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THESIS

**Enhancing career adaptability to prepare for the school to work transition:
Outcomes of an ePortfolio intervention among university students**

Anne Catharina Matheus Coolen

3518663

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Supervisor: dr. Veerle Brenninkmeijer

2nd Supervisor: dr. Pierre Cavalini

Supervisor Meurs HRM: Anna van der Horst MSc

ABSTRACT

Many graduates struggle when it comes to the school to work transition. Because career adaptability has proved to be helpful when managing career transitions, this study tested an ePortfolio intervention aimed at enhancing students' career adaptability (concern, control, curiosity, and confidence). The intervention consisted of a self-exploration meeting and an environmental exploration meeting. The development of the different career adaptability dimensions is compared between the experimental group ($n=23$) which received the entire intervention and the control group ($n=26$) which only attended the environmental exploration meeting. Results indicated that after attending the self-exploration meeting, participants in the experimental group showed significantly higher levels of concern, self-exploration (curiosity) and job search self-efficacy (control) compared to the control group. Participants in both groups showed an increase in all career adaptability measures after attending the environmental exploration meeting. The intervention seemed to be more effective on enhancing career planning (concern) and environmental exploration (curiosity) when the entire intervention was attended. In sum, results indicated that the ePortfolio intervention is effective in enhancing career adaptability in the short run. Moreover, the results showed the significance of self-exploration before conducting environmental exploration.

Key words: career adaptability (career concern, career control, career curiosity, career confidence), ePortfolio, self-exploration, environmental exploration, school to work transition.

INTRODUCTION

Students who will graduate soon are about to enter a very important phase in their life: the school to work transition. Soon they will leave their student life behind and are supposed to enter the labor market to find a suitable job. During this transition important career-related decisions have to be made which can influence their future careers (Koen, Klehe, & Van Vianen, 2012). However, many people are struggling when entering the labor market. Transitions from school to fitting work are slow and difficult nowadays. During an economic crisis it takes graduates longer to find a suitable job, and chances of a permanent position and a high salary are limited (SEO, 2013). Unfortunately, the current economic situation forces graduates to be less selective about what kind of job to accept. This results in lower job quality (ILO, 2013) which is not desirable since finding high quality employment is especially important during the school to work transition. A graduate's first job can influence future vocational outcomes and career success (Ng & Feldman, 2007) which highlights the importance of the school to work transition.

An effective transition occurs when graduates match their personality traits and skills to work environments in which they are required to use those traits and skills (Solberg, Howard, Blustein, & Close, 2003). This is reflected in a high person-job fit. Person-job fit strongly correlates with job satisfaction, organizational commitment and intent to quit, which are outcomes found important by both employees and organizations (Kristof-Brown, Zimmerman, & Johnson, 2005). In addition, organizations are currently operating in a changing environment which forces them to constantly adapt (Cummings & Worley, 2010). This also has implications for employees in terms of changing working conditions and flexible career requirements. Nowadays people change jobs more often due to technological developments and large changes in organizational structures (ROA, 2011). Because rapidly changing organizations will remain to be standard in the future, it requires people to be highly adaptable throughout their entire careers. This forces them to take the lead in building their own careers since it is their own responsibility (Van Vianen, De Pater, & Preenen, 2010). For graduating students who will soon enter the labor market, it starts with preparing for the school to work transition. However, the uncertainty that goes with this transition can hinder peoples initiative to prepare themselves for such a change (Klehe, Zikic, Van Vianen, Koen, & Buyken, 2012). Therefore, it is important to prevent this and provide graduating students with necessary resources to cope with all the changes before they enter the school to work transition.

An intervention aimed at enhancing students' career adaptability might be what students need to help them cope with changes during this transition as well as in their future career. Although some research has been conducted on training interventions aimed at enhancing career adaptability (Koen et al., 2012) or similar career competencies (e.g. Akkermans, 2013), there are no studies yet using an ePortfolio intervention. This is an online tool that supports people to find their own way in the fast changing labor market, and gives them the opportunity to discover and develop their personal knowledge and skills in a more autonomous way. The current study will answer to the often heard call for more intervention studies on career development (e.g. Verbruggen & Sels, 2008; Vuori, Toppinen-Tanner, & Mutanen, 2012) and test the effectiveness of the ePortfolio in enhancing students' career adaptability. Moreover, the current study will contribute to the knowledge what students need to feel well prepared when entering the labor market.

Career adaptability

A successful transition from school to work asks for career adaptability which can be described as a psychosocial construct that explains individual's resources for coping with current and anticipated tasks, transitions and traumas in occupational roles (Savickas, 2005). Career adaptability consists of four dimensions: concern, control, curiosity, and confidence (Savickas, 2005). Each of those represent an adaptive resource or strategy that individuals could use to cope with tasks, transitions and traumas while constructing their careers (Savickas, 2005). In short, people should 1) become *concerned* about their future career, 2) increase individual *control* over their career, 3) show *curiosity* by exploring themselves and potential career paths, and 4) enhance their *confidence* to live up to their ambitions.

The first dimension 'career concern' is about looking ahead to the future and being aware that it is important to have a plan (Savickas, 2005). Career concern involves setting career goals and is thus closely linked to career planning. The second dimension 'career control' concerns being responsible and careful in making career-related choices. It implicates that people are able to influence their future and are responsible for constructing their own career. When people show a lack of career control, it is called career indecision (Savickas, 2005). The third dimension 'career curiosity' is about gaining self-knowledge by self-exploration and exploring what the work world is offering to discover the fit between the self and the occupational roles (Savickas, 2005). Regarding to self-exploration important questions which should be answered are, 'What motivates me? What are my talents? What are my ambitions? What is truly important to me in a job?'. In addition to self-exploration it is

important to conduct environmental exploration by discovering different career paths and gaining information about different jobs, organizations and professional fields. The fourth and final dimension 'career confidence' concerns expecting to be able to solve complex problems while constructing one's career (Savickas, 2005). It has to do with someone's job search self-efficacy and refers to someone's belief in being capable to perform behaviors which lead to certain employment outcome (Moynihan, Roehling, LePine, & Boswell, 2003). The total level of one's career adaptability is reflected in the presence of each of the four dimensions, but more importantly in the ability to adequately use them (Savickas, 2005). It is about both competence and willingness to adapt to changes.

Several studies showed that adolescents higher in career adaptability are more successful in managing career transitions (Creed, Muller, & Patton, 2003; Germeijs & Verschueren, 2007; Neuenschwander & Garrett, 2008; Patton, Creed, & Muller, 2002 In: Hirschi, 2009). Zikic and Klehe (2006) found that perceiving a sense of competence, examining one's career options and planning one's career prior to unemployment, which show strong resemblances with the career adaptability dimensions confidence, curiosity and concern, increases the possibility of finding a suitable job. Moreover, job seekers who show more adaptive behavior before a career transition, frequently report higher employment quality afterwards (Koen, Klehe, Van Vianen, Zikic, & Nauta, 2010) and career success (Hirschi, 2010), which is exactly what graduates need. Thus, to successfully manage the school to work transition it is important that graduates have a future plan, make career-related decisions properly, explore themselves and their environment, and be confident.

Nevertheless, it is questionable whether adolescents are able to develop career adaptability in terms of concern, control, curiosity, and confidence. In the literature there is no clarity whether career adaptability is a dynamic and thus malleable construct, or a stable personality trait (Verbruggen & Sels, 2008). Whereas Verbruggen and Sels (2008) and Griffin and Hesketh (2003) consider career adaptability as a stable personality trait, Koen et al. (2012) and Akkermans (2013) support Savickas and Porfeli's (2012) view on career adaptability as a dynamic construct. Previous research of Verbruggen and Sels (2008) showed that career counseling increased adaptability at short notice, but failed to sustainably increase adaptability. It has to be noted that adaptability was measured as an overall perceived competence and motivation to adapt to changing circumstances. Verbruggen and Sels (2008) suggest that career counseling is probably not the way to enhance adaptability in the long run, or that adaptability should be viewed as a trait instead of a competence that can be gained. Griffin and Hesketh (2003) treated adaptability as an inflexible personality trait and argued

that it has strong similarities with the Big Five trait ‘openness to experience’. Fugate, Kinicki, and Ashforth (2004) consider personal adaptability as one of the dimensions of employability and note that individual differences predispose people to engage in adaptive efforts.

Conversely, Savickas and Porfeli (2012) view career adaptability as transactional competences which develop in the interaction between a person and its environment, and therefore as changeable. However, there is little research on specific career adaptability interventions. Koen et al. (2012) developed a theory-driven training aimed at increasing career adaptability in terms of concern, control, curiosity, and confidence. They found an increase in concern, control and curiosity right after the training, and an increased level of control and curiosity in the long run. This partially confirms Savickas and Porfeli’s (2012) view on career adaptability as a malleable construct. Akkermans (2013) tested a comparable intervention (the CareerSKILLS intervention based on the JOBS intervention (Caplan, Vinokur, Price, & Van Ryn, 1989)) to enhance career competencies among young workers and found significant effects. The career competencies show strong resemblances with the career adaptability dimensions. The reflective competencies ‘reflection on motivation’ and ‘reflection on qualities’ can be compared to the career curiosity dimension, in particular the self-exploration part. The communicative competence ‘networking’ shows some resemblance with career concern. The behavioral competence ‘work exploration’ is comparable to career curiosity, mainly the environmental exploration part. The second behavioral competence ‘career control’ even has the same name as one of the career adaptability dimensions. The overall method of the intervention is based on strengthening self-efficacy which can be compared to the career confidence dimension. Because the intervention is effective in enhancing the competences at least in the short run and the competences show strong resemblances with the career adaptability construct, this also supports Savickas and Porfeli’s (2012) view on career adaptability. However, the question remains whether it is possible to develop career adaptability in terms of concern, control, curiosity, and confidence when using a different type of intervention.

ePortfolio

A tool that might contribute to sustainable effects and thus could be helpful when managing a career transition, is an ePortfolio. In general, an ePortfolio is described as a web-based information system that uses electronic media and services. It aims at building and maintaining an online portfolio in which someone is able to demonstrate one’s competences and skills, and reflect on one’s development. This helps people to achieve a better

understanding of their personal development, and supports career planning and CV building (Tosh & Werdmuller, 2004). Tosh and Werdmuller (2004) found mutual benefits because an ePortfolio can be used as a learning tool, a monitoring tool and a mechanism for employment opportunities. In education ePortfolios are seen as a powerful tool since it promotes self-management and self-direction by giving the responsibility for maintaining the tool, using its functions and improving their learning experience to the user. Users are completely in control of how and what they present. Hallam and Creagh (2010) found that there is a high level of interest in ePortfolios in the higher education because it helps students become reflective learners and being aware of their personal and professional strengths and weaknesses. Moreover, it can support them to make those skills more explicit and this might promote the graduate recruitment process. Research of Alexiou and Paraskeva (2010) showed that students' self-regulated learning skills enhanced when using ePortfolios. Since an ePortfolio seems to be a useful tool to promote self-management, it goes well with the trend that people are responsible for their own career and the career adaptability construct.

The ePortfolio has already showed its usefulness during career transitions. Herman and Kirkup (2008) studied women in transition using an ePortfolio. Those women were returning into employment in science, technology and engineering. 73% of the participants reported the ePortfolio as fairly to very useful and 77% would use an ePortfolio in the future again. The benefits of an ePortfolio compared to more traditional interventions are reflected in its self-directed possibilities and its cost effectiveness. An ePortfolio can be used autonomously. The clear instructions within the program help the users go through the different steps. Therefore it is a very cost-effective career intervention in contrast to career counseling which is relatively expensive. Combining its self-management possibilities and its usefulness during a career transition, the ePortfolio might be an effective tool to enhance one's career adaptability.

The current ePortfolio intervention

In the current study an ePortfolio intervention is tested which aims at helping students manage an effective school to work transition. The ePortfolio developed by Meurs HRM contains tests, questionnaires and exercises to help people discover their personal qualities and incentives. Moreover, it contains the Vacancy seeker which aims to make the labor market more transparent and allows self-directed environmental exploration by enabling to search for vacancies based on personal characteristics, incentives and roles.

The ePortfolio used in this study is based on the career adaptability construct. Career

concern is reflected in the possibility to provide a clear overview of the current status of one's career and future ambitions. This overview can be used as foundation for a concrete career plan. Career control is reflected in the entire ePortfolio since people are able to start working autonomously in the ePortfolio and the Vacancy seeker. In this way they obtain an overview and insight about their current situation and are able to independently take action. Career curiosity is reflected in both self-exploration and environmental exploration. Self-exploration includes filling out different questionnaires which give insight in one's personality, incentives and team roles. Moreover, curiosity is triggered by the pitch exercise in which people reflect on the results of the questionnaires, write an abstract of the most important outcomes while answering the questions, 'Who am I?, What are my qualities?, What are my ambitions?'. Subsequently, they make a pitch to briefly present themselves. Environmental exploration includes gaining more insight in the current labor market by using the Vacancy seeker. The Vacancy seeker gives an up-to-date overview of the current vacancies on the internet and helps people broaden their horizon by searching on personality characteristics and team roles instead of exclusively searching on job title. This gives people a clear overview of positions which initially seem less obvious, but actually fit their qualities very well. At last, career confidence is reflected in the entire ePortfolio. It supports one's confidence in their career by offering insight in their personal qualities, talents and skills. When people know what they are good at, what they are looking for and where they can find it, it becomes easier to independently find their own way on the labor market.

The ePortfolio intervention in the current study is divided in two meetings: the self-exploration meeting and the environmental exploration meeting. During the self-exploration meeting students explored their own personality, incentives and roles, and learned how to present their personal qualities in a pitch. During the environmental exploration meeting students searched for a suitable job using the Vacancy seeker. To see whether the intervention is effective, an experimental group which receives the entire intervention is compared to a control group which only attends the environmental exploration meeting.

Hypotheses

Based on previous research and the concept-driven design of the ePortfolio the following hypotheses are formulated:

Hypothesis 1. Participants in the experimental group will show an increase in career adaptability in terms of concern, control, curiosity, and confidence after the self-exploration meeting, compared to participants in the control group.

Hypothesis 2. Participants in the experimental group and the control group will show an increase in career adaptability in terms of concern, control, curiosity, and confidence after the environmental exploration meeting.

Hypothesis 3. The overall effect of the intervention on career adaptability in terms of concern, control, curiosity, and confidence is stronger when both the self-exploration and the environmental exploration meeting is attended.

METHOD

Design and procedure

A quasi experiment with repeated measures design allowed us to compare the development in career adaptability of university students who received the entire ePortfolio intervention (the experimental group) to students who only attended the environmental exploration meeting (the control group).

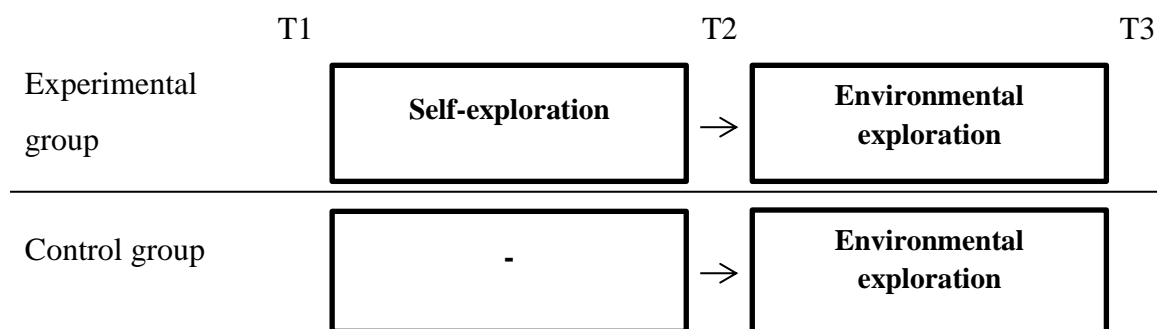


Fig. 1. Intervention explained for both the experimental group and the control group with the different measurement intervals.

The intervention was promoted as a training. The first meeting took place during the labor market preparation week organized by the faculty of social sciences of Utrecht University. Students were able to sign up for the training by the event website. The students who signed up automatically formed the experimental group. Before attending the first self-exploration meeting, they had to fill out the start questionnaire which measured career adaptability. 104 participants signed up for the training. 62 participants actually joined the self-exploration meeting, the rest did not show up or canceled. 26 of these participants also joined the environmental exploration meeting.

The participants, who did not show up or canceled during the first meeting, were invited to join the training again, and thus join the control group; four of them actually did. The rest of the control group was formed by inviting colleague master students and other people in researcher's network. 34 participants signed up for the training by sending an e-

mail. 26 of them actually attended the environmental exploration meeting. Before attending this meeting, they filled out the start questionnaire and an in between questionnaire which measured career adaptability again.

Participants

Data were collected among students and alumni from Utrecht University. In total 91 participants took part in the study from which 65% ($n=59$) formed the experimental group and 35% ($n=32$) the control group. All of them completed the first (Time 1) and the second (Time 2) measurement. 54% ($n=49$) also completed the third measurement (Time 3) from which 47% ($n=23$) formed the experimental group and 53% ($n=26$) the control group. The sample that completed all three measurements consisted of 41 women (84%) and 8 men (16%) with an average age of 23.9 years ($SD=3.92$, range between 19 and 47). The majority, 62%, were master students, 33% were bachelor or premaster students and 5% had graduated already. The alumni graduated at most 6 months ago and had not find suitable employment yet.

Training

Participants attended the training in a computer room at the university. During the training participants used their personal ePortfolio, an online tool which is developed by Meurs HRM. All meetings were guided by two researchers of Meurs HRM.

The training for the experimental group existed of two meetings: the first meeting was focused on self-exploration and the second meeting was focused on environmental exploration. Prior to the first meeting, the participants received access to their personal ePortfolio. They were asked to fill out the start questionnaire and three other questionnaires which measured personality, incentives and team roles. The first meeting was offered up to ten participants at a time. During this meeting, they reflected on the results of the questionnaires, summarized the most important outcomes and answered the questions, ‘Who am I?, What are my qualities?, What are my ambitions?’. Subsequently, they wrote their personal pitch and pitched in front of the group. At the end of the meeting, the participants filled out the evaluation questionnaire which measured career adaptability again, and contained several questions concerning the ePortfolio. During the second meeting participants used the Vacancy seeker to see if they could find suiting vacancies. They had to look for vacancies during 45 minutes. Every vacancy they clicked on had to be rated with 1 to 5 stars which symbolized how well they thought the vacancy fits them. Subsequently, they filled out the evaluation questionnaire which measured career adaptability again, and contained several questions to evaluate the Vacancy seeker.

The training for the control group could be considered as a workshop since it consists of only one meeting. Participants received access to their personal ePortfolio at the start of the workshop. Subsequently, participants used the Vacancy seeker as explained for the experimental group and filled out the evaluation questionnaire. Afterwards, the other functionalities of the ePortfolio were explained.

Measures

Career adaptability was measured using different scales to measure each of the four dimensions of career adaptability. Participants could answer on a five-point Likert scale ‘no!, no, ?, yes, yes!’ in which they answered if they had developed the concerned ability.

Career concern was measured using the concern scale coming from the Career Adaptabilities Scale (CAAS) developed by Van Vianen, Klehe, Koen, and Dries (2012). It consisted of 5 items such as, ‘thinking about what my future will be like’ ($\alpha_{t1} = .73, \alpha_{t2} = .81, \alpha_{t3} = .68$). Moreover, career concern was measured using 6 items based on the Planning Scale of Gould (1979), with items as, ‘I have a plan for my career’ ($\alpha_{t1} = .81, \alpha_{t2} = .81, \alpha_{t3} = .75$).

Career control was measured using 5 adapted items of the Career Decision Scale of Osipow, Carney, and Barak (1976). One of the items was, ‘I can list the alternative career options’ ($\alpha_{t1} = .64, \alpha_{t2} = .73, \alpha_{t3} = .51$).

Career curiosity was measured by the environment exploration and the self-exploration scale based on the Career Exploration Survey of Stumpf, Colarelli, and Hartman (1983). An example of an item of the environment exploration scale was, ‘In the last six months I have investigated career possibilities’ ($\alpha_{t1} = .76, \alpha_{t2} = .81, \alpha_{t3} = .77$). One of the items of the self-exploration scale was, ‘In the last six months I have thought about what is important to me in my career’ ($\alpha_{t1} = .65, \alpha_{t2} = .80, \alpha_{t3} = .81$).

Career confidence was measured using an adapted 6-item version of the Job Search Self-Efficacy Scale (Ellis & Taylor, 1983; Van Ryn & Vinokur, 1992), with items as, ‘I find myself capable of making the right decisions within my career’ ($\alpha_{t1} = .73, \alpha_{t2} = .76, \alpha_{t3} = .55$).

Statistical analyses

The effect of the intervention on participants’ career adaptability was tested by different analyses in SPSS. Firstly, 2x2 repeated measures analyses of variance (ANOVAs) (GLM) tested the interaction condition x time to see if the development of the different career adaptability dimensions was significant after the self-exploration meeting and could be ascribed to the intervention. Subsequently, repeated measures ANOVAs (GLM) tested the development of the career adaptability dimensions for the experimental group and the control

group after the environmental exploration meeting. At last, 2x3 repeated measures ANOVAs (GLM) and contrast analyses were conducted to test if the development of the different adaptability dimensions was stronger for the experimental group compared to the control group.

RESULTS

To see whether the experimental group and the control group would be comparable before the start of the intervention, we first checked if the groups differed in demographic variables and the different career adaptability measures at Time 1. No significant differences were found between the experimental group and the control group for age ($F(1,89) = .13, p = .72$) and gender ($\chi^2(1) = 1.08, p = .30$), nor for concern ($F(1,89) = 1.76, p = .19$), career planning ($F(1,89) = .00, p = .99$), career indecision ($F(1,89) = 2.47, p = .12$), environmental exploration ($F(1,89) = .18, p = .67$), self-exploration ($F(1,89) = .79, p = .38$), and job search self-efficacy ($F(1,89) = .34, p = .56$).

Effectiveness of the self-exploration meeting

The first hypothesis stated that participants in the experimental group would show an increase in career adaptability in terms of concern, control, curiosity, and confidence after the self-exploration meeting compared to participants in the control group. In Table 1 the means and standard deviations for each measure per group are shown for the different time intervals. The means indicate that the experimental group showed higher scores on concern, career planning (concern), environmental exploration (curiosity), and self-exploration (curiosity), and a lower score on career indecision (control) at Time 2 compared to the control group.

Table 1

Means and standard deviations of the different career adaptability dimensions on T1, T2 and T3 for the experimental group and the control group.

Dimension	Measure	Group	T1 (N=91)		T2 (N=91)		T3 (N=49)	
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Career concern	Concern	Experimental	3.38	.61	3.63	.56	3.98	.49
		Control	3.19	.71	3.22	.75	3.74	.50
	Career planning	Experimental	2.90	.77	3.27	.72	3.62	.62
		Control	2.91	.79	3.06	.75	3.30	.63
Career control	Career indecision	Experimental	3.40	.64	3.22	.65	2.82	.60
		Control	3.19	.61	3.11	.57	2.79	.32
Career curiosity	Environmental exploration	Experimental	2.57	.78	2.72	.76	3.65	.80
		Control	2.64	.86	2.70	.80	3.29	.50
	Self-exploration	Experimental	3.93	.52	4.23	.42	4.43	.42
		Control	3.82	.64	3.88	.65	4.01	.52
Career confidence	Job search self-efficacy	Experimental	3.55	.51	3.60	.53	3.92	.32
		Control	3.61	.60	3.48	.56	3.80	.38

To test whether participants in the experimental group will show a significant increase in career adaptability after the self-exploration meeting in comparison to the control group, six 2x2 repeated measures ANOVAs were conducted. The career adaptability measure at each time interval was the within-subjects variable and group was the between-subjects variable. Although the assumptions of normality and homogeneity of variance were not met for all measures on every measurement interval, an ANOVA was considered a robust test due to the number of participants. No effects occurred for environmental exploration. For self-exploration ($F(1,89) = 14.46, p = .00$), career indecision ($F(1,89) = 4.84, p = .03$), concern ($F(1,89) = 6.59, p = .01$), and career planning ($F(1,89) = 20.82, p = .00$) main effects for time were found which suggests that all participants showed more self-exploration, career decidedness, concern, and career planning at Time 2. Moreover, for self-exploration ($F(1,89) = 4.57, p = .04$) and concern ($F(1,89) = 5.47, p = .02$) main effects for group were found which implies that the experimental group shows more self-exploration and concern in general. A significant interaction effect was found for self-exploration ($F(1,89) = 6.74, p = .01$), concern ($F(1,89) = 4.05, p = .05$) and job search self-efficacy ($F(1,89) = 4.61, p = .03$). In other words, the results showed that the development of self-exploration (curiosity),

concern and job search self-efficacy (control) was significantly different for the experimental group compared to the control group. These results partially support Hypothesis 1.

Effectiveness of the environmental exploration meeting

The second hypothesis stated that participants in the experimental group and the control group would show an increase in career adaptability in terms of concern, control, curiosity, and confidence after the environmental exploration meeting. The means in Table 1 indicate that an increase occurred in concern, career planning, career indecision, environmental exploration, self-exploration, and job search self-efficacy and a decrease in career indecision for both the experimental group and the control group.

To see whether participants in both the experimental group and the control group will show a significant increase in career adaptability after the environmental exploration meeting, repeated measures ANOVAs were conducted for both groups. For all different career adaptability measures a time effect was found in the experimental group; environmental exploration ($F(1,22) = 24.62, p = .00$), self-exploration ($F(1,22) = 9.07, p = .01$), career indecision ($F(1,22) = 7.73, p = .01$), concern ($F(1,22) = 16.60, p = .00$), career planning ($F(1,22) = 6.54, p = .02$), and job search self-efficacy ($F(1,22) = 12.51, p = .00$). These time effects were also found in the control group; environmental exploration ($F(1,25) = 9.36, p = .01$), self-exploration ($F(1,25) = 2.49, p = .02$), career indecision ($F(1,25) = 5.22, p = .03$), concern ($F(1,25) = 16.72, p = .00$), career planning ($F(1,25) = 7.74, p = .01$), and job search self-efficacy ($F(1,25) = 18.27, p = .00$). In other words, the results revealed that both the experimental group and the control group show significant increases in the career adaptability dimensions after attending the environmental exploration meeting, thereby supporting Hypothesis 2.

Overall effectiveness of the intervention

Six 2x3 repeated measures ANOVAs were conducted to test if the development of the career adaptability dimensions was significant and could be ascribed to the intervention. The career adaptability measure at each time interval was the within-subjects variable and group was the between-subjects variable. Mauchly's test indicated that the assumption of sphericity has been violated for environmental exploration. Therefore the degrees of freedom were corrected using the Greenhouse-Geisser correction ($\epsilon = .74$).

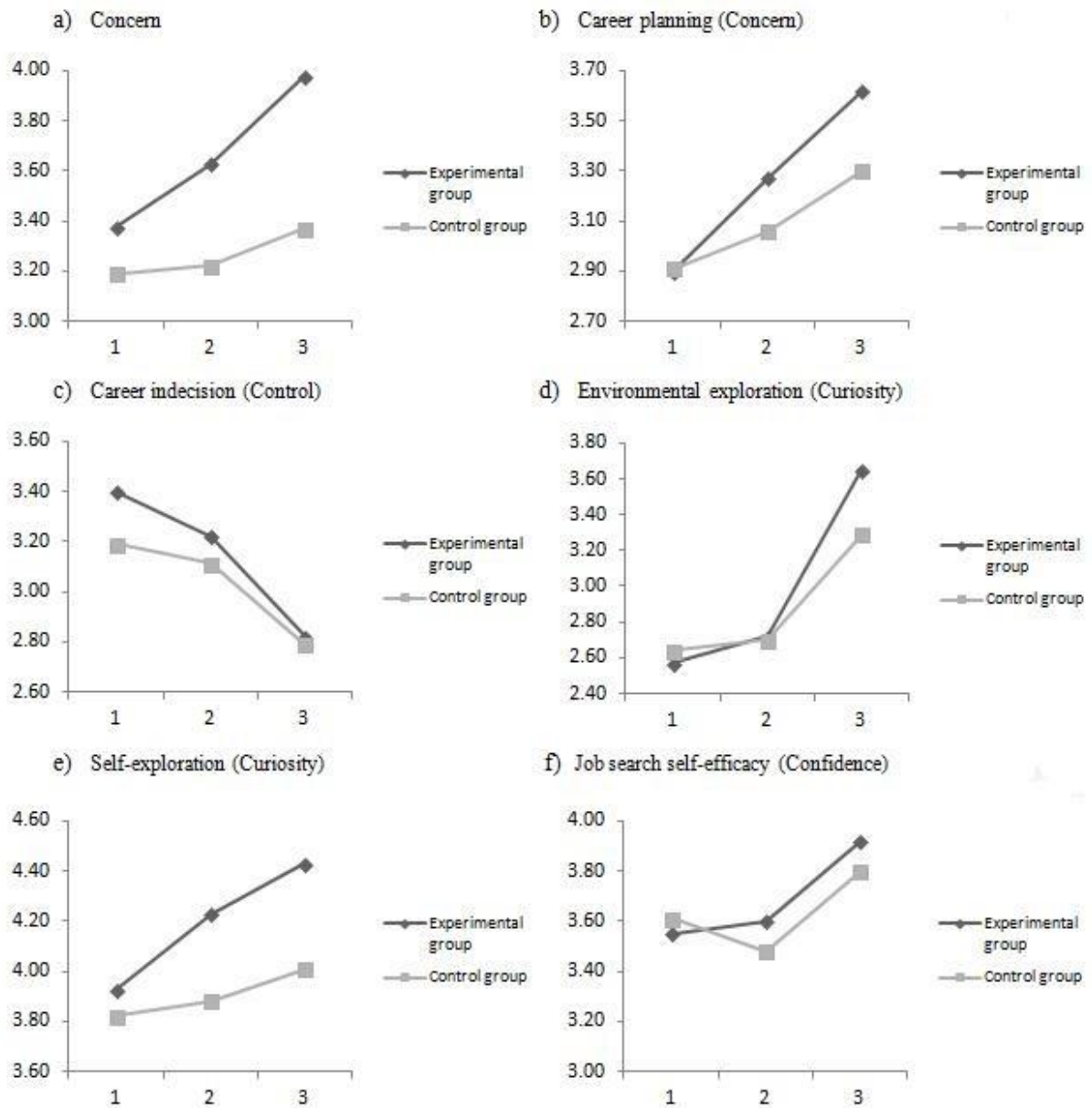


Fig. 2. Graphic representations of the different career adaptability measures at the different time intervals for both the experimental group and the control group.

Results revealed that for every career adaptability measure a main effect on time was found; environmental exploration ($F(1,47, 69.15) = 33.78, p = .00$), self-exploration ($F(2,94) = 17.68, p = .00$), career indecision ($F(2,94) = 16.51, p = .00$), concern ($F(2,94) = 23.10, p = .00$), career planning ($F(2,94) = 38.15, p = .00$), and job search self-efficacy ($F(2,94) = 16.43, p = .00$). For self-exploration ($F(1,47) = 5.13, p = .03$) and concern ($F(1,47) = 4.57, p = .04$) also a main effect on group was found. Furthermore, results showed that the interaction condition x time was significant for environmental exploration ($F(1,47, 69.15) = 4.53, p = .02$) and career planning ($F(2,49) = 4.48, p = .01$). In other words, the results revealed that the development of environmental exploration (curiosity) and career planning (concern) was

significantly different in the experimental group compared to the control group. These results partially confirm Hypothesis 3.

To assess the differences in development in more detail contrast analyses were used. Tests of within subject effects showed that the overall time effect for environmental exploration was significant in the experimental group ($F(2,44) = 25.54, p = .00$) and the control group ($F(2,50) = 8.55, p = .00$). Further analyses found that participants in both the experimental group and the control group showed no significantly higher levels of environmental exploration at Time 2 compared to Time 1. However, at Time 3 participants in both the experimental group ($F(1,22) = 24.62, p = .00$) and the control group ($F(1,25) = 9.36, p = .01$) showed an increase in environmental exploration compared to Time 2. Both the experimental group ($F(1,22) = 37.51, p = .00$) and the control group ($F(1,25) = 9.42, p = .01$) showed significantly higher levels when comparing scores at Time 3 to Time 1.

For career planning tests of within subject effects showed that the overall time effect for career planning was significant for both the experimental group ($F(2,44) = 24.57, p = .00$) and the control group ($F(2,50) = 12.68, p = .00$). Subsequently, contrast analyses showed a significant increase in career planning for both the experimental group ($F(1,22) = 24.29, p = .00$) and the control group ($F(1,25) = 7.05, p = .01$) between Time 1 and Time 2. An increase in career planning was also found between Time 2 and Time 3 for both the experimental group ($F(1,22) = 6.54, p = .02$) and the control group ($F(1,25) = 7.34, p = .01$). Both the experimental group ($F(1,22) = 37.58, p = .00$) and the control group ($F(1,25) = 20.48, p = .00$) showed significantly higher levels of career planning on Time 3 when comparing to Time 1.

DISCUSSION

The current study answered to the call for more intervention studies (Verbruggen & Sels, 2008; Vuori et al., 2012) and tested the effectiveness of the ePortfolio in enhancing students' career adaptability in terms of concern, control, curiosity, and confidence. An experimental group which attended the entire intervention including the self-exploration meeting and the environmental exploration meeting was compared to a control group which only attended the environmental exploration meeting. In total 91 participants took part in the study from which 58 formed the experimental group and 32 the control group.

Results indicated that participants in the experimental group had increased in concern, self-exploration (curiosity) and job search self-efficacy (confidence) after attending the self-exploration meeting whereas the control group did not. The environmental exploration meeting resulted in an increase for both the experimental group and the control group in

concern, career planning (concern), career decidedness (control), self-exploration (curiosity), environmental exploration (curiosity), and job search self-efficacy (confidence). Moreover, results revealed that the intervention was more effective on career planning (concern) and environmental exploration (curiosity) when both the self-exploration meeting and the environmental meeting was attended. It seems to be beneficial to explore the self before conducting environmental exploration. This indicates that external exploration is important, but self-exploration prior to environmental exploration clearly enhances the overall effect. In sum, these results indicate that the ePortfolio is beneficial in enhancing students' career adaptability. Therefore, it can be concluded that the ePortfolio intervention has proven its effect.

Theoretical contributions

Our results have several theoretical contributions. First, the results of the current study partially confirm Savickas and Porfeli's (2012) view on career adaptability as competencies that can be modified. In the literature there was no consensus yet whether career adaptability is a stable personality trait or can be seen as a set of transactional competencies (Verbruggen & Sels, 2008). Whereas Verbruggen and Sels (2008) and Griffin and Hesketh (2003) were supporting the personality trait view on career adaptability, Koen et al. (2012) and Akkermans (2013) intervention studies confirmed Savickas and Porfeli's (2012) view on the career adaptability dimensions as competencies that can be modified. The results of the current study tend more towards Savickas and Porfeli's (2012) view because all the different career adaptability dimensions developed when using the ePortfolio. Our study shows that the ePortfolio intervention can actually enhance students' career adaptability at least in the short run, hence it contributes to Savickas and Porfeli's (2012) view on career adaptability as a malleable construct.

Second, the current study emphasizes the significance of conducting self-exploration prior to environmental exploration. The results indicate that exploring one's personal qualities prior to investigating the various career options resulted in higher levels of career planning and environmental exploration. Consequently, self-exploration prior to environmental exploration ensures people to set more career goals and gain more information about different jobs, organizations and professional fields. Zikic and Klehe (2006) have already pointed out that environmental exploration increases the possibility of finding a suitable job. The results of the current study suggest that when students conduct self-exploration before exploring the environment their adaptability at the labor market increases significantly.

Third, the current study answers the call for more empirical studies to examine the effectiveness of interventions supporting career development (Vuori et al., 2012) and the specific demand for more intervention research on enhancing career adaptability (Verbruggen & Sels, 2008). Moreover, the current study proves that it is actually possible to enhance students' career adaptability using an ePortfolio intervention. Herman and Kirkup (2008) have already demonstrated the usefulness of an ePortfolio for women in a career transition. Our results show that an ePortfolio can also be useful in preparing for the school to work transition. The ePortfolio seems to be an appropriate intervention to enhance students' career adaptability which may help students successfully manage career transitions (Hirschi, 2009), find high quality employment (Koen et al., 2010) and have career success (Hirschi, 2010).

Limitations and suggestions for future research

There are a few limitations that need to be addressed. First, the results indicate that the ePortfolio can enhance students' career adaptability on the short term since the effect was measured directly afterwards the intervention. Therefore, the results cannot provide any clarity whether the increased career adaptability levels sustain in the long run. Burke and Hutchins (2007) underline the importance of time and opportunity to implement the new skills and knowledge retrieved from the intervention. This inquires a longer time interval between the end of the intervention and the measurement to determine the effect of the intervention. Because the ePortfolio is developed to enhance career adaptability sustainably, it requires to test the effectiveness of the intervention on the long run.

Second, participants were not randomly assigned into the experimental group and the control group due to practical limitations. Analyses at Time 1 showed no differences between the two groups on any of the demographic variables nor on the different career adaptability measures. However, it might have had a confounding influence on our outcome variables. Moreover, the sample consisted of participants who signed up on a voluntary basis. This can trigger a self-selection bias which implies that people who voluntarily participate might have had lower career adaptability levels at Time 1 than the average. Students who felt already prepared for the school to work transition and therefore probably show higher levels of career adaptability would possibly not sign up for the training. However, the intervention is designed for graduates who do not meet the certain career adaptability levels to successfully manage the school to work transition. This indicates that the intervention reaches the relevant target group: those students who could use a helping hand. Another limitation on our study is that it contained a relatively small sample. Although effects were found despite the sample size,

more effects could have been significant when larger sample sizes were used. Furthermore, additional analyses would have been conducted to assess the career adaptability development in more detail.

Another critical remark on our study is that it only involves self-assessment measures. Self-reports run the risk of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) which might have influenced the results. However, the levels of the different career adaptability dimensions are probably evaluated most accurate by individuals' themselves. In addition, the Cronbach's alphas were respectively questionable for the Career Decidedness Scale on Time 1 and Time 3 according to George and Mallery (2003). The Cronbach's alpha for the Job Search Self-Efficacy Scale on Time 3 turned out to be questionable as well. This denotes that the internal consistency of the scale was not sufficient for those measurements. The lowest Cronbach's alpha values were found on Time 3. This might indicate that the third measurement was less reliable. Participants might have been less motivated to fill out the questionnaire again after being confronted with the same questions multiple times.

Future research should assess the long term effects of the ePortfolio on career adaptability. Another important addition to the current study would be to investigate the effects of the ePortfolio on more objective outcomes, for example whether graduates actually find a suitable job. In addition, links with career success and job quality could be investigated to verify previous research of Koen et al. (2010) and Hirschi (2010). Moreover, it is important to investigate the effect of the ePortfolio without the supportive meetings. The current study does not provide clarity whether the effects of the ePortfolio on career adaptability remain when graduates do not attend one or two meetings. At last, it would be interesting to use other samples to see if the ePortfolio is also a useful tool to help people manage other career transitions.

Practical implications

The ePortfolio offers graduates the opportunity to increase their career adaptability which may help them successfully manage the important school to work transition. Students may feel better prepared when using the ePortfolio, an intervention aimed at supporting career development in a more autonomous way. The current study also demonstrates that it is possible to support graduates' career development when using an online tool.

Since the ePortfolio seemed to be effective in enhancing students' career adaptability, its self-directed possibilities and relatively low costs, the ePortfolio could be a useful tool for universities which are willing to help their graduates successfully manage the school to work

transition. Other implications involve career counselors who prefer to give their clients a more self-directive role in supporting their career development. They could introduce an ePortfolio and help the clients go through the different steps of the program.

Conclusion

The results indicated that the ePortfolio is a useful tool to enhance students' career adaptability and help them prepare for a successful school to work transition. Attending both the self-exploration meeting and the environmental exploration meeting resulted in a more beneficial effect compared to only attending the environmental exploration meeting which emphasized the importance of conducting self-exploration prior to environmental exploration. With this study we hope to have demonstrated the theoretical and practical relevance of career adaptability and provide a useful tool to develop students' career adaptability to help them successfully manage the important school to work transition.

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