

Increasing the career choice readiness of young adolescents: an evaluation study

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Abstract A career workshop that applies models of the Cognitive Information Processing Approach (Sampson, Reardon, Peterson, & Lenz, 2004) and incorporates critical ingredients (Brown and Ryan Krane, 2000) to promote the career choice readiness of young adolescents was developed and evaluated with 334 Swiss students in seventh grade applying a Solomon four group design with a three-month follow-up. Participants significantly increased their performance in terms of career decidedness, career planning, career exploration, and vocational identity. Implications for evaluation research and counselling practice are presented.

Résumé Améliorer l'état de préparation au choix de carrière chez de jeunes adolescents: une étude d'évaluation. Un atelier "carrières" qui applique des modèles se rattachant à l'Approche du Traitement Cognitif de l'Information (Sampson, Reardon, Peterson, & Lenz, 2004) et qui incorpore des éléments critiques (Brown and Ryan Krane, 2000), visant à favoriser la préparation au choix de carrière de jeunes adolescents, a été mis sur pied et évalué sur 334 étudiants suisses de septième année en appliquant un plan expérimental de type Solomon à quatre groupes avec un suivi à trois mois. Les participants ont amélioré de manière significative leurs performances en termes de décision, de planification et d'exploration de carrière, ainsi que d'identité professionnelle. On présente les

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implications de cette étude pour la recherche relative à l'évaluation et aux pratiques de conseil.

Zusammenfassung Förderung der Berufswahlreife bei Jugendlichen: Eine Evaluationsuntersuchung. Ein Berufswahl-Workshop unter Anwendung von Modellen des Kognitiven Informationsverarbeitungsansatzes (Sampson, Reardon, Peterson, & Lenz, 2004) sowie unter Einbeziehung sog. “wesentlicher Elemente” (Brown and Ryan Krane, 2000) zur Förderung der Berufswahlreife bei Jugendlichen wurde entwickelt und mit 334 schweizerischen Schülern der 7.Klasse bei Anwendung eines 4-Gruppen-Untersuchungsdesigns nach Salomon mit einer Nachuntersuchung nach 3 Monaten evaluiert. Die Teilnehmer entwickelten in signifikanter Weise ihre Ergebnisse im Hinblick auf ihre Berufsentscheidung, Laufbahnplanung, Berufserkundung und berufliche Identifikation. Schlussfolgerungen für Evaluationsuntersuchungen und die Beratungspraxis werden vorgestellt.

Resumen Mejora de la Disposición de los Jóvenes Adolescentes para la Elección de la Carrera. Se desarrolló y evaluó un taller de orientación para la carrera que aplica los modelos del Enfoque Cognitivo de Procesamiento de la Información (Sampson, Reardon, Peterson, & Lenz, 2004) e incorpora ingredientes críticos (Brown and Ryan Krane, 2000) para promover la disposición (preparación) de los jóvenes adolescentes respecto a la elección de carrera—evaluando a 334 estudiantes suizos de 1° de la ESO, aplicando un diseño experimental Solomon de cuatro grupos con un seguimiento de 3 meses. Los participantes aumentaron su rendimiento en términos de decisión sobre la carrera, planificación, exploración e identidad vocacional. Se presentan las implicaciones para la investigación evaluativa y para la práctica de la orientación.

Keywords Career counselling · Career choice readiness · Outcome research

Introduction

Choosing a vocation can be regarded as one of the major developmental tasks in adolescence (Super, 1990). Within the Swiss educational system, two-thirds of the students starts a vocational education after mandatory school upon finishing the ninth grade. By the end of grade eight/beginning of grade nine, students have to apply for one of over 200 available vocational education options. Each of them will train a student for two to four years in a specific occupation, where about two-thirds of the time is spent in a private company and the rest in a vocational high school (Bundesamt für Berufsbildung und Technologie [BBT], 2006). Each of these “choices” is circumscribed by a rather restrictive set of necessary scholastic aptitudes and abilities and by the availability of a position in private companies. In most regions, schools at the secondary level (grades 7 to 9) are divided among classes with advanced and basic requirements. This also has an influence on the available options since certain vocations and general high school are only available to students from school classes with advanced requirements. The one-third of

students who do not start an apprenticeship continue in a general high school with only minor specialisations available (e.g., slightly more mathematics or language focus) and are prepared for college education.

In this education system young adolescents, aged 14 to 15, are required to go through an important career decision-making process. To support students in this task, a theoretically derived career intervention was conceived for students near the end of grade seven to improve their career choice readiness (Super, 1990) and the career decision-making process in the eighth grade. The intervention programme corresponds to what Vondracek, Lerner, and Schulenberg (1983) called *developmental intervention*, with a focus on optimization and prevention in developmental processes. The type of programme is in line with the increased awareness of the importance of early and systematic support for a successful school-to-work transition in Switzerland (cf. Eidgenössisches Volkswirtschaftsdepartement, 2005). It also responds to the international trend to create a stronger link between theory, practice, and accountability in career counselling (cf. Herr, Cramer, & Niles, 2004). The intervention was also intended to be cost-efficient and applicable to a wide range of students, hence corresponding to the increased attention to productivity in career guidance (cf. Watts & Dent, 2006).

Career intervention outcome research

Despite the fact that several evaluation studies for career interventions with adolescents have been published recently (e.g., Nota & Soresi, 2004; Repetto, 2001; Turner & Lapan, 2005), there is still a general need for rigorously conducted outcome studies to enrich the international literature (cf. Bernes, Bardick, & Orr, 2007). This seems especially true since recent international reviews noticed a decline in published counselling evaluation research (Brown & McPartland, 2005; Whiston, Sexton, & Lasoff, 1998). An overview of the existing studies (e.g., c.f. Brown & Ryan Krane, 2000) also reveals several shortcomings in the current evaluation research which are addressed by the present study: (a) most studies are conducted with college students or less frequently college-bound high-school students. Studies with young adolescents and non-college bound participants are rare; (b) most studies do not apply a follow-up to establish the long-term effects of the intervention; (c) the potential influence of a pre-test on the outcome measures is hardly ever evaluated; (d) interventions which systematically incorporate findings from recent evaluation research in terms of critical ingredients (Brown & Ryan Krane, 2000; Brown et al., 2003) have so far not often been conceived and evaluated; (e) the “Uniformity-Myth” (cf. Fretz, 1981) has still not been broadly challenged and most outcome studies do not evaluate possible differences in effectiveness for different groups of participants.

Present study and hypotheses

The present study addresses each of the above mentioned issues by using young, mainly non-college bound adolescents as participants, conducting a follow-up

measurement, evaluating the possible influence of a pre-test, evaluating an intervention, which systematically incorporates recent meta-analytic findings, and analyzing possible differences in effectiveness for different groups of students.

Participants in the present study are distinguished in terms of their gender, school-type, and nationality. There is research in Switzerland, which indicates that these different groups of students are also different in their career choice readiness development (Hirschi & Läge, 2007) and that these three factors play a significant role in the school-to-work transition: male students, students from classes with advanced requirements and students with Swiss nationality have a better chance of obtaining an apprenticeship after school; even after controlling for objective ability (Haeblerlin, Imdorf, & Kronig, 2004). Since the workshop was conceived as a generally applicable developmental intervention, it is considered important that it is effective for different groups of students. Hence, it also seems important to consider these three influential demographic variables when evaluating the differential effectiveness of the intervention.

It is expected that compared to a non-treatment group the intervention can significantly increase the career choice readiness of participants, immediately and at least up till three months after the intervention. It is further assumed that the effects do not differ depending on the participants' gender, attended school-type, or nationality. Finally, it is assumed that the pre-test does not have a significant influence on the outcome measures.

Method

Subjects

Participants were 368 secondary school students from 5 different schools and 16 different school classes from a rural area in the German speaking part of Switzerland. At the time of the pre-test, intervention, and post-test, participants were near the end of grade seven and at the follow-up they were at the beginning of grade eight. 334 students (91%) participated on all three measurement points. They ranged from 12 to 16 years of age ($M = 14.14$, $SD = 0.70$). At the post-test, 6 students did not participate because they were not attending class when the data were collected. At the follow-up, 28 students did not participate, mainly because these students repeated one grade and were no longer in the same class as the other participants. These students do not differ on the four outcome measures at the post-test from the remaining students ($F(4, 351) = 0.829$, $p = .507$, $\eta^2 = .009$). The final sample of 334 students consisted of 156 students in the treatment group (32% without pre-test; 49% male; 63% advanced requirements, the other 37% basic requirements; 82% Swiss, the other 17% other Nationalities, many from South-Eastern Europe) and 178 in the control group (23% without pre-test; 51% male; 63% advanced requirements; 83% Swiss). The unequal distribution among the pre-test and non pre-test groups was intentional because some analyses could only be conducted with students who completed a pre-test (i.e., increase from pre-test to post-test), so this group of students was designed to be as large as possible. The groups with and without

pre-test do not significantly differ in their distribution of gender, school-type, or nationality.

Measures

The degree of career choice readiness was measured with regards to four aspects. All scales are well established measures in German language and were retrieved from official adaptations of internationally well-known instruments. However, they are not strict translations of these measures since empirical analyses of the respective authors during scale construction showed that new items had to be conceived in order to reach satisfactory results in reliability and factor structure. Thus, while the scales are supposed to measure the same constructs as the originals, no direct comparison on an item-level is possible.

Career decidedness

The degree of decidedness and commitment in career decision-making was measured with the respective scale of the German adaptation of the *Career Maturity Inventory* (CMI—Crites, 1973; Seifert & Stangl, 1986). The scale consists of 12 items (e.g., “I don’t know exactly what to do in order to choose the right occupation”) and answers are indicated on a four-point scale ranging from 1 (*not true*) to 4 (*true*). Several studies (e.g., Bergmann, 1993; Hirschi & Werlen Lutz, 2007; Seifert, 1993; Seifert & Stangl, 1986) indicated students with higher career decidedness on this measure also show more overall career maturity, suffer less from stress in career decision-making, are more active in applying for an apprenticeship after school, and are more successful in actually finding an apprenticeship. The Cronbach’s α for the present sample were .86, .86, and .87 for the three measurement points, respectively.

Career planning

The degree of career planning was measured with the respective scale from the German adaptation of the *Career Development Inventory* (CDI—Seifert & Eder, 1985; Super, Thompson, Lindeman, Jordaan, & Myers, 1981). The scale consists of 22 items tapping the amount of time and thoughts invested in career planning and answers are indicated on a five-point Likert scale ranging from 1 (*very few*) to 5 (*a lot*). Different studies (e.g., Seifert, 1993; Seifert & Eder, 1985) reported that students with higher scores on this measure also show more career knowledge and decidedness, are more likely to obtain an apprenticeship after school, and are more likely to realize their aspired major in university. Cronbach’s were .90, .90, and .88, respectively.

Career exploration

The degree of career exploration was measured with the respective scale from the German adaptation of the CDI (Seifert & Eder, 1985; Super et al., 1981). The scale

asks students to indicate, whether they would consult different sources of information for their career development (e.g., my father, my teacher, job-shadowing) and how much useful information they have already obtained from these sources. Answers are given on a five-point Likert scale ranging from 1 (*none*) to 5 (*very much*). Studies (e.g., Hirschi & Werlen Lutz, 2007; Seifert, 1993; Seifert & Eder, 1985) showed the scale's positive correlation with career decidedness, knowledge about the world of work, or success in finding an apprenticeship. The internal consistency was .85, .86, and .84 over the three measurement points, respectively.

Vocational identity

To measure a student's clarity of personal interests, strengths, and values, the German adaptation of the *Vocational Identity Scale* (Holland, Daiger, & Power, 1980; Jörin, Stoll, Bergmann, & Eder, 2004) was used. The scale consists of ten items and students can indicate how much the statements (e.g., "I'm not sure yet which occupations I could perform successfully") resemble their personal situation ranking from 1 (*not at all*) to 5 (*completely*). Studies show that the scale is positively associated with career decidedness, interest differentiation and congruence (Hirschi & Läge, 2007) and that students with higher scores on this measure were also more likely to find an apprenticeship after school and were better able to realize their original career aspiration (Hirschi & Werlen Lutz, 2007). Cronbach's Alpha was .82, .85, and .86, respectively.

Procedure and research design

The five participating schools were randomly assigned to the treatment (two schools) or the control group (three schools) using a quasi-experimental, non-equivalent groups design (cf. Heppner, Kivlighan, & Wampold, 1998). Although such a research design does not permit as strong an internal validity as a randomized assignment of individuals, it is frequently applied in field research because the groups already existed before the research began. Students within the five schools were compared with MANOVAs taking the four outcome measures as dependent variables. The results of these analyses showed that no significant differences between the five schools exist at the pre-test on the outcome measures ($F(16, 944) = 1.135; p = .317; \eta^2 = .019$).

Schools and not single classes were chosen because we expected a greater acceptance among students and teachers to participate if their whole school were treated equally in relation to the chance of receiving the specific career intervention. Thanks to close collaboration with the teachers involved, all students from the selected treatment classes were able to attend the intervention during regular school-time.

The applied Solomon (1949) four-group repeated measures design with a three month follow-up used two treatment and two control groups. One of each completed a pre-test while the other two only completed the post-test and the follow-up. This

research design allows for the influence of the pre-test to be evaluated independently of the treatment effect. Within the treatment and the control group, two school classes were each randomly assigned to the non pre-test groups.

Three weeks prior to data collection, parents of all participating students were informed about the purpose of the study through a written statement. Students were then administered the questionnaires tapping career choice readiness and were asked to indicate gender, school-type, and whether they have a Swiss or other nationality. Students assigned to the pre-test groups completed the questionnaire approximately three to four weeks prior to the treatment (due to logistic reasons because of an interfering spring break). In total, 15 workshops with a total duration of 5.5 hours were held at the local career centre on two half-days with about ten days time between the two parts. The attending groups consisted out of 9 to 13 students ($M = 11.47$, $SD = 1.46$) from one school class with mixed gender and nationality. To ensure maximal treatment integrity, all 15 workshops were conducted by the first author of this study, an experienced career counsellor with adolescents, following a detailed step-by-step instruction manual within a time period of four weeks.

Between two and three weeks after the intervention or approximately six weeks after the pre-test, respectively, students completed the same questionnaires as applied in the pre-test. Twelve weeks after the second measurement point, every student again completed the same questionnaires. All students completed the questionnaires on all three measurement points during an ordinary school lesson under the supervision of their classroom teacher or the first author of this study.

The intervention

Theoretical background

The theoretical foundation of content and process of the intervention was derived from the Cognitive Information Processing (CIP) Approach to career guidance (Peterson, Sampson, & Reardon, 1991; Sampson, Reardon, Peterson, & Lenz, 2004). According to the CIP approach, clients should be assisted in developing the ability to solve career problems independently. Both as a theoretical model and practical guide for counsellors and counselees the CIP approach presents the Pyramid of Information Processing Domains as a model of three critical contents for career decision-making: (a) Career decision-making knowledge (self-knowledge and occupational knowledge), (b) decision-making skills (generic information processing skills), and (c) executive processing (meta-cognitions in terms of self-talk, self-awareness, and control). The approach also presents a model for the career decision-making process, the CASVE-Cycle, which provides a practical example of generic information processing in career decision-making. The cycle describes successful career decision-making as consisting of five generic phases: (a) Communication: Knowing I need to make a choice; (b) Analysis: Understanding myself and my options; (c) Synthesis: Expanding and narrowing my list of occupations; (d) Valuing: Choosing an occupation; and (e) Execution: Implementing my choice. The cycle finally goes back to the Communication phase “Knowing

I made a good choice”. These models lay the foundation for the content and process of the teaching modules and were introduced to the students as guiding principles for their own career decision-making process.

Another major theoretical background for the intervention was the recent findings from meta-analytic studies on career interventions effectiveness. Specifically, based on the findings by Whiston, Brecheisen, and Stephens (2003), a structured group workshop was selected as treatment modality, since this seems to be “... the most empirically and cost-effective interventions for many clients” (Miller & Brown, 2005, p. 446). Also, the critical ingredients for effective career interventions as identified by Brown and Ryan Krane (2000; Brown et al., 2003) were systematically incorporated into the teaching modules as described below.

Intervention content

Nine teaching modules were conceived as presented in Table 1 and were carried out consecutively. The first day started with module one and focused on introducing the personal relevance of the upcoming career decision-making process for the participants and inviting them to reflect on their personal current state in the career decision-making process. Module two introduced the Pyramid of Information Processing Domains and the CASVE cycle with practical examples as guidelines for their career decision-making process. In module three, students undertook a brief self-assessment and conducted an interview with one classmate regarding their interests and strength according to Holland’s (1997) RIASEC typology. In module four, the counsellor gave the participants a brief overview of the existing vocational and educational possibilities and invited them to ask questions about personally interesting options. Finally, the students received the small homework assignment that they should consult a website (<http://www.berufsberatung.ch>) for more detailed information about their options and talk to their parents/guardians about the content of the workshop and their personal career aspirations. The next day the workshop started within module five. Students were invited to elaborate on personally interesting and suitable careers/vocations with the help of their previously derived self-estimated RIASEC type and a simplified handbook of vocational codes. In module six the participants undertook a structured in-depth search about two of their preferred vocational options with the materials provided in the local career library and on the internet. Module seven then guided the students through a structured exercise to compare these two options for positive and negative aspects for them and for important others. Module eight focused on helping them specify all available resources, both personal and organizational, which can support their career decision-making process. They were also guided to make a written and specific plan about their next steps in the career decision-making process. The final module nine was used as the closing session where the content of the whole workshop was reviewed.

Based on the CIP approach the modules thus addressed self-knowledge (module 3, applying Holland’s (1997) RIASEC model), occupational knowledge (modules 4 and 6), decision-making skills (modules 2 and 7), and thinking about the career

Table 1 Contents of the career workshop

Module [duration in minutes]	Goals/content
<i>1st Session</i>	
1. Start [15]	Get to know the other members of the group. Evaluate one's own phase in the career decision-making process
2. Domains and process of career decision-making [30]	Learn which domains are essential in career decision-making (Pyramid of Information Processing Domains) and how a good career decision-making process is executed (CASVE-Cycle). Presentation of two models who mastered the career decision-making process successfully
3. Know myself [30]	Learn to better assess one's own vocational interests, skills, and values applying self-evaluation with Holland's (1997) RIASEC Model. Counsellor gives individualized feedback
4. Know my options [20]	Learn about existing career options after school and important characteristics of career fields. Counsellor provides up-to-date information about the world-of-work and encourages obtaining information outside of the workshop
<i>2nd Session</i>	
<i>[Homework assignment: Obtain information about two interesting vocations from a career website]</i>	
5. Identify suitable occupations [30]	Create a list of several interesting vocational alternatives with help of one's RIASEC Code (elaboration); then reduce the alternatives to a small number for further exploration (crystallization). Counsellor gives individualized feedback on promising possibilities
6. In-depth search about two career alternatives [60]	Acquire information about work contents and requirements of one's favourite career alternatives using resources in the local career library
7. Comparison of career alternatives [20]	Identify positive and negative aspects of one's favourite career alternatives. Compare alternatives in writing
8. Plan for further career decision-making [25]	Reflect on which persons and institutions can help in career decision-making to develop social support network. Formulate a tentative written plan about further steps in the career decision-making process
9. End and evaluation [15]	Evaluate the personal learning in the workshop. Evaluate one's current phase in the career decision-making process

decision-making process (modules 1, 8, and 9). The workshop guided the participants along the phases of the CASVE-Cycle Communication (module 1), Analysis (modules 2, 3, and 4), Synthesis (modules 5 and 6), Valuing (module 7), Execution (module 8), and back to Communication (module 9).

The seven critical ingredients identified by Brown and colleagues were included by (a) presenting models of similar students who successfully mastered the career decision-making task (module 2), (b) giving individualized feedback on their career decision-making process (modules 3 and 5), (c) giving encouragement to obtain vocational information outside of the intervention (module 4, and homework), (d) providing up-to-date information in the intervention about career possibilities (modules 4 and 6), (e) comparing in writing different career options (module 7), (f) making written plans about future steps in career decision-making (module 8), and (g) assisting in developing a social support network (module 8).

Results

Effect of the pre-test

The study applied a Solomon four-group design to evaluate the influence of the pre-test on the outcome measures. Two Multivariate Analyses of Variance (MANOVA) with the four career choice readiness measures as dependent variables by pre-test-group were conducted to assess the possibility of a significant influence of the pre-test on the outcome measures; both for the treatment and the control group. Neither at the post-test (treatment group $F(4, 150) = 1.218$; $p = .306$; $\eta^2 = .031$; control group $F(4, 172) = 0.525$; $p = .717$; $\eta^2 = .012$), nor at the follow-up (treatment group $F(4, 147) = 2.156$; $p = .077$; $\eta^2 = .055$; control group $F(4, 167) = 1.728$; $p = .146$; $\eta^2 = .040$) were significant influences discovered.

To test whether the pre-test had significant interactions with the treatment, two treatment by pre-test MANOVAs with the four outcome measures as depended variables were conducted: neither at the post-test ($F(4, 325) = 0.331$; $p = .857$; $\eta^2 = .004$) nor the follow-up ($F(4, 317) = 1.102$; $p = .356$; $\eta^2 = .014$) occurred any significant interactions. Thus, the hypothesis that the pre-test has no significant influence on the treatment outcome measures could be confirmed.

General effectiveness of the intervention

To evaluate the general effect of the workshop, three MANOVAs were conducted to compare students from the treatment group to those in the control group for differences of the four outcome measures at the pre-test ($F(4, 236) = 0.262$, $p = .902$, $\eta^2 = .004$), post-test ($F(4, 372) = 11.34$, $p < .000$; $\eta^2 = .122$) and the follow-up test ($F(4, 319) = 4.52$, $p = .001$; $\eta^2 = .054$). As the results show, the two groups showed no differences prior to treatment, but significantly differ at both post-intervention measurement points with the treatment group showing higher scores on the outcome measures. Table 2 presents the means, standard deviations, and effect sizes (Cohen's [1969] d) for each of the four outcome measures. As can be seen, no significant differences occurred at the pre-test for any measure between the treatment and the control-group. At the post-test, students from the treatment group showed significantly higher values than the control-group for all outcome measures. The obtained effect-sizes ($M = 0.44$, $SD = 0.12$) range between 0.30 (vocational identity) and 0.59 (career exploration). At the follow-up students from the treatment group still scored higher for every measure, although the differences for career decidedness and career planning are no more significant. The effect-sizes are smaller than at the post-test ranking from 0.07 to 0.39. As can also be seen in Table 2, the general decrease in effect size in the follow-up is the result of a significant increase of the control group for the outcome measures from the post-test to the follow-up test, and not because the treatment group decreased again in career choice readiness.

Table 2 Values of the different outcome measures at pre-test, post-test, and follow-up for the treatment- and the control-group

Measure	Group	Pre-test (N = 242)			Post-test (N = 334)			Follow-up (N = 334)			
		M	SD	t	M	SD	t	M	SD	t	d
Career decidedness	Treatment	31.98	6.35	-0.66	36.17	6.12	4.27***	35.92	6.54	0.66	0.07
	Control	32.03	6.56		33.21	6.50		35.47	6.12		
Career planning	Treatment	64.57	13.98	0.12	71.88	13.27	3.61***	75.31	12.96	1.61	0.18
	Control	64.36	13.58		66.68	12.91		73.12	11.68		
Career exploration	Treatment	79.52	14.49	-0.12	89.67	14.95	5.59***	96.34	14.09	3.62***	0.39
	Control	79.74	12.88		81.09	13.11		90.98	12.79		
Vocational identity	Treatment	32.27	7.80	0.60	35.78	7.67	2.76**	36.73	7.26	1.66*	0.18
	Control	32.03	6.56		33.51	7.34		35.42	7.12		

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Differential evaluation

To analyze whether the intervention has different effects for different groups of students, mixed model treatment \times group \times time MANOVAs over all three measurement points with the four outcome measures as dependent variables were conducted. Since all three measurement points were incorporated, only the two groups with a pre-test could be included in the analyses ($N = 242$). No significant interaction over time with treatment by gender ($F(4, 227) = 1.174$; $p = .320$; $\eta^2 = .020$), nationality ($F(4, 227) = 0.613$; $p = .654$; $\eta^2 = .011$), or school-type ($F(4, 227) = 0.533$; $p = .712$; $\eta^2 = .009$) were observed. Thus, the hypothesis that the intervention shows no differences in effect for the three assessed groups of participants could be confirmed.

Discussion

The Swiss educational system places special demands on adolescents' career decision-making. They have to master the task of choosing a vocation at a comparatively early age and within a rather short amount of time. To support students in this task, a theoretically derived career intervention was developed and evaluated for its effectiveness. Models of career decision-making from the Cognitive-Information-Processing (CIP) Approach (Peterson et al., 1991; Sampson et al., 2004) together with findings from recent meta-analyses (Brown & Ryan Krane, 2000; Brown et al., 2003) provided the theoretical background. A Solomon (1949) four group design with a three-month follow-up was applied to evaluate the effectiveness of the intervention while controlling for possible effects of the pre-test.

While most existing career intervention outcome studies did not systematically evaluate the effect of a pre-test on the outcome measures, this was possible in the present study thanks to a refined research-design. The results showed, however, that the pre-test did not have a significant effect on the outcome measures and did not result in a significant interaction with the treatment. This result is important to notice because it implies that the simpler pre-test/post-test design could also be rightfully applied in career intervention outcome research.

As the evaluation study shows, participants showed a significant increase in career choice readiness after the intervention in terms of the depended variables career decidedness, career planning, career exploration, and vocational identity. The obtained effect sizes are comparable to the average weighted effect-sizes of other career interventions, which are about 0.30 to 0.34, as reported in meta-analytic studies (Brown & Ryan Krane, 2000; Whiston et al., 1998). The significant effects of the intervention could still be seen three months after the workshop, when the students were at the beginning of grade eight. However, the students from the no-treatment control group also increased significantly during this period. The reason for their progress might be that grade eight marks the "official" beginning of the career decision-making process within the Swiss educational system. This could result in career development more frequently being brought up as an important topic

for discussion at home and in school which in turn increases the student's thinking about activities in career decision-making.

Apart from the follow-up measure, another major advantage of the present study compared to most other career intervention outcome research is its inclusion of an evaluation of differential effects. Based on existing research, we incorporated group variables of gender, school-type, and nationality in the analyses since these factors have been shown to play an important role in the school-to-work transition in Switzerland (Haeberlin et al., 2004). As the results showed, the intervention indicated no difference in effectiveness between these groups of participating students. This finding supports the utility of a broadly conceived developmental intervention to foster positive development regardless of demographic differences.

Limitations and recommendations for future studies

The present study could show that the models of career decision-making derived from the CIP approach that was basically developed and evaluated with U.S. college students, can also be effectively used to foster career development of younger adolescents in a very different educational system. Also, the study showed that systematic incorporation of critical ingredients when planning an intervention's contents can result in meaningful effects even for a short group-based career intervention. Furthermore, the study showed that such an intervention can significantly increase the career choice readiness of a diverse group of students, which makes it very convenient to apply in practice. These findings should encourage practitioners around the world to apply these recent theoretical advantages in planning and evaluating career interventions.

One limitation of the study is that the intervention was not directly compared to other already existing interventions in a direct comparison (e.g., cf. Brown & McPartland, 2005; Brown & Ryan Krane, 2000). The high effect sizes for treatment gains, its suitability for a diverse group of young adolescents, and the group setting and brevity of the intervention in this study can be considered as an advantage compared to many existing interventions. However, it is difficult to determine the degree to which the present treatment represents an improvement over other existing career interventions. For the Swiss context, this study is the first case of a clearly established effective intervention with secondary school students applying a rigorous research design and well established outcome measures. The study could thus represent a useful reference point for conceiving and evaluating career interventions. Such subsequent research seems especially important since the specific educational context and group of participating students of the present study might limit the extent to which it can be generalized.

A critical remark on the research design and its limitations to the internal validity of our study is also warranted. As is often the case in field studies, no random assignment of individuals to the treatment or control group was possible. Instead, schools were randomly assigned to the different treatment conditions. Although the analysis of the pre-test data do not support this assumption, it is nonetheless theoretically possible that this might have had a confounding influence on the

outcome measures. Also, all workshops were conducted by the first author of this study and one might be concerned that this might have had an unintended influence on the outcome. We believe, however, that since all workshops were carried out according to a detailed step-by-step treatment manual there should not be significant differences in treatment effects if conducted by other professionals. Nonetheless, it remains for future studies to verify this claim empirically.

Finally, since the intervention was conceived as a developmental intervention to promote positive career development of a wide range of students, practitioners should not forget that it was not designed to address specific at-risk populations. Such interventions might need to be more specifically tailored and possibly more time intensive than the workshop presented herein.

Implications for counselling practice

The study implies that it is possible to construct a theoretically derived career intervention that is able to significantly increase career choice readiness of secondary students regardless of gender, scholastic aptitude, or nationality. Career counsellors can use such interventions to promote the career development of a heterogeneous group of students in a cost-efficient way. Even younger students who are not fully concerned with career decision-making can benefit from such an approach. As the present study shows, they reach a substantially higher level in career choice readiness in a very short amount of time. If one specifically wishes to foster career development of disadvantaged groups of students, the intervention could also be selectively offered to specific groups which could help to equalize their success in the career decision-making process and the school-to-work transition.

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