

Effects of Career Choice Intervention on Components of Career Preparation

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This randomized experimental study ($N = 1,034$) examines both the direct and the indirect effects of the Towards Working Life intervention on 2 components of adolescents' career preparation: preparedness for career choice and attitude toward career planning. The intervention comprised a 1-week workshop program, the proximal goals of which were to enhance 9th graders' career choice preparedness and attitude toward career planning. Participants were assessed at baseline and immediately after the intervention. The results showed that the intervention had directly improved the students' career choice preparedness, which in turn increased positive attitude toward career planning. Implications for both theory and practice are discussed.

Career preparation has been viewed as a major developmental task for adolescents, the successful performance of which improves personal development, social adjustment, and future well-being (Erikson, 1968; Super, 1990). Savickas (1999) summarized that career developmental theories view "awareness of the choices to be made and information and planning that bear on these choices" (p. 334) as the main predictors of successful career choices and smooth transitions from school to work. Since the early work of Crites (1978), career theories generally have stressed two distinct factors that affect educational and vocational decisions and the implementation of career choices (Savickas, 1999). The first is a competence factor. Crites formulated the model of career maturity, which includes five career choice competencies: (a) self-knowledge, (b) occupational information, (c) goal selection, (d) planning, and (e) problem solving. According to the social cognitive approach, the way in which adolescents develop and exercise personal efficacy in the domain of career choice during adolescence and the transition to adulthood can play a key role in setting the course of their life path (Bandura, 2006; Lent, Hackett, & Brown, 1999; Taylor & Betz, 1983). The second is an attitudinal factor,

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which refers to the development of positive attitudes toward career planning and exploration. However, having career choice competencies does not alone guarantee that adolescents will perform successfully in career exploration and planning. Thus, in addition to a sense of efficacy, adolescents need to develop a positive attitude toward career planning (Ajzen, 1988; Bandura, 1977, 2006; Lent, Brown, & Hackett, 1994; Savickas, 1999). These two motivational components complement each other in the prediction of goal-setting and the implementation of behavioral strategies in the domains of career planning and exploration. Consequently, already during basic education, developing the competence in and preparation for overcoming problems, barriers, and setbacks as well as positive attitudes toward career planning and exploration have become proximal goals of interventions aimed at facilitating career choice.

Aims of the Study

The objectives of the present study were to examine both the direct and the indirect immediate effects of a theory-driven career choice intervention on competence and attitudinal factors of career preparation among adolescents. The competence component of the career preparation process in this study is *career choice preparedness*. Career choice preparedness refers to the readiness to take advantage of opportunities and the readiness to deal with barriers and setbacks in the domain of career choice (Sweeny, Carroll, & Shepperd, 2006; Vuori, Koivisto, Mutanen, Jokisaari, & Salmela-Aro, 2008). In the present study, we operationalized career choice preparedness as a combination of two measures: career choice self-efficacy and inoculation against setbacks (Vuori et al., 2008; see also Koivisto, Vuori, & Vinokur, 2010; Vuori & Vinokur, 2005). The concept of career choice self-efficacy used in this study refers to the degree of confidence in one's ability to successfully engage in tasks related to career choice. Career development theorists have generally accepted that self-efficacy belief plays a critical role in the determination of the competence component of career preparation (e.g., Lent et al., 1994; Taylor & Betz, 1983). Inoculation against setbacks refers to anticipatory stress management skills, which help individuals maintain active, goal-directed behavior and well-being when facing barriers or setbacks (Meichenbaum, 1985), and resembles the concepts of coping efficacy (Albert & Luzzo, 1999), barrier coping efficacy (Lent et al., 2003), problem-solving efficacy (Taylor & Betz, 1983), and motivational resilience (Eccles, Vida, & Barber, 2004).

In the expectancy-value approach, attitude toward specific task behavior has been understood as the sum of the expected values of the attributes ascribed to the behavior (Eagly & Chaiken, 1993). Modern social cognitive theories describe evaluations of these attributes in terms of outcome expectations, interests (Lent et al., 1994), and task values (Eccles & Wigfield, 1995, 2002). As indicators of adolescents' positive attitudes toward career planning, we focused on what Eccles and Wigfield (1995, 2002) referred to as *attainment value* and *utility value* in their expectancy-value model of achievement-related choices. Attainment value refers to how important it is to an adolescents' sense of self to do well in tasks related to career planning, for example, educational and vocational choices or the attainment of planned education. Utility value refers to the usefulness of the activity to adolescents' personal future goals or plans, for example, a person's belief that engagement in career planning activities and future education increases his or her possibilities of gaining

a high quality job and a satisfying work career. A person's evaluations of the outcomes of planned behavior have been seen as crucial determinants of attitudes toward transforming intentions, plans, and goals into concrete behavioral strategies (Ajzen, 1988; Lent et al., 1994).

Finally, Lent et al. (1994) proposed an integrative social cognitive career theory (SCCT) that incorporates the contribution of self-efficacy, outcome expectations, and interest into career choice goals and career development. The concept of self-efficacy (Bandura, 1977) in the Lent et al. (1994) model includes a dimension that focuses on coping with barriers and is thus conceptually similar to our preparedness construct. In addition, the concepts of outcome expectations in the Lent et al. (1994) model correspond to constructs of utility and attainment values, which are incorporated in our construct of attitude toward career planning (see Arbona, 2000).

Previous Research on Preparation for Career Choice

Researchers have documented a range of SCCT-driven (Lent et al., 1994) associations between the key variables of career choice preparation and related outcomes. First, career choice-related self-efficacy beliefs have been shown to positively associate with vocational intentions (Fouad & Smith, 1996), career exploration (Creed, Patton, & Prideaux, 2007; Gushue, Scanlan, Pantzer, & Clarke, 2006), actual career-related choices and performance (Betz & Hackett, 1981; Lent, Lopez, & Bieschke, 1993), and career persistence (Lent, Brown, & Larkin, 1984). Low self-efficacy has been shown to be linked with career indecision (Betz & Voyten, 1997; Lopez & Ann-Yi, 2006; Taylor & Betz, 1983) and fear of commitment (Wolfe & Betz, 2004). In addition, career self-efficacy has proved to be associated with attitudinal variables, such as career decision-making attitudes (Luzzo, 1993), vocational outcome expectations, and interest (Lent et al., 2003; Turner & Lapan, 2002). Outcome expectations and interests, in turn, have been shown to complement self-efficacy in the prediction of educational (Lent et al., 1993) and vocational intentions (Fouad & Smith, 1996) and educational choice goals (Lent et al., 2005). Finally, Germeijs and Verschueren (2007) found that high school students' abilities to cope with career decisional tasks predict their subsequent academic commitment and adjustment in higher education, which in turn is associated with successful academic achievement.

Several meta-analytic investigations conducted since the 1980s have shown that career choice interventions have generally had beneficial effects on short-term levels of career preparation outcomes, such as career information-seeking, career maturity, and career options (Brown & Ryan Krane, 2000; Oliver & Spokane, 1988; Spokane & Oliver, 1983; Whiston, Brecheisen, & Stephens, 2003; Whiston, Sexton, & Lasoff, 1998). Recently, boosting self-efficacy beliefs related to career preparation has become a frequently used proximal goal in career choice interventions (for reviews, see Betz, 2007; Gainor, 2006). Using Crites's (1978) five career competencies, Taylor and Betz (1983) formulated the concept of career decision-making self-efficacy. It has been shown that interventions that are based on the four sources of efficacy information (i.e., performance accomplishment, vicarious learning or modeling, managing anxiety, and providing support and encouragement) are considerably effective in boosting career self-efficacy beliefs (for reviews, see Betz, 2007; Gainor, 2006). The social cognitive theories consider attitudinal factors such as task

values (Eccles & Wigfield, 1995), outcome expectancies, and interests (Lent et al., 1994) to be contributors to career behavior. However, to the best of our knowledge, the theory-driven direct and indirect (through self-efficacy) effects of career choice interventions on factors related to career planning attitude have not been previously examined in randomized experimental studies and are therefore the focus of the present study.

Components of Career Preparation as a Proximal Goal of the Towards Working Life (TWL) Intervention

The proximal goals of the TWL group counseling method focus on improving adolescents' career choice preparedness and enhancing positive attitudes toward career planning. Its distal goals are intended to promote career choice and transition to secondary studies and to prevent the impairment of mental health associated with career difficulties among ninth graders completing basic education (Vuori et al., 2008). Vuori et al. (2008) conducted an effectiveness trial of the TWL career choice intervention among ninth graders. The follow-up was conducted 1 year later, when most of the participants had made educational decisions and crossed the transition to secondary studies. Results of the follow-up demonstrated that the intervention fulfilled the distal goal related to the prevention of mental health problems. Participation in the intervention prevented depressive symptoms, according to the follow-up assessment among students who had reported elevated symptoms of depression at the baseline measurement. In addition, the TWL intervention prevented symptoms of school burnout among students who reported both elevated symptoms of depression and learning difficulties (e.g., dyslexia). Finally, the intervention showed that education-related discussions had decreased during the follow-up among those who reported both elevated symptoms of depression and learning difficulties during the baseline assessment (Vuori, Koivisto, Mutanen, Salmela-Aro, & Jokisaari, 2009). We interpret the latter result as indicating that the intervention benefited the subgroup or risk group in question and made the participants feel a less acute need for education-related discussions and support-seeking after the transition to secondary studies. Thus it seems that participation in the TWL workshops possibly helped those with learning difficulties or symptoms of depression to navigate the transition to postsecondary studies. The present study aimed to add to the previous study (Vuori et al., 2008; Vuori et al., 2009) by examining the possible effects of the TWL intervention on proximal career preparation outcomes. For this we used the same data that were collected in the experimental effectiveness study (Vuori et al., 2008; Vuori et al., 2009) on the effects of the TWL group intervention.

The intervention for the present study was developed and delivered using a highly structured and intensive workshop format (15 hours in 1 week). The workshop format we used was based on an earlier experience of prevention efforts that had applied the same group training principles of promoting preparation to two other challenging career transitions: (a) from unemployment to work and (b) from vocational education to work. Intervention researchers originally developed these group training principles at the Michigan Prevention Research Center in the Job Search Program known as JOBS (for a detailed description of these group training principles, see Caplan, Vinokur, & Price, 1997; Price, Friedland,

Choi, & Caplan, 1998; Price & Vinokur, 1995). These group training principles include the implementation of active learning and teaching methods and Bandura's (1977) four sources of efficacy information for boosting preparedness for the career transition in question. Previous research has demonstrated that the proximal effects of the Työhön Job Search Program and the School-to-Work group intervention improved preparedness, which in turn mediated the beneficial distal effects of the interventions on employment and mental health outcomes (Koivisto et al., 2010; Vuori & Vinokur, 2005). However, preparedness constitutes only the competence component of the career preparation process. The possible direct and indirect effects of the TWL on the attitudinal component have not been analyzed in these earlier studies, despite the fact that all of these interventions also targeted the attitudinal component regarding the expected and valued outcomes of the programs, including learned behavioral strategies and activities. In this study, our main goal was to test both the direct and the indirect effects of the TWL intervention on career choice preparedness as the competence component and career planning attitude as the attitudinal component of the career preparation process.

Consequently, on the basis of SCCT (Lent et al., 1994) and the previous research on interventions aimed at boosting career self-efficacy (Betz, 2007; Gainor, 2006) and preparedness (Koivisto et al., 2010; Vuori & Vinokur, 2005), we suggest that social learning in the TWL intervention workshops increases career choice preparedness. In turn, in line with SCCT, we suggest that the effect of learning experiences in the workshops on career planning attitude is partly direct and partly mediated by the increase in career choice preparedness (Betz & Borgen, 2000; Fouad & Smith, 1996; Lent et al., 1994, 2005). Thus, we expect that participation in the intervention (i.e., in the TWL workshops) will have a direct effect on increasing career choice preparedness as well as both a direct and an indirect effect on positive attitudes toward career planning, with the indirect effect being mediated by career choice preparedness. Finally, on the basis of the general social cognitive theory (Bandura, 2006) and Lent et al.'s (1994) theoretical propositions concerning causal directions, we expect career choice preparedness to enhance a subsequent positive attitude toward career planning. To summarize, we propose the following set of hypotheses:

Hypothesis 1. Participation in the TWL intervention will increase career choice preparedness.

Hypothesis 2. Participation in the TWL intervention will enhance a positive attitude toward career planning.

Hypothesis 3. Career choice preparedness will mediate, at least partly, the effect of the TWL intervention on enhancing a positive attitude toward career planning.

Hypothesis 4. Career choice preparedness will enhance a subsequent positive attitude toward career planning.

Method

Overview

A field experiment was carried out in 11 junior high schools (seventh through ninth grade) in the two medium-sized towns of Pori and Hyvinkää in Finland during the academic years 2003–2004 and 2004–2005. Participants were

randomized into experimental and control groups and were assessed before and immediately after a career choice intervention was administered to the experimental group.

Participants

The 1,034 participants were 14- to 15-year-old Finnish adolescent students facing the transition to secondary education. Fifty percent of the participants were female adolescents. Finnish adolescents complete 9 years of basic education at the ages of 15 to 16 years, and during the spring term, ninth graders must make a choice regarding their secondary education between the vocational track offered by secondary level vocational institutions and the academic track that begins in upper secondary schools. Nowadays in Finland, about half of all students continue on the academic track and about 40% on the vocational track. Secondary vocational institutions are the pathway to both the labor market and tertiary-level education, whereas upper secondary school functions as a bridge to further education, most likely higher education. In addition, about 2% of students opt for the extra 10th grade, aimed to improve their marks before continuing to further education. Altogether, some 94% of Finnish adolescents enter and 84% complete secondary studies. Because of lack of resources in career counseling, a great proportion of adolescents starting secondary studies feel that they have not received enough information and guidance on the career decisions they have made, which may increase the risk of dropout from the educational track. Thus, the aim of the present intervention was to help ninth graders in their career decision process at the time when it is most crucial.

Study Design and Procedure

A longitudinal experimental design was used in this study. In each of the 11 participating schools, four to eight classes of ninth graders were invited to information sessions held in their schools. In these sessions, they were informed of the study and told that participation in the intervention workshops counted as part of their schoolwork but that filling in the study questionnaires was entirely voluntary. The same information was also provided to parents. At the meetings, the participants filled in a questionnaire for baseline measurement (Time 1 [T1]). After this, they were randomly assigned to either the experimental or the control group. Randomization was carried out on pairs of classes, so that approximately half of the students in any combination of two classes were randomly assigned to the experimental group ($n = 522$) and half to the control group ($n = 512$). The participants in the experimental group were invited to the TWL workshops, whereas the control group participated in normal schoolwork. Of the 1,088 who participated in the information meetings, 54 participants were excluded from the study either because they did not complete the T1 questionnaire adequately, they wished to drop out of the study, or they did not follow study protocol during the intervention phase. In addition to the T1 baseline assessment, participants were reassessed in the classroom at the end of the last day of the workshop; on average, this was 10 weeks after baseline assessment (Time 2 [T2]). Of those assessed at T1, 89% provided data at T2 ($N = 922$). The respective figures in the experimental and control group were 90% ($n = 471$) and 88% ($n = 451$).

Experimental Conditions

The experimental treatment consisted of delivering the TWI intervention to groups through a workshop format. Each intervention workshop lasted 15 hours spread over 4 to 5 days in the course of 1 week. Twenty-five groups were trained in these workshops. The number of participants varied from 18 to 25, with a mean of 20. The mean number of days that participants attended the workshop was 4.7 ($SD = 0.85$).

In the workshop, skilled trainers worked at activating and maintaining an active learning process and a supportive, cooperative learning environment (Vuori et al., 2008; for a more detailed description, see Caplan et al., 1997). During the orientation phase, trainers introduced the background, aims, and possible benefits of the program to participants (attitudinal component). Generally speaking, the possible benefits of the program and career planning skills were discussed during the orientation phase and, more specifically, in the group discussions related to career planning skills throughout the program. Trainers used scientific knowledge regarding career development and intervention research (expert power). In addition to expert power, trainers aimed at reducing social distance from participants by speaking freely about their own career decision process (role-modeling self-disclosure, referent power). By using expert and referent power and positive, well-targeted, argued feedback, trainers tried to build participants' trust in the group process and encourage them toward self-disclosure (positive emotional arousal) and learning from others (vicarious learning). The group activities were arranged so that participants' personal accomplishments in career exploration and planning served as vicarious learning for coparticipants. According to the principles of active teaching and learning, trainers did not lecture but used the self-disclosure, knowledge, and career management skills of the participants themselves as part of the learning process.

The participants began constructing their career plans by defining personal strengths and interests and comparing them with the educational options and professional careers offered in society and the challenges posed by these options. Interest and skill inventories, workbooks, guidebooks, and an Internet-based program were used to explore for information. This information was then discussed in the workshop and used in small-group exercises. The participants also learned to recognize and use institutional resources (some activities were carried out in a local labor office) and guidance, as well as the nonformal social network and other sources of support in career exploration and planning.

Participants also interviewed older guest students who had successfully completed the transition to upper secondary school or a secondary vocational institute (role-modeling). In accordance with Krumboltz and Worthington's (1999) learning theory of career counseling, they also discussed lifelong learning (i.e., adaptation to changing work tasks and environments during future career and lifetime learning) and the learning opportunities presented by various leisure activities to explore and expand vocational interest and capacities. Following the principles of stress inoculation training (Meichenbaum, 1985), participants identified possible barriers and setbacks related to career choice and prepared themselves to overcome them. At the end of the group work, participants committed themselves to follow through and pursue the career plans they had made

during the group process in the workshop (e.g., long-term plans for a route to the desired occupation or short-term plans such as “Taking a concrete step toward crystallizing my choice regarding secondary education”).

Several steps were used to ensure the fidelity and uniformity of the delivery of the TWL intervention. All the workshop trainers had completed a 3-day course. The intervention program was detailed in a manual issued to trainers and participants, who used structured workbooks. Trained supervisors and researchers (including the first and third authors) prepared group trainers and school headmasters. Project leaders in each town participated in group training, visited all the group sites in the schools, and supervised the quality of group activities.

Control Conditions

The control group participated in normal schoolwork, including school counseling curriculum lessons, and had normal access to individual school counseling. Participants of the experimental group also had access to these normal school counseling activities but had to be absent from 15 lessons in other subjects during the workshop.

Measures

We assessed participants’ demographic characteristics using standard survey questions for reporting the age, gender, and occupations of parents. The competence and attitudinal components of the career preparation process were studied using measures of career choice self-efficacy, inoculation against setbacks, and positive attitudes toward career planning. All of these components were assessed at T1 and T2.

Competence component of career preparation. The Career Choice Self-Efficacy Scale (CCSES) was specially redesigned for this study because the existing career decision-making self-efficacy scale (Taylor & Betz, 1983) was mainly designed for high school and college applications. The redesigned CCSES assesses self-efficacy beliefs related to career choice behaviors in the context of Finnish ninth graders who are planning transition to secondary studies and making choices between academic and vocational educational tracks. To assess self-efficacy beliefs, the following phrase preceded a series of 11 questions on the topic: “Next we would like to know how well you believe you can perform in different education- and career choice-related tasks.” The participants were then asked to answer the following questions, using a 7-point scale (1 = *very poorly*, 7 = *very well*):

Do you believe you are able to (1) identify personal strengths which help you make educational and vocational career choices? (2) identify personal interests which are related to a particular profession and work career? (3) choose the most personally suitable sector of education for yourself? (4) identify school subjects in which success will promote the realization of your future career plans? (5) ask your friends, acquaintances or relatives about occupational and educational opportunities that interest you? (6) contact school counselors or teachers to obtain guidance and information on issues related to your prospective educational and work career? (7) contact an employment office to obtain guidance and information on issues related to your prospective educational and work career? (8) search for information on the Internet, in guidebooks and in libraries on issues related to your prospective educational and work career? (9) say what your dream occupation is? (10) describe the main characteristics of your dream occupation or career? (11) assess the effect of the choices you make now on your future educational and work career?

Questions 8, 9, and 10 were adapted from Taylor and Betz's (1983) Career Decision-Making Self-Efficacy Scale.

On the basis of these 11 questions, two mean scores were calculated to represent two aspects of career choice self-efficacy: decision-making self-efficacy (Questions 1, 2, 3, 4, 9, 10, 11), and information-seeking self-efficacy (Questions 5, 6, 7, 8). The Cronbach's alpha coefficients for the decision-making and information-seeking self-efficacy measures were .86 and .78 at T1, and .88 and .77 at T2. The Cronbach's alpha coefficient for the entire scale was .87 at both T1 and T2.

The Inoculation Against Setbacks measure was also designed for the present study and included the following two questions: "Do you already have ideas or alternative plans in case you do not find a suitable educational program in your home district?" and "Do you already have ideas or alternative plans for any possible setbacks you may face in your studies?" Participants provided answers using a 7-point rating scale (1 = *very few*, 7 = *very many*). The Cronbach's alpha coefficients for the Inoculation Against Setbacks scale were .53 (T1) and .59 (T2), and for the entire career choice preparedness scale, including the Career Choice Self-Efficacy and Inoculation Against Setbacks scales, it was .86 at both T1 and T2.

Attitudinal component of career reparation. The Positive Attitude Toward Career Planning Scale (PACPS) was based on the concepts and measure of task values (Eccles & Wigfield, 1995). It was specially designed for this study to measure task values related to career-planning and secondary studies among ninth graders. The following phrase preceded a series of questions on the topic of career planning: "Next we will ask you to appraise some attitudes toward education and career planning." The participants were then asked to rate their agreement with these attitudes using a 7-point scale (1 = *do not agree at all*, 7 = *completely agree*). The ratings were combined to represent two dimensions, with the following two calculated mean scores: Attainment Value subscale (e.g., "Post-basic education is important for my future," "Finding a suitable educational and work career is important to me") and Utility Value subscale (e.g., "In the interests of my future work career, it is important that I choose and plan my future studies carefully before making any choices," "By attaining a good post-basic education I create a solid foundation for my future work career"). The Cronbach's alpha coefficients for the Attainment Value and Utility Value subscales were .80 and .75 at T1 and .89 and .79 at T2. For the entire PACPS, it was .86 at T1 and .90 at T2.

Integrity of experimental conditions. The integrity of the TWL intervention delivery to the experimental group was evaluated at the first follow-up (T2) using 19 questions on the various aspects of the group process. Participants were asked to rate how often they encountered the following aspects of the process on a 7-point rating scale (1 = *not at all*, 7 = *very often*): support by trainers (e.g., "How often during the TWL workshop did the trainers pass the participants' questions back to the group?"), amount of group discussions on inoculation against setbacks (e.g., "How often during the TWL workshop did you discuss how to act if you do not get enough support from home for your career choice?"), adherence to time schedule (e.g., "How often during the TWL workshop did you fail to keep to the time schedule?"), and the relevance of the TWL workshop to the participants' life situation (e.g.,

“How often during the TWL workshop did you feel the materials and discussions corresponded with your life situation?”).

Effectiveness of Randomization, Response Rates, and Attrition

The T1 baseline measurement revealed no statistically significant differences between the experimental group and the control group in gender, risk of depression, learning difficulties, grade point average (GPA) of last school report, family situation, parents' socioeconomic status (SES), or career choice self-efficacy.

Attrition in the experimental design was analyzed following the recommendations of Hansen, Collins, Malotte, Jonson, and Fielding (1985). We used logistic regression analyses to examine whether the baseline assessment (T1) predicted responses at the posttreatment assessment (T2), that is, whether the respondents and dropouts in the posttreatment assessment (T2) differed in the measures assessed at baseline. In these analyses, we used responses at T2 (respondent = 1, nonrespondent or dropouts = 0) and the treatment conditions (experimental = 1, control = 0) as dependent variables, and specific measures (e.g., information-seeking self-efficacy, GPA, SES) one at a time, or only one specific variable in each logistic model, as independent variables. According to the analyses, respondents and dropouts differed in some baseline variables at T2. Compared with dropouts, respondents had statistically significantly higher career-planning-related attainment value (6.22 vs. 6.00, $\chi^2 = 5.14$, $df = 1$, $p < .05$). In addition, the GPA of the last school report at baseline measurement was higher among respondents than dropouts (4.13 vs. 3.24, $\chi^2 = 26.04$, $df = 1$, $p < .001$). Compared with dropouts, respondents had more social ties in terms of discussions related to career choice, education, and future occupation (3.23 vs. 2.87, $\chi^2 = 8.73$, $df = 1$, $p < .01$). In conclusion, there were systematic dropouts at the posttreatment assessment: Compared with dropouts, respondents at T2 had better school performance, higher career-planning-related attainment values, and more social ties involving career-related discussions than at T1.

Most important, an analysis of integrity was conducted to reveal whether experimental versus control conditions influenced response rate at T2. We studied integrity by adding the interaction terms of the treatment condition and specific measures to the logistic regression analyses (e.g., Treatment Condition \times GPA). No statistically significant interactions were found. Thus, we can conclude that the integrity of the experimental design was maintained from baseline (T1) to the posttreatment assessment (T2).

Finally, we checked the number of nonparticipants, also termed *no-shows*, in the experimental group. According to the posttreatment assessment (T2), participants in the experimental group attended the workshop for a mean of 4.6 days. The proportion of participants who attended for at least 4 days was 94%, and only two people did not participate at all. Because the five groups completed the program in 4 days, we concluded that the study does not contain a significant number of nonparticipants or no-shows. To preserve the integrity of the randomization design and to prevent selection bias, we followed the guidelines of Cook and Campbell (1979) and conducted all our analyses on an intent-to-treat basis with a completely randomized experimental group, regardless of whether or not certain participants missed some workshops.

Results

Integrity of the TWL Intervention

The participants perceived the TWL intervention, to some extent at least, positively. The mean ratings of their responses to the 19 questions on the 7-point scales at T2 varied between 4.26 and 5.59 (SD varied between 1.23 and 1.74). For example, the participants considered the atmosphere of the workshops friendly and encouraging ($M = 5.42$, $SD = 1.26$) and thought that the trainers frequently made positive and encouraging comments about their individual strengths ($M = 5.59$, $SD = 1.23$). According to the participants' own appraisals, the workshops contained a great amount of practice on how to identify personal strengths and interests ($M = 5.14$, $SD = 1.29$) and how to locate information regarding interesting educational alternatives and professions ($M = 5.03$, $SD = 1.37$). In addition, they had discussed to some extent how to act if they did not get enough support from their homes in career-related issues ($M = 4.60$, $SD = 1.56$) and had frequently discussed the best course of action in the event of failing to gain admission to their preferred educational program ($M = 5.23$, $SD = 1.35$). Finally, the participants reported that the workshop materials and discussions corresponded considerably well to their life situation ($M = 4.90$, $SD = 1.37$) and that they had not personally experienced difficulties in concentrating on the topic at hand ($M = 5.24$, $SD = 1.56$).

As already noted, the proximal goals of the TWL intervention were to increase career choice preparedness (i.e., to combine self-efficacy and inoculation against setbacks) and positive attitudes toward career planning (i.e., the assessed attainment and utility value of career-related tasks). Comparisons of these observed career preparation variables (means, standard deviations, and results of t tests) between the experimental and the control groups at baseline and posttreatment measurements are presented in Table 1. To assess the impact of the intervention on these variables, we performed a group (experimental and control) by time (T1 and T2) repeated measures analysis of variance on each of the previously mentioned proximal outcome variables. The effects of gender and GPA in the last school report were controlled for in the analyses. The results for all five of the variables demonstrated statistically significant group by time interaction effects for decision-making self-efficacy, $F(1, 836) = 11.06$, $p < .01$, partial $\eta^2 = .01$; information-seeking self-efficacy, $F(1, 874) = 33.52$, $p < .001$, partial $\eta^2 = .04$; inoculation against setbacks, $F(1, 886) = 6.25$, $p < .05$, partial $\eta^2 = .01$; attainment value, $F(1, 895) = 9.82$, $p < .01$, partial $\eta^2 = .01$; and utility value, $F(1, 886) = 3.97$, $p < .05$, partial $\eta^2 = .00$. In other words, and more specifically, the means of these variables increased over time (i.e., after the intervention), significantly more so in the experimental than in the control group.

Next, we studied whether the baseline level of the outcome variables influenced the effectiveness of the intervention. We added the group by time by baseline level (e.g., information-seeking self-efficacy at T1) interaction term to each of the aforementioned repeated measure analysis of variance models. The results for the resulting four variables demonstrated statistically significant group by time by baseline level interaction effects on decision-making self-efficacy, $F(34, 764) = 2.10$, $p < .001$,

TABLE 1

Comparison of Career Preparation Variables Between Experimental and Control Groups at Baseline and Posttreatment Measures

Variable	Experimental		Control		<i>t</i>	<i>df</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Information-seeking self-efficacy						
Time 1	4.65	1.13	4.72	1.17	0.90	1001
Time 2	4.78	1.20	4.41	1.30	4.43***	879
Decision-making self-efficacy						
Time 1	5.04	1.04	5.01	1.02	0.51	977
Time 2	5.39	0.92	5.16	1.07	3.37*	851
Innoculation against setbacks						
Time 1	3.84	1.39	3.86	1.33	0.21	1013
Time 2	4.22	1.43	4.01	1.43	2.15*	903
Attainment value						
Time 1	6.19	0.93	6.21	0.88	0.49	1017
Time 2	6.34	0.93	6.20	1.04	2.24*	889
Utility value						
Time 1	5.90	1.00	5.88	0.96	0.38	1007
Time 2	6.09	0.92	5.97	1.05	1.82	906
Career choice preparedness						
Time 1	4.74	0.88	4.74	0.90	0.01	961
Time 2	5.03	0.85	4.76	0.95	4.37***	868
Attitude toward career planning						
Time 1	6.05	0.89	6.04	0.86	0.15	1006
Time 2	6.22	0.86	6.08	0.99	2.15*	906

* $p < .05$. *** $p < .001$, two-tailed.

partial $\eta^2 = .09$; inoculation against setbacks, $F(12, 862) = 2.36$, $p < .01$, partial $\eta^2 = .03$; attainment value, $F(8, 877) = 3.02$, $p < .01$, partial $\eta^2 = .03$; and utility value, $F(10, 865) = 2.39$, $p < .01$, partial $\eta^2 = .03$. More clearly, the means of these variables increased over time (i.e., after the intervention), significantly more so among the experimental group participants who exhibited low level values at baseline measurement than among those who originally exhibited high level values.

We first constructed a preliminary, then a final structural equation model (SEM) to test our hypotheses. Both models, including the standardized beta coefficients along the paths of hypothesized influence and the squared multiple correlations for outcome variables, are presented in Figures 1 and 2. Career choice preparedness was indicated by scores on three subindices: two subscales of the CCSES (i.e., Decision-Making and Information-Seeking) and one scale that assessed inoculation against setbacks. Attitude toward career planning was indicated by scores on two subscales of the PACPS: Attainment Value and Utility Value. The correlations among the observed study variables in our models, together with their means and standard deviations, are presented in Table 2.

As just discussed, we assumed that scores on the decision-making and information-seeking subscales of the CCSES and the Inoculation Against Setbacks scale were indicators of career choice preparedness. Using the seven decision-making self-efficacy items, four information-seeking self-efficacy items, and two inoculation items, we tested whether they formed the assumed three subscales for a higher order factor of career choice preparedness. Estimating a three-factor model of career choice preparedness provided results that fit the model well, with $\chi^2(56, N =$

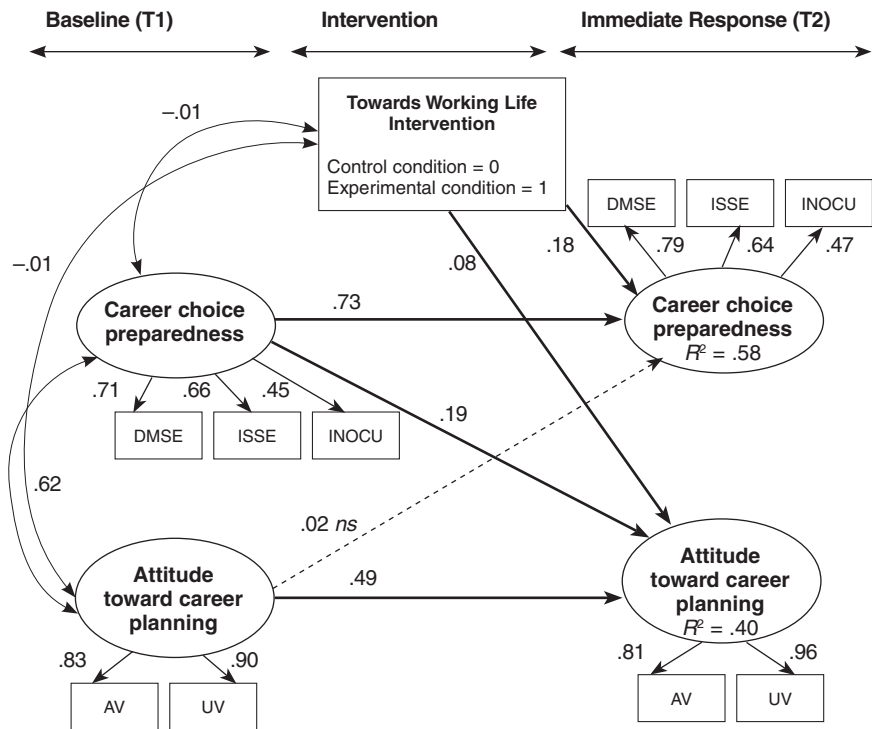


FIGURE 1

Structural Model of Direct Effects (Standardized Regression Path Coefficients) of the Towards Working Life Intervention

Note. All paths with solid lines are significant at .01 or above. A path with broken lines is not significant. The squared multiple correlations for outcome variables (T2) are marked at the bottom of each construct. $\chi^2(108, N = 1,034) = 473.14, p < .001$, normed fit index = .94, non-normed fit index = .91, comparative fit index = .95, root mean square error of approximation = .04. Key to observed variables and standardized factor loadings: DSME = decision-making self-efficacy; ISSE = information-seeking self-efficacy; INOCU = inoculation against setbacks; AV = attainment value; UV = utility value.

1,034) = 168.86, $p < .001$, normed fit index (NFI) = .97, non-normed fit index (NNFI) = .96, comparative fit index (CFI) = .98, root mean square error of approximation (RMSEA) = .04.

Our structural model, based on the study hypotheses, was tested using AMOS (Version 17.0) software with full information maximum likelihood estimates for the parameters (Anderson, 1957). The model estimation adjusts for the unreliability of the measures and provides disattenuated correlations and standardized regression coefficients. In reporting the SEM results, the statistical significance of the chi-square is ignored in favor of the other fit measures. This is because very small differences in a large sample (e.g., above 500) produce a statistically significant chi-square (Hayduk, 1987). Consequently, according to the guidelines of Raykov, Tomer, and Nesselroade (1991), we provide three goodness-of-fit indices (i.e., NFI, NNFI, CFI) and one misfit measure (i.e., RMSEA). Fit indices that are above .90, with an RMSEA of .06 or below, indicate that a model has an acceptable fit with the data (Hu & Bentler, 1999; for a detailed discussion, see Bentler, 1990; Bollen, 1990).

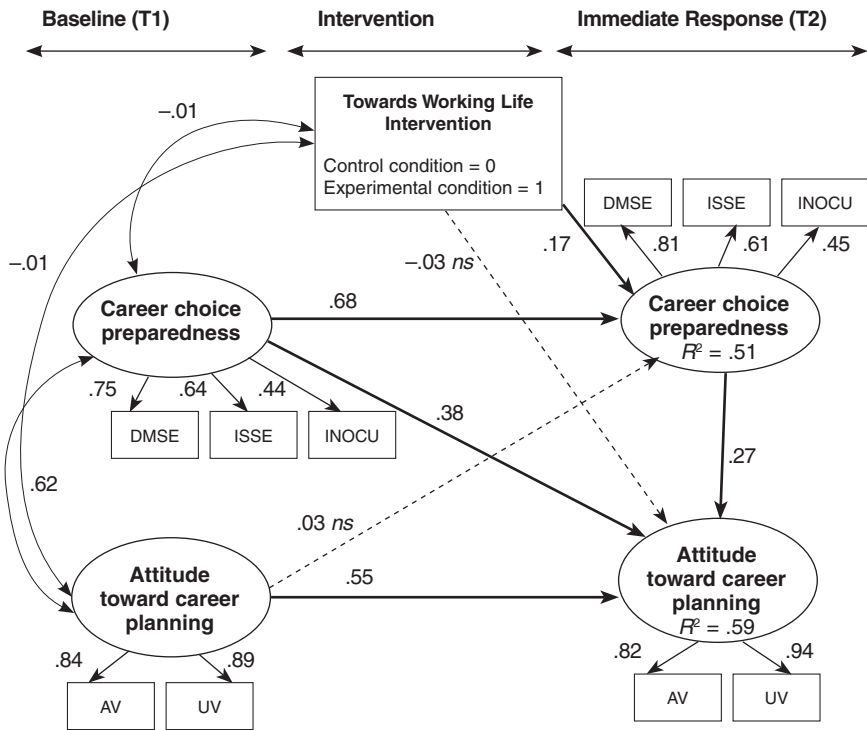


FIGURE 2

Structural Model of Direct and Indirect Effects (Standardized Regression Path Coefficients) of the Towards Working Life Intervention

Note. All paths with solid lines are significant at .01 or above. A path with broken lines is not significant. The squared multiple correlations for outcome variables (T2) are marked at the bottom of each construct. $\chi^2(105, N = 1,034) = 209,071, p < .001$, normed fit index = .97, non-normed fit index = .98, comparative fit index = .99, root mean square error of approximation = .02. Key to observed variables and standardized factor loadings: DSME = decision-making self-efficacy; ISSE = information-seeking self-efficacy; INOCU = inoculation against setbacks; AV = attainment value; UV = utility value.

First, we estimated the measurement model, which provided a very good fit with the data, $\chi^2(33, N = 1,034) = 81.33, p < .001$, NFI = .98, NNFI = .98, CFI = .99, RMSEA = .04. Second, we estimated a preliminary structural model, which demonstrated that participation in the TWL intervention had a statistically significant, direct effect on both T2 career choice preparedness ($\beta = .18, p < .001$) and T2 positive attitude toward career planning ($\beta = .08, p < .01$; see Figure 1). In addition the preliminary model showed that T1 career choice preparedness increased T2 positive attitude toward career planning ($\beta = .19, p < .001$). It is important to note that in line with the purpose of the randomization procedure, participation in the experimental condition did not correlate with the baseline measurements of career choice preparedness and attitude toward career planning. The preliminary model provided an acceptable fit with data, $\chi^2(108, N = 1,034) = 473.14, p < .001$, NFI = .94, NNFI = .91, CFI = .95, RMSEA = .04. Third, we formulated the final structural model by adding the path from T2 career choice

TABLE 2
Means, Standard Deviations, and Correlations Among Observed Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. IEG	—														
2. DMSE T1	.02	—													
3. DMSE T2	.11**	.86	—												
4. ISSE T1	-.03	.48**	.37**	—											
5. ISSE T2	.15**	.30**	.46**	.78	—										
6. IAS T1	-.01	.31	.28**	.30**	.77	—									
7. IAS T2	.07*	.24**	.40**	.22**	.19**	.53	—								
8. AV T1	-.02	.40**	.32**	.22**	.32**	.40**	.59	—							
9. AV T2	.07*	.19**	.43**	.33**	.22**	.15**	.13**	.80	—						
10. UV T1	.01	.42**	.33**	.27**	.29**	.13**	.18**	.49**	.89	—					
11. UV T2	.06	.23**	.48**	.38**	.24**	.16**	.14**	.74**	.41**	.75	—				
12. CCP T1	.00	.89**	.78**	.78**	.46**	.16**	.22**	.48**	.77**	.50**	.79	—			
13. CCP T2	.15**	.55**	.89**	.49**	.78**	.35**	.34**	.41**	.24**	.45**	.32**	.86	—		
14. ACP T1	.01	.43**	.35**	.38**	.25**	.17**	.14**	.93**	.48**	.94**	.53**	.46**	.86	—	
15. ACP T2	.07*	.23**	.49**	.30**	.34**	.16**	.21**	.52**	.94**	.48**	.94**	.30**	.48**	.62**	.90
N	1,034	979	882	1,003	899	1,015	905	1,019	911	1,009	908	963	870	1,008	908
M	0.50	5.02	5.28	4.68	4.60	3.85	4.12	6.20	6.27	5.89	6.03	4.74	4.90	6.05	6.15
SD	0.50	1.03	1.00	1.15	1.26	1.36	1.43	0.90	0.99	0.98	0.99	0.89	0.91	0.88	0.93

Note. Boldface values indicate Cronbach's alpha coefficients of the measures. IEG = intervention (experimental group); DMSE = decision-making self-efficacy; T1 = Time 1; T2 = Time 2; ISSE = information-seeking self-efficacy; IAS = inoculation against setbacks; AV = attainment value; UV = utility value; CCP = career choice preparedness; ACP = attitude toward career planning.

* $p < .05$. ** $p < .01$, two-tailed.

preparedness to T2 attitude toward career planning to the preliminary model (see Figure 2). The fit statistic for the revised model improved statistically significantly, $\Delta_{A-B}\chi^2 = 264.07$, $\Delta df_{A-B} = 3$, $p < .001$, modifying the preliminary model according to Hypothesis 3. The final structural model provided an improved excellent fit to the data, $\chi^2(105, N = 1,034) = 209.07$, $p < .001$, NFI = .97, NNFI = .98, CFI = .99, RMSEA = .02.

Next, we examined the results in terms of the four sets of hypotheses previously outlined. In support of Hypothesis 1, participation in the TWL intervention had a direct, positive effect on career choice preparedness at T2 ($\beta = .17$, $p < .001$; see Figure 2). However, participation in the TWL intervention did not have a statistically significant direct effect on T2 attitude toward career planning ($\beta = -.03$, *ns*); a result that failed to support Hypothesis 2. In turn, and in line with Hypothesis 3, T2 career choice preparedness increased T2 positive attitude toward career planning ($\beta = .65$, $p < .001$). To examine whether T2 career choice preparedness mediated the effect of the intervention on T2 attitude toward career planning, we applied the Sobel (1987) test, which, in support of Hypothesis 3, resulted in a significant effect for the two-tailed test ($t = 5.09$, $p < .001$). Finally, and in line with Hypothesis 4, T1 career choice preparedness increased T2 positive attitude toward career planning ($\beta = .38$, $p < .001$).

Structural equation models usually produce counterintuitive signs of the diagonal longitudinal path coefficients (Price, Choi, & Vinokur, 2002). This will happen in models that include the effects of the independent variables both longitudinally and concurrently on the dependent variable, as is the case in our final model (see Figure 2). Kessler and Greenberg (1981) provided a mathematical treatment and substantive interpretation for these counterintuitive values of the diagonal coefficients in these cases. According to Kessler and Greenberg, the reverse of the value of the diagonal coefficient represents the effect of change in the independent variable on change in the dependent variable. This effect is also explained in a more recent article by Maassen and Bakker (2001). In addition, Kessler and Greenberg demonstrated that the path coefficient from the independent to the dependent variable at T2 includes the sum of both the effect of change and the net concurrent effect. To calculate the net concurrent effect, we need to subtract the effect of change from the value of the concurrent coefficient. In our case, this is $.65$ minus $.38 = .27$, which is the value provided in Figure 2. Following Kessler and Greenberg, the sign of the figure of diagonal longitudinal path from career choice preparedness at baseline measurement to the attitude toward career planning in the posttreatment assessment (originally $-.38$) was reversed to provide the estimated effect of the independent variable on the dependent variable.

Discussion

The aim of this study was to examine both the direct and the indirect effects of the TWL group counseling intervention on two components of adolescents' career preparation: preparedness for career choice and attitude toward career planning. An additional aim of the study was to examine the causal relations of preparedness and attitudes in the career decision-making process.

As we hypothesized (Hypothesis 1), the results of the study showed that participation in the TWL workshops increased career choice preparedness. This result is consistent with previous studies on interventions boosting career self-efficacy (Betz, 2007; Gainor, 2006) and career preparedness (Koivisto et al., 2010; Vuori & Vinokur, 2005). Considering the self-efficacy related propositions of general social cognitive theory (Bandura, 1977, 2006) and its application to career context (Lent et al., 1994), this may mean that participants' strengthened preparedness to make career choices as a result of the workshops may also have increased their investment of motivational resources in the exploitation of learned career exploration and planning skills outside of the workshop.

In line with our Hypothesis 2, the TWL intervention also increased positive attitudes toward career planning. When considered on the basis of social cognitive theories, this may have strengthened participants' commitment to the application of learned skills (Ajzen, 1988; Bandura, 1977; Eccles & Wigfield, 2002; Lent et al., 1994) and therefore complemented the motivating influence of preparedness on further career choice behavior. As we hypothesized (Hypothesis 3) on the basis of SCCT (Lent et al., 1994), career choice preparedness mediated the effect of the intervention on attitude toward career planning. This finding is consistent with Bandura's (1977) theoretical proposition, also adapted in SCCT (Lent et al., 1994), that efficacy beliefs shape outcome expectations. In view of the fact that the treatment outcomes for all variables were measured at the same time, it is important to note that career choice preparedness at baseline measurement was associated with positive attitudes toward career planning at the posttreatment assessment. This latter result is significant because it strengthened our conclusion on the causal direction, that is, that preparedness has a causal effect on attitudes rather than vice versa. This finding is also in accordance with Eccles and Wigfield's (1995, 2002) expectancy-value model and adds to previous discussion on causal relations between task values and competence beliefs (e.g., Arbona, 2000; Eccles & Wigfield, 2002) by supporting the assumption that adolescents value tasks in which they think they can succeed rather than develop competencies in the tasks they value.

However, the lack of a direct effect of the TWL intervention on career planning attitudes was not in accordance with Hypothesis 4, which derived from SCCT (Lent et al., 1994, 1999). It therefore seems that to have a positive influence on attitudes related to career planning, an intervention first needs either to increase career choice preparedness or to target career planning attitudes more directly. This finding is especially interesting to note because group discussions focusing on attitude toward career planning were included in the intervention. In general, the results highlight the role of career choice preparedness as a proximal goal or primary mediator in activities aimed at promoting career development among adolescents through the building of essential career exploration, planning strategies, related coping behaviors, and problem-solving skills. However, we are not refuting that the clarification of possible values and the benefits of career planning play an important role in career counseling; we are merely pointing out that further investigations are needed to reveal the possible roles of counseling techniques that are targeted directly at improving positive career planning attitudes.

Overall, the effects of the intervention on proximal outcomes may appear to be very small at the level of general sample or whole age group (partial eta

squared = .004 minus .037). The intervention seems to have had a stronger effect on career choice preparedness, particularly on self-efficacy beliefs, than on attitudes toward career planning. A possible reason for this may be that preparedness functioned as a primary mediator and fully mediated the effect on attitudes. Another possible reason for the reduced effect of the intervention on career planning attitudes seems to have been a ceiling effect. Already before the intervention, adolescents had rated their attitude toward career planning ($M = 6.05$, $SD = 0.88$) notably more positively than they had rated their career choice preparedness ($M = 4.74$, $SD = 0.89$) on a 7-point scale.

We interpret small effect sizes as indicating that the competence and attitudinal components of career preparation are relatively stable results of a long-term development process that unfolds throughout the school years, including complex interactions between personal, social, and academic ability factors. For example, Eccles et al. (2004) found that sixth graders' college plans and visions predicted their performance in high school, which in turn influenced their college attendance. Consequently, preparation for career choice at the level of whole age group is not easily influenced by brief primary prevention programs that are timed just prior to the career decision-making situation. We agree with Eccles, Lent, Schultheiss, and their colleagues (Eccles et al., 2004; Lent et al., 1999; Schultheiss, 2005) that the systematic support of career development should already begin during the elementary school years.

However, our analysis showed that the experimental group and baseline level of outcome variable had a statistically significant interaction effect on four outcome variables. This interaction explained 8.5% of the variance of decision-making self-efficacy measured immediately after the TWL intervention. The respective figures for the inoculation against setbacks, attainment value, and utility value were 3.2%, 2.7%, and 2.7%. In other words, the students who were initially less confident in their ability to make career decisions benefited more from participation in the TWL intervention and showed a greater gain in their career-decision making confidence after the workshop than did their peers who originally exhibited greater confidence. These interaction effects are in accordance with a previous study by Vuori et al. (2008, 2009), who found that the TWL intervention had preventive distal effects on the depressive symptoms and school burnout of adolescents who had reported elevated symptoms of depression or learning difficulties at baseline assessment.

Although the documented effect sizes of the TWL intervention are relatively small, explaining not more than 8.5% of the variances of the outcomes, the effect is nevertheless important for two reasons. First, even small starting effects are shown to generate other effects that accumulate over time, resulting in a much greater impact on a wider range of outcomes several years later. For example, Schweinhart et al. (2005) showed that the initial, very small effect of a preschool intervention resulted in large effects on educational, employment, and other outcomes 35 years later, when the children who had participated in the intervention entered early middle age. This may especially be the case for educational interventions because educational outcomes have a wide range of ramifications that cannot be assessed in a short-term, single study and may require several years until their outcomes unfold and can be assessed appropriately. A second reason is that such an effect, even a small one, may give rise to research that identifies subgroups of high-risk

students among whom the effect is much greater. Through improvement in the intervention design for high-risk students, such intervention has the potential to produce much stronger effects.

Strengths and Limitations

The strengths of the present study are rooted in its experimental design, including the randomization procedure and pre- and posttreatment assessments. In addition to these strengths, the large sample, with low rates of dropouts and no-shows, allowed the examination of both the direct and the indirect effects of the present career choice intervention using a comprehensive structural model. However, at least two limitations in the interpretation of the results of the study should be noted. First, instead of using standardized instruments developed for different educational and life-span contexts (e.g., Taylor & Betz, 1983), we designed specified measures for the purposes of the present study. This is because career preparation outcome measures should be both understandable and meaningful to participants (Whiston, 2001) as well as compatible with the career decision-making process in the Finnish educational context (Ajzen, 1988) that we studied. Although the reliability of the Inoculation Against Setbacks scale was relatively low, it is still acceptable given that the scale is one of the three subindices of preparedness measures, and our analyses provided a very good fit to a one-factor model of career choice preparedness.

Second, it is important to note that this study does not reveal any possible mediating pathways from the components of career preparation to the previously reported preventive distal effects of the TWL intervention on depressive symptoms and school burnout found among the subgroups at 1-year follow-up (Vuori et al., 2008, 2009). In the light of the previous literature, this probable pathway may be indirect, including intermediating adjustment variables such as career indecision or congruence between a person and his or her chosen education (Smith & Betz, 2002; Swanson & Fouad, 1999).

Conclusion

The present study adds to the previous career intervention literature by offering evidence on the causal role played by boosting career choice preparedness in attempting to improve positive attitudes toward career planning. In summary, in the light of the present study and the previous findings of Vuori et al. (2008, 2009), it seems that a more cost-effective way to improve career choice preparation than targeting a whole age group is to design intensive workshop format career choice interventions as selective prevention programs targeted at high-risk adolescents in the greatest need of support, particularly at those who exhibit deficient career choice preparedness, have learning difficulties, or have mental well-being problems. However, putting theory into convincing practice requires further research with a longer follow-up time frame that captures a longer time span (i.e., an intervention through one's educational career to one's transition to work life). As many researchers have already emphasized, this type of research more fully reveals the effectiveness of career choice interventions on career congruence, career satisfaction, and the well-being of adolescents (e.g., Brown & Ryan Krane, 2000; Heppner & Heppner, 2003; Whiston, 2001). These studies should also include

an examination of the proposed mediating roles that components of career preparation are assumed to play, together with other factors, in directing the life course of the participants.

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