The characteristics and change patterns of career decision self-efficacy among secondary school students of special educational needs and those of typical development

RÉKA TÖRÖK

Supervisor: István Kiss, PhD

Doctoral School of Psychology
Head of programme: Prof. Zsolt Demetrovics, DSc

Socialization and Social Processes Programme
Head of programme: Prof. Hunyady György, MHAS

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INTRODUCTION

The support of individuals' career building decisions, the development of their decision making skills and ensuring the learning experience necessary to support decision making are of major importance during the entire career. Providing lifelong support in decision making is not only important because individuals face several decision making situations owing to the rapidly changing labour market processes but also because our career decisions have an influence on all the areas of our lives. The complex, interrelated workplace and private life roles that determine our lives require high-level cognitive and self-management skills and personal self-efficacy. These skills include career decision self-efficacy, the optimal scale of which helps us to fulfil our employment roles.

Career decision self-efficacy (CDSE) is a scarcely studied phenomenon in Hungary in spite of the fact that, based on the previous research findings, the increased CDSE contributes to the decrease of uncertainty related to career choice, improves school performance, helps to reach the desired objectives, thus, it can prevent poor decision making, and in the long run, drop-out and frequent career change, which may have negative consequences (Betz and Taylor, 2012).

Individuals' self-efficacy, their belief in their own abilities, their personality and intentions equally influence their career-related behaviour and their career decision self-efficacy (Lent et al., 1994; Sampson et al., 2004). Students' previous experiences and beliefs play a decisive role during their further education and later during their work. The mapping of factors related to career choice can contribute to the design of career guidance interventions with important conclusions.

The populations who face difficulties due to their personal, environmental or socio-economic reasons in terms of education or employment require special attention in the context of career building and career guidance. From among target groups needing lifelong guidance services, disabled persons or those with special needs face several challenges during their social integration, and thus, also in the area of further education and employment, which is evidenced by their poor employment figures and high rate of unemployment. A growing ratio of students of special educational needs participate in integrated education, so the methods applied in this area require a more differentiated approach.

Although there is a growing need for career guidance provided in schools, its system seems incomplete as several schools are not prepared for carrying out this activity and the legal background is not appropriate in this area, either. Even where good examples can be seen, the appropriate evaluation of the programmes is rare, thus, we do not have a clear picture of what changes the various services can bring in students' lives. There are only a small number of researches related to the social integration, preparation for employment and career choice of students of special educational needs, and lifelong guidance services provided for these people are mostly not available. Moreover, few researches deal with the career decision self-efficacy of students with special educational needs, the related dimensions and the proposals relevant with regard to lifelong guidance.

This doctoral dissertation wishes to examine the relationship between career decision self-efficacy, which is of key importance for career building, and the related factors, as well as and the practical utilization of these results in career guidance interventions among secondary school students of special educational needs and those of typical development. The research findings of this dissertation may provide reference for the design of interventions related to career guidance at school.

THEORETICAL BACKGROUND

The study of self-efficacy has become a popular research area based on the work of Bandura (1977, 1997) both with regard to career-related behaviour and school behaviour. The self-efficacy refers to the conviction of persons that they are able to organise and display a conduct tailored to the requirements of various situations in life (Bandura, 1995). The concept of self-efficacy was first used by Hackett and Betz (1981) in lifelong guidance. Factors related to career building, whose central term is career building self-efficacy, are integrated by the social-cognitive career model of Lent, Brown and Hackett (1994, 2000). According to the social-cognitive career theory, the sense of career building self-efficacy develops as a result of environmental factors, which have an impact in the long run (for example, role models available in the
environment), and learning experiences determined by personal dispositions, which shape self-efficacy expectations and expectations regarding results. The latter has an impact on the discovery of the world of labour, the formation of areas of interest and the fulfilment of career plans.

Based on the work of Betz et al., who laid the foundations of several further researches by the creation of the Career Decision Self-Efficacy Scale (Taylor and Betz, 1983), the study of career decision self-efficacy received a lot of attention. Now the examination of the phenomenon appears in several areas of behaviour. Career decision self-efficacy is the individuals’ belief in how they can successfully complete the activities related to decision making (self-appraisal, occupational information development, goal selection, planning and problem solving) during their career development (Betz and Taylor, 2012).

Career decision self-efficacy plays a very important role in the life of secondary school students. The development stage of the age group between 15 and 24 is about discovery according to Super’s career development theory (1990). Based on Super’s model, establishing general vocational preferences and goals, the mobilisation of resources to achieve objectives, the collection of information regarding the preferred vocations and making choices based on interest, skills and individual value structures rank among the most important vocational development tasks in students’ career role. According to Super, self definitions regarding competences in the period of adolescence influence the success and satisfaction gained in future vocational roles.

We very often encounter indecisiveness at points of career decision (Creed et al., 2006). Career choice indecisiveness has a negative correlation with self-esteem and career decision self-efficacy (Taylor and Betz, 1983; Betz et al., 1996; Betz et al., 1997). Disabled persons with high self-efficacy and self-esteem are much more successful and satisfied with their lives and experience less stress (Smedema, 2014). Ochs and Roessler (2001, 2004) and Rojewski (1993) compared students of typical development and those of special educational needs. According to their findings, students of special education needs (SNE) and disabled have lower career decision self-efficacy than their fellow students of typical development. Luzzo et al. (1999) had similar findings among students studying in higher education.

Career decision self-efficacy shows correlation with other areas of self-efficacy. Self-efficacy can also be regarded as an important factor in the development of school performance. Students’ beliefs about their own abilities and their sense of control over events have a significant impact on their everyday lives. Beliefs about personal efficacy influence decisions, the level of motivation, adaptation to difficult situations, and consequently, school performance (Schunk, 1989; Bandura, 1993, 1994). Apart from school performance, beliefs about self-efficacy have an important role in the management of social interactions.

Empirical results provide evidence that optimism corresponds to the desired results as well as active and effective efforts made (Savickas et al., 1984; Scheier et al., 1986). The adolescents who have positive visions for the future will probably step into adulthood more successfully, which may play a decisive role throughout their career. The career decision self-efficacy of individuals depends on whether they actively participate in career planning, gain experience about activities related to career development (Ochs and Roessler, 2001). Based on the reviewed literature, students who receive emotional support and encouragement, get a positive model and have a sense of success will also have an increased self-efficacy.

The social-cognitive model of self-management with regard to career development, elaborated by Lent and Brown (2013), originate from the merge of the social-cognitive career theory (Lent et al., 1994) and the career development theory of Super (1990), and the career adaptability concept of Savickas (1997). The theory deals with the behavioural components of career development and it wants to find the answer for the questions how (for example, under what environmental conditions) individuals make their career decisions, how they find a job, adapt to changed circumstances, reach their goals and manage their various roles.

The high rates of underemployment and unemployment necessitate the understanding of factors related to career building among disabled employees (Hanley-Maxwell et al., 1998). Although the number of studies about the career development of students of special educational needs is insufficient, it is obvious that the disability or developmental disorders alone do not determine the career of a person (Szymanski and Hanley-Maxwell, 1996). The effect of further factors and their interaction must be taken into consideration when the relationship of disability, various developmental disorders and career building is examined.

Nowadays the environmental-behavioural point of view recognises that disability and special educational needs represent an interaction of the affected person and the environment surrounding that person (Soresi et al., 2008). The social model, as opposed to the medical one, regards damage as a physical characteristic, while disability can be defined as a social status and socially determined construction, which can be stopped,
unlike the special characteristics of a person (Johnstone, 2004). The biopsychosocial approach of disability, which is based on the dynamic interaction of person and environment, may be connected to the theoretical principles of the social-cognitive approach.

The optimal school environment has a positive influence on students’ sense of self-efficacy, performance and their attitude to learning, and later, to work. The educational environment of students of special educational needs has a major significance, although there are various opinions about its impact. There is a broad consensus about the fact that school integration is one of the preconditions of the complex social integration of disabled persons and their active participation in society. At the same time, the impact of the integrated or segregated environment lies in the match with the students’ other characteristics. The labour market position of disabled persons is not explained by the factors of disability in the context of special education, but mainly by their social situation and their opportunities to protect their interests. Disability is a special social relationship that has an influence on integration depending on the nature of the disabled persons’ relationship with their environment (Bánfalvy, 2012).

Apart from the education of career building information, the development of skills helping students in making career decisions represents an important part of career guidance programmes at school (Bishop, 1987; Gysbers et al., 1999; Herr and Cramer, 1996; Lapan et al., 1997; Loughead et al., 1995). Career building knowledge decreases the drop-out of students and helps keeping them in education, increases the rate of employment and the amount of salary for young people belonging to the target group, moreover, it has significant labour market gains among secondary school students (Bishop, 1987; Brown et al., 1999).

Several proposals have been made regarding the measurable indicators (Dewson et al., 2000; Hárs, 2009; Falzon et al., 2010) and measurement models (Magnusson and Lalande, 2005; Lalande et al., 2006; Hughes and Gratien, 2009) in the area of lifelong guidance services. As for domestic studies, the impact assessments of individual career guidance also provide important findings (Ritoók, 2008; Lisznyai et al., 2009; Szabó et al., 2011). According to the results of meta-analyses, the impact assessments work well in the case of group activities if the content is focused and the related measurement is specific to the content. Furthermore, duration is not decisive, even short sessions may have a significant impact (Whiston et al., 1998).

Considering the antecedents of programme assessments, it can be concluded that the amount and quality of impact assessments are rather insufficient in the area of lifelong guidance activity as compared to what would be necessary. There are very few domestic researches that examine the components of the development of career decision self-efficacy and the efficiency of interventions. The characteristics of adolescents, including young people of special educational needs, underline the necessity of considering how services related to lifelong guidance and the education of career knowledge can be provided efficiently and in a time-saving manner in a public educational environment, and what techniques can be applied to career-related topics in order to elaborate the major directions regarding the structure and methodology of interventions.

**OBJECTIVES**

My most important aim is to adapt the Career Decision Self-Efficacy Scale based on the sample of secondary school students in Hungary, check the internal consistency of the scale and examine the factor structure and the convergent validity of the scale. My further aims are to explore what factors forecast career decision self-efficacy among secondary school students and what differences there are in the presented models among students of typical development and those of special educational needs, moreover, what differences there are between the students of the two samples regarding the scales and background variables.

It is an important question if there is any noticeable difference in the career decision self-efficacy of the students of special educational needs who study in different school environments (integrated or segregated), and those who possess various degree and number of disabilities.

Apart from career decision self-efficacy, I focus on the relationship of the perceived self-efficacy areas (academic, social and self-regulatory), career choice indecisiveness, self-esteem and positive thinking. Besides, my aim is to describe the groups that can be characterised by a different profile with regard to a variable and to draw the relevant conclusions for career guidance.

Finally, I intend to find out how and to what extent career decision self-efficacy and the related dimensions change as a result of school career guidance interventions and what influences these patterns.
QUESTIONS AND HYPOTHESES

I have asked three major questions and put forward 10 hypotheses regarding the objectives. The confirmation of the hypotheses is summarized in Table 1.

Table 1. Questions and hypotheses

<table>
<thead>
<tr>
<th>Questions</th>
<th>Hypotheses</th>
<th>Fulfillment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. What differences can be seen between students of typical development and those of special educational needs in career decision self-efficacy and the related dimensions? What differences can be seen in the career decision self-efficacy of students with special educational needs regarding the objective (degree and number) and subjective (perceived disability) measures of disability and the type of educational environment (integrated or segregated)?</td>
<td>Hypothesis 1: The career decision self-efficacy, perceived self-efficacy, positivity and self-esteem of secondary school students of typical development are higher and career choice indecisiveness is lower than those of the students of special educational needs (Ochs and Roessler, 2001; 2004).</td>
<td>Partially confirmed</td>
<td>The average score of students of typical development achieved on the career information factor of CDSES and the academic self-efficacy factor of CPSES is significantly higher than that of SEN students. SEN students have a higher positivity than the students of typical development. No other difference was seen in the averages of variables between the two samples.</td>
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<td></td>
<td>Hypothesis 2: The students of special educational needs who regard their disability a smaller obstacle (perceived disability) have a greater career decision self-efficacy (Corrigan, 2008), but there is no difference in the degree of career decision self-efficacy based on the degree of disability (low, moderate or serious) and career decision self-efficacy does not have any correlation with the number of disabilities, either (Corrigan, 2008; Smedema, 2014).</td>
<td>Confirmed</td>
<td>The higher the level of perceived disability is, the lower the CDSE becomes. The groups having various degrees of disability (low, moderate or serious) do not differ in the degree of career decision self-efficacy. The number of disabilities does not correlate with the degree of career decision self-efficacy.</td>
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<td></td>
<td>Hypothesis 3: The students of special educational needs who study in integrated educational environment have higher career decision self-efficacy (Gillespie and Hillmann, 1993; Enright et al., 1996; Kohlhe et al., 2009).</td>
<td>Not confirmed</td>
<td>There is no difference in the degree of career decision self-efficacy between students of special educational needs who study in integrated or segregated educational environment.</td>
</tr>
<tr>
<td>Q2. Examining the career decision self-efficacy patterns of secondary school students, what type of groups can be separated? What characterizes individual groups?</td>
<td>Hypothesis 4: Groups that can be characterised with significantly different profiles can be separated alongside all the studied variables (career decision self-efficacy, career choice indecisiveness, self-esteem, perceived self-efficacy and positivity).</td>
<td>Confirmed</td>
<td>Two groups of different profiles can be created based on the CDSE, the emotional dimensions of CFI, self-esteem, perceived self-efficacy and positivity.</td>
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<td></td>
<td>Hypothesis 5: Students with a low career decision self-efficacy are mostly characterised by a higher level of career choice indecisiveness (Taylor and Betz, 1983; Bandura, 1995), while persons with higher career decision self-efficacy have a higher perceived self-efficacy (Betz and Klein, 1996), have higher positivity and self-esteem values than the group(s) with lower scores (Betz and Klein, 1996; Creed et al., 2004).</td>
<td>Partially confirmed</td>
<td>A higher level of career choice anxiety and generalized indecisiveness characterizes low CDSE students, while high CDSE students have a higher perceived self-efficacy, higher values of positivity and self-esteem than those of the lower score group. The two groups, however, have similar needs for self-knowledge and occupational information.</td>
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<td></td>
<td>Hypothesis 6: Significantly more students of special educational needs belong to the low career decision self-efficacy group(s) (Ochs and Roessler, 2001; 2004).</td>
<td>Not confirmed</td>
<td>The same amount of students of special educational needs belong to the groups of low and high career decision self-efficacy created based on the latent profile analysis.</td>
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<td></td>
<td>Hypothesis 7: The higher career decision self-efficacy group(s) includes a significantly higher amount of students who earlier participated in career guidance training (Betz and Taylor, 2012), and this effect is sustained after a period of one month (Wang et al., 2010).</td>
<td>Confirmed</td>
<td>Several students who participated in career guidance training previously or have better grade point average belong to the high CDSE group created based on the latent profile analysis.</td>
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<tr>
<td>Q3. How do the career decision self-efficacy, perceived self-efficacy, career indecisiveness, self-esteem and positivity of students change as a result of career guidance group intervention? What patterns can be seen in the created effects and what influences these effects?</td>
<td>Hypothesis 8: The career decision self-efficacy of students significantly increases as a result of career guidance intervention (Betz and Taylor, 2012), and this effect is sustained after a period of one month (Wang et al., 2010).</td>
<td>Partially confirmed</td>
<td>The degree of CDSE increase after the group training and is sustained one month after the training, but the result are only valid for the group of low CDSE.</td>
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<td></td>
<td>Hypothesis 9: The self-esteem and positivity of students do not change as a result of career guidance intervention (Bernaud et al., 2006; Caprara et al., 2010), and no change can be seen in the other areas of self-efficacy and in career choice indecisiveness (Whinston et al., 1998).</td>
<td>Partially confirmed</td>
<td>The scores of self-esteem and positivity did not change after the intervention, however, academic self-efficacy increased and career choice anxiety decreased.</td>
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<td></td>
<td>Hypothesis 10: The increase in the degree of career decision self-efficacy does not correlate with a sample (students of typical development or special educational needs), gender or previous participation in career guidance training (Whinston et al., 1998).</td>
<td>Confirmed</td>
<td>The results of the intervention are not influenced by the condition of belonging to a sample (students of typical development or of special educational needs), previous participation in a career guidance session or the gender of the participants.</td>
</tr>
</tbody>
</table>
METHODS

1. Participants and procedure

The research sample comprises students of typical development and secondary school students with a sound mind who qualify as students of special educational needs based on the opinion of the expert and rehabilitation committee. This doctoral dissertation includes four studies in line with objectives. Some of the studies were conducted with a different number of participants and aims (see Table 2).

Table 2. Summary of the studies of the doctoral dissertation

<table>
<thead>
<tr>
<th>Number of study</th>
<th>Aim of study</th>
<th>Sampling process</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Hungarian adaptation of the short form of the Career Decision Self-Efficacy Scale (CDSES-SF, Betz et al., 1996)</td>
<td>Online data collection, a sample of secondary school students of typical development</td>
<td>649 persons</td>
</tr>
<tr>
<td>2</td>
<td>The role of different variables in the forecast of career decision self-efficacy</td>
<td>Online data collection, a sample of secondary school students of typical development and special educational needs</td>
<td>1047 persons</td>
</tr>
<tr>
<td>3</td>
<td>The characterization of the groups of the research sample gained by latent profile analysis</td>
<td>Online data collection, a sample of secondary school students of typical development and special educational needs</td>
<td>1047 persons</td>
</tr>
<tr>
<td>4</td>
<td>The examination of the change in career decision self-efficacy and the related dimensions as a result of career guidance interventions</td>
<td>Online and paper-based data collection, a sample of secondary school students of typical development and special educational needs</td>
<td>198 persons</td>
</tr>
</tbody>
</table>

2. Measurement tools

The following questionnaires were applied:

1. Career Decision Self-efficacy Scale Short Form (CDSES-SF, Betz et al., 1996)

The Career Decision Self-Efficacy Scale measures the belief of individuals in their ability to solve the tasks related to decision making about career. The 10 items per scale and the 5 items of the shortened version (CDSES-SF; Betz et al., 1996) cover all the five areas of competency by Crites (1978): precise self-appraisal, obtaining occupational information, goal selection, planning for the future and problem solving. The respondents have to mark how much they agree with the listed statements on a 5-degree Likert-scale. In addition to getting a quick picture about the clients' areas needing development, the measurement tool proved to be suitable also for the examination of the effects of intervention (Bergeron and Romano, 1994; Betz and Luzzo, 1996; Peterson, 1993), and the measurement tool was used as a dependent variable in several interventions (e.g. Luzzo and Taylor, 1994; Betz and Borgen, 2009; Fouad et al., 2009). The internal consistency reliability of the short from ranged 0.73 to 0.83 for the subscales, and 0.94 for the total score (Betz et al., 2006). The translation of the scale was prepared in line with the international and Hungarian regulations (Beaton et al., 2006).

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1“Children / students with special education needs” means children / students requiring special treatment who, based on the expert opinion of the committee of experts, are handicapped or have perceptual, mental deficiency or speech disorder, or have multiple disabilities in case of the simultaneous occurrence of several deficiencies or have autism spectrum disorder or any other psychic disorder [serious disorder concerning learning or the control of attention or behaviour]. Article 48§/(25) of Act CXC of 2011, Hungary

2I applied the same scales on the samples of both the students of typical development and those of special educational needs. The only difference was that the status data of students of special educational needs also included questions regarding disability and the status of developmental disorder. A part of the data included in these questionnaires (diagnoses and ICD codes) was populated by the help of teachers. Moreover, the students of special educational needs also filled in a scale on the subjective assessment of their disability (see Section 6 of this Chapter). Prior to the population of the questionnaire package I asked secondary school students to provide social-demographical data.
2. Career Factors Inventory (CFI, Chartrand et al., 1990)

The CFI questionnaire identifies the indecisiveness occurring during career decisions through personal-emotional and information-type dimensions. The questionnaire comprises four sub-scales: the first two scales measure the emotional side of indecisiveness occurring in career decisions through career choice anxiety and generalized indecisiveness, while scales 3 and 4 measure the need for information essential for career and self-knowledge. The four factors of career choice indecisiveness described by Chartrand et al. (1990) could be separated in the Hungarian version of CFI (Lukács, 2012) on a sample of secondary school students (N=683). The two cognitive factors are the perceived need for occupational information (Cronbach’s-alpha 0.60) and the perceived need for self-knowledge (Cronbach’s-alpha 0.89), while the two emotional factors are career choice anxiety (Cronbach’s-alpha 0.89) and generalized indecisiveness (Cronbach’s-alpha 0.61). The Hungarian measurement tool includes 17 items as compared to the original 21 times.

3. Children’s Perceived Self-Efficacy Scale (CPSES, Bandura, 1990)

The Children’s Perceived Self-Efficacy Scale measures 9 areas of operation by the help of 50 items. Students assess on a four-level Likert-scale what skills they possess for the completion of the activities included in the questions. The Hungarian adaptation of the Children’s Perceived Self-Efficacy Scale was performed by Rózsa and Kő (no publication date available) on a sample of elementary and secondary school students (a total of 862 persons, average age: 14 years). The shortened form of the Children’s Perceived Self-Efficacy Scale, comprising 37 items, consists of 3 factors: academic efficacy (Cronbach’s-alpha 0.86), social efficacy (Cronbach’s-alpha 0.72) and self-regulatory efficacy (Cronbach’s-alpha 0.57). The first factor mostly consists of the mechanisms determining educational efficacy, while the second factor consist of self-efficacy perceived in social relationships and activities and self-confidence developing in a social environment. The efficiency of supports and requests for help and the efficiency of the fulfilment of expectations are represented by the third factor.

4. Rosenberg Self-Esteem Scale (RSES, Rosenberg, 1965)

Global self-esteem was examined through the broadly used Rosenberg Self-Esteem Scale, created by Rosenberg (1965). Self-esteem is grabbed by the scale as a permanent sense of personal value or excellency, and it is measured on one dimension. The measurement tool includes 10 items, which are to be assessed on a four-level Likert-scale. The reliability and validity of the scale based on 5 positive and 5 negative statements are justified by research results obtained on several samples (adolescents, elderly people, psychiatric patients) and in various cultures (Rózsa and Komlósi, 2014). The scale was adapted by Rózsa and Komlósi (2014) on a sample of 815 persons (average age: 36.6 years), confirming the one-dimension nature of the scale. The general psychometric features of the Hungarian version can be regarded as good on the whole (Cronbach’s-alpha 0.86). The comparison by genders and years of age shows statistically significant differences for the benefit of men and older people.

5. Positivity Scale (PS, Caprara et al., 2012)

Positivity means the positive attitude and experience of individuals regarding themselves, their lives, future, trust in others, general satisfaction with life. Positive attitude is a shared underlying factor behind self-appraisal, satisfaction with life and optimism. An 8-item, one-factor positivity questionnaire asks questions about all these and respondents must note on a five-level Likert scale how much they agree with the listed statements. I examined the factor structure of the Positivity Scale with a confirmatory factor analysis, based on which a six-item, one-factor correlation could be established (CFI=0.99; RMSEA=0.06 [90% CI 0.04-0.09]; CFI=0.18; SRMR=0.02). The internal consistency of the final six items is also appropriate (Cronbach’s-alpha 0.83).

6. Sheehan Disability Scale (SDS, Sheehan, 1983)

The Sheehan Disability Scale was created to measure the functional damage of anxiety disorder for adults. This self-assessment tool asks questions about three areas of life (school and work/social life and free time/family life) to discover how disturbing the symptoms occurring as a result of this condition are, using a 11 point Likert-scale. The scale is short and simple and has a high validity; therefore, it is broadly used. The reliability and validity of SDS have been confirmed by several studies and it is used in the measurement of the major components of disabilities even nowadays (e.g. Sheehan, 1986, quoted by Whiteside, 2009; Leon et al., 1997; Sheehan and Sheehan, 2008; Luciano et al., 2010). The Child Sheehan Disability Scale (CSDS, Sheehan, 1986, quoted by Whiteside, 2009), prepared for children has proven to be suitable for the separation of anxious and not anxious children and the items of the scale are significantly correlated: work and social life 0.54; work and family life 0.70; family and social life 0.52 (Whiteside, 2009).
I applied the scale for the subjective assessment of the disability of secondary school students of special educational needs, tailored to their language, with the exception that I asked about the events of the past 30 days instead of the past week. The translation of the scale was prepared in line with the international and Hungarian regulations (Beaton et al., 2000). The reliability of the scale proved to be appropriate (Cronbach’s-alpha 0.76).

**STUDY 1: The Hungarian adaptation of the short version of the Career Decision Self-Efficacy Scale (CDSES-SF, Betz et al., 1996)**

**1.1. Participants**

The sample used for the research comprise 649 Hungarian secondary school students (M age = 17.24, SD age = 1.07). 56.2 of the sample are women (N=365). The sample of secondary school students consisted of students attending grammar school (N=150; 23.1%), vocational secondary school (N=432; 51%) and vocational school (N=67; 8%). As for their residence, 17 of them (2.6%) live in the capital, 72 (11.1%) in county towns, 286 (44.1%) in towns, and 274 (42.2%) in villages. The average of their grades in the previous school semester was 3.58 (SD=0.71).

**1.2. Results and discussion**

In the first study I used the short form of CDSES on a sample of Hungarian secondary school students. The results available in international literature (Watson et al., 2001; Creed et al., 2002; Hampton, 2005; Chaney et al., 2007; Miller et al., 2009; Gaudron, 2011; Jin et al., 2012; Presti et al., 2013; Buyukgoze-Kavas, 2014) show a somewhat different picture regarding the structure of the scale measuring career decision self-efficacy than the results achieved based on the Hungarian sample. I examined five models of various structures (see Table 1): the first one was a 25-item five-factor first order model, which is the same as the original structure elaborated by Betz et al. (1996). Then I examined the 15-item five-factor first order model (2), 15-item five-factor hierarchical model (3), the 15-item one-factor first order model (4) and the bifactor (5) models as well.

<table>
<thead>
<tr>
<th>Model</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA [90% CI]</th>
<th>CFit</th>
<th>SRMR</th>
<th>AIC</th>
<th>BIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) 25-item five-factor first order model</td>
<td>0.893</td>
<td>0.878</td>
<td>0.059 [0.054-0.063]</td>
<td>0.001</td>
<td>0.048</td>
<td>36933</td>
<td>37313</td>
</tr>
<tr>
<td>(2) 15-item five-factor first order model</td>
<td>0.947</td>
<td>0.930</td>
<td>0.054 [0.046-0.062]</td>
<td>0.221</td>
<td>0.035</td>
<td>22324</td>
<td>22570</td>
</tr>
<tr>
<td>(3) 15-item five-factor hierarchical model</td>
<td>0.946</td>
<td>0.934</td>
<td>0.052 [0.044-0.060]</td>
<td>0.304</td>
<td>0.036</td>
<td>22330</td>
<td>22553</td>
</tr>
<tr>
<td>(4) 15-item the one-factor first order model</td>
<td>0.933</td>
<td>0.922</td>
<td>0.057 [0.049-0.064]</td>
<td>0.071</td>
<td>0.040</td>
<td>22389</td>
<td>22591</td>
</tr>
<tr>
<td>(5) 15-item bifactor model</td>
<td>0.953</td>
<td>0.934</td>
<td>0.052 [0.044-0.061]</td>
<td>0.333</td>
<td>0.034</td>
<td>22308</td>
<td>22576</td>
</tr>
</tbody>
</table>

**Notes:** CFI=comparative fit index; TLI=Tucker-Lewis Index; RMSEA=root-mean-square error of approximation; CFit=RMSEA’s test of close fit; SRMR=standardized root mean square residuals; AIC=Akaike Information Criterion; BIC=Bayesian Information Criterion
During the confirmatory factor analysis I found a bifactor solution on the sample comprising secondary school students (N=649) as opposed to studies in the available literature. The model implies a factor structure that includes a general construct and five specific units: self-appraisal, occupational information, goal selection, planning and problem solving (see Figure 1). 3 items are attached to each specific factor.

![Figure 1. The final factor structure of the Hungarian version of the Career Decision Self-Efficacy Scale (Betz et al., 1996) on a secondary school student sample](image)

Notes: There are standardised factor loadings on the arrows, the variance of latent variables are set at 1, while the co-variances among the factors are set at 0.

The descriptive statistics of the Hungarian version of the CDSES-SF applied on a sample of secondary students are shown by Table 2. Each CDSES-SF factor had an acceptable reliability indicator; the Cronbach alpha values are above 0.69. The omega (ω) indicators also showed a high reliability; their values ranged between 0.73 and 0.78. In contrast, the omega hierarchical values (ωh) were low, ranging from 0.00 to 0.22, so the reliability of specific factors are low in the presence of the general factor. Based on the Pearson correlation analysis, I found strong positive correlations, significant on a 0.01 level. The relationships of the sub-factors of the scales range between 0.58 and 0.74, which represents the higher-than-expected correlation of sub-factors. All in all we can conclude that, considering both the Cronbach alpha and the omega values, the questionnaire has an acceptable reliability. Based on the psychometric indicators, the bifactor version of the 15-item Career Decision Self-Efficacy Scale is suitable for measuring the belief of secondary school students in their career decision abilities (Török et al., in press).

Table 4. Descriptive statistics of the Hungarian version of the CDSES-SF and correlation between the CDSES-SF factors using a sample of secondary school students (N=649)

<table>
<thead>
<tr>
<th>Scales</th>
<th>α</th>
<th>ω</th>
<th>ωh</th>
<th>Range</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. self-appraisal</td>
<td>.74</td>
<td>.78</td>
<td>.08</td>
<td>1-5</td>
<td>3.69</td>
<td>.72</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. problem solving</td>
<td>.74</td>
<td>.75</td>
<td>.22</td>
<td>1-5</td>
<td>3.56</td>
<td>.76</td>
<td>.64**</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. planning</td>
<td>.73</td>
<td>.76</td>
<td>.00</td>
<td>1-5</td>
<td>3.76</td>
<td>.77</td>
<td>.73**</td>
<td>.65**</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>4. occupational info</td>
<td>.75</td>
<td>.77</td>
<td>.08</td>
<td>1-5</td>
<td>3.87</td>
<td>.78</td>
<td>.69**</td>
<td>.59**</td>
<td>.74**</td>
<td>—</td>
</tr>
<tr>
<td>5. goal selection</td>
<td>.69</td>
<td>.73</td>
<td>.04</td>
<td>1-5</td>
<td>3.74</td>
<td>.76</td>
<td>.74**</td>
<td>.58**</td>
<td>.71**</td>
<td>.67**</td>
</tr>
</tbody>
</table>

Notes: α = Cronbach alpha value; ω = omega, ωh = omega hierarchical; AVE (Average Variance Extracted); **=p < .01
STUDY 2: The role of variables in the forecast of career decision self-efficacy

The second study presents the factors influencing career decision self-efficacy with the application of structural modelling.

2.1 Participants

The sample used for the research comprises 1047 secondary school students. There were 837 secondary school students of typical development (M_age = 17.20, SD_age = 1.02) and 201 secondary school students of Special Educational Needs (normal IQ) (M_age = 16.82, SD_age = 1.19). 56.9% of the sample of students of typical development are women (N=476). The sample of secondary school student consisted of students attending grammar school (N=340; 40.6%), vocational secondary school (N=436; 52.1%) and vocational school (N=61; 7.3%). As for their residence, 138 of them (16.5%) live in the capital, 75 (9.0%) in county towns, 326 (38.9%) in towns, and 297 (35.5%) in villages. The average of their grades in the previous school semester was 3.68 (SD=0.73).

35.2% of the SEN sample are women (N=74). As for their residence, 20 of them (9.5%) live in the capital, 47 (22.4%) in county towns, 93 (44.3%) in towns, and 50 (23.8%) in villages. The average of their grades in the previous school semester was 3.35 (SD=0.66). The 37.6% of SEN students study in a segregated (N=79), while the rest (N=131, 62.4% of the sample) study in an integrated secondary school. The sample included students attending grammar school (N=70; 33.3%), vocational secondary school (N=77; 36.7%) and vocational school (N=63; 30.0%). More than half of the sample belong to people suffering from psychiatric disorders by the ICD code3 (N=106, 50.5%, ICD F80-F89), 21.9% are physically disabled (N=46); 16.7% are hard of hearing (N=35), 0.9 are visually impaired (N=2). 19 persons are diagnosed with disorders of activity and concentration, 1 person (0.5%) has endocrinial illness (E00-E90). 1 person (0.5%) has a diagnosis not qualified elsewhere (R00-R99). The group of students with learning disorders are the biggest among the group of students with psychiatric development disorders amounting to 37.6% of the sample (N=79). 41.4% of the students (N=87) have more than one disorders. 26.6% of SEN students informed us about a minor disability (N=26), 26.6% about serious disability (N=56) and 45.6% about moderate disability (N=98).

2.2 Results and discussion

The variables involved in the research are interrelated based on literature data and also on the previous results, thus, I first examined the correlations among the traceable variables and the reliability of scales on the entire sample and on the individual subsamples. The scales proved to be reliable on each sample.

I found a moderate degree of positive significant correlation between career decision self-efficacy and self-esteem on both samples. This result is also supported by the findings of Robbins (1985) and Betz et al. (1997). Low self-esteem can be identified as an obstacle to career development and this is mainly true for women (Betz, 2005), while high-level self-esteem enables individuals to highlight their competencies, express their feelings about their values, and by this, decrease their disability and the feelings of hopelessness and resignation (Smedema, 2014). Adolescents of high self-esteem can build the elements of their self-definition into their career choice and their self-evaluation influences their exploration activities, planning and decisions (Wallace-Brosious et al., 1994). In line with my assumptions, there is a strong positive significant correlation between career decision self-efficacy and self-esteem on both samples, which fits in well with the theoretical background. Career decision self-efficacy and optimistic attribution style corresponds to career decision and dedication, satisfaction with work and workplace performance (Maples and Luzzo, 2005). Trait-like optimism is connected to desired results, active and efficient efforts (Maples and Luzzo, 2005) and helps the successful transition to adult life (Stoddard et al., 2011), the better adaptation to tasks of development as well as the setting and reaching of objectives (Savickas et al., 1984).

There is an inverse relationship between career decision self-efficacy and career choice indecisiveness on both samples, which is also evidenced by several researches (Taylor and Betz, 1983; Taylor and Popma, 1990; Gillespie and Hillman, 1993; Bergeron and Romano, 1994; Betz et al., 1996; Betz et al., 1997). Career choice anxiety and anxiety regarding general decision making may hinder self-efficacy and the intention to act may

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3 These students were classified into types by their ICD codes (used Hungarian ‘BNO’ system of International Classification of Diseases) first communicated.
be blocked if a cognitive or emotional stimulus distracts students’ attention from the implementation of an action.

All the three factors of CPSES are in a positive relationship with career decision self-efficacy on both samples; there is a strong correlation with school and social self-efficacy and only a weak correlation with self-regulatory efficacy. This confirms previous results, according to which various self-efficacy dimensions are decisive in how well adolescents can meet the challenges of a given period of development. These challenges include tasks related to studies, social relationships, career choice and dedication. Various areas of self-efficacy are interrelated, for instance, there is a close correlation among career decision self-efficacy and generalized self-efficacy and social self-efficacy (Bandura, 1986; Niles and Sowa, 1992, quoted by Betz and Klein, 1996; Betz and Taylor, 2012). Self-efficacy corresponds to reaching the required educational attainment and career related results (Bandura, 1986; Lent et al., 1994, 2000). According to Felsman and Blustein (1999), the high level of attachment to their peers and the ability to handle intimate relationships are connected to the exploration of the environment and corresponds to the development of dedication in the career orientation process, whereas the deficiencies of social self-efficacy may lead to delay in the process of career building (Betz et al., 1999).

Then, I examined how much certain variables forecast career decision self-efficacy. I applied Structural Equation Modelling (SEM) to both secondary school samples in order to explore the direction and strength of relationships among the dimensions of career decision self-efficacy, self-esteem, positivity, career choice indecisiveness and perceived self-efficacy. First, I drew up the model of the combined sample and then I tested on both subsamples if the same structures can be applied, and examined how much the three models deviate from each other (see Figure 2).

![Figure 2](image_url)

**Figure 2.** The presentation of effects and standardised path coefficients in structural models: combined sample, samples of students of typical development and of special educational needs

*Notes:* Dashed arrows: non-significant path coefficients, continuous arrows: significant path coefficients. Black arrows: combined secondary school sample, blue arrows: sample of students of typical development, green arrows: sample of students of special educational needs. Up-down arrows: positivity and career choice anxiety and co-variances between academic and social self-efficacy.
The full model explains 38% and 56% of the total variance of career decision self-efficacy for the students of typical development and the students of special educational need, respectively, and 41% in the case of the combined sample.

The structural analysis performed on the data of secondary school students rendered further proof that the variables of perceived self-efficacy and positivity, the variables of career choice indecisiveness and career decision self-efficacy are correlated. The personal factors forecasting career decision self-efficacy in the model include career decision indecisiveness, positivity as well as academic and social self-efficacy; among background variables, grade point average and participation in career guidance training appear as indirect effects both in the sample of students of typical development and those of special educational needs. If we jointly examine the combined sample, previous participation in career guidance has an impact both through academic and social self-efficacy and directly.

My findings confirm that academic and social self-efficacy have a significant direct impact on career decision self-efficacy independently of the sample. Positivity and career choice anxiety have a significant direct impact both on academic and social self-efficacy and, though these, they have an indirect effect on career decision self-efficacy (indirect path). For SEN students, career choice anxiety does not have an effect on academic self-efficacy and there is no traceable direct path from positivity to career decision self-efficacy. Participation in career guidance training has a significant direct and indirect effect on career decision self-efficacy, mainly through academic self-efficacy (there is no significant relationship between career training and social self-efficacy in the SEN sample), however, the impact is not very strong. The emotional factor of CFI, career choice anxiety has an indirect effect on career decision self-efficacy in all the models, mainly through social self-efficacy. The grade point average forecasts career decision self-efficacy through academic self-efficacy independently of the sample. While it is the increase of positivity that leads directly to career decision self-efficacy among students of typical development, the decrease of career choice anxiety directly forecasts career decision self-efficacy among students of special educational needs.

The second research confirms the research findings that showed the effect of personal variables and career choice indecisiveness on career decision self-efficacy (pl. Taylor and Betz, 1983; Betz and Luzzo, 1996; Betz et al., 1996, Betz et al., 1997). For example, school performance, positive self-efficacy expectations and positive self-attribution style greatly contribute to the increase of the career decision self-efficacy of adolescents (Bandura, 1997; Flum and Blustein, 2000). Secondary school students who regard themselves as more self-confident in their social and learning behaviour will more probably show higher career decision self-efficacy. This result gives further evidence that training sessions and programmes aiming to increase academic and social self-efficacy, which also deal with or even try to increase the efficiency expectations related to interpersonal relationships, may be useful in the development of career decision self-efficacy.

Literature related on this topic obviously connects the degree of career decision self-efficacy with the experience gained in career guidance activities and attributes its degree to the participation in these (Carnes et al., 1995; Ochs and Roessler, 2001; Eccles et al., 2003, Hansen et al., 2003). The coping of secondary school students with career choice has a positive effect on school successes and the formation of a positive self-image (Herr and Cramer, 1996). Besides, the help in active career exploration in the age of puberty most probably results in a better career choice, and thus, a more consistent self-image (Super and Hall, 1978; Vondracek et al., 1995; Blustein et al., 1997).
STUDY 3: The comparison of research samples and the creation of latent profiles

The third study deals with the comparison of secondary school students of typical development and those of special educational needs in the context of the variables of career decision self-efficacy, career choice indecisiveness, perceived self-efficacy, positivity and self-esteem. Apart from this, I classified students in groups of different characteristics by latent profile analysis based on the measured dimensions. The method represents a person-centred approach, which is broadly used in various social disciplines (Magnusson, 2003), but has not been applied for the discussion of profiles created alongside the self-efficacy of secondary school students.

3.1. Participants

The research sample is identical with the sample contemplated in Section 2.1.

3.2. Results and discussion

3.2.1. The comparison of students of typical development and special educational needs

Apart from the obtaining of occupational information and positivity in CDSES and academic self-efficacy in CPSES, there is no significant difference in the average scores of variables between secondary school students of typical development and those of special educational needs. Participation in a career guidance activity showed a significant difference in the values of career decision self-efficacy in both samples. The group of those participating in career guidance had a higher CDSES average in both samples.

SEN students have a higher positivity than the students of typical development. Several studies prove that students of special educational needs set similar objectives regarding further education and career to the objectives of their peers of the same age, but later this similarity disappears: disabled youth become less self-confident regarding their strengths related to their labour market participation. The discrimination against them (Burchardt, 2005), the lower performance expectations and the unrealistic assessment of their abilities by others may play a part in this. Several teachers and school counsellors believe that disabled people, mostly if their condition is serious, cannot make decisions on their own (Soresi et al., 2008). This attitude probably gets even stronger when it comes to work-related performance, so the beliefs of employers may also influence the future labour market success of disabled persons, and these beliefs have an impact on self-efficacy. Furthermore, the lack of future success, the employment that does not match qualifications or unemployment may originate from the insufficient knowledge of actual labour market conditions both by students and by professionals (Rojewski, 1993). This confirms the fact that the average score of students of typical development achieved on the career information factor of CDSES higher than that of SEN students.

Considering the fact that positive attitudes and optimism correspond to a better school performance, help individuals to reach their goals and copy with problems, a higher level of positivity may probably result in a higher involvement in activities related to career decisions among students of special educational needs.

The stereotypes against SEN students, including the disabled, and the low expectations regarding their learning abilities, may give an answer to the question why the academic self-efficacy of SEN students is lower than that of students of typical development. Besides, the release of SEN students from assessment is rather widespread, mostly in integrating institutions. This can arise from the fact that the methodology to teach students falling behind is rather premature and school failures are frequently avoided by releasing students from fulfilling obligations. Due to frequent exemptions, moreover, these students learn less in a community, which would increase the chances of their integration (Kőpatakiné et al., 2007). Due to the lack of success in learning, academic self-efficacy can fall back, which may result in lower further educational objectives.

There was no difference in the degree of career decision self-efficacy among the SEN students learning in segregated or integrated institutions. As the integrated school environment does not have an obvious
advantage for students, this further emphasizes the idea according to which the matching of a student with the school environment plays a decisive role in the areas connected to career decision self-efficacy, and we do not get closer to the understanding of the phenomenon by the examination of the disability and the school environment alone, as the interactions of these shall be subject to further investigations. The students who do not need further services probably study in an integrated environment, while the students who study in a segregated environment may benefit from the given learning environment in a career decision area.

No difference was shown in the degree of career decision self-efficacy based on the degree of disability among SEN students, either. However, the higher the level of perceived disability is, as measured by the SDS scale, the lower the career decisions self-efficacy becomes. This correlation is confirmed by Corrigan (2008), who found that the degree of acceptance of disability significantly corresponds to career decision self-efficacy in a sample of disabled students in higher education, but the degree and type of disability (born or acquired, or distributed by categories of activity) does not have any correlation with it. The assessment of disability is probably ‘activated’ depending on the current environmental or social situation and previous experience, which is in line with the biopsychosocial approach and the socio-cognitive theory. Based on all this, the functional disability arising from damage may become a disadvantage in the context of various physical, social and environmental factors. The significance and effect of special need or disability also depend on what people think of themselves and of their situation and what emotions are attached to this thinking (Wright, 1983).

3.2.2. The characteristics of classes obtained by latent profile analysis

I performed a Latent Profile Analysis (LPA) so that the students whose self-efficacy indicators, self-esteem and positivity and career choice indecisiveness are lower than the expected level are identified. The score values of the scales were the observed indicator variables. Then I compared the groups obtained from the LPA based on the demographical variables relevant for career decision self-efficacy (gender, age, type of school, place of residence, previous participation in career guidance, grade point average). It was an important question whether more students of special educational needs would be included in the group of low self-efficacy than in the group of high self-efficacy. The analysis supported the acceptance of two-class solution (see Table 5).

<table>
<thead>
<tr>
<th>Number of latent classes</th>
<th>AIC</th>
<th>BIC</th>
<th>SABBIC</th>
<th>Entropy</th>
<th>L-M-R test</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>27850</td>
<td>28003</td>
<td>27905</td>
<td>0.761</td>
<td>1211</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>27472</td>
<td>27680</td>
<td>27547</td>
<td>0.772</td>
<td>394</td>
<td>0.063</td>
</tr>
</tbody>
</table>

Notes: AIC=Akaike Information Criterion; BIC=Bayesian Information Criterion; SSABIC (Sample size adjusted BIC) L-M-R test=Lo-Mendell-Rubin Adjusted Likelihood Ratio Test; p=level of significance

The first group (35.9% of the entire sample, N=376) represents the students who reached scores below the average in the dimensions of career decision self-efficacy, the various factors of perceived efficacy as well as positivity and self-esteem, and at the same time, have a high career choice anxiety and generalized indecisiveness. The pattern of the second group of students (64.1% of the whole sample, N=671) is the opposite of the first group. It is a low “risk” group from the perspective of career decision self-efficacy: the members of this group have high decision self-efficacy, perceived efficacy, positivity and self-esteem, accompanied by low career anxiety and generalized indecisiveness. The need for self-knowledge and the need for occupational information are almost the same in these two groups.

The characteristics of the two groups are shown by Figure 3.
There was no difference between the two groups in the proportion of SEN students. The students belonging to the group of high career decision self-efficacy are probably boys ($\chi^2(1)=9.036, p=0.003$), reach better grade point average at school ($t(1034)=-5.402, p=0.000$) and have already participated in career guidance training ($\chi^2(1)=6.065, p=0.014$). The students belonging to the group of low career decision self-efficacy are probably girls, have not participated in career guidance training and have more modest school results.

If we compare the SEN students belonging to the low group (N=73, 34.8% of the SEN sample) and high group (N=137, 65.2% of the SEN sample), we see a significant difference based on gender, perceived disability and the number of disabilities. The students belonging to the group of high career decision self-efficacy are probably boys ($\chi^2(1)=9.49, p=0.002$), have fewer disabilities ($t(208)=2.03, p=0.043$) and their perceived disability is lower ($t(117.903)=2.864, p=0.005$). The students of special educational needs who have a low career decision self-efficacy are probably girls, also have more disabilities and feel more disabled in their everyday lives.

The students who have a low career decision self-efficacy are characterised by career choice anxiety and a higher level of indecisiveness (Taylor and Betz, 1983; Bandura, 1995), while persons who have a high career decision self-efficacy have a higher perceived self-efficacy (Betz and Klein, 1996), their positivity and self-esteem values are higher than those of the low-score group (Betz and Klein, 1996; Creed et al., 2004).

The two profiles do not vary greatly in the cognitive factors of career choice indecisiveness, so there is an almost same need for self-knowledge and career-knowledge among students of low and high career decision self-efficacy. On this basis it can be concluded that secondary school students are mostly interested in the same questions but this interest is accompanied by less anxiety and indecisiveness in the group of students of high self-efficacy. They probably interpret experimenting as a challenge, develop the related competences more efficiently, are better at overcoming failures, and do not worry so much in the meantime. This entails a steadier performance and a more balanced learning path even in the long run (Bandura 1993, quoted by Kiss, 2009). The role of increasing self-efficacy grows in the period of career choice indecisiveness. Decreasing the anxiety related to career choice, the teaching of techniques helping career decisions, the increase of internal control in career decision processes are of key importance for students of low self-efficacy. This helps students to believe they can overcome difficulties coming up during their career (Luzzo and Hutcheson, 1996).

My findings contradict several theories and research results that emphasize the low self-efficacy of students of special educational needs both in general and also as compared to their peers who are not disabled or have no special educational needs (Enright et al., 1996; Rojewski, 1993; Mazurek and Shoemaker, 1997; Ochs and Roessler, 2001; Burchardt, 2005; Lindstrom et al., 2012). I regard the social-cognitive career model as a starting point to give an explanation for this. This model looks upon self-efficacy expectations and the consequent behaviour as the resultant of the effects of personal and environments factors. This is
confirmed by the social model, which handles disability as a social construct. According to this approach, the need for special education, as an individual feature, does not explain alone the perceived low self-efficacy, it is rather the low grade point average and the lack of access to career guidance represent these 'risk factors', occurring mostly among girls.

**STUDY 4: The explanation of the change of career decision self-efficacy as a result of group career guidance interventions**

The fourth study deals with the change of the career decision self-efficacy of secondary school students and the related dimensions as a result of career guidance interventions conducted in a school environment. The aim of group training sessions was to increase career decision self-efficacy, as the social-cognitive construct of the behaviour's mediator, on an individual level, which is expected to lead students towards the taking the necessary steps in the given areas of career decision.

**4.1 Participants and protocol**

10- and 11-former secondary school students participated in the interventions and the population of questionnaires both in the experimental and control groups. 290 persons started to populate questionnaires and the data of a total of 198 participants proved to be valid in all the three dates (31.7% of respondents dropped out during the entire research process during a one-month period). A total of 12 group sessions were conducted with the participation of seven secondary schools, comprising a special school (vocational secondary school and grammar school faculty), four grammar schools and two vocational secondary schools. There were 12–13 persons in the intervention groups.

The experimental sample of secondary school students (N=98) consisted of 41 persons of special educational needs and 57 persons of typical development (M_{age}=16.97, SD_{age}=1.12). 46.9% of the sample were female (N=46). The sample included grammar school students (N=60; 61.2%) and students studying in vocational secondary schools N=30; 30.6%) and vocational schools (N=8; 8.16%). As for their residence, 29 of them (29.6%) lived in the capital, 4 (4.08%) in county towns, 45 (45.91%) in towns, and 20 (20.40%) in villages. The average of their grades in the previous school semester was 3.53 (SD=0.67).

The control sample of secondary school students (N=100) consisted of 34 persons of special educational needs and 66 persons of typical development (M_{age}=16.94, SD_{age}=0.90). 52% of the sample are female (N=52). The sample included grammar school students (N=72; 72%) and students studying in vocational secondary schools N=18; 18%) and vocational schools (N=10; 10%). As for their residence, 43 of them (43%) lived in the capital, 6 (6%) in county towns, 37 (37%) in towns, and 14 (14%) in villages. The average of their grades in the previous school semester was 3.85 (SD=0.66).

Both the experimental and the control groups filled in the applied questionnaire package 1–2 days before the group sessions. 2–3 days after the training session they populated the questionnaire package again with the purpose of follow-up, then the population of the questionnaires was repeated after 4 weeks. The students did not participate in other career guidance training until the follow-up period. The interventions lasted for three hours each in line with the school timetable. Altogether 7 experts, who took part in preliminary training beforehand so that the methodology and structure of sessions should be the same among the given groups, lead the group sessions.

As school classes were involved in the examination of the effect of interventions in their own natural environment, I applied a quasi experimental design during the research. Quasi experiments are not entirely real experimental processes as they use groups composed with a non-systematic procedure. They examine groups (here: secondary school classes) created naturally, as a result, no full control may be exercised over the selection and grouping of the participants of the experiment. At the same time these examinations fulfil the criteria of experimental method: there is an experimental intervention (independent variable), whose impact on some dependent variable can be measured. Based on the non-equal control group plan, one natural group receives some experimental treatment (experimental group), while the other natural group does not (control group). The experimental intervention was preceded by a pre-test and followed by a post-test, which were also conducted in the control group (Szkolszky, 2004).
I used the theoretical work of Brown et al. (2003), the study of Yeager and Walton (2011) and the recommendations of Marks and Allegrante (2005) in planning the group interventions, using the paradigm of the social-cognitive career theory as the basis, and also considering the self-efficacy theory of Bandura (1986). My thinking was always centred around a solution-focussed approach (Garner and Valle, 2008; Ratner and Yusuf, 2015). The aim of interventions was to increase career decision self-efficacy. I also placed an emphasis on growing the dedication towards desired results, the proper understanding of future plans and previous successes (through the learning of results of role model and through successes gained from private experiences), personalized positive feedback, the opportunity for self-reflection and the support of the application of learnt information in real life.

4.2 Results and discussion

During the examination of the effects of intervention, I compared the results before and after the group sessions. I examined the change of the group averages with repeated measurement of variance between the dates (Fitzmaurice et al., 2004).

There were no significant differences between the average scores of measured variables in the experimental and the control groups before the intervention. There was no significant difference in the values regarding the gender of participants ($\chi^2(2, N=198)=0.023, p=0.988$) measured in the first time, either, but the scores of grade point average were different ($t(192)=3.41; p=0.001$). The grade point average was higher in the control group ($M=3.85, SD=0.66$). The difference in positivity between the two groups was at a 5% significance level ($t(176)=2.09; p=0.037$) where the positivity score of the experimental group was higher ($M=22.17, SD=4.23$) than that of the control group ($M=20.62, SD=5.60$), however, I did not regard this result as relevant using the Bonferroni correction, considering a 0.005 significance level. The composition of the students participating in the intervention and that of control school classes were the same in all the characteristics examined except for grade point average.

Based on the repeated measures of ANOVA (confidence interval: Bonferroni) I found a significant difference on the variable of CPSES academic self-efficacy ($F(1.76; 310.20)=8.09, p=0.001; \eta_p^2=0.044, OP=0.94$). The degree of impact can be regarded as moderate, while the observed power is high. Group intervention explains 4.4% of the variance of results. The degree of change of academic self-efficacy observed in the experimental group exceeded the change observed in the control group by 3.19 average points in a period of one month, which can be explained by the effect of the intervention. This change shows a linear trend (see Figure 4).

![Figure 4. The change of academic self-efficacy before the intervention (T1), directly after it (T2) and at the date of follow-up (T3) (N_{exp}=89; N_{cont}=89)](image)

4 As compared to the 76 total score of the CPSES academic self-efficacy scale.
After that I made three groups of the sample based on the score of career decision self-efficacy (Hawley and Little, 2007). In order to show the changes occurring as a result of career decision self-efficacy interventions, Wang et al. (2010), who only analysed the data of the low self-efficacy group, applied the method of grouping. The averages belonging to the lowest 33% of the scores in the sample represented the low, the scores in the upper range above the 66% of the scores represented the high, while the scores between 33% and 66% represented the medium self-efficacy group. On this basis, the average score below 3.6 represented the low career decision group (N=66), the high group comprised the average scores above 4 (N=67) and the scores between 3.6 and 4 represented the group of moderate career decision self-efficacy.

During the repeated measures of ANOVA (confidence interval: Bonferroni; post hoc test: LSD) a significant difference could be seen among the students belonging to the experimental group regarding career decision self-efficacy on the three dates as compared to the control group (F(9.44;362.45)=8.25, p=0.000; \( \eta^2=0.177 \), OP=1). The impact measurement can be regarded as high and the observed power is high, so the measured effect is solid. The increase shows a linear trend (see Figure 5). Group intervention explains 17.7% of the variance of the results. There was a significant difference in the growth of CDSES (p=0.024) between the experimental and the control groups in the group of low career decision self-efficacy. Then I did not see neither a significant increase or decrease in the CDSES scale scores in the cases of moderate (p=0.533) and high (p=0.304) career decision self-efficacy groups.

The degree of career decision self-efficacy change observed in the low experimental group exceeded the change seen in the control group by 3.76 average points\(^5\) in a one-month period, which can be regarded as the effect of the intervention.

There was also a significant change in the CFI career choice anxiety factor in the experimental group as compared to the control group (F(8.56; 310.05)=2.41, p=0.013; \( \eta^2=0.062 \), OP=0.91). Here a parabolic change of the effect can be established: anxiety grows in the low career decision self-efficacy group after the intervention, but it decreases after a month, while it first decreases in the moderate and high groups, then increases (see Figure 6). The impact measurement can be regarded as moderate and the observed power is high. Group intervention explains 6.2% of the variance of the results.

The degree of career choice anxiety observed in the experimental group decreased as compared to the change seen in the control group in a one-month period, which can be regarded as the effect of the intervention. There was a trend of decreasing career choice anxiety in the low career decision self-efficacy experimental group as compared to the control group (p=0.071).

Considering the observation of Cohen (1969, pp. 278-280, quoted by Richardson, 2011) the impact measurement of 0.0099 can be regarded as low, 0.0588 as moderate and 0.1379 as high. Consequently, the development in academic self-efficacy can be regarded as stable and moderate. Similarly, the degree of decrease in career choice anxiety can also be considered moderate. The strongest, especially high effect is represented by the development of career decisions self-efficacy in the low career decision self-efficacy group.

There was no traceable difference regarding the results of the intervention between boys and girls, the samples of students of typical development and SEN students, and with regard to previous participation in career guidance training (participated or not) (F(9.52;354.43)=0.98, p=0.452).

\(^5\) As compared to the full CDSES total score of 75.
Figure 5. The change of career decision self-efficacy in 6 groups before the intervention (T1), directly after it (T2) and on the date of follow-up (T3) (N\text{exp}=98; N\text{cont}=99)

Figure 6. The change of career choice anxiety in 6 groups before the intervention (T1), directly after it (T2) and on the date of follow-up (T3) (N\text{exp}=89; N\text{cont}=97)
Based on my findings, career decision self-efficacy grew significantly after the group session as a result of the 3-hour intervention aiming to increase career decision self-efficacy, it persisted after a month, moreover, further increase was seen in a one-month period in the case of groups of low career decision self-efficacy but not the moderate or high ones. The effect of the development of career decision self-efficacy and the related dimensions and competences through interventions was confirmed by several researches (e.g. Bandura, 1986; Luzzo and Taylor, 1994; Betz and Luzzo, 1996; Luzzo et al., 1996; Sullivan and Mahalik, 2000; Lent et al., 2003; Nguyen, 2005; Betz and Borgen, 2009; Fouad et al., 2009; Wang et al., 2010; Koen et al., 2012). The study of Wang et al. (2010) is the closest to the structure of my research. They found a large increase in the CDSES scores of the low career decision self-efficacy group as a result of a group intervention session lasting for several weeks among students of higher education.

The CDSES and CFI career choice anxiety scores of the moderate and high career decision self-efficacy groups did not change significantly as a result of the intervention. The stagnating results suggest that intervention may help in the sustenance of career decision self-efficacy and the prevention of decrease. Students of moderate and high career decision self-efficacy may also benefit from group sessions in order to uphold the current level of their self-efficacy. If the students who are originally 'better performers' fail to put energy in the extension of their self-evaluation, the collection of career information and the specification of their goals, the scores of these areas may decrease, even because the related knowledge must be continuously updated with special regard to labour market information (Koen et al., 2012).

Based on the intervention results we can see that the elements aiming to increase career decision self-efficacy also have an effect on academic self-efficacy. This supports the positive effect of career guidance programmes reflected in educational attainment, which are also evidenced by previous research (e.g. Betz and Luzzo, 1996; Brown et al., 1999; Dykeman et al., 2003a). Several studies emphasize that career building knowledge helps keeping students in education, increases the rate of employment and the amount of salary for young people belonging to the target risk group, moreover, it has significant labour market gains among secondary school students (Bishop, 1987; Brown et al., 1999). Peterson (1993) also confirms that career-guidance interventions strongly contribute to learning and social adaptation through the increase of career decision self-efficacy, which may decrease drop-out. The increased career choice anxiety immediately following the intervention may arise from the growing awareness of career decision issues and the encounter with missing competences. One month later, however, as a result of intervention, the drawing up of action plans and decision making commence, the awareness of the steps already taken becomes higher, which may result in the termination of indecisiveness and anxiety occurring in the process, while career decision self-efficacy steadily grows.

The change pattern of certain dimensions varies in a one-month period. One month after the intervention the steady growth of career decision self-efficacy and academic self-efficacy can be observed. This is probably due to the fact that the students made efforts to see their values and abilities clearly, get to know the occupations that interest them, think over several alternatives regarding their future, change the directions that they do not regard as appropriate and take steps in order to broaden their knowledge for better success. Koen et al. (2012) had similar findings with regard to the dimensions of career adaptation, where development was also observed in the areas of decision, planning, collecting career information and problem solving, and further growth could be seen in the areas of decision making and problem solving during a six-month period. According to the results, the effects become stronger in the long run. The fact that these areas need some time to ‘ripen’ is probably the result of the learning process that was started by the intervention built on group work.

Based on my findings, career guidance intervention that is well-focussed in its structure, content and timing has a significant impact on the increase of career decision self-efficacy. In the organisation of content and the selection of measurement tools, I considered the recommendation of Whiston et al. (1998), according to whom the more the content of intervention corresponds to the result indicators to be measured (e.g. the application of questionnaires related to decision making skills, if we want to focus on these) and the intervention is tailored to the level of development (preparedness) of the client, the more apparent the development becomes as a result of interventions. It is worth noting that apart from the increase of career decision self-efficacy, academic self-efficacy also grew and career choice anxiety also decreased, and considering the indicators of these, the change may be regarded as significant. If secondary schools could spend three hours on development in this area per semester, its efficiency would be rather high, especially among students of low career decision self-efficacy, but it would also be important for students of moderate or high career decision self-efficacy owing to the sustainment of the previously achieved level. If we further improve results by providing group training sessions, we can provide a solid basis for a successful career choice behaviour in the long run.
CONCLUSIONS

All the findings support the conclusion that, from among the individual characteristics, the positivity and the anxiety factor of career choice indecisiveness of secondary school students are of key importance in their career decision self-efficacy, while career guidance services have a crucial role among environmental features. Academic and social self-efficacy and the grade point average play an important role in the intermediation of all these effects through academic self-efficacy. By including career guidance intervention, which increases career decision self-efficacy, and personal factors among proximate environmental effects, an alternative model that is built on the self-management model originating from the social-cognitive model is recommended for secondary school students (Lent and Brown, 2013) (see Figure 7).

Based on the model, the anxiety factor of career choice indecisiveness, which can be connected to a current state of development, and positive orientation (both being parts of the personal factors), and career guidance intervention focussed on career decision self-efficacy (as part of environmental factors) have a direct effect. In contrast, previous school career training sessions and grade point average have (through academic and social self-efficacy) an indirect effect on career decision self-efficacy. These characteristics are expected to influence career decision self-efficacy through academic and social self-efficacy and mediate the behaviour related to career decisions through career decision self-efficacy. This behaviour includes the setting of objectives related to career decision, taking the necessary steps, which are realised in the career decisions results. Furthermore, the career decision self-efficacy has an impact on academic and social self-efficacy. The results in career decisions include actions to broaden self-evaluation, collect career information, select aims, prepare concrete plans solve problems and search for alternatives. The increase of career decision self-efficacy probably results in, among others, the broadening of exploration, the selection of optimal paths of further education (changing the direction), the preparation of the portfolio for job search as well as the deepening and broadening of decision making skills.

My theory applies for students with special educational needs increasingly well in the context of social-cognitive career theory. It was an important premise that there is a significant heterogeneity in the perception of disability, life experiences, the educational and social environment and the future endeavours determining all these (Enright et al., 1996). In the third study, based on the results obtained by latent profile analysis, the degree of perceived disability the SEN students included in the 'low performer' group is higher. This confirms the fact that the use of resources in career building largely depends on the individuals' interpretations, expectations and beliefs in their own abilities, however, it does not depend on the degree of disability and developmental deficiency. It was also evidenced in the second study that there is no

Figure 7. The self-management model of secondary school students
(the plus effects built into the figure in addition to the self-management theory is marked by a coloured arrows; dark blue: direct effect, light blue: indirect effect, purple: direct and indirect effect as well
(Source: my own editing based on Lent and Brown, 2013, p. 562)
apparent difference in career decision self-efficacy based on the degree of disability (deficiency). The segregated or integrated educational environment alone does not make a difference in the career decision self-efficacy of students. If we decrease external obstacles and increase the availability of services, the students’ assessment of their own disability can become more positive. According to Brown and Krane (2000), building up supportive resources is a critical point in the success of career guidance. The interventions increasing support and helping students to overcome obstacles may strengthen students’ belief in their self-efficacy, by which the chosen aims can stabilize, and sustain their efforts to reach the goals. The key to increasing the self-efficacy of students belonging to the low career decision self-efficacy group lies in the provision of equal opportunities to access career guidance activities and gain work experience. In addition, the self-efficacy of supporting persons needs to be increased and the approach of parents and teachers need to be formed appropriately as part of this.

The pursuit of activities related to experience-based career exploration, the development of positive attitude towards working and the active participation of counsellors in the strengthening of social support have significant roles. By the application of these strategies, not only career decision self-efficacy but also the positive expectations of results and setting objectives regarding decisions are supported. Encouraging students to set positive educational and employment endeavours, i.e. the support of optimistic expectations of results further increases the self-efficacy experience, which orients students towards successful implementation. A further precondition of taking major steps towards success is the presence of positive role models and the experience of a sense of success.

The majority of European countries believe in a cost-effective lifelong guidance structure, which is based on the specification of required service levels. This model determines what intervention various people need and require, that is, who can find their way alone and how many people need a more intensive support. If the measurement of career decision self-efficacy was involved in the methodology of schools and servicing institutions, individuals’ preparedness for making career-related decisions could be assessed on three levels. People with high career decision self-efficacy can use such services and gain information individually, clients with moderate decision self-efficacy may need short-time supported services, while those belonging to low career decision self-efficacy groups could use intensive services (e.g. individual counselling and long-term group counselling). Based on the results, the number of persons requesting intensive support could be decreased if group career guidance interventions were introduced in the school career orientation practice as prevention programmes lead by well-trained teachers or school psychologists. The more students are offered participation in short training sessions increasing and sustaining self-efficacy, the fewer students are expected to need intensive, individual guidance requiring the participation of experts later. The efficiency of the group method is inevitable even because of the opportunity for students to learn from each other.

It is of outstanding importance to recognise the signs that forecast if students intend to quit their studies for some reason, but they do not have any plans or aims as to the next steps of their career. At this point there is still a chance of prevention for the school to identify the areas where they can interfere in the process. An indicator system can be created to recognise the dangers concerning the later employment of students in time and strategies can be devised for the solution. Schools must find the means by which they can make corrections, give students help to catch up with others, move on and handle transitions (Kőpatakiné et al., 2007). The decrease in academic and social self-efficacy can result in the occurrence of learning and motivation issues, which may have an effect on self-efficacy related to career decision areas. Incomplete school terms or the exclusion of further education and the lack of preparation for the entry to the labour market can significantly decrease the chance of a seamless future career building.

The application of the intervention scale measuring career decision self-efficacy may contribute to the experiences of an early indicator and intervention system that can be used for the prevention of educational drop-out or later employment issues. Interventions increasing the self-efficacy of adolescents at the earliest possible age will most probably appear as protective factors against drop-out of education or future unemployment. As a result of short-term intervention increasing career decision self-efficacy, a moderate and stable development can be achieved in academic self-efficacy. If career guidance training sessions are supplemented by programme elements that strengthen and motivate learning, the impact measurement can probably be increased further. The examination of career development patterns has important conclusions for the systems and services of career guidance. Based on the results we can conclude that the factors influencing career decision self-efficacy support most of the theses of social cognitive career theory in the case of adolescents. In accordance with the presented model of self-management, career decision self-efficacy has a significant intermediary role in career decision-related behaviours determined by well-specified objectives.
Literature referenced in the theses


