		
	M	SD	M	SD	U	*d*	*p*
Career orientation activity	2.80	1.77	3.49	1.59	3,845	0.421	0.003
CMC components	3.30	1.90	3.92	2.15	4,162	0.307	0.031
CDDQ gen. indecisiveness	5.24	2.01	5.93	1.98	3,394	0.104	0.026

Legend: M = mean, SD = standard deviation, U = Mann-Whitney U value, *d* = Cohen's *d* effect size, *p* = level of significance. (*N* = 206).

Table 3. Pre-test versus post-test results of all variables for the pilot group

Variables	Pilot group						
	Pre		Post		Mann-Whitney		
	M	SD	M	SD	U	*d*	*p*
Career orientation activity	2.80	1.77	3.68	1.88	5,721	0.432	0.003
Career decision state	2.61	1.65	3.14	1.54	5,408	0.332	0.023
Career choice awareness	1.39	1.36	1.85	1.37	5,966	0.301	0.030
Career decision self-efficacy	5.79	2.44	6.73	2.10	5,942	0.399	0.005
CMC components	3.30	1.90	4.45	2.66	5,847	0.408	0.005
CFI career choice anxiety	2.73	1.06	2.42	1.12	3,656	0.301	0.041
CFI gen. indecisiveness	2.92	0.92	2.92	1.04			
CFI career information need	3.59	0.69	3.32	0.80	3,485	0.369	0.013
CFI need for self-knowledge	3.57	1.15	3.22	1.29			
CDDQ lack of motivation	3.48	1.75	3.14	1.43			
CDDQ gen. indecisiveness	5.24	2.01	5.12	1.86			
CDDQ dysfunctional beliefs	4.69	1.36	4.11	1.39	2,661	0.398	0.012
CDDQ lack of inf. dec. process	4.41	2.26	3.73	1.85	2,813	0.319	0.042
CDDQ lack of inf. on self	4.16	2.23	3.90	1.99			
CDDQ lack of inf. occupations	4.57	2.10	3.89	1.87	2,752	0.350	0.026
CDDQ lack of add. information	3.84	2.06	3.19	1.69	2,818	0.316	0.043
CDDQ unreliable information	3.54	1.84	3.86	1.88			
CDDQ internal conflicts	3.88	1.82	3.98	1.71			
CDDQ external conflicts	3.17	1.90	3.87	1.95	4,156	0.365	0.019
CDDQ summary of difficulties	5.85	2.18	5.19	2.10	2,810	0.320	0.040

Legend: see Table 2. (*N* = 92).

five variables, while lower mean values are considered more favorable for the CFI and CDDQ variables. The direction of change is favorable in all cases except for the CDDQ external conflicts variable. Based on Cohen's *d* values, the changes with the largest effect sizes are in decreasing order for Career orientation activity, CMC components, Career decision self-efficacy, and CDDQ dysfunctional beliefs.

As seen in Table 4, significant changes also occurred in the control group in the 11 months between the two tests in terms of Career decision state and CFI career information need. Both

Table 4. Significant differences between pre-test and post-test results for the control group

Variables	Control group						
	Pre		Post		Mann-Whitney		
	M	SD	M	SD	U	*d*	*p*
Career decision state	2.54	1.48	2.99	1.33	5,315	0.316	0.031
CFI career information need	3.55	0.68	3.30	0.77	3,161	0.366	0.016

No significant differences were found for other variables not shown here.
Legend: see Table 2. ($N = 96$).

Table 5. Significant post-test differences

Variables	Post test						
	Pilot group		Control group		Mann-Whitney		
	M	SD	M	SD	U	*d*	*p*
Career choice awareness	1.85	1.37	1.40	1.28	5,206	0.313	0.031
Career decision self-efficacy	6.73	2.10	5.39	2.49	5,694	0.515	0.000
CMC components	4.45	2.66	3.47	1.92	5,175	0.345	0.020
CFI career choice anxiety	2.42	1.12	2.98	1.14	2,793	0.494	0.001
CDDQ gen. indecisiveness	5.12	1.86	5.83	2.00	3,600	0.295	0.025
CDDQ external conflicts	3.87	1.95	3.05	2.24	3,837	0.434	0.007

No significant differences were found for other variables not shown here.
Legend: see Table 2. ($N = 188$).

variables changed here in a favorable direction. Finally, Table 5 shows the significant differences between the two groups at the time of the post-test measurement. In the first five cases, the values of the pilot group are more favorable, while in the last case, the control group's value is better (CDDQ external conflicts).

Spearman's correlation test revealed no significant relationship between the independent variables listed above and the changes in the 20 dependent variables for the pilot group. Some exceptions are the following weak correlations. Students with lower academic achievement showed some greater reduction in difficulty with unreliable information (rho = 0.205; $p = 0.044$). For the lower educational attainment of the father. difficulty with general indecisiveness (rho = 0.279; $p = 0.007$) and difficulty with lack of information about occupations (rho = 0.220; $p = 0.035$) were more reduced; while lower mother's education was associated with some greater reduction in CFI generalized indecisiveness (rho = 0.228; $p = 0.034$). These small differences may also be related to the fact that there is more room for improvement for variables with a less favorable initial value.

DISCUSSION

The effectiveness of the intervention is supported by the fact that a dozen of the 20 dependent variables changed positively in the case of the experimental group, while only two significant

positive changes were observed in the control group between the two tests. However, all the effect sizes for the significant changes in Table 3 are small, based on the usual interpretation of Cohen's *d* values. This magnitude is in line with what the Whiston, Yue Li, Mitts, and Wright (2017) meta-analytic study considers to be the usual average for this type of intervention. The small effect size is not surprising half a year after the end of the intervention, which consisted of only 12 sessions. The change had the largest effect sizes in the case of the two variables in which the pilot group was significantly at a disadvantage during the pre-test.

What do the variables that have not changed significantly tell us? Due to the nature of the CFI indecisiveness and CDDQ generalized indecisiveness variables, no such change can be expected in these cases. The other two similar variables, the CFI need for self-knowledge and the CDDQ lack of information on self, decreased in value but not significantly. It seems that such a short intervention is not sufficient to achieve lasting significant results in the area of self-awareness. The situation is similar for the CDDQ lack of motivation variable. The latter is unfortunate because the initial focus of the educational intervention could logically be on increasing career orientation activity and related motivation. The former was better achieved. Since there has been a change, the results are interpreted as suggesting that a longer, well-distributed, and well-implemented program using active learning and experiential pedagogical methods would significantly improve motivation for a similar group of learners.

The CDDQ external conflict variable shows a different behavior from the above, as its value significantly worsened for the pilot group. In our opinion, external and internal conflicts typically occur in the decision-making process when this process has already progressed, and therefore we consider this change as a possible sign of progress, i.e. in our interpretation it does not necessarily contradict the overall picture painted by the other results. Consistent with what has been said, the values of the CDDQ internal conflicts and the CDDQ unreliable information variables, which are of the same nature, did increase, but not significantly.

Between the two tests, the control group had no major career guidance programs or activities organized at the school or class level. As seen in Table 4, the following two control group variables changed positively: the progress of the career decision state, and the need for career information measured by CFI. (CDDQ also has a similar subscale reflecting a lack of information about occupations, and its value has also decreased, but not significantly.) Both significant control group variable changes point to a slow progression in the decision-making process, based on some exploration of further education and career choices. By the time of the post-test, the upper cohort had generated this trend as they approached the important decision point of submitting their applications for further education in February 2023. They show significant differences between the pre-test, and post-test, while the lower cohort does not, as shown by independent-samples Mann-Whitney U test results (control group upper cohort career decision state: Cohen's $d = 0.533$; $U = 1{,}482$; $p = 0.011$; and CFI need for career information: Cohen's $d = 0.566$; $U = 580$; $p = 0.013$).

The significant differences found in the post-to-post comparison (Table 5) support the overall picture. Taking into account the results of the control group, it cannot be concluded that the changes in the two above discussed variables were caused by the intervention. For the remaining ten variables, however, it can be claimed. Our first hypothesis was therefore partially fulfilled.

The results of the Spearman correlation test suggest that the effectiveness of the pilot course is essentially independent of factors such as gender, age, academic performance, and the father's

and mother's education, which is an important beneficial feature of the intervention. Our second hypothesis is therefore fulfilled.

CONCLUSION

Our previous study has shown that many high school students have poor career management competence (CMC) and many need increased differentiated support based on unfavorable scores on examined career orientation variables (Pálvölgyi, 2022). The present study has shown that a relatively short intervention in a realistic school setting may already be capable of achieving demonstrable lasting improvement on a range of important career orientation variables. In particular, significant and lasting improvements were achieved in certain CMC knowledge and skills-related variables, while career choice anxiety decreased. The mixed method classroom intervention was embedded as a kind of supplementary mini-curriculum in the school timetable for 10th and 11th grade high school students, which was perceived differently by individuals, but mostly positively according to the different feedback.

Only a few similar studies are using Hungarian samples (see Appendix). What makes this study unique is the wide range of variables used and the fact that it is not based solely on self-assessment, but also includes knowledge and skills tests for some CMC items. Another distinctive feature is that the impact of the intervention was examined over a six-month time horizon. The lasting, albeit small, effect on the ten variables can be considered an important result, which could pave the way for the dissemination of similar programs in Hungarian high schools.

We suggest that this program should not be implemented on a campaign basis, as was done in the research, but spread over several years, thus ensuring the necessary continuity of career orientation. A class teacher who knows the students well and schedules the different sessions at the right times can be much more successful than the current teacher team of this pilot program. Career guidance should become a permanent focus of class teachers' educational work, to which subject teachers can also make important contributions, e.g. by using active learning methods (such as project-based learning). School psychologists, career guidance services, professional civil society organizations, parents, and companies can provide additional valuable support. It would be advantageous if the heads of institutions were given more room for maneuver to sometimes use competent external service providers for certain activities and programs. Supporting career guidance and career education could be an important evaluation aspect in the internal performance evaluation system for teachers to be introduced in the near future in Hungary.

The limitation of our research is that it is not based on a nationally representative sample. Nevertheless, the schools included can be considered fairly average in terms of their main parameters. The intervention was based on a combination of several methods, but we did not test the effectiveness of each of the components separately. We also did not investigate whether there might be other methodological approaches or combinations of methods that could lead to better results. The study could be extended in this direction, although it is worth noting that Mackay, Morris, Hooley, and Neary (2015) highlighted in their meta-analysis that combining several intervention methods is generally more effective than using only one. It would be worthwhile to further develop the program based on the experiences, feedback, and suggestions

of teachers and students, and to test its effectiveness with other age groups, and in more schools. The enhanced version could become a supplementary career education program officially recommended for Hungarian high schools. The final step could be to increase the number of such sessions and activities in their compulsory curricula, after proper preparation.

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Appendix
Typical examples of career education courses accompanied by impact measurement

References	Target group	Intervention	Results
Babarovic et al. (2020)	Eighth-grade middle-school students (Croatia)	School program (interests, skills, work values, learning about the labor market and secondary schools, career planning, decision making) (eight 45-min group workshops)	Career readiness and career decision-making independence improved along with the shortage of career information.
Di Fabio and Kenny (2010)	High school students (Italy)	Training program to improve learners' emotional intelligence using an ability-based model (four weekly 2.5-h sessions)	Emotional intelligence increased and perceived indecisiveness and career decision difficulties decreased
Falco and Summers (2019)	Girls attending a medium-sized public high school (Arizona)	Nine 50-min group sessions designed to improve career decision self-efficacy and STEM self-efficacy	Positive impact on participants' career decision self-efficacy and STEM self-efficacy (with moderate to large effect sizes)
Ferrari et al. (2012)	Italian adolescents are selected according to their level of career indecision and poor future orientation	Structured 10-didactic unit intervention to promote learners' orientation towards the future, learn about the current world of work, elevate career determination (ten weekly 2 h)	Increased time perspective, continuity, hope, and career decidedness as compared to controls
Fouad, Cotter, and Kantamneni (2009)	Students at a large Midwestern urban university, mainly freshmen (U.S.)	A semester-long career exploration course entitled "Foundations of Academic Success: Planning Your Major and/or Career"	Students' career decision-making difficulties decreased, career self-efficacy increased, and perceptions of barriers did not change
Freeman et al. (2017)	Undergraduate college students (Florida)	A theory-based, comprehensive career development course during a 16-week semester.	Significant positive effect on career decision and affective states
Glessner et al. (2017)	Middle school students (Florida)	Workshop of the Florida Choices program including virtual career exploration activities and a local college campus tour (4 days)	Higher levels of college and career self-efficacy than controls

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References	Target group	Intervention	Results
Gulsen et al. (2021)	Ninth-grade high school students (Northern Cyprus)	Psychoeducational course(career construction processes, self-exploration, career adaptability, future orientation, narrative identity and life satisfaction) (five 60–75-min sessions)	Significant increases in scores on all measures (Design my future scale, Career adaptabilities scale, Satisfaction with life scale)
Jackson and Wilton (2016)	Business undergraduates (UK and Australian universities)	Work-integrated learning program (with part-time or full-time work in industry)	Positive impact on career management competencies, development of self-awareness, opportunity awareness, decision-making learning, transition learning
Kim and Lee (2023)	High school students in Korea	The goal of the study is to estimate the effectiveness of career education programs offered by high schools	Career clubs and career experience programs were identified as effective in enhancing students' career development competencies
Koen et al. (2012)	Graduates about to transition from school to work	One-day intensive training for career adaptability (in groups of 15 people with two instructors)	Improved school-to-work transition, increase in concern, control, and curiosity in the long run
Lam and Santos (2018)	First-year Malaysian college students	College career educational course (4 sessions, 2 h each)	Greater career decision-making self-efficacy and certainty; lower career decision-making difficulties
Miles and Naidoo (2017)	South African Grade 11 learners with diverse socio-economic backgrounds	Career intervention program derived from social cognitive career theory designed for the South African context (six 1.5-h sessions)	Increased career maturity expressed in enhanced career decision-making self-efficacy (medium effect)
Miller et al. (2018)	Undergraduate university students (Southeastern United States)	Comprehensive 3-credit career course influenced by cognitive information processing theory	Progress in career decision states; more certainty about occupational choice, and confidence about the process of decision making.

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References	Target group	Intervention	Results
Olteanu (2022)	Hungarian 10–12. grade high school students	Decision-making training for choosing a career and further education (decision-making process, self-knowledge, self-reflection) (twelve 45-min lessons)	Positive effect on general indecisiveness, career anxiety, need for self-knowledge, and lack of information on the decision process
Osborn, Howard, and Leierer (2011)	Racially and ethnically diverse college freshmen (Florida)	1-credit-hour career development course with lectures, interactive group activities, reflective homework exercises, reading assignments (6 weeks)	Freshmen with the highest level of dysfunctional career thinking indicated the most dramatic decrease (reductions occurred irrespective of students' gender or race/ethnicity)
Peng (2001)	College freshmen (Taiwan)	Two different career education courses (cognitive restructuring intervention and career decision skills training)	Improved career decidedness compared to the control group (without significant differences between both experimental groups).
Reese and Miller (2006)	University students (Texas)	Career development course designed to help undecided students with career decision-making	Increased career decision-making self-efficacy (obtaining occupational information, setting career goals, career planning); lower perceived career decision difficulties.
Sávoly and Dost (2020)	Senior-year university students in Turkey	Career educational course adopting a school-to-work transition skills program developed in the USA (12 sessions, 90 min each)	Positive impact on school-to-work transition, higher career adaptability, and career optimism
Scott and Ciani (2008)	Undergraduate students attending a large Midwestern University (U.S.)	A semester-long one-credit-hour voluntary career explorations course (occupational interests, decision making)	Increased adaptive self-efficacy beliefs and, a stronger sense of vocational identity. Especially effective for increasing women's judgments of efficacy for career planning and problem-solving.

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References	Target group	Intervention	Results
Shea et al. (2009)	Low-income, urban Chinese immigrant youth	School-based, culturally responsive career exploration and assessment group intervention for increasing career self-efficacy	Decrease in career indecision; increases in academic, career, college help-seeking, and career decision-making self-efficacy; increase in career decision-making making, collective self-esteem.
Sullivan and Mahalik (2000)	Women enrolled in three universities in New England	Career group intervention designed to increase career-related self-efficacy for women (6 weeks)	Increased career decision-making self-efficacy, vocational exploration, and commitment for women (and maintained those gains at 6-week follow-up)
Talib, Salleh, Amat, Ghavifekr, and Ariff (2015)	Community college students in Malaysia	Career education course (9 sessions, 2 h each)	Positive effect on career development (career planning abilities, self-efficacy, and career maturity)
Thrift et al. (2012)	Pacific Island college students	Classroom course focusing on individuals' career interests and dysfunctional thoughts using the Career Thoughts Inventory Workbook (4 sessions)	Lower career dysfunctional thoughts, reframe negative statements into positive statements, positive effect on decision-making confusion and commitment anxiety
Török (2016)	Hungarian 10th and 11th grade high school students	Three-hour group session to increase self-efficacy (reflection of own career plans, commitment to development) (groups of 12 people organized)	School self-efficacy and career decision self-efficacy increased significantly, career choice anxiety decreased significantly
Wei (2021)	Undergraduate university students (Taiwan)	College career course with high-intensity and low-intensity action-based homework assignments (18 weeks, 36 h)	High-intensity action-based homework: better-enhanced career exploration (no difference between the two groups in terms of enhanced career self-efficacy)