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Ready for the Change:

Strengthening Adaptive Responses to a Looming Career Transition

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General Introduction:

Ready for the Change: Strengthening Adaptive Responses to a Looming Career Transition

Adapting to new and unknown circumstances can be an exciting challenge or a difficult and strenuous task. Especially when it comes to something as crucial as peoples' work and careers. Having a job is very important to people in many ways. Being employed in a job that suits you is positively linked to mental and physical health (McKee-Ryan, Song, Wanberg, & Kinicki, 2005; Paul & Moser, 2009).

However, finding and keeping the right job is becoming more difficult. Not too long ago, people could often decide their preferred career path and pursue this path in a predictable and linear fashion, staying within one job family while moving vertically through a single organization's hierarchy. Today, jobs are subject to high-speed changes and uncertain prospects and workers are often confronted with planned as well as unplanned transitions (e.g., Greenhaus, Callanan, & DiRenzo, 2008). The uncertainties and demands of a rapidly changing labor market call for more flexible and self-regulated career paths, in which workers can transition between jobs and even organizations. Navigating such an unpredictable and capricious world of work asks workers to constantly be on the tip of their toes. The responsibility for career management has shifted more and more from the employer to the employee (Kossek, Roberts, Fisher, & Demarr, 1998). Therefore, workers have to be well prepared and see the need and to know the right tools for self-managing their own careers (Segers & Inceoglu, 2012; Vuori, Toppinen-Tanner, & Mutanen, 2012).

Accordingly, the aim of this dissertation is to provide new insights and tools for scholars and practitioners who aim to help workers manage their own careers, prepare for transitions and adapt successfully.

The premise of the dissertation is that personal adaptivity, career adaptability and adaptive responses contribute to dealing successfully with changes in work and work conditions and to finding suitable, high quality employment during different career stages. I will show that career adaptability and adaptive responses are crucial in preparing for career transitions and I will introduce new, efficient, scalable and effective career interventions that can enhance career adaptive responses and help people find higher quality employment. I will also address the notion that adapting to career transitions can be especially challenging for older workers and thus, for a growing percentage of the workforce (UN Population Division, 2009). A possible remedy lies in certain individual differences variables that may facilitate adaptive responses to a looming career transition in general, and among older workers in particular. Overall, the findings in this dissertation indicate that it is possible to help large groups of workers to adapt at different stages of their careers by training career adaptability adaptive responses with low-key interventions.

In this introduction, I will start with discussing what career transitions are and why they have become such an important research topic according to career construction theory. Consecutively, I will elaborate on career adaptability and adaptation. Thereafter I will give and overview of research on the effectiveness of career interventions, after which I will discuss the influence of age on career adaptability and the role of core individual difference variables that may facilitate adaptive responses. I will close this introduction with a brief overview of the studies conducted for this dissertation.

Career Construction Theory, Career Adaptability and Adaptation

As the labor market becomes more flexible, workers are confronted with more career changes and transitions. This means work itself changes faster and workers have to change jobs more frequently (e.g., Greenhaus et al., 2008). Savickas (2012), explains that even though adapting to change often is the start of learning and developing, people do not readily

initiate large changes themselves. They often have grown comfortable the way they are and transitions require substantial effort. More often than not, it is something external that triggers a change in people's careers. Career construction theory identifies three social challenges that prompt a career related change:

1. Vocational development tasks, are social expectations about age-graded normative transitions. Societies tell young people how to prepare for and enter their working lives, to choose a vocational field, specify an occupational preference and enter a first suitable job.
2. Occupational transitions, which implies moving from one job to the next. These transitions can be wanted or unwanted, planned or unexpected, and promotions or demotions.
3. Work trauma's, that is, painful unwanted events like dismissal during reorganization, the closing of an office, an accident at work, etc.

Dealing with these changes can be a real struggle. For example, many graduates struggle with their vocational development tasks as on average, it takes graduates with a tertiary level of education worldwide, about 9.7 months to find a stable or satisfactory job (ILO, 2015). This is not only because there is a lack of options for graduates, but also because graduates often flounder to find a job that fits their own interests, personalities, and skills (Solberg. Howard, Blustein, & Close, 2002). At the same time, older workers may find dealing with work related changes particularly challenging as they face a very different world of work than the world that they were socialized into when starting their careers (Kalleberg, 2008; Smola & Sutton, 2002).

According to career construction theory (Savickas, 2005, 2013), workers need to adapt continuously to go thru the diverse work-related changes throughout their life-span. Therefore, they need to remain ready for change in their careers at all times. Career construction theory characterizes adaptation outcomes as resulting from adaptivity,

adaptability and adaptive responses. Adaptivity is described as the readiness to adapt and being prepared to change in general. It denotes the personal characteristics of flexibility or willingness to meet career tasks, transitions and trauma's with fitting responses. However, before people can demonstrate the necessary responses, they also need adaptability, described as the self-regulation recourses to manage career related change. Career construction theory suggests that the adaptation process occurs along four interrelated factors of adaptability, : control, curiosity, concern, and confidence. These factors are each characterized by specific behaviors and cognitions, labeled career adaptive responses (Savickas, 2005, 2013). In other words, workers need to have a sense of control over the progress of their careers, be curious about alternative career options, be concerned with the future and have the confidence to master the career-related challenges ahead.

First, 'career control' concerns being responsible and careful in making career-related choices. It implies that people are able to influence their future and are responsible for constructing their own career. Consequently, they arguably face fewer difficulties in deciding upon their future career, i.e., experience higher *career decidedness* (Savickas, 2013).

Second, 'career curiosity' is about an inquisitive mindset in regard to one's career and oneself in order to learn about one's surrounding and to grow as a person. This would foster an adaptive response of career exploration, which encompasses both *self-exploration* and *environmental exploration* (Savickas, 2013). Self-exploration implies pondering about questions such as 'What motivates me?' and 'What are my talents?', whereas environmental exploration refers to the exploration of potential jobs, organizations and professional fields.

Third, 'career concern' is about looking ahead to the future and being aware that it is important to plan (Savickas, 2005, 2013). A high level of career concern arguably motivates people to engage in the adaptive response of *career planning*, i.e., of setting career-related goals and developing plans on how to reach these goals.

Finally, 'career confidence' is about expecting to succeed in constructing one's career

by being able to perform efficiently the tasks at hand, solve complex problems, overcome obstacles, and learn new skills (Savickas, 2005, 2013). Career confidence would foster an efficacious and adaptive mindset about imminent career tasks at hand (i.e. *career self-efficacy*), such as graduates' self-efficacy to search for and find a suitable (first) job (Moynihan, Roehling, LePine, & Boswell, 2003).

While the link between different factors of career adaptability and the respective adaptive responses are not as straightforward as originally proposed (Hirschi, Herrmann, & Keller, 2015), both career adaptability and adaptive responses are helpful during the transitions from school to further education (Germeijs & Verschueren, 2007; Hirschi, 2010), from school-to-work (e.g., Creed, Muller, & Patton, 2003; Koen, Klehe, & van Vianen, 2012) and later during one's career (e.g., Zacher, 2014) e.g., when transitioning from unemployment back into work (Koen, Klehe, Van Vianen, Zikic, & Nauta, 2010; Zikic & Klehe, 2006).

Effectiveness of Proposed Career Interventions

As the ability to adapt is such an important skill to have during all career stages, it is not surprising there is an ongoing call for intervention studies on career development (e.g. Savickas et al., 2009; Savickas, 2012; Verbruggen & Sels, 2008; Vuori et al., 2012; Whiston, Brecheisen, & Stephens, 2003; Whiston, Li, Mitts & Wright, 2017). Career interventions in general show positive effects when it comes to helping workers prepare for transitions (Whiston et al., 2003; Whiston et al., 2017), yet there is still a lot unclear about interventions' long-term effects. Long-term experimental design studies are often difficult to conduct because of the ethical issues associated with not providing treatment to the control group. Therefor most studies use a waitlist control design in which career interventions are provided to the control group not long after the treatment group has finished, making it difficult to study long-term effects. An exception is a quasi-experimental study on a career adaptability intervention for students by Koen et al. (2012) which lead to an increase in students' level of

career concern, control and curiosity right after the training, and an increased level of control and curiosity six months later. This study shows it is possible to train young people's career adaptability and enhance their chances for success during their first step on to the labor market.

At the same time, the intervention by Koen et al. (2012), was relatively time-intensive (8,5 hours of group training) and could only be conducted with small groups of students of 15 participants at a time. Developing the skills needed for adapting to a looming career transition is relevant for every student, however, and money and time are often an issue when it comes to implementing career interventions in schools and universities – thus there is a need for efficient, scalable and effective interventions. In this dissertation, I extended on Koen et al. (2012) by developing and evaluating a more scalable, theory driven intervention that aims at enhancing career adaptability and adaptive responses. Like the intervention designed by Koen et al. (2012), I based the content of the training on Savickas' (2005) recommendation to incorporate exercises to acquire and utilize each career adaptability resource by planning, decision-making, exploration and problem solving. Additionally, I based the structure of the intervention on Brown and Ryan Krane's (2000; Brown et al., 2003) recommendation to include critical ingredients that improve the effectiveness of career interventions, such as the use of written workbook exercises, individualized interpretations of intervention material and personal feedback, and gathering information on the world of work and on specific career options and social support for students' career choices and plans.

According to a recent meta-analysis by Whiston et al. (2017), workbooks, counselor dialogue and world of work information are the most effective critical ingredients out of the five named by Brown and Ryan Krane (2000). Further, Whiston et al. (2017) found three additional critical ingredients that might be even more important for intervention success: counselor support, values clarification and psychoeducation (providing information or education regarding the steps involved in arriving at a career choice decision, certainty, or

satisfaction). Counselor support and values clarification where already included in the intervention design of the current study. The intervention developed for this dissertation is unique as compared to the intervention from Koen et al. (2012) as it is more compact and partly web-based.

Computer-assisted or web-based interventions have the potential to reach and engage a much larger group of people (Hirschi, 2018). Web-based interventions are both efficient and flexible, as they allow participants to complete assignments anytime and anywhere (e.g., Tate & Zabinski, 2004; Ouweneel, Le Blanc & Schaufeli, 2013). These interventions can cover some of counselors' traditional roles (e.g., assessing interest, providing information) and therefor, allow counselors to devote their limited time to activities that add significantly to the effectiveness of the intervention (Gati, 1996). Even though the potential of computer-assisted career interventions has been recognized for some years (Gati & Asulin-Peretz, 2011; Horan, 2010; Tracey, 2010), the number of studies that include computer guided interventions over the last 20 years have been scares (Whiston et al., 2017). Therefore, there is a strong call for practitioners and researchers alike to integrate and validate online- and computer-assisted career interventions (Hirschi, 2017),

That said, meta-analytic results suggest that computer-based interventions are generally more effective when combined with counseling than when used in isolation (Whiston et al., 2003). Further, while some meta-analyses suggest individual counseling to be most effective (Whiston, Sexton, & Lasoff, 1998), efficiency concerns and results from other meta-analyses speak for the use of structured group workshops as a good alternative (Whiston et al., 2003; Whiston et al., 2017). Therefore, in this dissertation I combined web-based interventions with one or two structured group interventions. I hypothesized that with combining these interventions, it is possible to enhance the career adaptability of students both in the short- and long-term (6 months after the intervention).

Intervention Intensity

When designing a scalable intervention it is important to in addition to the focus (i.e., career adaptability) and type of the intervention (i.e., web-based combined with structured group interventions), choose the optimal level of intensity. While it is often suggested that more intensive interventions (with more hours and more sessions) are more effective (Brown & Ryan Krane, 2000; Oliver & Spokane,1988), the relationship between number of sessions and effect size is not completely clear, partially due to a lack of low-intensity interventions. For their meta-analysis on career interventions over the past 20 years, Whiston et al. (2017) could only identify three studies with fewer than 5 session: one with one, one with two and one with three sessions. This makes it difficult to make clear assumptions about the impact of intervention intensity.

In this dissertation, I offer a systematic evaluation and comparison between different intervention set-ups varying in length and content. Assuming that more intensive interventions will have more pronounced effects, I hypothesized that students who take part in a more intensive intervention show a larger increase in career adaptability and career adaptive responses immediately after the intervention and six months later, compared to students who take part in a less elaborate intervention.

Career Adaptability and Age

While according to career construction theory (Savickas, 2005, 2013), career adaptability and adaptive responses are of utmost importance throughout the entire career, the vast majority of empirical research on career adaptation has stayed close to its roots in vocational maturity (Super, 1955) by studying students and graduates in the context of their school-to-work transition (e.g. ., Barclay & Stoltz, 2016; Bernes, Bardick, & Orr, 2007; Hirschi et al., 2015, Koen et al., 2012; Nota, Santili & Soresi, 2016; Stoltz, Wolff, & McClelland, 2011; Taber, Hartung, Briddick, Briddick & Rehfuss, 2011). The latest meta-

analysis on career choice interventions containing all relevant studies over the past twenty years, showed 80,3% of the studies focused on students (Whiston et al., 2017). This is problematic as the aging of the (working) population (UN Population Division, 2009) and the accompanying rise of the regular retirement age implies that older workers, too, need to continue adapting to the rapid changes in their work and working conditions. Also, some studies show that workers who do show more adaptivity in later career stages are indeed more likely to successfully transition back to work and to secure high-quality employment following job loss and/or unemployment (Griffin & Hesketh, 2003; Koen et al., 2012; Koen et al., 2010; Zacher, 2014a; Zikic & Klehe, 2006), herewith highlighting the benefits of career adaptive responses in today's fast-paced and evolving work context (Savickas, 2013).

However, simply expecting workers who are looking back over an extended work history to adapt to transitions in the same manner as their younger colleagues is not realistic (Buyken, Klehe, Zizic, & Van Vianen, 2015). Compared to young workers, experienced workers stand at career stages traditionally concerned with maintenance and even exit (Super, 1980). Experienced workers have often invested much time and energy into their previous career choices, implying high professional investments in their past, high emotional costs of changing occupations, and limited occupational alternatives (Carson & Carson, 1997). Thus, older workers may experience great difficulty adapting to changes (e.g., Brouwer, Schellekens, Bakker, Steegen, Verheij, Havinga, & Brakel, 2011; Heckhausen, Wrosch, & Schulz, 2010). Therefor I hypothesize that age is negatively related to the four facets of workers' adaptive responses to a looming career transition.

Adaptivity: Individual Differences Variables that May Help Workers Adapt

If adaptive responses are indeed more difficult for older workers, it might be interesting to look what other factors influence how adaptive people respond during different stages of their careers. The latest rendition of career construction theory (Savickas, 2005,

2013) proposes that core individual differences, labeled adaptivity, denote people's mental readiness to meet career tasks, transitions, and traumas with fitting responses. It is known that core self-evaluations and proactivity have a positive effect on the adaptive responses and beliefs of university students (Hirschi et al., 2015), but the effect on workers instead of students are still unknown and core self-evaluations and proactivity have not yet been conceptually linked to the four facets of career adaptation. Therefor I address such links by studying individual differences that are conceptually linked to the facets proposed in career construction theory, namely people's locus of control, their generalized self-efficacy, and their trait curiosity.

An internal *locus of control* represents the extent to which people believe that the rewards they receive in life are controlled by their own personal actions (Rotter, 1966). An internal locus of control can be directly related to career control, and is likely to be a prerequisite for career adaptive responses like feeling responsible for constructing your own career.

Generalized self-efficacy, describes peoples perceived ability to cope, perform, and be successful in general (Judge, Locke, & Durham,1997). As the tendency to feel efficacious usually spills over into specific situations (Eden, 2001), one important outcome of generalized self-efficacy is specific self-efficacy which refers to the perceived ability to succeed in specific situations or accomplish specific tasks, including to successfully execute the actions needed to achieve one's career goals, i.e., career confidence (Savickas, 2005).

Trait curiosity, is a core component of openness to experience and a global, positive trait that involves the recognition, pursuit, and desire to explore novel, challenging, and uncertain events (Kashdan & Silvia, 2008). Up to now, trait curiosity has hardly been studied within the domain of work (Kashdan & Silvia, 2008). Yet, findings suggest that curiosity may be relevant at the workplace and particularly during career transitions as it influences job performance, learning during the socialization process (Reio & Wiswell, 2000), and promotes newcomers' successful adaptation into the organization (Harrison et al., 2011).

Aligned with Savickas' (2005, 2013) career construction theory, the theoretical underpinnings of these core individual difference variables are anchored in self-regulation capacities of individuals to successfully find their way in unfamiliar circumstances. However, the links between adaptivity and adaptability are not always as straightforward as Savickas suggested, but can also be related in a more intertwined way (see Hirschi et al. 2015, Wehrle, Kira & Klehe, in press). I therefor hypothesize that an internal locus of control. generalized self-efficacy and trait curiosity are positively related to all four facets of workers' adaptive responses to a looming career transition.

Adaptivity as a Moderator to the Effect of Age

Additionally, theoretical frameworks on successful aging at work imply that individual differences can buffer against the negative effects of age (Rudolph, 2016). Older workers with a high internal locus of control will likely refuse to hand over the control over their careers to external factors and will thus continue deciding themselves about the future of their careers and to plan ahead. Workers with a high amount of generalized self-efficacy may also maintain their sense of career-related self-efficacy, irrespective of age. Finally, a high trait curiosity, also in later career stages, may positively impact older workers' career adaptive responses and particularly their exploration behavior, making age-related differences less pronounced. Subsequently I hypothesize that indicators of adaptivity, moderate the relationship between age and workers' career-adaptive responses to a looming career transition: an internal locus of control will weaken the negative link between age and career planning and decidedness, generalized self-efficacy will weaken the negative link between age and career self-efficacy, and trait curiosity will weaken the negative link between age and career exploration.

Interventions for Experienced Workers

Core individual differences might be a helpful buffer against the negative effects of

age, but as they are also likely to be quite stable, it is important to look at what can be done to enhance older workers adaptive responses. If we know that low-key interventions that combine web-based assignments with a group intervention can help students prepare better for their career transition, it seems relevant to consider that such an approach could also obtain similar effect for more experienced workers. However, a simple translation of findings from the school-to-work transition to workers with an extended work history is far from given (Buyken, Klehe, Zikic & Van Vianen, 2015). Compared to students who enter the labor market for the first time, adults stand at different career stages (Super, 1980) with different experiences, needs, and expectations. Particularly workers in previously stable organizations might have more difficulty maintaining career adaptive responses with age. This mirrors the ongoing call from diverse researchers for more intervention studies on career development (e.g. Savickas et al., 2009; Savickas, 2012; Verbruggen & Sels, 2008; Vuori et al., 2012; Whiston et al., 2003; Whiston et al., 2017).

Arising therefrom, I present and evaluate a scalable intervention, combining an online portfolio with a half-day event, designed for experienced workers in the context of an organizational downsizing. I hypothesize that workers who participate in the intervention will show an increase in career adaptive responses, compared to workers who did not participate.

Dissertation Overview

The ability to adapt one's career has become crucial to many workers facing today's fast changing labor market. Despite a long history of research on career interventions, there is a need for more efficient interventions that focus on enhancing career adaptability and adaptive responses at all career stages. We need more knowledge on how recent technology can be used to make interventions more scalable, and how training results transfer into sustained changes in career related responses, attitudes and outcomes, like employment quality. Besides, not everyone might react in the same way to a looming career transition. For some

people it might be easier to show the necessary responses, than it is for others. Therefore, it is important to find out what factors influence these responses and who might need extra help when confronted with career changes or transitions.

In this dissertation, I try to fill these gaps in research by amplifying the knowledge on career interventions for students and experienced workers. I present and evaluate new scalable interventions that aim to enhance career adaptability and adaptive responses, with a combination of web-based assignments and compact group interventions. I also investigate the role of age and adaptivity (core individual differences) in career adaptive responses.

In the first empirical chapter of this dissertation (Chapter 1), I developed and evaluated career interventions that can help large numbers of students prepare for the school-to-work transition. In a quasi-field experiment I compared the development of career adaptability and adaptive responses between three intervention groups (n= 48, n= 304, n= 42) and the control group (n=79) over three time points (pre-intervention, post-intervention and six months later). At the third time point, I also looked at the interventions' effect on first employment quality and satisfaction. To evaluate the optimal intervention intensity, interventions varied in length and content. Repeated measurement analyses showed an overall increase in career adaptability and adaptive responses in the intervention groups, though not in the control group, that in most instances also held for six months after the interventions. Structural equation modelling showed that six months later, participants in the intervention groups reported higher perceived fit, career growth and satisfaction in their jobs through enhanced career adaptability. Effects in regard to intervention intensity were less clear. In sum, results show that efficient, scalable, partly web-based career interventions may help students prepare for the school-to-work transition and raise their chances on finding high quality employment.

In Chapter 2, I studied the relationship between age, individual differences (locus of control, generalized self-efficacy, and trait curiosity) and career adaptive responses in several Dutch non-profit organizations. Adapting to a looming career transition can be a challenge,

particularly for older workers and thus, for a growing percentage of workers in the workforce. A possible remedy lies in certain individual difference variables that may facilitate adaptive responses to a looming career transition in general, and among older workers in particular. In this study, I examined the impact of age and the effect of locus of control, generalized self-efficacy and trait curiosity on workers' adaptive responses (i.e., showing concern, control, confidence and curiosity) in the face of a looming career transition. I hypothesized age to have a negative effect, and the individual difference variables to have positive associations with workers' adaptive responses, while also buffering the effect of age on specific career adaptive responses. To examine this, I collected data among 3,413 workers facing an imminent career transition, usually the loss of their jobs. Results from hierarchical regression analyses largely supported the hypotheses, indeed highlighting the importance of individual differences for ensuring adaptive career responses and for buffering against the negative impact of age in the face of a looming career transition.

Following the result that adapting to career transitions can be particularly difficult for older workers, in Chapter 3, I developed and evaluated a scalable intervention that focuses on enhancing the career adaptive responses of more experienced workers in the context of an organizational downsizing. The intervention combines an online portfolio with a half-day career event. Career adaptive responses were measured before and six months after the intervention with 20 employees who participated and 28 employees who did not participate in the intervention. Employees who participated showed increases on career decidedness, self-awareness, environmental exploration and planning, whereas employees in the control group did not. No effects were found for self-exploration and self-efficacy. These results show that it is possible to offer experienced employees a low-key, efficient, and effective option for enhancing their career adaptive responses in the context of a looming organizational restructuring.

The final chapter of this dissertation, Chapter 5, discusses the main findings from the

empirical studies and seeks to integrate them. In this concluding chapter, I propose that it is indeed possible to enhance students career adaptability, adaptive responses and first employment quality with relatively little input, using low-key interventions that include web-based technologies and group workshops. I also concluded that not everyone reacts to a looming career transition in the same manner. Older workers show less career adaptive responses compared to younger ones, and workers adaptivity, described as the core individual differences locus of control, generalized self-efficacy and trait curiosity, seems to foster career adaptive responses and even buffer against the negative effect of age. Even though it seems more difficult for older workers to show adaptive responses, I found that a similar low-key intervention approach like the one that was successful for students, can also enhance career adaptive responses during later career stages. Furthermore, I discuss the implications of these findings from both theoretical and practical points of view.

Chapter 1:

Facilitating a Successful School-to-Work Transition: Comparing Compact Career-Adaptation Interventions

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Abstract

A successful school-to-work transition is an important yet challenging step in graduates' careers. In this study, we answer to the call for more research on scalable and effective career interventions that can help large numbers of students prepare for this transition. We present and validate a partly web-based career intervention based on career construction theory (Savickas, 2005, 2013) that aims to foster students' career adaptability and career adaptive responses and to enhance students' quality of employment after their studies. A quasi-field experiment compared the development of career adaptability and adaptive responses between three intervention groups (n= 48, n= 304, n= 42) and a control group (n=79) over three time points (pre-intervention, post-intervention and six months later). To evaluate the optimal intensity of the intervention, interventions varied in length and content. Repeated measurement analyses showed an overall increase in career adaptability and adaptive responses in the intervention groups, though not in the control group, that in most instances also held for six months after the intervention. Structural equation modelling shows that six months later, participants of the intervention groups reported higher perceived fit, career growth and satisfaction in their jobs through enhanced career adaptability. Effects in regard to intervention intensity were less clear. In sum, results show that a compact, scalable and partly web-based career intervention may help students prepare for the school-to-work transition and raise their chances on finding high quality employment.

Public Significance Statement: Presenting and validating a compact, partly web-based career intervention that facilitates a successful school-to-work transition, by training students' career adaptability and career adaptive response.

Keywords: school-to-work transition, career intervention, career construction theory, career adaptability, career adaptive responses.

Facilitating a Successful School-to-Work Transition: Comparing Compact Career-Adaptation Interventions

Introduction

University students on the brink of graduation are entering an important phase in their lives: the school-to-work transition. Career decisions made and the immediate successes achieved during this transition often influence graduates' entire future careers in terms of long-term occupational directions (Richards, 1984), the likelihood of being employed (OECD, 1998), earnings, and overall career success (Steffy, Shaw, & Noe, 1989). However, many university graduates struggle with this transition: Across the globe, young people with a tertiary level of education need about 9.7 months to find a stable or satisfactory job (ILO, 2015). This is not only because there is a lack of options for graduates, but also because graduates often flounder to find a job that fits their own interests, personalities, and skills (Solberg. Howard, Blustein, & Close, 2002).

A long tradition of research has attempted to help students during this transition with different forms of career-related interventions, in general with success (e.g., Bernes, Bardick, & Orr 2007; Langher, Nannini, & Caputo, 2018; Whiston, 2002; Whiston, Brecheisen, & Stephens, 2003; Whiston, Li, Mitts & Wright, 2017), and the OECD (2004) highlighted the usefulness of career interventions during the transition from university to the labor market. However most interventions studied are rather elaborate and different reviews arrive at different conclusions regarding the best treatment modality (Brown & Krane, 2000; Oliver & Spokane, 1988; Whiston, Sexton, & Lasoff, 1998; Whiston et al., 2017), and bemoan a number of frequent shortcomings in research design and outcome measures studied (Langher et al., 2018). The current study addresses these gaps by presenting and systematically validating a partly web-based career intervention for university students preparing for the school-to-work transition. Based on career construction theory (Savickas, 2005, 2013), this

intervention is built on a solid theoretical framework that has proven useful in earlier intervention research for enhancing short-term learning and long-term employment success (Koen et al., 2012).

With this, the current study makes three conceptual contributions. First, it adds to the career adaptability framework (Savickas, 2005, 2013) by examining if it is possible to enhance students' career adaptability and adaptive responses both directly after the intervention and half a year later, with rather low-key and thus scalable interventions. Second, the study examines if by enhancing career adaptability the intervention can help students to find high quality employment in their first job. Finally, the current study offers a systematic evaluation by comparing more versus less intensive intervention setups with a control group. With this, the study adds to the debate on the effects of intervention intensity (Whiston, et al., 2003; Whiston, et al., 2017).

Methodologically, the novelty of the interventions is the use of online portfolios that can be matched to vacancies on the labour market. The interventions are relatively compact and scalable and facilitates the transfer of training to students' actual job-search. In line with meta-analytic results (Whiston et al. 2003; Whiston et al., 2017), the online interventions are combined with one or two short structured group interventions / workshops aimed at making the web-based interventions more effective.

Career Adaptability and Career Adaptive Responses

A successful school-to-work transition asks for career adaptability, i.e. the attitudes, behavior and cognitions that form people's "readiness to cope with the predictable tasks of preparing for changes in work and work conditions" (Savickas, 1997, p. 254). Career construction theory characterizes adaptation outcomes as resulting from adaptivity, adaptability and adaptive responses. Adaptivity is described as the readiness to adapt and being prepared to change in general. It denotes the personal characteristics of flexibility or

willingness to meet career tasks, transitions and trauma's with fitting responses. However, before people can demonstrate the necessary responses, they also need adaptability, described as the self-regulation recourses to manage career related change. Career construction theory suggests that the adaptation process occurs along four interrelated factors of adaptability: control, curiosity, concern, and confidence. These factors then express themselves through specific behaviors and cognitions, labelled career adaptive responses (Savickas, 2005, 2013).

'Career control' concerns being responsible and careful in making career-related choices. It implies that people are able to influence their future and are responsible for constructing their own career. Consequently, they arguably face fewer difficulties in deciding upon their future career, i.e., experience higher *career decidedness* (Savickas, 2013).

Second, 'career curiosity' is about an inquisitive mindset in regard to one's career and oneself in order to learn about one's surrounding and to grow as a person. This would foster an adaptive response of career exploration, which encompasses both *self-exploration* and *environmental exploration* (Savickas, 2013). Self-exploration implies pondering about questions such as 'What motivates me?' and 'What are my talents?', whereas environmental exploration refers to the exploration of potential jobs, organizations and professional fields.

Third, 'career concern' is about looking ahead to the future and being aware that it is important to plan (Savickas, 2005, 2013). A high level of career concern arguably motivates people to engage in the adaptive response of *career planning*, i.e., of setting career-related goals and developing plans on how to reach these goals.

Finally, 'career confidence' is about expecting to succeed in constructing one's career by being able to perform efficiently the tasks at hand, solve complex problems, overcome obstacles, and learn new skills (Savickas, 2005, 2013). Career confidence would foster an efficacious and adaptive mindset about imminent career tasks at hand (i.e. *career self-efficacy*), such as graduates' self-efficacy to search for and find a suitable first job (Moynihan, Roehling, LePine, & Boswell, 2003).

While the link between different factors of career adaptability and the respective adaptive responses are not as straightforward as originally proposed (Hirschi, Herrmann, & Keller, 2015), both career adaptability and adaptive responses are helpful during the transitions from school to further education (Germeijs & Verschueren, 2007; Hirschi, 2010), from school to work (e.g., Creed, Muller, & Patton, 2003; Koen et al., 2012) and later during one's career (e.g., Zacher, 2014), such as when transitioning from unemployment back into work (Koen, Klehe, Van Vianen, Zikic, & Nauta, 2010; Zikic & Klehe, 2006). This makes career adaptability (the resources needed before people can respond in an adaptive way) and adaptive responses (the behaviors and cognitions needed to adapt: career decidedness, self-exploration, environmental exploration, planning and career self-efficacy) valuable resources and reactions for graduates seeking satisfying employment that fits their personality, needs and abilities and that allows them to grow in their careers.

Designing an Efficient and Scalable Intervention

As a good preparation for the school-to-work transition, in the sense of a high career adaptability and adaptive responses, is important for all students, the goal of the current study was to develop and validate a compact and scalable career adaptability intervention that can be offered to many students simultaneously. Yet, we did not want to present students with a one-time training and let them figure out the subsequent transfer of training on their own. Instead, we aimed to create an intervention for which the transfer might be readily visible and easy to manage.

The potential of computer-assisted and particularly for web-based career interventions has been recognized for some years (Gati & Asulin-Peretz, 2011; Horan, 2010; Tracey, 2010). Web-based interventions are both cost-efficient and flexible, as they allow participants to complete assignments anytime and anywhere (e.g., Tate & Zabinski, 2004; Ouweneel, Le Blanc & Schaufeli, 2013). Used for covering some of counselors' traditional roles (e.g.,

assessing interest, providing information), they further save costs and/or allow counselors to devote their limited time to activities that add significantly to the effectiveness of the intervention (Gati, 1996).

An approach particularly promising in online interventions is the use of an online portfolio. In general, an online portfolio is a web-based information system that allows individuals to demonstrate their competences and skills, interests and personality. In the context of the school-to-work transition, this may help students become aware of their personal and professional strengths and weaknesses (Hallam & Creagh, 2010). Online portfolios can be useful for career purposes, such as professional development, career planning (Balaban, Divjak, & Mu, 2011; Cambridge, 2010; 2012; Tosh & Werdmuller, 2004), and job seeking (Balaban et al., 2011). A further advantage of an online portfolio is that clear instructions guide users through the different steps, facilitating users' self-directed engagement with the tool when and wherever they please.

That said, meta-analytic results suggest that computer-based interventions are generally more effective when combined with counseling than when used in isolation (Whiston et al., 2003). Further, while some meta-analyses suggest individual counseling to be most effective (Whiston et al., 1998), efficiency concerns and results from other meta-analyses speak for the use of structured group workshops as a good alternative (Whiston et al., 2003; Whiston et al., 2017). Therefore, the current study combined an online portfolio intervention with one or two structured group workshops. Our interventions met Savickas' recommendations to incorporate exercises on planning, decision-making, exploration and problem solving (Savickas, 2005; see also Koen et al., 2012), while also paying credit to prior research on what components are critical for career counseling interventions to work (Brown & Krane, 2000; Brown et al., 2003). We propose that:

Hypothesis 1a. *Compared to a control group, students in the intervention groups show an increase in career adaptability and career adaptive responses after the intervention.*

A true test of any intervention's effectiveness, however, lies in its' longer-term effects. A concern voiced with earlier research is that most intervention studies mainly focused on the degree of witch students felt decided on the direction of their future career path after the intervention, but did not focus on other measures of transfer of training (i.e., sustained changes in diverse career related behaviors and attitudes) or the long-term effects of the intervention, like whether the skills acquired truly help participants reach a higher employment quality (Langher et al., 2018). An effective intervention should help students build their adaptability and adaptive responses not only while the training is salient in their minds, but should sustain effects over time. That is, effects should transfer to students' daily lives, when immediate memory effects have worn off and when participants face the regular and often conflicting demands of their day to day activities (Baldwin & Ford, 1988). Hence, we expect:

Hypothesis 1b. *Compared to a control group, students in the intervention groups show an increase in career adaptability and career adaptive responses six months after the intervention.*

Fostering Actual Career Success

The ultimate objective of any career intervention is to foster not only students' career adaptability, but their actual career success. Past research has shown that adolescents who experience high career adaptability indeed manage career transitions better (Creed et al., 2003; Germeijs & Verschueren, 2007; Neuenschwander & Garrett, 2008; Patton, Creed, & Muller, 2002 In: Hirschi, 2009). Moreover, job seekers who show more adaptive responses report higher subsequent employment quality (Koen et al., 2010; Zikic & Klehe, 2006) and career success (Hirschi, 2010). The same is true for students undergoing a career adaptability intervention (Koen et al., 2012). In other words, we expect that students who score high on career adaptability are more likely to obtain employment, in particular high-quality

employment. Hence, we expect:

Hypothesis 2. *Via its effect on students' career adaptability, the intervention helps students find a post-study job (Hypothesis 2a) and experience high-quality employment (i.e., perceived fit, career growth and career satisfaction; Hypothesis 2b).*

Intervention Intensity

In addition to the focus (career adaptability) and type of the intervention (web-based combined with structured group events), it is important to choose the optimal level of intensity. While it is often suggested that more intensive interventions (with more hours and more sessions) are more effective (Brown & Ryan Krane, 2000; Oliver & Spokane,1988), the relationship between number of sessions and effect size is not completely clear, partially due to a lack of low-intensity interventions. For their meta-analysis on career interventions over the past 20 years, Whiston et al. (2017) could only identify three studies with fewer than 5 session: one with one, one with two and one with three sessions. Similarly, all but two of the interventions included in Langher et al.'s (2018) meta-analysis on school-to-work interventions required a minimum of two full working days or more. This makes it difficult to make clear assumptions about the impact of intervention intensity.

The current study offers a systematic evaluation and comparison between different intervention set-ups varying in length and content (see Table 1.1 for an overview). The first intervention set-up (two workshop intervention) combined students' preparatory work online with two short workshops, one on knowing the self (3 hours), and one on knowing the labor market (1 hour). The second intervention set-up (combined workshop intervention) was similar to the first intervention set-up, but was less time-consuming as the two original workshops were combined into one 2,5 hour workshop. The third set-up (short workshop intervention) cut the part on knowing the self to a minimum and therefore did not include preparatory work online. It included a 2 hour workshop where students briefly focused on

constructing their personal profile and mainly focused on the labor market . The control group only filled in the questionnaire on career adaptability and adaptive responses, but did not participate in any career intervention. Assuming that more intensive interventions will have more pronounced effects, we expect the following:

Hypothesis 3. *Students who take part in a more intensive intervention show a larger increase in career adaptability and career adaptive responses immediately after the intervention (Hypothesis 3a) and six months later (Hypothesis 3b), compared to students who take part in less intensive interventions.*

Methods

Design

We conducted a three-wave quasi-field experiment among advanced university students, whereby we compared 4 conditions. Students in the three intervention groups participated in similar interventions but with different intensity levels. Students in the control group did not participate in any intervention. Career adaptability and adaptive responses were measured before (T1) and right after (T2) the interventions (or with no intervention in-between in the case of the control group) with usually one week (in the case of the two workshop intervention, two weeks) in between. After six months, all students were asked to fill in the questionnaire again (T3), besides reporting information on their career success: employment status, and, if applicable, perceived fit, career growth and career satisfaction.

Sample

Participants were 473 3rd year bachelor and master students in the Netherlands (see Table 1.2 for more details on numbers, age, gender and field of study per intervention group). The two workshop intervention started with 42 participants. For the follow-up measurement after six months (T3), 19 (45.24%) participants dropped out. The combined workshop

intervention started with 304 participants, 209 (68.75%) dropped out by T3. The short workshop intervention started with 48 participants, 24 (50%) participants dropped out and the control group started with 79 participants, 46 (58.23%) dropped out by T3.

Procedure

The participants were recruited through student boards, during a university-wide labor market preparation week and a 3rd year career preparation program. The interventions were promoted to prepare students for the labor market. Participants signed up for one of the pre-selected intervention dates or participated as part of their 3rd year study-program. The allocation of the students to the interventions groups was based on availability. A maximum of 25 students were allowed in each workshop although most workshops were considerably smaller. The average number of participants per workshop was 14.2. The 79 students who participated in the control group were recruited via a message on university related social media, including the announcement that a sum of €50,- would be raffled among the participants. The reason for this approach was two-fold: First, it circumvented the issue that the methodologically ideal approach, an experimental group design, would have been either unethical (when excluding interested students from the intervention groups) or not feasible to conduct when turning the control group into a waiting-control group instead, as the prediction of first employment outcomes required an extended time lag during this sensitive time of transition in students' lives. Administering an intervention to the control group before the completion of this transition would have undermined the study's purpose, administering it after the transition would have been too late for students' own interests. Second, this approach ensured that participants in the control group did not know anything about the intervention groups.

All participants received an mail at the start of the study asking them to fill in a questionnaire on career adaptability and adaptive responses (T1). After filling in the

questionnaire, participants in the two- and in the combined workshop intervention groups gained access to their personal online portfolio. Participants in the short workshop intervention group did not get access to their portfolio yet, but received a link to only the questionnaire (T1). Directly after the intervention (T2), and six months later, all participants again filled in the same questionnaire(T3). Also students in the control group were asked to fill out the questionnaire on career adaptability and adaptive responses twice, with one week in between (T1 and T2) and six months later (T3).

Interventions

In the following, we will outline the structure of the interventions, the reflection and deduction from career construction theory and finally the consideration of critical components known to strengthen the effectiveness of career interventions. *Two workshop intervention*. The most intensive intervention combined preparatory online work and two workshops set about a week apart (see Table 1.1). In preparation, students filled in the career adaptability questionnaire (T1) and received access to their personal online portfolio (see Figure 1). The first exercise in the online portfolio aimed at stimulating self-exploration (curiosity). According to Savickas (2013), systematic exploration and reflection on exploratory experiences move individuals from naïve to knowledgeable, as they learn about their abilities, interests and values and how these fit to types of work. Therefore, students used their portfolio program to fill in questionnaires about their personality, personal motivators and preferred team roles. Students could also gather 360-degree feedback by inviting others to fill in the questionnaires about themselves.

The workshops followed a fixed structure. The first workshop (2,5 hours) started with introducing the trainers, students, and the workshop itself. To enhance students' career concern, i.e., their sense that it is important to prepare for tomorrow (Savickas, 2013), the trainers emphasized the relevance and usefulness of a good career preparation and participants

reflected upon their own state of preparedness. Participants then reflected on the results of the questionnaires, summarized the outcomes and answered the questions ‘Who am I?’, ‘What are my qualities?’, and ‘What are my ambitions?’. By doing so, students could form a clear personal profile. The outcomes of the questionnaires also linked personal characteristics to matching types of work (see below), thus facilitating a meaningful environmental exploration.

Next, students wrote a personal pitch, aiming to enhance curiosity and control, that is being conscientious, deliberate, organized and decisive in performing vocational development tasks (Savickas, 2013). Savickas argues that control arises from solving problems and recognizing that one can be useful and productive. Students wrote their pitch by answering several questions such as ‘What did you recognize in the results of the questionnaires and what did you not recognize?’, ‘What are your strengths?’ and ‘What do you look for in your future job?’ In writing the pitch, students were guided towards making deliberate and organized choices by fine-tuning their available options.

The final step of the first workshop was aimed at enhancing control and confidence, the feeling of self-efficacy concerning one’s ability to successfully make career choices and take action (Savickas, 2013). Students were asked to perform their pitch in front of the group and provided each other with feedback (see also Brown et al., 2003). This way students had the opportunity to develop a feeling of self-efficacy concerning their ability to present themselves to employers.

The second workshop of the intervention (1,5 hours) took place about a week later. Here, participants used the information gained previously to guide their environmental exploration. The tool used was the Vacancy Seeker, a representation of all vacancies available online in the Netherlands. This tool allows job-seekers to search for vacancies not only by job title, but also based on personal characteristics, incentives and roles (i.e., the information that participants had gained from their self-exploration), thus making the labor market more transparent and allowing for a more self-directed environmental exploration. Moreover, the

Vacancy Seeker provides in-session opportunities to gather information on the world of work and on specific career options (Brown et al., 2003). Participants in the two workshop intervention used the Vacancy Seeker for 45 minutes, evaluating the match of each vacancy found on a 1 to 5 scale in order to create a clear overview of suitable vacancies. At the end of the workshop, students discussed and solved anticipated problems concerning the next steps in their career preparation (i.e. by using and discussing the results of the Vacancy Seeker; control and confidence). After that, students filled in the career adaptability questionnaire (T2). The total trainer investment was 4 hours.

Subsequently, participants were asked to write a career plan in their online portfolio to translate the outcomes of the workshops into a concrete action plan (concern; Werner, O'Leary-Kelly, Baldwin, & Wexley, 1994) and transfer workshop insights to future situations (Aguinis & Kraiger, 2009; Martin, 2010). After the training, students maintained access to the online portfolio and Vacancy Seeker for 12 months.

Combined workshop intervention. This intervention combined the preparatory online work with one workshop (2.5 hours) that presented the same material as in the two separate workshops from the two workshop intervention in a more condensed format (see Table 1.1). The students filled in the same questionnaires as students in the two workshop intervention. The content of the intervention was the same, except that less time was spent on explaining and reflecting on the different exercises, and students did not present their pitch to the entire group, but only to one fellow participant. That way, individualized interpretation and feedback was still included in the intervention (Brown et al., 2003). For this intervention, the total trainer investment was 2.5 hours. Among this group, some participants participated voluntarily (N = 236), while others took part in the intervention as a mandatory career course (N = 68).

Short workshop intervention. This intervention was the least intensive and contained one workshop comparable to the second workshop of the two workshop intervention.

Different from the two workshop- and the combined workshop interventions, participants in the short workshop intervention gained access to the online portfolio only at the start of the workshop, as they did not do any preparatory work. Instead of the preparatory self-exploration of filling in one's online portfolio and reflecting and elaborating upon its results, participants used their online portfolio for the first time at the start of the 2-hour workshop. In the portfolio they only estimated their own personal profile by selecting the most relevant personality characteristics, motivation and team roles within the search option of the Vacancy Seeker (self-exploration; curiosity), without using the questionnaires. The Vacancy Seeker then selects those vacancies that matched the selected profile. After the intervention, participants were able to fill in the self-exploration questionnaires individually without guidance. About half of the participants did fill in one or more of these questionnaires, but none of them did as intensively as participants form the other groups.

Career adaptability and adaptive responses in the intervention.

The interventions followed Savickas' (2005) recommendations on how to acquire and utilize each career adaptability resource (control, curiosity, concern, and confidence; see Table 1.1): *Career control:* students were guided towards making deliberate and organized choices by writing and performing their personal pitch and they could work with the online portfolio (the short workshop intervention without guidance) and Vacancy Seeker autonomously. The purpose of this was to get a clear overview of their current situation and empowers them to make deliberate career choices and independently take actions.

Career curiosity: mainly in the two- and combined workshop intervention, self-exploration via different questionnaires aimed at allowing students insight in one's personality, incentives and team roles. Moreover, during the pitch exercise in the two- and combined workshop intervention, students reflected on the results of the questionnaires and subsequently wrote an abstract of the important findings. Environmental exploration via the Vacancy Seeker aimed at providing students in all three intervention groups with insight in

and knowledge of the current labor market.

Career concern: students in all three interventions reflected on their state of preparedness, gained an overview of the status of their current career and ambitions for the future, and were encouraged to set up an action plan for their careers.

Career confidence: is reflected in the entire online portfolio. Going through the steps in the portfolio provides students insight in their qualities, motivations and skills, which should also enhance their career confidence (without guidance for the short workshop intervention). Also the pitch exercise in the two- and combined workshop intervention aimed at enhancing students confidence on how to present themselves.

Critical components

In addition to its conceptual focus on career adaptability, the interventions aimed to include the five critical components for effective career interventions identified by Brown and Krane (2000; Brown et al., 2003): First, in the two- and combined workshop intervention workbook and written exercises describing one's goals, future plans and occupational analyses were included in the online portfolio and the workshop. Students summarized their outcomes for each questionnaire, wrote a personal pitch (only the two- and combined workshop intervention) or only filled in their personal profile (short workshop intervention) and optionally a career action plan (all interventions). Second, individualized interpretations of the intervention material and personal feedback were included by providing outcome reports on each questionnaire and by explaining how to interpret the results (two- and combined workshop intervention). For individualized feedback students discussed with the trainer and with each other how their results fit in to different career paths. Third, for the participants in all three interventions, opportunities to gather information on the world of work and on specific career options was provided by the Vacancy Seeker. Fourth, the trainers discussed role models who successfully coped with similar career transitions, and gave real life examples of their own career path and personal pitch as an example for students. Fifth,

social support for students' career choices and plans was stimulated by students asking others in their network to provide them with online feedback on their career related qualities and with career related tips and suggestions. During the workshop, students also helped each other improve their pitch and career plans (two- and combined workshop intervention).

Measures

Career adaptability was measured with the Dutch version (Van Vianen, Klehe, Koen, & Dries, 2012) of the CAAS (Career Adapt-Abilities Scale) Form 2.0 (Savickas & Porfeli, 2012). The CAAS has been validated in various countries to develop an international measure of career adaptability (cf. Savickas & Porfeli, 2012) and has proven good validity for predicting numerous measures of career success (Rudolph, Lavigne & Zacher, 2017). Students rated how strongly they believed that they could successfully perform the activities representing career control (e.g. "How well have you developed the following skills: making decisions by myself"), curiosity (e.g., looking for opportunities to grow as a person), concern (e.g., preparing for the future), and confidence (e.g., overcoming obstacles). To meet reliability standards and to prevent issues of multicollinearity, all four subscales were combined in one overall career adaptability scale, thus mirroring the latent adaptability factor outlined by Savickas and Porfeli (2012) ($T1\alpha = .78$, $T2\alpha = .80$, $T3\alpha = .85$).

Career adaptive responses were assessed with Dutch scales validated and published in earlier research (Van der Horst & Klehe, in press; Van der Horst et al., 2017). These included career decidedness (five items from the Career Decidedness Scale; Germeijs & De Boeck, 2003; based on Osipow, Carney, & Barak, 1976), self- (four items; Hirschi, 2009) and environmental exploration (six items; Zikic & Klehe (2006) adapted from Stumpf, Colarelli, and Hartman, 1983), career planning (Gould, 1979), and finally, career self-efficacy (six items: four items from Kanfer & Hulin, 1985; see also Saks & Ashforth, 1999, combined with two items emphasizing students' self-directedness). In the current study, we combined these

separate scales by calculating an average overall score across items, into one adaptive response measure for parsimoniousness reasons[1]. The reliability of the total career adaptive responses scale was T1α = .87, T2α = .88 and T3α = .90.

Job status was measured with a single item; "Do you have a paid job?" with the options: yes fulltime, yes part-time, no (i.e. no job at all, an unpaid job or internship, etc.).

Perceived fit was measured with three three-item scales developed by Cable and DeRue (2002): person-organization fit (e.g., "My personal values match my organization's values and culture") (α = .86), needs-supplies fit (e.g. "There is a good fit between what my job offers me and what I am looking for in a job") (α = .90) and demands-abilities fit (e.g. "The match is very good between the demands of my job and my personal skills") (α = .86). Further, in line with the content of the online portfolio, we added 3 items to measure the perceived fit between personality, motivation and team roles and the jobs students found (e.g. "My current job matches well with my personal motivators") (α = .84).

Career growth was measured with Bedeian, Kemery, and Pizzolatto's (1991) three item scale (e.g. "I feel that my present job will lead to future attainment of my career goals") (α = .88).

Career satisfaction was measured with the item "I am satisfied with the success I achieved in my study and or career" (Greenhaus, Parasuraman & Wormley, 1990), given that satisfaction can well be measured with single items (Wanous, Reichers, & Hundy, 1997).

Results

Table 3 presents the variables' means, standard deviations, inter-correlations and internal consistencies. As the three intervention groups scored lower than the control group on

[1] These results of the repeated measures ANOVA's largely also held for each of the adaptive responses tested separately, except for the prediction of career self-efficacy at T1-T2 in the short workshop intervention and at T1-T2-T3 for self-exploration for the combined- and short workshop intervention, and for environmental exploration and self-efficacy for the short workshop intervention.

career adaptive responses ($F(1, 471) = 12.872$, $p < .000$) before the intervention, we controlled for participants' starting level on the dependent variables in the following analyses.

Effects of the Interventions on Career Adaptability and Adaptive Responses

Hypothesis 1a proposed that participation in the interventions would raise students' career adaptability and career adaptive responses. Indeed, a series of paired sample *t*-tests (Table 4) showed that career adaptability and career adaptive responses increased between the pre- and the post-measure in all intervention groups, while they remained stable in the control group.

A full test of Hypothesis 1a involved a series of repeated measurement ANOVAs, expecting a significant interaction effect between group (intervention versus control) and time. For career adaptability, Hypothesis 1a was partially supported, as the proposed interaction effects were significant for the two workshop intervention and for the short workshop intervention, not, however, for the combined workshop intervention or in a comparison with all intervention groups combined. In the case of career adaptive responses, all proposed comparisons supported Hypothesis 1a (Table 5).

Because some participants in the combined workshop intervention participated voluntarily, while others took part in the intervention as a mandatory career course, we reran the ANOVAs separately for the voluntary and mandatory participants. The effect sizes did not meaningfully differ and were comparable for the separate groups: In line with the overall analysis, there was only a significant interaction effect between group and time for career adaptive responses. This suggests that the intervention did not seem to have a different effect no participants who took part voluntarily or mandatory.

Hypothesis 1b proposed that the effects achieved in the training interventions would hold over time. We tested this hypothesis with three sets of analyses: First, to determine whether the development of career adaptability and adaptive responses was significant and

could be ascribed to the intervention, we ran another set of repeated measurement ANOVA's across all three time-points among participants who responded to all three measurement occasions (Table 5). When comparing the intervention groups with the control group, results again largely supported the proposed interactions between group and time for career adaptability. Only when comparing the combined workshop intervention to the control group was the effect not strong enough to turn significant, even though it pointed in the proposed direction. For career adaptive responses the results fully supported the proposed interactions.

Also here we ran a set of repeated measurement ANOVA's separately for the voluntary and mandatory participants in the combined workshop intervention. In line with the overall analysis, there was a significant interaction effect between group and time for career adaptive responses for the voluntary group. These analysis showed no significant results for the mandatory group, probably due to the small sample size (voluntary, $N = 78$, mandatory $N = 17$).

Second, we used within group contrast analyses to compare students' scores on the dependent variables across the three time-points (Table 6). Here, we expected students of the three intervention groups – though not of the control group – to increase in career-adaptability and career adaptive responses from the pre-measure to post-measure (T1, T2), and from the pre-measure to the assessment six months later (T1, T3). Results fully supported this expectation: all intervention groups showed an increase in career adaptability and career adaptive responses from the pre-measure (T1) to the post-measure (T2), as already tested for Hypothesis 1a, and from the pre-measure to six months later (T3), whereas the control group did not. No significant effects emerged between the post-intervention-measure (T2) and six months later (T3) on the dependent variables for either the intervention groups or the control group.

Predicting Employment Outcomes

Hypothesis 2 proposed that via the effect on students' career adaptability, the interventions would help students (a) find employment and (b) foster employment quality. As a test of this assumption required us to test for a mediation effect from intervention (yes or no) to employment status and quality at T3 via students' post-intervention (T2) career adaptability while also controlling for the career adaptability that students started out with (T1), we tested this hypothesis via structural equation modelling with AMOS 24 (Table 7, Figure 3). As these analyses again depended on students' responses to the third questionnaire (T3) (and thus suffered from sample attrition) and in parts also on students actually having found a job at this stage, we ran these analyses for all intervention groups combined to ensure sufficient statistical power. In each of the models tested, students' participation in the intervention (yes or no) in addition to their baseline career adaptability (T1) was modelled to predict their career adaptability directly after the intervention (T2), which in turn was modelled to predict the outcome variable of interest (i.e., employment status, different aspects of perceived fit, career growth, and career satisfaction) six months later (T3).

The proposed models fit the data very well with no need for further model adjustment. In terms of path weights, each of these models confirmed the proposed link between participation in the intervention and students' career adaptability at T2 (see also Hypothesis 1). A first analysis further showed the predicted link between students' career adaptability at T2 and their employment status six months later (T3). Overall, the indirect effect was only marginally significant, however, thus lending marginal support to Hypothesis 2a.

For five of the six indicators of employment quality (Hypothesis 2b), however, the models also confirmed the proposed link between career adaptability at T2 and employment quality six months later (T3). The proposed indirect effect of participation in the intervention on employment quality via students' career adaptability was also significant in five of the six cases, thus mostly supporting Hypothesis 2b.

Comparison of Intervention Intensity

Hypotheses 3a and **b** proposed that more intensive interventions (with more hours and more sessions) would be more effective compared to less intensive ones immediately after the intervention (T2) and six months later (T3). This implies that the two-workshop intervention should be more effective than the combined workshop intervention which in turn should be more effective than the short workshop intervention. This hypothesis was tested with two series of repeated measurement ANOVAS, examining either T1 and T2 (Hypothesis 3a) or T1, T2 and T3 (Hypothesis 3b) as the within-subject variable and always comparing two of the three intervention groups with each other as the between subject variable. Again, we expected a significant interaction effect between group and time – in that the post-measures (T2 or T3) should increase more steeply from the pre-measure (T1) for the more intensive intervention.

Results of both series of ANOVAS partially support Hypothesis 3 (see Table 1.8; Figure 2). On the short term (T2; Hypothesis 3a), the most intensive two-workshop intervention indeed produced greater results than the combined workshop intervention on both career adaptability and adaptive responses. In comparison to the short workshop intervention, however, the two-workshop intervention was superior only on career adaptive responses. Unexpectedly, also the short workshop intervention produced better results compared to the combined workshop intervention on career adaptability. This means that the two- and the short workshop interventions both yielded better short-term results than the combined workshop intervention. Regarding the long-term effects (T3; Hypothesis 3b), the two-workshop intervention outperformed the combined workshop intervention marginally on career adaptability and on career adaptive responses, and again outperformed the short workshop intervention on career adaptive responses. The short workshop intervention did not produce better results compared to the combined workshop intervention on either outcomes measure. Overall, Hypothesis 3 can thus only be supported tentatively for the most intensive

intervention (two workshop intervention) in comparison with the other two interventions.

Discussion

Actively managing and adapting one's career matters for a successful school-to-work transition. With this study we answer to the call for more research on effective and scalable career interventions that help students prepare for this transition (Whiston et al., 2017), providing them with the skillset reflected in career adaptability and adaptive responses (Savickas, 2005). The design of the interventions combined online tools with one or two compact workshops, building on earlier conceptual (Savickas, 2005) and practical (Koen et al., 2012) work on career construction theory (Savickas, 2005). We studied the interventions' effects on the short and the longer term, as well as on students' job status and employment quality during their first employment, answering to the call for more research addressing long-term effects and outcome variables (Savickas et al., 2009, p. 248; Whiston et al., 2003; Whiston et al.,2017).

Main Outcomes

The results of this study showed that students' career adaptability and adaptive responses can be trained with rather short, partly web-based interventions, with positive effects not only right after the interventions but also 6 months later. Students' enhanced level of career adaptability in turn fostered higher employment quality in graduates' first job. Different from expectations, results on the effects of the interventions' intensity were rather mixed, however. While the most intensive intervention did indeed end up outperforming the two less intensive ones, the latter two did not differ in the proposed direction. In summary, the outcomes of this study showcase the usefulness of an intervention that combines an online- and structured group intervention, for finding quality employment. The presented interventions giving students the possibility to enhance both their career adaptability and

adaptive response sets.

Conceptual Contributions

The current study makes three conceptual contributions. First, in line with career construction theory (Savickas, 2005, 2013), results show that interventions practicing career adaptive responses indeed lead to students perceiving themselves as more adaptable and actually showing more adaptive responses even half a year after the interventions. Second, results also indicate that the interventions leads to students finding better quality employment. While in line with earlier findings (Koen et al., 2012), this finding is new by showing that the rise in employment quality is predicted by a rise in career adaptability, again supporting the career adaptability framework (Savickas, 2005, 2013). Third, the study adds to the debate on the effects of intervention intensity (Whiston, 2003; Whiston, 2017). The most intensive intervention (two workshop) generally caused stronger effect than the middle intensity intervention (combined workshop), but only partly outperformed the least intensive intervention (short workshop). Yet, also the least intensive intervention (short workshop) outperformed the middle intensity intervention (combined workshop) on the short term. These findings are in line with the null findings in Whiston et al.'s (2003) meta-analysis and suggest that intensity in terms of hours invested is not the key driver of intervention effectiveness.

Practical Implications

A rapidly changing world of work emphasizes the need for workers to be constantly ready to adapt (Savickas, 2013). The first practical implication of the current study is that the intervention evaluated proves useful during the school-to-work transition by enhancing the skills necessary for such adaptation. The school-to-work transition is an important period to develop these skills, as the university is often the last structured educational setting that students encounter. From the moment they leave the university, students are pretty much on

their own in regard to managing their own careers. With this study, we evaluated a compact intervention that can help students prepare for this task and that can be made available to large groups at the same time. This makes it possible and affordable to prepare not only the gifted few in talent programs or students who face special needs or challenges, but all students who are about to enter the labor market.

Second, the interventions presented obtained similar effects as a more time intensive intervention from earlier research (Koen et al., 2012), but with less trainer investment (two workshop intervention: 4 hours, combined workshop intervention: 2,5 hours and short workshop intervention: 2 hours, intervention in earlier research: 8,5 hours). While we do not know what caused the shorter interventions in this study to obtain similar effects as the earlier more intensive intervention, there are several possible explanations. One explanation is that the ability to outsource certain trainer tasks to the online tools (such as a structured self-assessment) made the overall intervention more efficient. Another explanation, however, would be in line with results to Hypothesis 3 that more simply is not necessarily better.

Limitations and Directions for Future Research

A limitation of the research design is that the current study presents a quasi-experiment rather than a true experiment. The reason is that an experimental waiting control group design would not have been feasible in the current setting, the prime consequence, however, is that the control group started out with slightly higher scores on career adaptive responses compared to the intervention groups. Yet, we do not consider this to present a viable threat to the validity of our results: First, we controlled for students' T1 value, rather than merely comparing their post-intervention scores. Second, results remained relatively stable across conditions, with even the least intensive intervention rendering meaningful and significant results in line with our assumptions. And third, the finding of cross-over effects, i.e., that the level of career-adaptability and adaptive responses achieved in the intervention

groups repeatedly surpassed that of the control group at T2 and T3, suggests that results cannot be explained by participants' starting level but are truly an effect of the intervention group they were in.

Furthermore, while we systematically compared interventions of different intensity, we did not systematically compare the impact of the separate exercises. Compared to the two workshop- and the short workshop intervention, the combined workshop intervention had less emphasis on the search for vacancies, as this was the last assignment at the end of a condense 2,5 hour workshop. The two workshop- and the short workshop intervention both had one workshop dedicated to seeking vacancies. In addition, the short workshop intervention did only have a brief exercise on constructing a personal profile, but also had the opportunity to engage in additional in depth self-exploration after the workshop by giving participants access, albeit unguided, to the same online portfolio assessments as provided in the two other interventions. This decision, administered out of fairness considerations, may somewhat minimize the differences between the most (two workshop intervention) and the least (short workshop intervention) intensive intervention , especially on the long-term. About half of the students in the short workshop intervention filled in the self-assessments on their own, engaging in some self-exploration.

This raises the question as to whether our initial approach, to focus on students' insight in their personal profile and ability to present themselves, before engaging them in seeking for vacancies to match their profile to career opportunities, is truly the ideal order. As said before, environmental information may help students create a more accurate and clear picture of what they find important and what is realistic. This information might help them to set up a more meaningful personal profile, and feel more confident in presenting this profile. This is in line with the literature on identity formation (Ashforth, & Schinoff, 2016; Cruess, Cruess, Boudreau, Snell, & Steinert, 2015; Meijers, 1998) that suggests that identities are formed not in open space, but in constant comparisons with the requirements of the context. If

this is the case, then a different intervention setup could lead to even better results. For example, it may be the time for reflection between the workshops that is particularly relevant, or alternatively, it may actually help to have more emphasis on exploring current available vacancies, before setting up a profile.

Another suggestion for future research is related to the population of the study. Both Koen et al. (2012) and the current study focused on Dutch university students. Yet, as Savickas and Porfeli (2012) point out, individuals in different countries vary in their career adaptability as different countries provide different demands and opportunities to develop and express adaptability. The effects of interventions may thus differ in other national contexts or economic climates. They may also differ for other populations such as workers facing restructuring, downsizing, relocation or unemployment, or workers with special conditions or needs such as handicapped job seekers or job seekers with an immigrant background.

Conclusions

The results of this study show that the combination of an online- and structured group interventions can help student increase their career adaptability and adaptive responses and thereby facilitate a successful school-to-work transition. By combining these two types of intervention we have designed an effective, scalable and effective approach that can be made available to large groups of students at the same time. In times where students struggle to find suitable work and where job seekers have to be more self-directed and adjustable than ever, this new intervention can be very relevant to students and to practitioners that aim to help students to make a successful transition to the labor market.

Figure 1.1 Screenshots from the online Portfolio: welcome page, introduction to personality scales, test results.

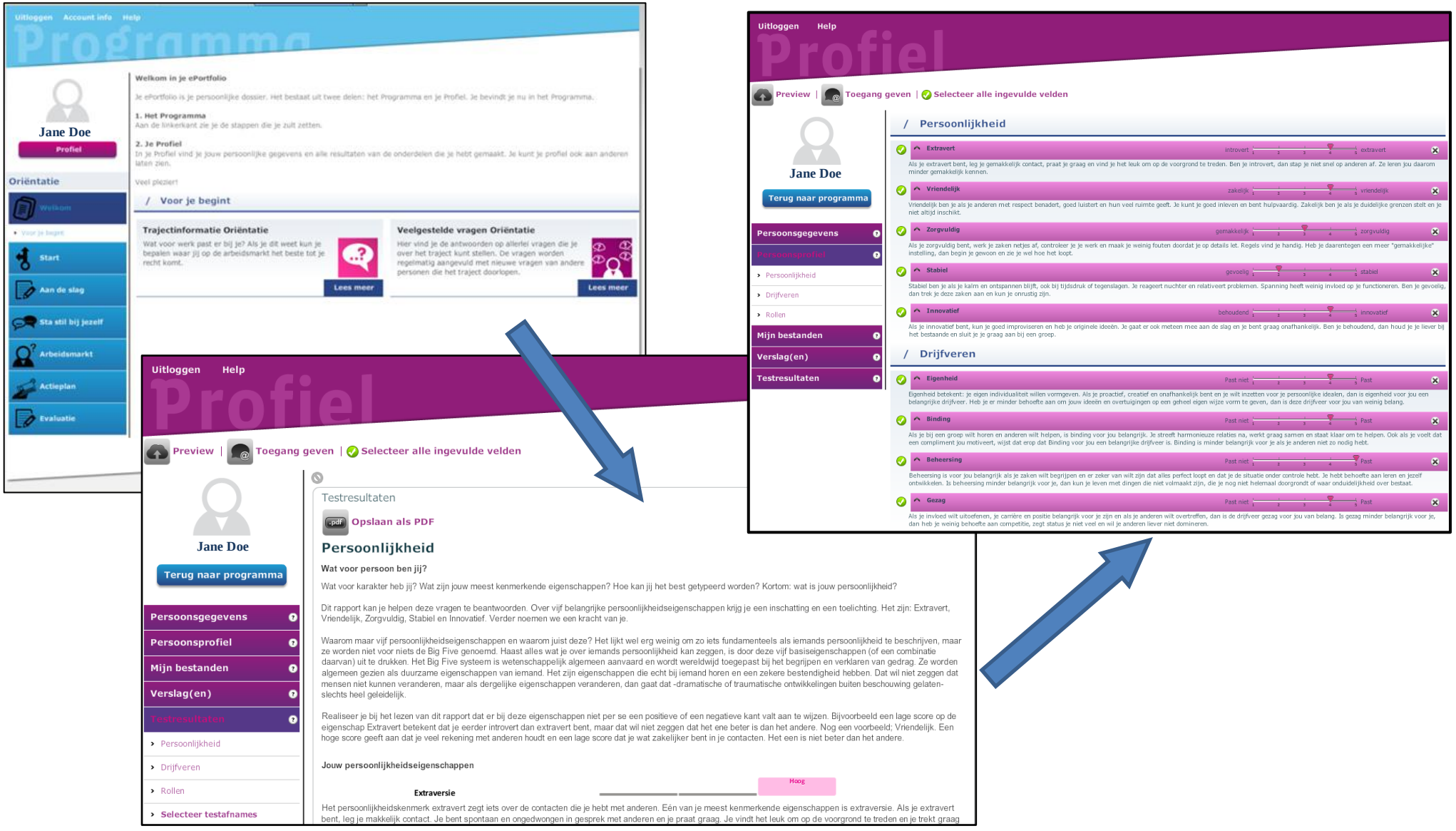
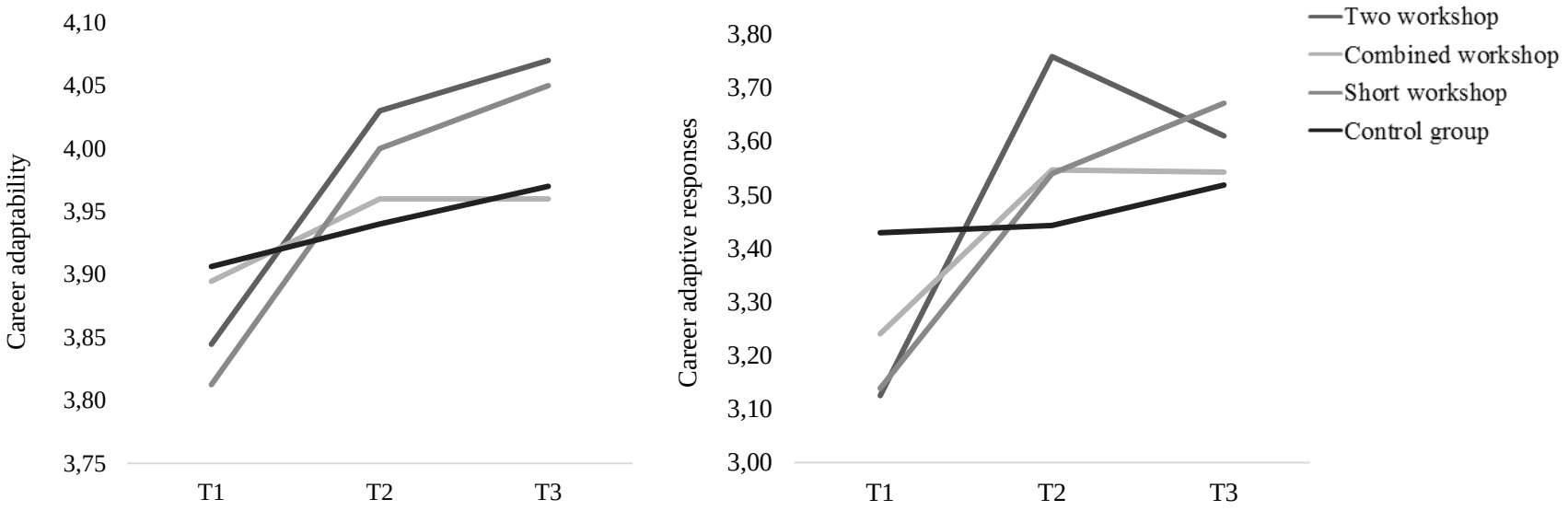


Figure 1.2 Graphic representation of career adaptability (a) and career adaptive responses (b) at pre-training (T1), post-training (T2) and follow-up measurement for the intervention groups and the control group (T3).

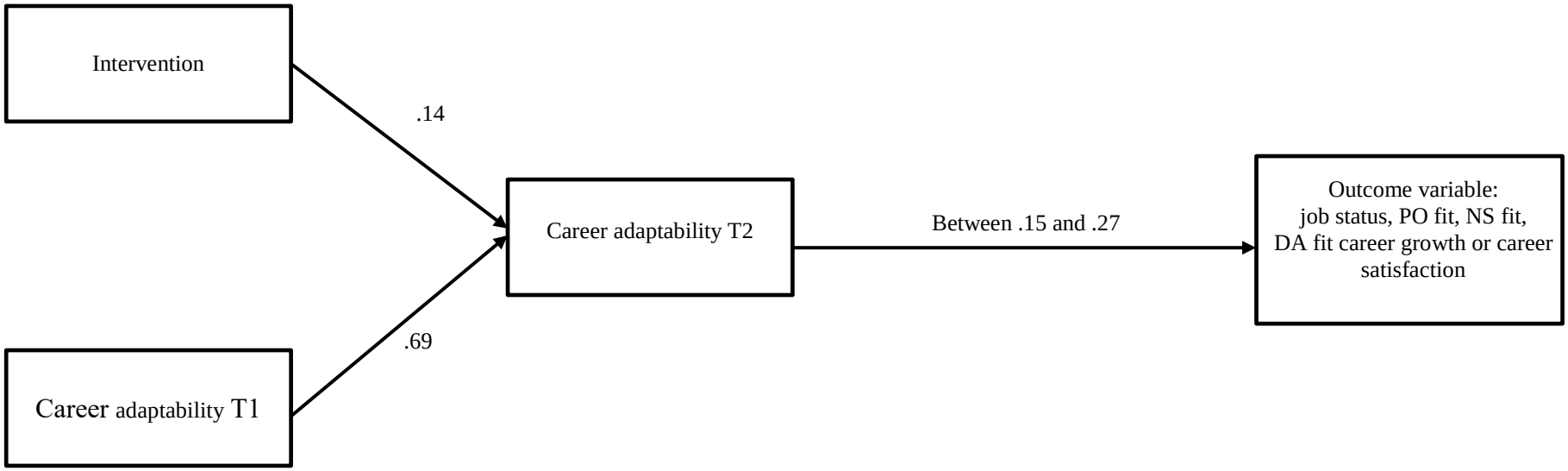
a. Career adaptability

b. Career adaptive responses



Note. Sample sizes change between measurement times due to sample attrition.
T1-T2: $N_{twoworkshop}$ = 42, $N_{combinedworkshop}$ = 304, $N_{shortworkshop}$ = 48, $N_{controlgroup}$ = 79.
T3: $N_{twoworkshop}$ = 23, $N_{combinedworkshop}$ = 95, $N_{shortworkshop}$ = 24, $N_{controlgroup}$ = 33.

Figure 1.3 Structural equation modelling analysis, outcome variables



A separate analysis was done for each outcome variable. For the exact β per outcome variable see Table 1.7.

Table 1.1 Contents of the training in the different intervention groups.

Section	Exercise	Factors	Activity	Two workshop	Combined workshop	Short workshop
Online portfolio	Personality questionnaire	Curiosity	Exploration (self): personality	homework	homework	-
	Personal motivators questionnaire	Curiosity	Exploration (self): motivators	homework	homework	-
	Preferred team roles questionnaire	Curiosity	Exploration (self): preferred team roles	homework	homework	-
	Invite others to give 360 feedback	Curiosity	Exploration (self)	homework	homework	-
Introduction	Welkom, relevance of preparation	Concern		workshop 1	workshop	workshop
	Reflecting on personal state	Concern	Reflecting on state of preparedness	workshop 1	workshop	workshop
Knowing the self	Summarizing outcomes of online questionnaires	Curiosity and control	Exploration (self)	workshop 1	workshop	-
	Writing personal pitch	Curiosity and control	Exploration (self) and decision making	workshop 1	workshop	-
	Present pitch to other student(s), feedback on pitch	Confidence and control	Building self-efficacy and decision making	workshop 1	workshop	-
	Determining key personality, motivators & team role factors	Curiosity	Exploration (self)	-	-	workshop
Knowing the labor market	Searching vacancies with personal profile	Curiosity	Exploration (environment)	workshop 2	workshop	workshop
	Discuss outcomes, problems and solutions of search	Control and confidence	Decision making and problem solving	workshop 2	workshop	workshop
Home assignment	Write career plan	Concern	Planning career steps.	homework	homework	homework

Table 1.2 Sample details.

	T1-T2									T3				
Group	*N*	M age	SD age	% female	% Master	% psychology	% education	% other social sciences	% STEM	*N*	M age	SD age	% female	% Master
Two workshop intervention	48	23.7	4.49	81.0	76.2	42.9	35.7	21.4	0	23	24.3	5.58	78.3	69.6
Combined workshop intervention	304	22.7	2.01	78.3	56.6	71.7	0.3	25.1	2.9	95	23.0	2.24	83.2	62.1
Short workshop intervention	42	23.3	2.03	77.1	79.2	69.9	14.6	15.5	0	24	23.8	2.38	83.3	87.5
Control group	79	23.6	3.34	79.7	55.7	45.6	6.3	36.8	11.3	33	23.8	4.69	90.9	42.4

Table 1.3 Means, Standard Deviations, Correlations and Coefficient Alphas (on the diagonal).

		Means	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	1 Age	22.99	2.61	-														
	2 Intervention no/yes	0.83	0.37	-.10*	-													
T1	3 Career adaptability	3.88	0.36	.04	-.03	*.78*												
	4 Career adaptive responses	3.25	0.49	.10*	-.16**	.57**	*.87*											
T2	5 Career adaptability	3.97	0.33	.04	.04	.58**	.41**	*.80*										
	6 Career adaptive responses	3.55	0.44	.10*	.11*	.46**	.64**	.59**	*.88*									
T3	7 Career adaptability	3.99	0.37	.06	.03	.65**	.45**	.74**	.60**	*.85*								
	8 Career adaptive responses	3.56	0.51	.10	.04	.48**	.59**	.62**	.68**	.69**	*.90*							
	9 Job status	0.20	0.40	.19*	-.08	.03	.09	.16*	.17	.10	.21**	-						
	10 PO Fit	3.50	0.97	.01	.02	.09	.16	.19*	.12	.24**	.29**	.32**	*.86*					
	11 NS Fit	2.67	1.19	.06	.03	.15	.28**	.31**	.28**	.34**	.45**	.39**	.57**	*.90*				
	12 DA Fit	3.01	1.08	.08	-.03	.07	.16	.21*	.12	.21*	.27**	.40**	.49**	.66**	*.86*			
	13 Intervention Fit	3.27	1.06	.06	.14	.10	.17	.25**	.22*	.31**	.36**	.33**	.77**	.77**	.63**	*.84*		
	14 Career growth	3.75	1.11	-.03	-.03	.21**	.24**	.19*	.16*	.33**	.21**	.27**	.49**	.61**	.63**	.57**	*.88*	
	15 Career satisfaction	3.75	1.10	-.25**	-.06	.27**	.29**	.24**	.19*	.37**	.25**	.14	.31**	.40**	.32**	.36**	.56**	-

* Correlation significant at 0.05, ** correlation significant at 0.01, T1 and T2 *N* = 472, T3 *N* = 136 for PO Fit, NS Fit, DA fit, Intervention fit *N* = 169 for Job status, Career growth and Career satisfaction.

Table 1.4 Paired sample *t*-tests, career adaptability and adaptive responses at T1 and T2.

		Time 1		Time 2					
Group	Dependent variable	Mean	SD	Mean	SD	*N*	df	*t*	*p*
Intervention groups (group 1, 2, 3)	Career adaptability	3.88	0.34	3.97	0.32	394	393	-5.78	.00
	Career adaptive responses	3.22	0.47	3.57	0.43	394	393	-17.68	.00
Two workshop intervention	Career adaptability	3.84	0.36	4.03	0.27	42	41	-3.51	.00
	Career adaptive responses	3.13	0.41	3.76	0.43	42	41	-10.12	.00
Combined workshop intervention	Career adaptability	3.89	0.35	3.96	0.33	304	303	-3.64	.00
	Career adaptive responses	3.24	0.46	3.55	0.43	304	303	-14.23	.00
Short workshop intervention	Career adaptability	3.81	0.29	4.00	0.27	48	47	-4.30	.00
	Career adaptive responses	3.14	0.52	3.54	0.37	48	47	-6.70	.00
Control group	Career adaptability	3.91	0.41	3.94	0.38	79	78	-1.00	.32
	Career adaptive responses	3.42	0.56	3.44	0.51	79	78	-0.427	.67

Two workshops intervention: $N = 42$, combined workshop intervention: $N = 304$, short workshop intervention: $N = 48$, control group: $N = 79$.

Table 1.5 Repeated measures analyses of variance (ANOVAs) for T1-T2 and T1-T2-T3, interventions vs control group.

	Group	Dependent variable	Time					Group					Interaction Time * Group				
			F	df1	df2	*p*	η²	F	df1	df2	*p*	η²	F	df1	df2	*p*	η²
T1-T2	Intervention groups vs control	Career adaptability	10.33	1	471	.00	.021	0.01	1	471	.91	.000	2.59	1	471	.11	.005
		Career adaptive responses	61.28	1	471	.00	.115	0.71	1	471	.40	.002	52.51	1	471	.00	.100
	Two workshops vs control	Career adaptability	13.86	1	119	.00	.104	0.04	1	119	.84	.000	6.92	1	119	.01	.055
		Career adaptive responses	105.05	1	119	.00	.469	0.00	1	119	.95	.000	96.40	1	119	.00	.448
	Combined workshop vs control	Career adaptability	6.20	1	381	.01	.016	0.02	1	381	.88	.000	0.82	1	381	.37	.000
		Career adaptive responses	49.94	1	381	.00	116	0.06	1	381	.44	.002	41.80	1	381	.00	.100
	Voluntary group vs control	Career adaptability	7.18	1	313	.01	.022	0.05	1	313	.82	.000	1.17	1	313	.28	.004
		Career adaptive responses	49.59	1	313	.00	.137	0.59	1	313	.44	.002	41.57	1	313	.00	.117
	Mandatory group vs control	Career adaptability	2.01	1	145	.16	.014	1.09	1	145	.23	.007	0.06	1	145	.81	.000
		Career adaptive responses	31.30	1	145	.00	.178	0.25	1	145	.62	.002	26.06	1	145	.00	.152
	Short workshop vs control	Career adaptability	17.37	1	125	.00	.122	0.07	1	125	.79	.001	8.91	1	125	.00	.067
		Career adaptive responses	44.77	1	125	.00	.264	1.22	1	125	.27	.010	39.09	1	125	.00	.238
T1-T2-T3	Intervention groups vs control	Career adaptability	0.38	1.92*	332.02	.01	.027	0.02	1	173	.90	.000	0.25	1.92	332.02	.05	.018
		Career adaptive responses	17.71	1.92	332.83	.00	.092	0.00	1	137	.83	.000	9.72	1.92	332.83	.00	.053
	Two workshop (group 1vs control)	Career adaptability	8.46	2	108	.00	.135	0.24	1	54	.62	.004	6.54	2	108	.00	.108
		Career adaptive responses	23.99	2	108	.00	.308	0.01	1	54	.92	.000	18.14	2	108	.00	.251
	Combined workshop vs control	Career adaptability	2.37	1.90	239.87	.10	.018	0.00	1	126	.98	.000	1.57	1.90	239.87	.21	.012
		Career adaptive responses	13.19	1.85	233.69	.00	.095	0.21	1	126	.65	.002	6.54	1.85	233.69	.00	.049
	Voluntary group vs control	Career adaptability	2.69	2	218	.70	.024	0.03	2	218	.86	.000	1.80	2	218	.17	.016
		Career adaptive responses	12.18	1.82	198.431	.00	.110	0.01	1.82	198.431	.93	.000	6.66	1.82	198.431	.00	.058
	Mandatory group vs control	Career adaptability	0.64	2	48	.53	.013	0.16	1	48	.69	.003	0.42	2	48	.66	.009
		Career adaptive responses	4.70	2	48	.01	.089	0.03	1	48	.87	.001	2.29	2	48	.11	.046
	Short workshop vs control	Career adaptability	5.69	2	110	.00	.094	0.02	1	55	.90	.000	3.95	2	110	.02	.067
		Career adaptive responses	10.66	2	110	.00	.162	0.12	1	55	.73	.123	4.82	2	110	.01	.081

T1-T2: $N_{twoworkshop}$ = 42, $N_{combinedworkshop}$ = 304, $N_{combinedworkshopvoluntary}$ = 236, $N_{combinedworkshopmandatory}$ = 68, $N_{shortworkshop}$ = 48, $N_{controlgroup}$ = 79. T1-T2-T3: $N_{twoworkshop}$ = 23, $N_{combinedworkshop}$ = 95, $N_{combinedworkshopvoluntary}$ = 78, $N_{combinedworkshopmandatory}$ = 17, $N_{shortworkshop}$ = 24, $N_{controlgroup}$ = 33. *Assumptions of normality and homogeneity of variance were met in all analysis. The assumption of sphericity was sometimes violated. If so, degrees of freedom were corrected using Greenhouse–Geisser estimates.

Table 1.6 Contrast analyses for T1-T2-T3.

Group	Dependent variable	T2 minus T1			T3 minus T2			T3 minus T1		
		delta	SE	*p*	delta	SE	*p*	delta	SE	*p*
Intervention groups	Career adaptability	.142	.025	.00	-.026	.021	.21	.116	.026	.00
	Career adaptive responses	.355	.036	.00	.014	.033	.68	.369	.039	.00
Two workshop intervention	Career adaptability	.241	.062	.00	-.020	.043	.65	.222	.055	.00
	Career adaptive responses	.641	.087	.00	-.124	.082	.15	.517	.088	.00
Combined workshop intervention	Career adaptability	.111	.030	.00	-.043	.027	.11	.068	.034	.05
	Career adaptive responses	.306	.043	.00	.025	.041	.55	.331	.051	.00
Short workshop intervention	Career adaptability	.173	.068	.02	.033	.049	.50	.206	.056	.00
	Career adaptive responses	.273	.083	.00	.103	.074	.18	.377	.080	.00
Control group	Career adaptability	.009	.033	.79	.014	.051	.79	.023	.047	.63
	Career adaptive responses	.019	.052	.72	.068	.067	.31	.088	.074	.25

T1-T2-T3: $N_{twoworkshop} = 23$, $N_{combinedworkshop} = 95$, $N_{shortworkshop} = 24$, $N_{controlgroup} = 33$.

Table 1.7 Structural equation modelling analysis, outcome variables.

Outcome variable	Fit									Weights				Indirect effect of intervention on outcome via adaptability			
	Chi2	df	*p*	Chi2/df	CFI	TLI	IFI	RMSEA	SRMR	γ intervention to adaptability	p_{γ}	β adaptability to outcome	p_{β}	Standardized effect	Lower bound	Upper bound	*p*
Job status	3.075	2	.215	1.537	.99	.97	.99	.056	.0340	.125	.023	.151	.044	.019	.000	.036	.089
PO Fit	0.022	2	.989	0.011	1.00	1.00	1.00	.000	.0039	.127	.025	.164	.046	.022	.000	.052	.099
NS Fit	0.048	2	.976	0.024	1.00	1.00	1.00	.000	.0040	.137	.025	.271	.000	.037	.008	.068	.013
DA Fit	0.144	2	.930	0.072	1.00	1.00	1.00	.000	.0082	.137	.025	.181	.027	.025	.004	.049	.034
Intervention Fit	2.387	2	.303	1.194	1.00	.99	1.00	.037	.0317	.137	.025	.199	.015	.027	.004	.053	.031
Career growth	0.867	2	.648	0.433	1.00	1.00	1.00	.000	.0180	.125	.023	.181	.015	.023	.003	.044	.032
Career satisfaction	1.974	2	.373	0.987	1.00	1.00	1.00	.000	.0296	.125	.023	.243	.000	.030	.009	.056	.026

$N_{\text{twoworkshop}} = 23$, $N_{\text{combinedworkshop}} = 95$, $N_{\text{shortworksop}} = 24$, $N_{\text{controlgroup}} = 33$.

Table 1.8 Repeated measures analyses of variance (ANOVAs) for T1-T2 and for T1-T2-T3, comparing interventions

	Group	Dependent variable	Time					Group					Interaction Time * Group				
			F	df1	df2	*p*	η^2	F	df1	df2	*p*	η^2	F	df1	df2	*p*	η^2
T1-T2	Two workshop vs Combined workshop	Career adaptability	21.97	1	344	.00	.606	0.02	1	344	.89	.000	4.68	1	344	.03	.013
		Career adaptive responses	226.96	1	344	.00	.398	0.53	1	344	.47	.002	27.56	1	344	.00	.074
	Combined workshop vs Short workshop	Career adaptability	26.78	1	350	.00	.071	0.23	1	350	.63	.001	6.09	1	350	.01	.017
		Career adaptive responses	143.17	1	350	.00	.290	0.29	1	350	.39	.002	2.60	1	350	.11	.007
	Two workshop vs Short workshop (group 3)	Career adaptability	30.20	1	88	.00	.256	0.29	1	88	.59	.003	0.01	1	88	.92	.000
		Career adaptive responses	142.18	1	88	.00	.618	1.54	1	88	.22	.017	7.15	1	88	.01	.075
T1-T2-T3	Two workshop vs Combined workshop	Career adaptability	15.86	1.87	216.49	.00	.120	0.41	1	116	.53	.003	3.10	1.87	216.49	.05	.036
		Career adaptive responses	53.23	1.89	219.39	.00	.315	.32	1	116	.57	.003	2.52	1.89	219.39	.01	.045
	Combined workshop vs Short workshop	Career adaptability	11.69	1.87	220.63	.00	.091	0.03	1	117	.85	.000	2.16	1.87	220.63	.12	.018
		Career adaptive responses	29.51	1.89	221.34	.00	.201	0.82	1	117	.37	.007	0.33	1.89	221.34	.71	.003
	Two workshop vs-Short workshop	Career adaptability	18.77	1.74	78.24	.00	.294	.250	1	45	.62	.006	0.41	1.74	78.24	.64	.009
		Career adaptive responses	40.15	2	90	.00	.472	0.09	1	45	.77	.002	5.08	2	90	.01	.101

T1-T2: $N_{twoworkshop} = 42$, $N_{combinedworkshop} = 304$, $N_{shortworksop} = 48$, $N_{controlgroup} = 79$.
T1-T2-T3: $N_{twoworkshop} = 23$, $N_{combinedworkshop} = 95$, $N_{shortworksop} = 24$, $N_{controlgroup} = 33$.

Chapter 2:

Adapting to a Looming Career Transition: How Age and Core Individual Differences Interact

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Abstract

Today's workers often need to adapt their careers in the face of looming career transitions, i.e., they need to be concerned about and to have a sense of control over the progress of their careers, be confident that they are able to master the career-related challenges ahead, and remain curious about alternative career options. This can become an issue as workers grow older – and thus, for a growing percentage of workers in the workforce. A possible remedy lies in certain individual difference variables that may facilitate adaptive responses to a looming career transition in general, and that may also buffer against any possible age-related effects. In this study, we examined the importance of locus of control, generalized self-efficacy and trait curiosity for workers' adaptive responses (i.e., showing concern, control, confidence and curiosity) in the face of a looming career transition. We hypothesized age to have a negative and the individual difference variables to have positive associations with workers' adaptive responses, besides buffering the effect of age on specific career adaptive responses. Data were collected among 3,413 workers facing an imminent career transition, usually the loss of their jobs. Results largely supported the hypotheses, indeed highlighting the importance of individual differences for ensuring adaptive career responses and for buffering against the impact of age in the face of a looming career transition.

Keywords: career adaptation, career adaptive response, age, curiosity, locus of control, generalized self-efficacy

Adapting to a Looming Career Transition:
How Age and Core Individual Differences Interact

Introduction

Not too long ago, many young people were able to decide upon their preferred career path and to pursue this path in a predictable and linear fashion, staying within one job family while moving vertically through a single organization's hierarchy. Today, jobs are subject to high-speed changes and uncertain prospects (e.g., Greenhaus, Callanan, & DiRenzo, 2008). These uncertainties and the resulting career transitions and traumas, i.e., painful, unwanted and unpredictable events such as job loss, require workers to continuously adapt (Savickas, 2005, 2013), i.e., to be concerned with and to have a sense of control over the progress of their careers, to have the confidence to master the career-related challenges ahead, and to be curious about alternative career options. Not an easy task in general, such adaptation may become increasingly difficult with age. This is also a concern as not only the nature of work but also the nature of the workforce is changing in Western countries, with its mean age steadily rising [United Nations World Population Aging Report (UN Population Division, 2009)]. Yet, most previous research on career adaptation has focused on students facing the regular vocational development task of their school to work transition, rather than on adult workers facing an unwanted occupational transition, or even a trauma in the course of their careers.

The current study tries to fill this gap by addressing adult workers' career adaptive responses to a looming career transition, empirically testing the claim that adaptive responses decline with age, and trying to identify possible advantages that some workers may have in the form of core individual difference variables that are supposed to motivate workers, particularly with increasing age, to adapt. More specifically, we propose an internal locus of control, generalized self-efficacy, and trait curiosity to be indicators of workers' trait

adaptivity, and thus to show direct positive effects on workers' career adaptive responses, and also to buffer against the possible negative effect of age.

Thus, we aim to contribute to the scholarly knowledge on the relationship between age, trait adaptivity and workers' adaptive responses in the face of a looming career transition. Specifically, the study adds to the literature on the career sustainability across the working life (Van der Heijden & De Vos, 2015), including workers who face a different world of work than the world that they were socialized into when starting their careers (Kalleberg, 2008; Smola & Sutton, 2002). Still, also older workers need to keep adapting to today's labor market, as job changes and losses will be prominent also in the second half of their careers (Klehe, Koen, & De Pater, 2012). The current research also contributes to the study of career adaptation. While arguably relevant throughout one's career, most past research has focused on students during their school to work transition (Hirschi, Herrmann, & Keller, 2015; Koen, Klehe, & van Vianen, 2012). Adaptivity and adaptive responses in the sense of feeling an urge to adapt and possibly to reinvest in an existing career path during one's working years, however, has gained far less scientific attention. One study by Zacher and Griffin (2015) did show that career adaptability was positively related to job satisfaction, but this relationship actually declined with age. The current study is one of the first to even address the notion that career adaptive responding is negatively related to age and to seek possible remedies against such age-related effect, should it be found. As such, this study adds to the emergent literature on individual differences underlying adaptation in the workplace and in the context of people's careers (Harrison, Sluss, & Ashforth, 2011).

Career Adaptation

Employment contracts have become more flexible and workers change jobs more often, willingly or forced (Kalleberg, 2000; Raad voor werk en inkomen, 2012), and not only vertically, but also horizontally between jobs and organizations (Arnold & Cohen, 2008).

Consequently, workers' career paths are less predictable (Arthur, Khapova, & Wilderom, 2005), and workers need to be highly self-regulated in order to successfully navigate new roles, demonstrate new behavior and acquire new skills (Chan, 2000; Pulakos, Arad, Donovan, & Plamondon, 2000). In short, workers need to remain ready throughout their life-span to adapt their careers (Savickas, 2005, 2013).

Career adaptability describes the attitudes, behaviors and cognitions that help people to cope well with changes in the labor market by making themselves fit to work that suits them (Savickas, 2005). While conceptually drawing upon Super's (1955) work on vocational maturity, i.e., a young person's vocational readiness to make career decisions during the school-to-work transition, the literature on career adaptation, too, is an explicit reaction to the constantly changing nature of today's careers. More specifically, career construction theory (Savickas, 2005, 2013) assumes that career adaptation happens along four interrelated facets:

(1) **Career concern** implies a sense that one needs to prepare for the future. Behaviorally, this shows both in a general engagement in one's career (Hirschi, Freund, & Herrmann, 2014) and in planning, i.e., outlining future career developments and constructing concrete career goals, which in turn, predict successful careers (Ng & Feldman, 2009).

(2) **Career control** means that people feel like they own their own future and are responsible for constructing their own careers (Savickas, 2005).

(3) **Career confidence** describes one's self-efficacy or the perceived ability to successfully execute the actions needed to achieve one's career goals (Savickas, 2005).

(4) Finally, **Career curiosity** denotes a curious view towards diverse career options and shows itself in the exploration of both oneself (i.e., personal interests, goals, skills, experiences) and of the environment (i.e., jobs, organizations, occupations, or industries; Stumpf, Colarelli, & Hartman, 1983; Werbel, 2000).

Age and Adaptive Responses When Faced With a Looming Career Transition

While adaptive career responses are of utmost importance throughout the entire career, most empirical research on career adaptation has stayed close to its roots in vocational maturity (Super, 1955) by studying students and graduates in the context of their school-to-work transition (Hirschi et al., 2015; Koen et al., 2012). Only little previous research has addressed career adaptation among experienced workers, and even less so among workers who really need it, that is, among workers who face an involuntary occupational transition if not trauma in the form of a looming job loss. This is problematic for two reasons: First, individuals who plan (concern), who feel more decided (control) and self-efficacious about mastering their imminent career task at hand (confidence), and who actively explore (curiosity) are indeed more likely to successfully transition back to work and to secure high quality employment (Griffin & Hesketh, 2003; Koen et al.,, 2012; Koen et al., 2010; Zacher, 2014a ; Zikic & Klehe, 2006), herewith highlighting the benefits of career adaptive responses in today's fast-paced and evolving work context (Savickas, 2013). Second, the aging of the (working) population (UN Population Division, 2009) and the accompanying rise of the regular retirement age implies that older workers, too, need to continue adapting to the rapid changes in their work and working conditions.

However, simply expecting workers who are looking back over an extended work history to adapt as easily to a looming career transition as their younger colleagues is not realistic (Buyken, Klehe, Zizic, & Van Vianen, 2015). Compared to students who enter the labor market for the first time, experienced workers stand at career stages traditionally concerned with maintenance and even exit (Super, 1980), resulting in different motivations (Kooij, De Lange, Jansen, & Dikkers,2008), values (Smola & Sutton, 2002), goals (Ebner, Freund, & Baltes, 2006) and work attitudes (Gaillard & Desmette, 2008). The latter usually have invested much time and energy into their previous career choices, implying high professional investments in their past, high emotional costs of changing occupations, and

limited occupational alternatives (Carson & Carson, 1997). Thus, the longer workers have been working in the same profession and often the same job, the greater difficulties they may experience adapting to changes [e.g., Brouwer, Schellekens, Bakker, Steegen, Verheij, Havinga, & Brakel, 2011; see also Heckhausen, Wrosch, and Schulz (2010) for a detailed discussion of the effect of age on worker's declining control over their careers]

Hypothesis 1. *Age is negatively related to all four facets of workers' adaptive responses to a looming career transition.*

Adaptivity: Individual Difference Variables That May Help Workers Adapt

As it is important to adapt to career challenges throughout the working life (Koen et al., 2010, 2012; Zikic & Klehe, 2006), the question then is what individual differences may help workers to respond adaptively and to buffer against the negative effect of age.

The latest rendition of career construction theory (Savickas, 2005, 2013) proposes that core individual differences, labeled adaptivity, denote people's mental readiness to meet career tasks, transitions, and traumas with fitting responses. Hirschi et al. (2015) used this conceptualization to study the effects of core self-evaluations and proactivity on the adaptive behaviors and beliefs of university students. While extremely helpful in highlighting the role of individual differences in the adaptation process, two concerns with this study are again: (a) the focus on students instead of workers; and (b) that core self-evaluations and proactivity, while helpful in predicting students' adaptive responses, aren't linked conceptually to the four facets of career adaptation. The current study creates such links by studying individual differences that are conceptually linked to the facets proposed in career construction theory, namely people's locus of control, their generalized self-efficacy, and their trait curiosity.

Locus of control. An internal locus of control represents the extent to which people believe that the rewards they receive in life are controlled by their own personal actions (Rotter, 1966). It predicts many outcomes from academic achievement (Crandall, Katkovsky,

& Crandall, 1965) to longevity (Krause & Shaw, 2000), job satisfaction and job performance (Judge & Bono, 2001; Ng, Sorensen, & Eby, 2006; Wang, Bowling, & Eschleman, 2010).

There are several reasons why an internal locus of control may also relate positively to the career adaptation of workers who face a transition. First, locus of control can be directly related to career control, and a certain level of internal locus of control is likely a prerequisite for even basic career adaptive responses: People who believe their lives are controlled by outside influences, such as other people or fate (i.e., people with an external locus of control) are unlikely to find themselves responsible for constructing their own careers.

Second, an internal locus of control also causes people to set challenging goals for themselves, and to persist in pursuing those goals in the face of adversity (Erez & Judge, 2001; Hollenbeck, Williams, & Klein, 1989). Therefore, locus of control should also be linked to career concern. Finally, an internal locus of control relates to greater self-efficacy (Phillips & Gully, 1997) and more confidence in career decision-making tasks (Taylor & Popma, 1990), and thus likely fosters not only people's perceived responsibility, but also their self-efficacy to manage the career-related tasks ahead of them (career confidence), and to take the appropriate actions for remaining on a promising career path, even despite a possible temporary setback. Moreover, we assume that people with a high internal locus of control are encouraged to be more open towards exploring alternative career options (curiosity).

Generalized self-efficacy. People differ in their perceived ability to cope, perform, and be successful in general (Judge, Locke, & Durham,1997). As the tendency to feel efficacious usually spills over into specific situations (Eden, 2001), one important outcome of generalized self-efficacy is specific self-efficacy which refers to the perceived ability to succeed in specific situations or accomplish specific tasks, including to successfully execute the actions needed to achieve one's career goals, i.e., career confidence (Savickas, 2005).

Yet, generalized self-efficacy will likely also facilitate other career adaptive responses. Indeed, generalized self-efficacy has been linked to career decision-making self-efficacy

(Betz & Klein, 1996), intentions and behaviors (Lent, Brown, & Hackett, 1994), yet also to planning, the development of task strategies (Lock & Latham, 2002; Zikic & Klehe, 2006) and goal setting (career concern) (Erez & Judge, 2001), as well as to environmental career exploration (career curiosity) (Zikic & Klehe, 2006).

Trait curiosity. Finally, the best indicator of adaptivity in terms of people's career curiosity is likely their trait curiosity. Trait curiosity is a core component of openness to experience and a global, positive trait that involves the recognition, pursuit, and desire to explore novel, challenging, and uncertain events (Kashdan & Silvia, 2008).

Up to now, trait curiosity has hardly been studied within the domain of work (Kashdan & Silvia, 2008). Yet, findings suggest that it may be relevant at the workplace and particularly during career transitions as it influences job performance and learning during the socialization process (Reio & Wiswell, 2000), and promotes newcomers' information-seeking and positive framing, leading to a more successful adaptation into the organization (Harrison et al., 2011).

There are several reasons why trait curiosity may have a similar effect on the career adaptation of workers who face a transition. First, curiosity is innately linked to the activity of exploration (e.g., Reeve & Nix, 1997; Silvia, 2005). As a desire for new information that engenders inquisitive and exploratory behaviors (Litman, 2005), curiosity may also foster the extensive exploration of oneself and of the environment in the context of one's career.

Second, curiosity involves the tendency to seek out, savor, and probe novel features of each moment, with an eye toward change as opposed to stability. With this, curiosity also implies a voluntary immersion of oneself (Kashdan & Silvia, 2008) and a challenge and subsequent growth of one's views of oneself, others, and the world around them. Kashdan and Silvia (2008) further associated curiosity with a high level of engagement and with the planning of long-term goals, also in the face of obstacles – indeed behaviors that career construction theory (Savickas, 2005, 2013) would categorize as indicators of career concern.

Third, the desire to learn and to gain a deeper understanding is key in succeeding in

today's world of work (London & Smither, 1999; Maurer & Tarulli, 1994; Maurer, Weiss, & Barbeite, 2003), and the desire to learn is fundamental to adaptation (Ashford & Taylor, 1990; London & Smither, 1999). In a changing environment, curiosity may thus help people to keep track of their current environment and to see novel situations less as a threat than a challenge. Feeling curious increases tolerance for stress when trying new things (Kashdan, 2007). Thus, curious workers may not only be more acutely aware of threats and opportunities in their environment, herewith enabling them to navigate more successfully, but may also be less intimidated by potential threats, thus experiencing both a greater sense of control in the face of change and greater confidence in their abilities to manage these changes.

Hypothesis 2. *An internal locus of control (a), generalized self-efficacy (b) and trait curiosity (c) are positively related to all four facets of workers' adaptive responses to a looming career transition.*

Adaptivity as a Moderator to the Possible Effect of age

Additionally, locus of control, self-efficacy, and trait curiosity may be able to buffer against the possible negative effect of age on career adaptation. Indeed, theoretical frameworks on successful aging at work imply that individual differences can buffer against negative age-effects (Rudolph, 2016). More specifically, the possible age-related decrease in career adaptive responses (Hypothesis 1) may hold true for people with an external locus of control, low generalized self-efficacy and low trait curiosity, while the effects may be considerably weaker for people with an internal locus of control, a high generalized self-efficacy and high levels of trait curiosity: Workers at the start of their career are in a natural career phase of clarifying their skills and capacities (Van Vianen, De Pater, & Preenen, 2009), finding their first job and getting a clear idea of what they have to offer to the labor market. Thus, they may generally report a high amount of career adaptive responses. Once workers grow older, it may generally become more difficult to adapt (see Hypothesis 1), yet workers

with a high internal locus of control will likely refuse to hand over the control over their careers to external factors and will thus continue deciding themselves about the future of their careers and to plan ahead. Workers with a high level of generalized self-efficacy may also maintain their sense of career-related self-efficacy, irrespective of age. Finally, a high trait curiosity, also in later career stages, may positively impact workers' career adaptive responses and particularly their exploration behavior, making age-related differences less pronounced.

Hypothesis 3. *Indicators of adaptivity moderate the relationship between age and workers' career-adaptive responses to a looming career transition: (a) an internal locus of control will weaken the possible negative link between age and career planning and decidedness, (b) generalized self-efficacy will weaken the negative link between age and career self-efficacy, and (c) trait curiosity will weaken the negative link between age and career exploration.*

Methods

Sample and Procedure

We studied the relationship between age, individual differences (locus of control, generalized self-efficacy, and trait curiosity) and career adaptive responses with data from 3,413 employees of several Dutch non-profit organizations (45.1% women, age M = 46.4; SD = 9.45). Among the sample, 232 (6.8%) held no vocational certificate beyond their high school diploma, 1,804 (52.9%) held an intermediate vocational training certificate (MBO) obtained from a one to four year applied training. The aim of this training is to provide some basic vocational education, possibly at the level of working independently in the respective profession, and possibly also towards obtaining a higher level of responsibility in the respective field. In the Netherlands, a higher-level MBO certificate also enables people to pursue a higher professional education, i.e., to attend an applied Bachelor's program (HBO). Among our sample, 974 (28.5%) held such an HBO or higher professional education

certificate, and 403 (11.8%) of the sample held a university degree. Participants were recruited via a career guidance program offered by Eelloo (formerly known as Meurs HRM), the Netherlands. 3114 (91.2%) participants were civil servants at different ministries within the Dutch government. Formerly life-time employers, these ministries had to reorganize and to cut personnel, informing participants that they would be made redundant in the coming years. The remaining 299 participants (8.8%) were associated with an intermediate organization and were either working in elderly care but would likely lose their current jobs in the coming year due to organizational changes, or were returning to work after a longer period of illness, needing to be reintegrated into one of the intermediate organizations' customers. In either case, the career guidance program served to prepare workers for the upcoming change, to help them gain more insight into the labor market, and to extend their current position on it as well as their chances of finding a new job.

Measures

The measures employed for this study reflected previously validated scales, either from the scientific literature or developed and validated by Eelloo, the Netherlands. As regards the latter, scales had been developed on the basis of conceptual definitions and previously published scales about the respective construct and had been pilot-tested among 10,547 respondents (55% women, age M = 43.4; SD = 8.8). Items were scored on a five-point scale ranging from 1 (not at all) to 5 (very much).

Career adaptive responses

Each of the four facets was measured with one to three measures each, depending on the uni- or multi-faceted nature of the specific concept:

Career concern was measured with three items from Gould's *career planning* scale (1979; e.g., "I know what I need to do to reach my career goals"), which primarily address the

existence of goals and plans for the future of one's career, and four items developed by Eelloo, to address the actual activity of making plans (e.g., "I have made plans regarding my future career"; α = .89). Further, we measured *career engagement* with a three-item scale adjusted and translated from Hirschi et al. (2014; e.g., "In the past 6 months I have assumed duties that will help me progress in my career"; α = .90). Items were selected on the basis of relevance and suitability for measuring career concern beyond the notion of career planning alone. Items overlapping with other career adaptability facets were not included [in our case: 'sincerely thought about personal values, interests, abilities, and weaknesses' and 'collected information about employers, professional development opportunities, or the job market …', which both address career exploration and thus career curiosity, rather than concern].

Career control was assessed as *career decidedness* with five items taken from the Career Decidedness Scale (Germeijs & De Boeck, 2003; based on Osipow, Carney, & Barak, 1976). The original scale had been developed for students during the school-to-university transition and had addressed both respondents' knowledge about different alternatives and different aspects on how they evaluate these. In order to be included in the current study, items had to fit the context of experienced workers facing a possible career transition and had to focus on the concept of control, instead of addressing other facets of career adaptability. Thus, the final scale reflected the perceived lack of information: 'knowing which alternatives exist', 'knowing the characteristics of the alternatives', 'knowing the differences between the alternatives', 'ability to make the link between the characteristics of the alternatives and the objectives', and 'not knowing if one is enough prepared to succeed in the career one considers to follow' (α= .78).

Career confidence was measured with a scale directed towards participants' *career self-efficacy*. For this purpose, we extended the four-item self-efficacy scale by Kanfer and Hulin (1985; see also Saks & Ashforth, 1999; e.g., "I consider myself able to successfully find

out where job openings exist") by two items emphasizing participants' self-directedness (e.g., "I consider myself capable of making the right decisions within my career"; α = .88).

Career curiosity was measured with three behavioral scales. *Self-career exploration* was measured with Hirschi's (2009) four-item adaptation of Stumpf, Colarelli, and Hartman's (1983) self-exploration scale (e.g., "In the past six months I have thought about what my personal qualities and abilities are"; α = .94). *Environmental career exploration* was measured with Zikic and Klehe's (2006) adaptation of Stumpf et al.'s environment exploration scale (six items; e.g., *"*In the past six months I have investigated career possibilities*"*; α = .91). Third, *actively approaching possible employers* was measured with a scale by Brouwer et al. (2011) who translated the scale from the Job Search Behaviour questionnaire [based on Kopelman, Rovenpor, and Millsap (1992) and Blau (1994)]; e.g., "Have you made any telephone inquiries to prospective employers in the last month?"; α= .85) and who divided it into four three-item sub scales, one of which measures actively approaching possible employers. In their attempt to predict reemployment in the Netherlands, this scale had shown good predictive validity for job search success (Brouwer et al., 2011).

Individual difference variables reflecting general adaptivity

Locus of control was measured with eight questions based on Rotter's (1966) classic locus of control measure (e.g., "I have little influence over the things that happen to me."; α = .73; α = .70 in the validation sample). Due to the consulting context, in which data were collected, the original scale of almost 60 questions needed to be shortened, deleting redundant items, and items that were unsuitable, as they focussed on topics like studying and politics.

Generalized self-efficacy was measured with three items (e.g., "I doubt my abilities" (reversely coded); α = .72; α = .73 in the validation sample) based on earlier conceptual work and scales (Judge, Erez & Bono, 1998; Schwarzer & Jerusalem, 2010).

Trait curiosity was measured with seven items (e.g., "I have a wide range of interests"; $\alpha = .86$; $\alpha = .85$ in the validation sample) based on earlier conceptual work and scales (Kashdan & Silvia, 2008; Litman & Silvia, 2006; Peterson & Seligman, 2004).

Control variables. Results from previous research suggest the inclusion of level of education when predicting career adaptive responses (Koen et al., 2012; Zacher, 2014b). Also, not only age but also tenure in the same job may relate to difficulties with adaptive responses to looming career transitions (Predictors of work resumption, UWV; Brouwer et al., 2011). Organizational tenure often relates negatively to development activities (Kozlowsky & Hults, 1987; McEnroe, 1989), career-related activities (Cleveland & McFarlane Shore, 1992) and mobility behavior (Campion, Cheraskin, & Stevens, 1994). However, given that age and tenure are usually highly correlated, creating problems of multi-collinearity, we only included tenure as an additional control variable after running the necessary analyses. We further reran all analyses with tenure, instead of age, as the main predictor, and investigated the interaction of tenure and the individual difference variables, in order to ensure that the effects found for age were not explained by tenure instead.

Results

A confirmatory factor analysis (AMOS 22) supported the proposed structure of ten interrelated factors, i.e., of seven indicators of career adaptive responses and three measures of locus of control, generalized self-efficacy, and curiosity (CFI = 0.97; IFI = 0.97; TLI = 0.96; RMSEA = 0.04; SRM = 0.04). All indicators loaded 0.57 or higher onto their respective factor ($\bar{\lambda} = 0.81$). Given an average latent factor correlation of 0.42 and a particularly high correlation between the two indicators of career concern ($\phi = 0.73$), we further compared this model to a model that additionally assumed a second-level career concern factor (defined via career planning and career engagement), and a second-level career curiosity factor (defined via self- and environmental exploration and approaching employers). Overall, this second

model fitted the data worse (CFI = 0.96; IFI = 0.96; TLI = 0.95; RMSEA = 0.05; SRMR = 0.04). The proposed model also appeared to fit better than a model that assumed one general career adaptability factor (CFI = 0.95; IFI = 0.95; TLI = 0.95; RMSEA = 0.05; SRMR = 0.05) or a model that assumed one second-order factor to account for all variances between variables (CFI = 0.94; IFI = 0.94; TLI = 0.94; RMSEA = 0.05; SRMR = 0.06).

See Table 2.1 for means, standard deviations, internal consistencies and correlations between all variables included. As expected, age, locus of control, generalized self-efficacy and trait curiosity showed significant links to all facets of adaptive responses, as did the respondents' level of education and tenure. Additionally, men showed relatively lower self-exploration than women, but higher generalized self-efficacy.

To test Hypothesis 1, 2 and 3 a five-step multiple hierarchical regression analysis was conducted on each of the seven indicators of career adaptive responses (see Table 2.2). First, after controlling for education in Step 1, the inclusion of age in Step 2 supported Hypothesis 1: Age was negatively related to three facets of career adaptive responses, namely to planning and engagement, to career decidedness and to environmental exploration and approaching employers. The only exceptions were self-exploration, where the negative relationship with age was marginally significant, and career self-efficacy, which did not relate to age.

Largely supporting Hypothesis 2, the results of Step 3, including locus of control (a), generalized self-efficacy (b) and trait curiosity (c) into the regression, showed that these variables were positively linked to all career adaptive responses, except for generalized self-efficacy which was unrelated to environmental exploration.

Step 4 of the hierarchical regression analysis included the interaction terms proposed in Hypothesis 3: As hypothesized, an internal locus of control moderated the effect of age on planning, engagement (marginally) and decidedness. Trait curiosity moderated the effect of age on self-exploration and on approaching employers, though not the effect of age on environmental exploration. Different than expected, generalized self-efficacy did not

moderate the effect of age on career self-efficacy.

In addition to the specific moderations mentioned above, we included the remaining possible moderations in Step 5 of the hierarchical regression analysis. Results showed no significant increment in model fit, except for the prediction of environmental exploration and approaching employers, where generalized self-efficacy emerged as another significant moderator, albeit with a negative impact, which was unexpected. See Figure 1 for a graphic representation of the effect of locus of control, curiosity and self-efficacy on the relationship between age and the four facets of career adaptation.

Finally, we included tenure in Step 6 of the hierarchical regression analysis to rule out tenure as an alternative explanatory factor for the effects found for age. Tenure turned out to relate negatively to engagement, environmental exploration and actively approaching employees. Yet, the addition of tenure did not meaningfully alter the effects of age found in the previous analyses, except for approaching employers where the effect of age was no longer significant. Moreover, adding a seventh step in which we modelled an interaction between tenure and the respective individual differences showed no significant results. Overall, these results showed that locus of control (a), generalized self-efficacy (b) and trait curiosity (c) indeed facilitate adaptive responses to a looming career transition and that they can further buffer the negative effect of age on adaptive responses.

Discussion

In line with our expectations, we found that age was negatively related to career adaptive responses (H1). In particular, the older workers were, the less they showed career concern in the form of planning and engagement, career decidedness in the form of control, and career curiosity in the form of self- and environmental exploration and of approaching employers, yet they did not experience less career self-efficacy in the form of confidence. Results also suggest that a high tenure in one’s job is related to less career adaptive responses

in comparison with workers who had spent less time in their job. Yet, most effects of age also persisted when tenure was taken into account, indicating that tenure is not an alternative explanation for the effect of age on career adaptive responses. The only exception was in predicting approaching employers, which seemed to be less of a question of age than of tenure: While some workers apparently tend to be more active on the job market and change jobs more often, others seem to stick to one employer for a long(er) time. Even more, workers with high tenure seemed less concerned about their careers in general, and also showed less engagement and environmental exploration, an effect that held up independently of the effect of age.

The non-significant association between age and career self-efficacy is somewhat surprising, given that obstacles towards reemployment usually increase with age (Kanfer, Wanberg, & Kantrowitz, 2001). A possible explanation could be that older workers are not as yet aware of this dire prospect. Rather, older workers are usually more experienced and established in their careers, and their personal and social self-definitions have become shaped by their work over time (Beyer & Hannah, 2002; Kira & Klehe, 2016).

Our findings also showed that the individual difference variables locus of control, generalized self-efficacy and trait curiosity were positively related to all career adaptive responses, except for generalized self-efficacy, which was unrelated to two of the three indicators of career curiosity, i.e., to environmental exploration and approaching employers (H2). Furthermore, the individual differences variables also moderated the relationship between age and adaptive responses. Concrete, locus of control moderated the relationship between age and planning and decidedness, but also between age and environmental exploration. Generalized self-efficacy did not moderate the relationship between age and career self-efficacy, yet it did moderate the relationship between age and environmental exploration and approaching employers – though in a negative direction. Trait curiosity moderated the relationship between age, on the one hand, and engagement, self-exploration

(marginally), and approaching employers, on the other hand (H3). The finding that an internal locus of control and high trait curiosity were increasingly relevant for career adaptive responses with workers' increasing age is highly relevant, given that maintaining career adaptive responses is becoming more important also for older workers. Surprisingly, effects were reverse for generalized self-efficacy in that the effect of generalized self-efficacy on environmental exploration and approaching employers actually declined with age. Selective Optimization with Compensation theory (Baltes, Staudinger, & Lindenberger, 1999) might explain this outcome. This theory stresses that workers more likely adopt specific strategies for minimizing losses and maximizing gains using available personal resources as they grow older. Several researchers (De Lange, Bal., Van der Heijden, De Jong, & Schaufeli, 2011; Zacher & De Lange, 2011) have shown that people's goal orientation changes across the life-span, revealing evidence for loss prevention and a stronger orientation on maintenance with increasing age. As a result, workers might change their preference from extrinsically (competition with younger workers, promotions, etc.) to more intrinsically rewarding job features (learning opportunities, social contacts, etc.) (Kanfer & Ackerman, 2004; Rhodes, 1983) as they grow older, explaining the decrease in externally oriented career curiosity.

Study Limitations and Recommendations for Future Research

As all data were collected via single-source surveys, there is a possibility of response set consistencies and common-method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Yet, this methodological problem is often overstated (e.g., Spector, 2006) and cannot explain the meaningful relationships found regarding the objective data on age and tenure as well as the significant interactions between core individual differences and age.

Second, we cannot truly differentiate between age and cohort effects. Results show a negative relationship between age and career adaptive responses, but this does not prove that responses indeed decline with age. It is likely that adaptive responses decline with age, as

workers become more entrenched the longer they work in a certain area, and the rest of their career may appear more foreseeable as they have less time laying ahead of them. Yet, it is also possible that age-related effects are actually cohort-effects with older workers having begun their careers during a different and more stable world of work (Rubin & Brody, 2005).

Third, while we included tenure as a possible alternative explanation, frameworks on successful aging at work also suggest other variables (e.g., person-related; knowledge, skills, abilities and other personal characteristics or context-related; work characteristics and life circumstances) that might be taken into account in future scholarly work (Rudolph, 2016). Moreover, previous research indicates that age reduces the remaining time and opportunities in one's work (occupational future time perspective, Carstensen, 2006), while work characteristics (job complexity and job control) moderate the relationship between age and remaining opportunities (Zacher & Frese, 2009). Therefore, it could be fruitful to include variables such as work characteristics as moderators in future research.

Finally, the magnitude of the moderation effects may appear small at first sight (Cohen, 1988), lying between $\beta = .034$ and $\beta = .055$. Yet, a meta-analysis (Aguinis, Beaty, Boik, & Pierce, 2005) revealed the average effect size of moderation effects published in top-tier journals to be 0.009, motivating the authors to suggest benchmarks of 0.005, 0.01, and 0.025 for small, medium, and large moderation effects, respectively. Using this benchmark, the moderation effects of the current study are all large and meaningful.

Theoretical Implications

Our findings bear several important theoretical implications. First and foremost, our study shows that age is negatively related to workers' career adaptive responses. While we do not know yet why this is the case – due to adherence to outdated career stage models, a slow preparation towards the retirement age, being attached to a comfortable life in a well-suited niche of the labor market or a silent career entrenchment, to mention some examples – this is

a troubling finding in the face of more turbulent labor markets and a need to continue working for a longer time, making the ability to adapt more important than ever.

Secondly, our findings empirically support the theoretical assumption that career adaptive responses are fostered by the individual differences variables locus of control, generalized self-efficacy and trait curiosity. Aligned with Savickas' (2013) career construction theory, the theoretical underpinnings of these individual difference variables are anchored in self-regulation capacities of individuals to successfully find their way in unfamiliar circumstances. Our results suggest that individuals high on these variables are indeed more likely to show more career adaptable responses. This answers to the need for more knowledge on how individual differences (Weick, 1996, p.53) can foster career adaptive responses to a looming career transition and implies that these factors have an important role in the workplace, as they can help workers in later career stages to show the necessary behavior to prepare for career transitions.

Practical Implications

Together, these findings also add important knowledge for career management and HR strategies that are aimed at promoting career adaptive responses. As workers become more vulnerable on the labor market the older they get, this study underscores the increasing importance of effective guidance with progressive age. Moreover, given the negatively moderating effect of self-efficacy, practical interventions are needed that stimulate career curiosity and employability enhancement throughout the life-span (Van der Heijden, De Lange, Demerouti, & Van der Heijde, 2009), in order to compensate for the increased focus on loss prevention and a stronger orientation on maintenance. Workers themselves should take control over their own careers and focus on learning and developing during all career stages. As such, both parties, i.e., organizations and individual workers, should invest in personal development and stimulate learning in all stages of the working life.

According to social cognitive theory, not only the person but also the environment and the cognitive and emotional processes specific to that person interact to determine behavior (Bandura, 1986). Creating a stimulating work environment and fostering an internal locus of control, generalized self-efficacy and career curiosity could be the key to help workers maintain adaptive responses throughout their careers. As locus of control is socially learned (Rotter, 1966), organizations could try to promote it by helping workers to form more favorable causal attributions (Hansemark, 1988). In addition, when developing an internal locus of control, it is vital that workers believe in their ability to bring about change, and to control their own life and career; "Self-efficacy concerns not the skills one has, but the judgments of what one can do with whatever skills one possesses" (Bandura, 1986, p. 391). Curiosity could possibly be fostered by including exercises to promote exploration in formal learning settings and informal learning contexts through supportive organizational policies and procedures. Organizations should try to create a psychologically safe workplace environment in which curiosity is stimulated and acknowledged through evaluation, career development, and reward and compensation procedures (Reio & Wiswell, 2000).

Conclusions

In conclusion, our study extends the literature on age, individual differences and adaptation to looming career transitions by showing that adaptive responses have a negative relationship with age, but a positive relationship with core individual differences. Moreover, the negative relationship between adaptive responses and age appears to be moderated by core individual differences. Based on our findings, we suggest that practitioners in working organizations should promote the career adaptive responses of workers throughout their career by fostering an internal locus of control, general self-efficacy, and train curiosity at work.

Figure 2.1 Graphic representation of the relation between a. Age and Locus of Control on Career Planning, b. Age and Trait Curiosity on Career Engagement, c. Age and Locus of Control on Career Decidedness, d. Age and Trait Curiosity on Career Self Exploration, e. Age and Locus of Control on Environmental Exploration, f. Age and Generalized Self-efficacy on Environmental Exploration, g. Age and Trait Curiosity on Approaching Employers, and h. Age and Generalized Self-efficacy on Approaching Employers.

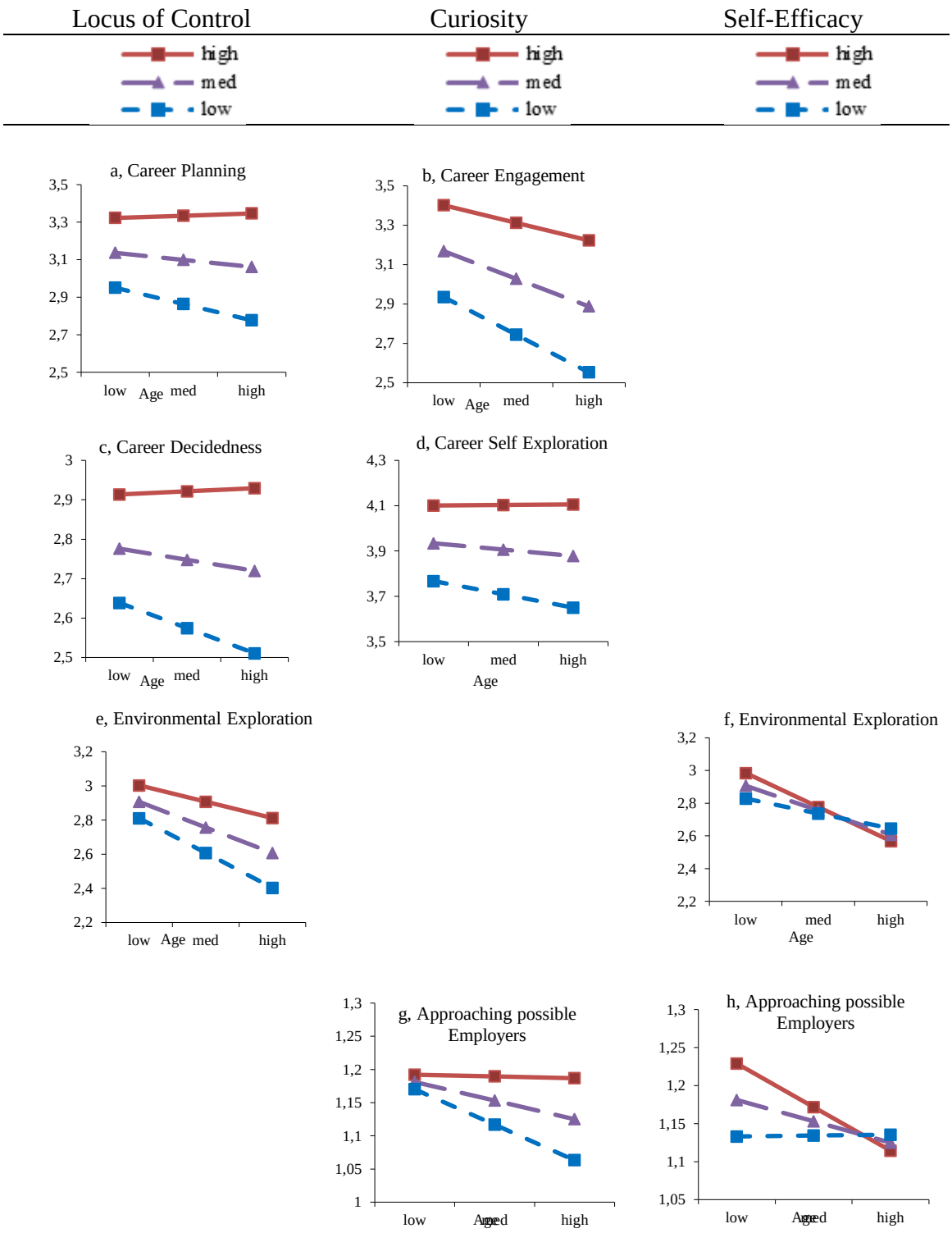

Table 2.1 Means, Standard Deviations, Correlations and Coefficient Alphas (on the diagonal).

	Descriptive Statistics		Correlations													
	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Control variables																
1. Gender	0.55	0.50														
2. Level of education	2.45	0.79	-.093													
Predictors																
3. Age	46.37	9.35	.079	-.052												
4. Locus of control	3.74	0.48	-.031	.243	-.203	(.73)										
5. Generalized self-efficacy	3.86	0.62	.181	.019	.003	.416	(.72)									
6. Trait Curiosity	4.06	0.54	-.018	.280	-.168	.477	.412	(.86)								
Adaptive responses																
Career Concern																
7. Planning	3.36	0.95	.031	.198	-.116	.419	.334	.366	(.89)							
8. Career engagement	3.38	1.24	-.030	.207	-.186	.347	.235	.383	.665	(.90)						
Career Confidence																
9. Career self-efficacy	4.06	0.73	.007	.238	-.105	.392	.327	.332	.621	.424	(.88)					
Career Control																
10. Career decidedness	3.12	0.80	-.008	.174	-.063	.389	.346	.305	.428	.313	.455	(.78)				
Career Curiosity																
11. Self-exploration	4.14	0.92	-.058	.195	-.113	.348	.216	.359	.536	.405	.408	.438	(.94)			
12. Environmental exploration	2.82	1.09	-.012	.140	-.212	.316	.196	.386	.563	.454	.486	.250	.461	(.91)		
13. Approaching possible employers	1.29	0.52	.012	.132	-.078	.166	.107	.159	.328	.260	.269	.145	.210	.356	(.85)	
14. Tenure	14.63	9.57	.165	-.185	.526	-.203	-.01	-.197	-.138	-.190	-.130	-.090	-.119	-.195	-.114	

Note. All $r > .052$ are significant at the .01 level, $N = 3{,}413$, except for Tenure: $N = 3{,}411$ and Approaching possible employers: $N = 3{,}410$.
Tenure is measured in years, Gender: 0 = female, 1 = male; education: 1= lower than intermediate vocational education, 2 = intermediate vocational education (MBO), 3 = higher professional education (HBO), 4 = university degree.

Table 2.2 Predicting Career Adaptive Responses with Age, Locus of control, Generalized Self-efficacy and Trait Curiosity.

	Career planning				Career engagement				Career Decidedness			
Model 1	R^2= .039; F (1,3409) =137.968, p < .001				R^2= .042; F (1,3409) =151.229, p < .001				R^2= .057; F (1,3409) =204.267, p < .001			
Model 2	ΔR^2= .011; F (1,3408) = 40.036, p < .001				ΔR^2= .031; F (1,3408) = 113.656, p < .001				ΔR^2= .009; F (1,348) = 31.552, p < .001			
Model 3	ΔR^2= .186; F (3,3405) = 276.815, p < .001				ΔR^2= .128; F (3,3405) = 182.605, p < .001				ΔR^2= .157; F (3,3405) = 228,427, p < .001			
Model 4	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*
Constant		3.099	.050			3.022	.066			2.750	.042	
Education	.088	.106	.019	.000	.093	.147	.026	.000	.149	.150	.016	.000
Age	-.038	-.004	.002	.015	-.111	-.015	.002	.000	-.037	-.003	.001	.017
Locus of control	.246	.490	.036	.000	.159	.411	.048	.000	.219	.362	.031	.000
Self-efficacy	.168	.257	.027	.000	.071	.140	.035	.000	.191	.243	.022	.000
Curiosity	.143	.251	.032	.000	.231	.528	.043	.000	.098	.143	.027	.000
Age*Locus of control	.051	.011	.003	.001	.028	.008	.004	.073	.033	.006	.003	.031
	$\Delta R2$= .003; F (1, 3404) = 11.305, p = .001				ΔR^2= .001; F (1,3404) = 3.217, p = .073				ΔR2= .001; F (1,3404) = 4.630, p < .05			
Model 5	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*
Constant		3.097	.050			3.028	.066			2.748	.042	
Education	.088	.107	.019	.000	.091	.144	.026	.000	.15	.151	.016	.000
Age	-.039	-.004	.002	.012	-.112	-.015	.002	.000	-.038	-.003	.001	.015
Locus of control	.246	.489	.036	.000	.160	.412	.048	.000	.218	.361	.031	.000
Self-efficacy	.167	.255	.027	.000	.068	.136	.035	.000	.190	.242	.022	.000
Curiosity	.144	.253	.032	.000	.229	.523	.043	.000	.100	.146	.027	.000
Age*Locus of control	.056	.012	.004	.002	.009	.002	.005	.641	.043	.008	.003	.020
Age*Self-efficacy	-.024	-.004	.003	.154	.000	.000	.004	.988	-.024	-.003	.002	.169
Age*Curiosity	.010	.002	.004	.583	.038	.010	.005	.039	0,000	.000	.003	.994
	$\Delta R2$= .000; F (2, 3402) = 1.036, p = .355				ΔR^2= .001; F (2,3402) = 2.279, p = .103				ΔR^2= .000; F (2,3402) = 1.007, p = .365			
Model 6	ΔR^2= .001 F (1,3401) = 2.247, p = .134				β	*b*	*SE*	*p*	ΔR^2= .000 F (1,3401) = 1.522, p = .217			
Constant						3.144	.079					
Education					.085	.134	.026	.000				
Age					-.088	-.012	.002	.000				
Locus of control					.157	.405	.048	.000				
Self-efficacy					.071	.140	.036	.000				
Trait curiosity					.226	.515	.043	.000				
Age*Locus of control					.008	.002	.005	.679				
Age*Self-efficacy					.002	.000	.004	.907				
Age* Curiosity					.036	.009	.005	.055				
Tenure					-.049	-.006	.002	.008				
					ΔR^2= .002 F (1,3401) = 7.034, p < .01							

	Career self-efficacy				Self exploration				Environmental exploration				Approaching employers			
Model 1	R^2= .030; F (1,3409) =106.998 , p < .001				R^2= .038; F (1,3409) =134.761 , p < .001				R^2= .020; F (1,3409) =67.828, p < .001				R^2= .017; F (1,3408) =59.635, p < .001			
Model 2	ΔR^2= .003; F (1,3408) = 10.481, p = .001				ΔR^2= .011; F (1,3408) = 37.931 p <.001				ΔR^2= .042; F (1,3408) = 151.891, p = .001				ΔR^2= .005; F (1,3407) = 17.736, p = .001			
Model 3	ΔR^2= .175; F (3,3405) = 248.274, p < .001				ΔR^2= .128; F (3,3405) = 176.566 p < .001				ΔR^2= .127; F (3,3405) = 178.033, p < .001				ΔR^2= .022; F (3,3404) = 26.495, p < .001			
Model 4	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*
Constant		3.906	.049			3.906	.049			2.759	.059			1.156	.030	
Education	.089	.082	.015	.000	.080	.094	.019	.000	.018	.025	.023	.261	.085	.056	.012	.000
Age	.003	.000	.001	.841	-.033	-.003	.002	.038	-.135	-.016	.002	.000	-.047	-.003	.001	.007
Locus of control	.242	.366	.028	.000	.199	.380	.036	.000	.141	.320	.043	.000	.083	.090	.022	.000
Self-efficacy	.212	.247	.021	.000	.040	.058	.027	.028	.020	.036	.031	.253	.040	.033	.016	.042
Curiosity	.076	.102	.025	.000	.215	.363	.032	.000	.281	.565	.038	.000	.066	.063	.020	.001
Age*Self-efficacy	.009	.001	.002	.572	.034	.006	.003	.034	.012	.003	.003	.437	.039	.004	.002	.023
	ΔR^2= .000; F (1,3404) = .319, p = .572				ΔR^2= .001; F (1,3404) = 11.305, p = .001				ΔR^2= .000; F (1,3404) = 0.605, p = .437				ΔR^2= .001; F (1,3403) = 5.154, p < .05			
Model 5	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*
Constant		3.904	.049			3.911	.050			2.757	.059			1.153	.03	
Education	.089	.082	.015	.000	.081	.094	.019	.000	.019	.026	.023	.274	.087	.057	.012	.000
Age	.002	.000	.001	.904	-.035	-.003	.002	.032	-.138	-.016	.002	.000	-.050	-.003	.001	.004
Locus of control	.242	.365	.028	.000	.198	.378	.036	.000	.138	.313	.043	.000	.081	.088	.022	.000
Self-efficacy	.211	.245	.021	.000	.039	.057	.027	.034	.018	.032	.032	.31	.037	.030	.016	.062
Curiosity	.076	.101	.025	.000	.217	.365	.032	.000	.284	.571	.038	.000	.070	.067	.020	.001
Age*Self efficacy	.001	.000	.002	.944	.035	.006	.003	.064	.009	.002	.004	.637	.049	.005	.002	.015
Age*LoC	.001	.000	.003	.967	.018	.004	.004	.329	.048	.012	.005	.009	.029	.003	.002	.157
Age* Curiosity	.018	.003	.003	.333	-.026	-.004	.003	.146	-.052	-.010	.003	.003	-.061	-.005	.002	.001
	ΔR^2= .000; F (2,3402) = .578, p = .561				ΔR^2= .001; F (2,3402) = 1.245, p = .288				ΔR^2= .002; F (2,3402) = 6.062, p <.01				ΔR^2= .003; F (2,3401) = 5.285, p <.01			
Model 6	ΔR2= .000 F (1,3401) = .320, p = .572				ΔR^2= .000 F (1,3401) = .519, p = .944				β	*b*	*SE*	*p*	β	*b*	*SE*	*p*
Constant										2.862	.070			1.211	.036	
Education									.013	.017	.023	.449	.080	.053	.012	.000
Age									-.113	-.013	.002	.000	-.021	-.001	.001	.296
Locus of control									.135	.307	.043	.000	.078	.084	.022	.000
Self-efficacy									.021	.036	.032	.252	.039	.033	.016	.045
Curiosity									.280	.564	.038	.000	.066	.063	.020	.001
Age* Curiosity									.006	.001	.004	.744	.046	.005	.002	.023
Age*LoC									.047	.012	.005	.011	.027	.003	.002	.174
Age*Self-efficacy									-.050	-.009	.003	.005	-.059	-.005	.002	.002
Tenure									-.050	-.006	.002	.007	-.058	-.003	.001	.004
									ΔR^2= .000 F (1,3401) = 7.339 p < .01				ΔR^2= .002 F (1,3400) = 8.287, p <.01			

Note. N = 3,411, except for Approaching employers N = 3,410. Age, Locus of Control, Generalized Self-efficacy and Trait Curiosity were centered and the interaction terms double-centered before adding them to the regression equation (Aiken & West, 1991). Variables added to the regressions included Education (Model 1), Age (Model 2), Locus of Control, Generalized Self-efficacy, Trait Curiosity (Model 3), the specific interaction term between Age and the relevant individual difference (Model 4), the two remaining interaction terms between Age and the individual differences (Model 5), Tenure (Model 6). Additional interaction terms between Tenure and the individual difference variables (Model 7) were non-significant

Chapter 3:

Enhancing Career Adaptive Responses Among Experienced Employees: A Mid-Career Intervention

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Abstract

In today's world of work, workers need to adapt their careers to ever-changing demands and circumstances, a possible challenge for employees of traditionally stable organizations. This raises the call for efficient and effective interventions that support employees in this adaptation. In the current study we present and validate a scalable intervention, combining an ePortfolio with a half-day event, designed for experienced employees in the context of an organizational restructuring. Career adaptive responses were measured before and six months after the intervention with 20 employees who participated and 28 employees who did not participate in the intervention. Employees who participated showed increases on self-awareness and career decidedness (control), self- and environmental exploration (curiosity) and career planning (concern), whereas employees in the control group did not. No effects were found for self-efficacy (confidence). Based on these results we conclude that it is possible to offer an efficient, scalable and effective intervention for enhancing experienced employees' career adaptive responses in the context of a looming organizational restructuring.

Key words: career adaptive responses, career construction theory, career intervention, ePortfolio, longitudinal quasi-experiment.

Enhancing Career Adaptive Responses Among Experienced Employees: A mid-Career Intervention

Introduction

Traditional career paths in which employees move vertically throughout a single organization's hierarchy, often staying within one job family throughout their careers, have become rare (Arthur, 1994). Rather, with changes in organizational structures, technology, and job assignments, employment contracts have become more flexible and employees change jobs more often, willingly or forced (European Political Strategy Centre, 2016; Kroeze, Dalm, Geerdinck, König, Lalta, & Van den Tillaar, 2012). Such changes require employees to constantly adopt new roles (Chan, 2000; Pulakos, Arad, Donovan, & Plamondon, 2000), and thus to readily adapt in their careers, i.e., to see the need and know the tools for self-managing their own careers (Segers & Inceoglu, 2012; Vuori, Toppinen-Tanner, & Mutanen, 2012). Yet, particularly employees in previously stable organizations might need advice in this regard and diverse researchers have called for intervention studies on career development and adapting among adult workers (e.g., Savickas, 2012; Verbruggen & Sels, 2008; Vuori et al., 2012; Whiston, Li, Mitts & Wright, 2017).

In the current study, we present and test an efficient, scalable, and hopefully effective intervention for strengthening experienced workers' career adaptive responding to a looming career transition. Conceptually, the intervention was designed to cover the core dimensions of adaptive responding as outlined in the career construction model of adaptation (Savickas, 2005, 2013). This model has proven useful in earlier intervention research for enhancing short-term learning and long-term employment success with students facing the school-to-work transition (Barclay & Stoltz, 2016; Koen, Klehe, & van Vianen, 2012), yet research on enhancing career-adaptive responses among experienced workers is still scarce.

The contributions of the current study are threefold: First, we designed and validated an effective intervention for preparing experienced employees for managing their careers in the face of an organizational change. While organizations are urged to empower mid-career workers to grow more adaptable in their careers (Brown, Bimrose, Barnes & Hughes 2012), empirical research on career interventions preparing experienced workers for a possible change is actually quite scarce (Whiston et al., 2017). Even fewer studies address longitudinal effects or consider more than one or two relevant dependent variable at a time (Whiston et al., 2017). In response, the current study offers a quasi-experimental assessment of such an intervention's effectiveness on different criteria over a half-year period.

When doing this, we, second, built on the career construction model of adaptation (Savickas, 2005, 2013). We identified and tested the intervention's longer-term effects on distinct indicators of career adaptive responses and highlighted how such adaptive responses can be strengthened among experienced workers. This is important as most empirical research on career adaptation has stayed close to its roots in vocational maturity (Super, 1955) by studying students and graduates in the context of their school-to-work transition (e.g., Barclay & Stoltz, 2016; Bernes, Bardick, & Orr, 2007; Koen et al., 2012; Nota, Santili & Soresi, 2016; Stoltz, Wolff & McClelland, 2011; Taber, Hartung, Briddick, Briddick & Rehfuss, 2011). Yet, adaptive responding remains an important topic throughout employees' careers, making research on how to strengthen experienced workers' adaptive responding rather important.

Finally, the intervention presented is relatively simple and low-key, showing that it is possible to change experienced employees' adaptive responses with relatively little input. This is important for both efficiency and scalability. Previous intervention research has mostly addressed quite elaborate interventions that used small groups or one-on-one coaching, and that were thus likely quite expensive (e.g., Di Fabio & Maree 2012; Eurofond 2016; Krieshok, Ulven, Hecox, & Wettersten, 2000; Lämsä & Hiillos, 2008; Maree, 2014; Schadt,1996) and

thus ill-suited for large groups of employees. Even though Whiston et al. (2017) tentatively suggest that around five sessions seems to be the most effective intensity for career counseling, they also note a lack of short intervention studies to give insight into their effectiveness. This makes research on efficient and scalable career interventions even more important (Soresi et al., 2014). We show here that long-term (6-months) changes in career adaptive responses do not necessarily depend on big investments in time or resources.

Career Adaptive Responses

Today's labor market requires the preparation for and readiness to cope with predictable and unpredicted changes in work and work conditions. Career construction theory (Savickas, 2013, 2005) distinguishes between adaptive readiness (trait of willingness to meet the problems presented by vocational development tasks, occupational transitions, and work traumas with fitting responses), adaptability resources (psychosocial strengths that condition self-regulation in coping with the tasks, transitions, and traumas), adapting responses (performing adaptive behaviors, beliefs and barriers that that people use to deal with career development tasks and changing work and career conditions), and adaptation results (e.g., career identity, career satisfaction, ,employability). In this study, we focus on adaptive responses as these represent the actual instances of adapting. People use adaptive responses to address career development tasks and changing work and career conditions (Hirschi, Herrmann, & Keller, 2015). According to career construction theory, career adaptive responses happen along four interrelated dimensions (Savickas, 2005, 2013):

1) *Career control* means that people feel like they own their future and are responsible for constructing their own careers. It describes the extent to which they take personal responsibility in influencing their development and work environment and shows in fewer difficulties in deciding upon their future career, i.e., more career decidedness

(Savickas, 2005, 2013). In line with this stands a greater self-awareness about one's personal needs, interests and qualities, how to use these in finding work that suits one.

2) *Career curiosity* involves people exploring possible future selves (self-exploration) by pondering about questions such as 'What motivates me?' and 'What are my talents?' and exploring external opportunities in potential jobs, organizations and professional fields (environmental exploration) in order to discover the fit between the self and the occupational roles (Savickas, 2005, 2013).
3) *Career concern* implies a sense that one needs to prepare for the future. Planning, i.e. outlining future career developments, building a career vision and translating this vision into concrete career goals, predicts successful careers (Ng & Feldman, 2007), likely because goals in general predict effort and effort predicts performance (Locke & Latham, 1990).
4) *Career confidence* describes people's beliefs that they can turn their career goals into reality and successfully solve problems and overcome obstacles (Savickas & Porfeli, 2012). As a consequence, such confidence should foster an efficacious mindset about imminent career tasks at hand, such as the self-efficacy to search for and find suitable work when needed (Moynihan, Roehling, LePine, & Boswell, 2003).

Career adaptive responses are self-regulatory reactions to career challenges (Klehe, Zikic, van Vianen, & de Pater, 2011) and are essential for people to meet the demands of today's labor market: More adaptive students more successfully manage their school-to-work transitions Creed, Muller, & Patton, 2003; Germeijs & Verschueren, 2007; Neuenschwander & Garrett, 2008; Patton, Creed, & Muller, 2002) and also experienced workers benefit from career adaptive responses (Bimrose & Hearne, 2012). For example, career adaptability fosters vocational and competence development, as well as young adults' motivation develop intellectually and personally (Creed, Fallon, & Hood, 2009). Unemployed jobseekers who

perceive a sense of competence (career confidence), who examine their different career options (career curiosity), and who plan their career despite their unemployment (career concern), are more likely to find a suitable job six months later, compare to jobseekers who show less adaptive responses (Zikic & Klehe, 2006). Generally, people who show more adaptive responses before a career transition report more job offers and higher employment quality (Koen, Klehe, Van Vianen, Zikic, & Nauta, 2010; Koen, et al., 2012) and career success later on (Hirschi, 2010; Zacher, 2014). A key challenge is, therefore, how best to support individuals in honing their career adaptive responding (Bimrose & Hearne, 2012, p. 343).

Interventions for Experienced Workers

Although empirical evidence supports the effectiveness of career interventions in general (Whiston et al., 2017), and of interventions targeting career adaptability in particular (Koen et al., 2012), the vast majority of this research has addressed students during the school-to-work transition (e.g., Barclay & Stoltz, 2016; Koen et al., 2012; Nota et al., 2016). Among adult populations, in comparison, much research uses qualitative case-study designs that allow an in-depth understanding of participants' adaptive processes during one-on-one counseling, but no quantification of effects or true differentiation between intervention and maturation processes in the course of the career transition (see Table 3.1 for an overview). In the latest meta-analysis to the effect of career interventions overall, Whiston et al. (2017) could identify only nine quantitative studies that address working-age participants, of which 3 where unpublished dissertations (Brennan, 2016; Cutler, 2005; Gragg,2003). Participants in the published studies where often part of challenged groups like women (Schadt,1996), sometimes with a history of domestic abuse (Chronister & McWhirter, 2006), war veterans (Krieshok et al., 2000), agricultural entrepreneurs (Di Fabio & Maree 2012) or people in

vocational rehabilitation (Merz & Szymanski, 1997).The few experimental studies available repeatedly addressed effective yet also elaborate interventions, which often required much personal attention for participants in small groups (e.g., Chronister & McWhirter, 2006) or during one-on-one coaching (e.g., Di Fabio & Maree 2012; Krieshok et al., 2000; Schadt, 1996). The one intervention included in the meta-analysis that was more scalable, a one-hour group-intervention with unemployed job seekers, showed rather disappointing results (Bullock-Yowell et al., 2014). Also, earlier research has mostly focused on the adaptation facets of decidedness and self-efficacy (Bullock-Yowell et al., 2014; Krieshok et al., 2000; Di Fabio & Maree, 2012; Schadt, 1996), whereas more research is needed on actual adaptation behaviors such as planning and exploration. Finally, we need a greater consideration of longer-term effects, as ethical considerations force purely experimental research to use a waitlist-control-group design, providing the career intervention in question also to the control group after the completion of the study. This lead to the use of either no follow-up measures (Di Fabio & Maree, 2012) or of follow-up measures that happened at most three months after the intervention (Chronister & McWhirter, 2006; Krieshok et al., 2000; Schadt, 1996).

Conceptually, the resulting shortage of knowledge on interventions for experienced workers is problematic, as a simple translation of findings from the school-to-work transition to employees with an extended work history is far from given (Buyken, Klehe, Zikic & Van Vianen, 2015). Compared to students who enter the labor market for the first time, adults stand at different career stages (Super, 1980) with different experiences, needs, and expectations, and maintaining career adaptive responses can become more difficult with age (Van der Horst, Klehe, & van der Heijden, 2017). Having invested heavily into their prior career choice, adult employees are likely more aware of their past occupational investments, the emotional costs associated with changing occupations, and of their limited occupational alternatives (Carson & Carson, 1997).

Looking at the importance of career adaptive responding throughout one's career and at the current state of research on respective interventions, we thus need more empirically validated interventions for experienced workers (Savickas, 2012; Whiston et al., 2017). More specifically, such intervention should focus on all four factors of career adaptive responses, should be efficient, scalable and thus potentially available to many workers at the same time, and should prove their effectiveness over a longer time-period.

Type of Intervention

As fostering adaptive responses to a looming career transition is relevant for all workers, not only select groups identified either as high-potentials or troubled groups, interventions should not only be effective, but also efficient and scalable in order to be a viable addition to any organization's intervention portfolio for their employees. At the same time, there is little consensus in the literature on what type of intervention is most suited to reach large groups of people; structured group interventions like career classes (Oliver & Spokane, 1988) or group counseling (Brown & Krane, 2000), or alternatively computer based interventions. Structured group interventions like career classes or workshops are often effective and reasonably efficient for providing services to groups of clients at once (Whiston, 2002; Whiston, Brecheisen, & Stephens, 2003). In comparison, computer based interventions, possibly the most efficient approach of all, might be less effective (Whiston et al., 2017), even though the technological possibilities of such interventions are ever advancing. Technology and the internet could support career counselors in providing high-quality services at reasonable prices through the use of computerized tests, materials, evidence-based protocols, and other information that can be quickly accessible to clients (Sampson & Osborn, 2015). There are some promising results on online interventions like ePorfolio's, which seem useful for self-directed career counseling (Balaban, Divjak, & Mu, 2011; Cambridge, 2010; Lievens,

2015), or a recent online career construction intervention for students (Nota et al., 2016), yet meta-analytic results (Whiston et al., 2003) suggest that computer programs become more effective when combined with group or one-on-one counseling, particularly when the latter occur after the computerized intervention.

The Intervention

Our goal in this study was thus to develop and evaluate a scalable intervention that helps employees to adaptively manage their careers in a self-directed manner during the context of an organizational restructuring. For this purpose, we designed an intervention consisting of two parts, combining the most effective (structured group interventions) and efficient (computer based interventions) types of interventions (Whiston et al., 2003; Whiston et al., 2017).

The first part, inspired by promising findings from educational psychology (Flanigan & Amirian, 2006), consists of an ePortfolio containing a personal profile and online questionnaires. The second part is a semi-structured group event. Possibly important to know is that while the employing organization paid for both the ePortfolio (€55,- per active participant) and the event (about €30,- per active participant), both were open on a voluntary basis to all administrative staff at the organization where this study was conducted, without information about participation being shared with managers. That is, managers had no say, knowledge or control over their employees taking part in the intervention or not.

ePortfolio: An ePortfolio is a web-based information system that uses electronic media and services. It aims at building and maintaining an online portfolio in which people can demonstrate their competences and skills, and reflect on their development. EPortfolio's help users to gather information about themselves on personality or motivation, past assignments, work experience etc. The technology involved in ePortfolios offers users many

different options such as access to their own records at any time, digital repository, feedback and reflections, in order to help them achieve a greater understanding of their individual growth, build their CV, etc. Research from education sciences has shown that using ePortfolios can enhance students' self-regulated learning skills (Alexiou & Paraskeva, 2010). A sense of control over how personal information is represented and direction over what is shown makes the ePortfolio a powerful tool that stimulates self-regulation (Flanigan & Amirian, 2006). EPortfolio's aim at supporting lifelong learning, often starting in an educational setting (Balaban et al., 2011). However, scholars and practitioners agree that ePortfolio's are useful for later career purposes as well, such as professional development career planning and job seeking (Balaban et al., 2011; Cambridge, 2010; Lievens, 2015). The benefits of an ePortfolio compared to more traditional career interventions include its self-directed possibilities and its cost effectiveness. An ePortfolio can be used fairly independently as clear instructions within the program help users go through the different steps. Employees can log in to their own ePortfolio whenever and wherever they would like. They can choose themselves when and what questionnaires they want to complete and they can see their own outcomes in a personal report immediately after finishing a questionnaire.

The ePortfolio used in the current study was developed by an external consultancy for organizations that aim to help employees gain more self-knowledge and insight in their current position on the labor market. The ePortfolio contained a short personal profile with curriculum vitae information and two validated online questionnaires, one on employees' personality and one on their sense of employability, i.e. of their self-assessed social and human capital, identity and adaptability in the domain of work (Fugate, Kinicki & Blake Ashforth, 2004). Employees needed two to three hours to complete the questionnaires and to interpret their results. Besides presenting a classic tool of self-exploration (career curiosity), the ePortfolio aimed at enhancing employees' awareness both of who they were as a person

and thus what was important to them (self-awareness; career control), and of their own work-related competencies and resources (self-efficacy; career confidence).

The group event further aimed at stimulating career adaptive responses. The half-day event was organized centrally by the HR-department of the employing organization for all administrative staff possibly affected by the organizational change. The event combined standardized elements in the form of two shared presentations with two rounds of elective workshops. It started with a common opening session during which a presenter from the organization's HR department highlighted the importance of continually working on one's career development throughout one's career and made suggestions on how employees can do so, in order to stimulate a proactive stance towards one's career and career planning (career concern). After that, there were two rounds of workshops, each workshop designed for up to 20 participants and lasting one and a half hours each. For the first round of workshops, participants could choose between workshops focusing on self-exploration, environmental exploration (career curiosity; e.g., "How can I use my talents?" or "discover your own qualities and learn how to use them") and/or career related self-efficacy (career confidence, e.g., "learning from success", or "discover your own qualities and learn how to use them"). The second round focused on self-awareness and career decidedness (career control), planning (career concern) and career related self-efficacy (career confidence; e.g., "how to use your professional network", "personal branding" or "what limits you outside of work"). All of these workshops were organized by external career coaches and experts from HR-consultancies, who were free to decide the content of their workshop as long as this was in line with the predetermined topics of the specific workshop round. While none of the workshops attempted to cover all components of career construction theory in its whole, this approach does stand in line with career construction theory's foundation in earlier models of career guidance (Savickas, 2005). In both instances, attendees could decide themselves on

which workshops to participate in, depending on their personal needs and interests. The event ended with a finishing session on how to change jobs, stimulating participants' environmental exploration (career curiosity), future career planning (career concern) and career related self-efficacy (career confidence).

While organized in collaboration with and on the premises of the employing organization, the event's prime focus was to raise participants' awareness of alternative career options and of how to learn about them, as well as their sense of responsibility and of control over their future careers. The total costs of the workshops and speakers during the event was almost 3000 euro's for 136 participants. An additional 1000 euro's was spent on materials and equipment. As the event was hosted at the employing organization, there were no additional costs for hiring a location.

The researchers collaborated with the external consultancy to set up the overall structure of the intervention, yet they were not involved in the details of either the ePortfolio (e.g., what type of measures to include) or the event. Indeed, none of them even attended the event or communicated with any of its speakers. All of the speakers and trainers involved in the event were unaware of the current study evaluating the overall intervention.

As both the ePortfolio and the event were developed to enhance worker's adaptive responses to a more volatile labor market, we expect:

Hypothesis 1. *Compared to employees who do not participate (i.e., a control group), employees who participate in the ePortfolio and the event will show an increase in career adaptive responses.*

This implies an increase in adaptive responses indicating

(a) career control in the form of self-awareness and career decidedness,

(b) career curiosity in the form of self- and environmental exploration,

(c) career concern in the form of career planning and

(d) career confidence in the form of career-related self-efficacy.

Methods

Study Design and Procedure

The intervention was run at a regional state-owned organization. Originally a lifetime employer, the organization had recently announced that it was planning on reorganizing and on cutting administrative personnel in the near future, without telling individual employees at this stage whether their individual jobs were at risk. The organization was offering the intervention to administrative employees on a strictly voluntary basis. No consequences were attached to participating in the intervention and managers within the organization never heard back about which employees did or did not participate. The organization turned to an external HR-consultancy, to implement an intervention that would help employees prepare for change and deal with possible uncertainties. Employees could participate in the intervention by logging in to their ePortfolio to complete the questionnaires and they could register online for the event.

We compared differences in career adaptive responses for employees who did participate in the intervention (intervention group) with employees who did not participate (control group) with a two-wave longitudinal quasi-experimental design. As participation in both the intervention and in the study was voluntary, they happened largely independently from one another. Participants for the study were recruited online both at the same website from which they could log in to their own ePortfolio and at a website on the organization's intranet. In both cases, a message with a separate link was placed where employees were asked to participate in a study on their career activities by responding twice to an online questionnaire. Participation in the study (i.e., responding to the T1 questionnaire) was only

possible as long as respondents had not yet worked on their own ePortfolio. The group event was held two months later, after participants competed their ePortfolio. Respondents to the T1 questionnaire were then contacted again six months after the group event (T2). Those participants who had worked on the ePortfolio and had attended the event in the meantime were then assigned to the experimental group, whereas participants who had done neither were assigned to the control group. To stimulate a good response rate, a prize (a trip to Barcelona) was raffled among participants who completed both evaluation questionnaires.

Participants

In total 330 employees participated in the ePortfolio. Of these, 70 employees also participated in the event, as did 66 employees who had not participated in the ePortfolio. All participants worked in administrative jobs (75% female, age M = 41.9; SD = 9.2). As participation in our study was a voluntary add-on for participants, the sample size of the experimental group was 20 employees who participated in both the ePortfolio and the event and who completed the questionnaires on career adaptive responses at T1 and T2. Because the experimental group (85% female, age M = 41.9; SD = 8.6) was relatively small, we checked whether the group was comparable to employees who could have participated in the study, but chose not to. These employees completed the ePortfolio and attended the event, but did not participate in the pre- or after measure of career adaptive responses. No differences emerged between these two groups for age (F(1,69) = .73, p =.40), gender ($\chi 2$ (1,69) =,01 p=1.00) or any of the big 5 personality traits openness to experience (F(1,69) = .04, p =.88), conscientiousness (F(1,69) = .15, p =.70), extraversion (F(1,69) = .00, p =.98), agreeableness (F(1,69) = 1,69, p =.20) and neuroticism (F(1,69) = 2,50, p =.12), suggesting that the experimental group was indeed representative of intervention participants overall. The control group consists of 28 administrative employees who completed the questionnaires on

career adaptive responses (T1 and T2) but did not participate in the intervention (the ePortfolio and the event), 67.9% female, age M = 42.0 (SD = 9.7).

Measures

To assess the effect of the intervention, we measured employees' career adaptive responses (control, curiosity, concern and, confidence) before the intervention (T1) and six months after the intervention (T2) with employees of both the intervention and the control group. The measures for career adaptive responses were the same at T1 as T2. Items were rated on a 5-point Likert-type scale ranging from 1 (not at all) to 5 (very much).

We measured career adaptive responses with six scales. The dimension of *career control* was addressed by two complementary scales. The first addressed respondents' understanding of themselves. This self-awareness was measured with six questions on what they knew about themselves on different important career aspects like qualities, inspiration, orientation and employability (e.g., "I know what is important to me and what inspires me"; α= .85 at T1 and .82 at T2). The second scale, in turn, consisted of a five-item scale by van der Horst et al. (2017), which in turn is a short version of the Career Decision Scale (Germeijs & De Boeck, 2003; based Osipow, Carney, & Barak, 1976), addressing respondents' understanding of the different career options available to them (e.g., "I can list the alternatives for my career" α= .70 at T1 and .73 at T2). In combination, this focus on both the self and also on the environment mirrors the traditional tenet of vocational psychology that 'a wise choice of a vocation' requires both – a solid understanding of oneself, and a good understanding of the environment (see Parsons, 1909, p. 5).

The dimension of *career curiosity* was also addressed by two complementary scales addressing the exploration of both the self and the environment. Self-exploration was measured with Hirschi's (2009) adaptation of Stumpf, Colarelli, and Hartman's (1983) self-

exploration scale (e.g., “To what extent have you done the following in the past 6 months: focused my thoughts on my personal quality and skills”; α = .94 at T1 and .91 at T2), and environmental exploration with Zikic and Klehe's (2006) adaptation of Stumpf et al.’s environment exploration scale (e.g., “To what extent have you done the following in the past 6 months: investigated specific career possibilities.”; α = .94 at T1 and .92 at T2)

Career Concern was addressed by a career planning scale that combined two items from Gould (1979) about the existence of goals and plans with two items that address more the activities associated with planning (e.g., “I have made plans regarding my future career”; T1α = .86, T2α = .78).

Finally, *career confidence* was addressed by a five-item measure that combined respondents’ self-efficacy to find suitable alternative employment (Kanfer & Hulin; 1985; see also Saks & Ashforth, 1999; e.g., “I am confident of my ability to successfully find out where job openings exist”) and to be self-directed in their career decisions in general (e.g., “I am confident of my ability to successfully make decisions in my career” T1α = .77, T2α = .71).

Results

Pre-analyses

Table 2 presents the means, standard deviations, internal consistencies and correlations between the variables included in this study. Because participating in the intervention was voluntary, we checked whether the two groups differed with respect to the demographics and their career adaptive responses prior to the intervention (T1). No differences emerged between the two groups for age ($F(1,46) = -0.04$, $p = .97$) or gender ($\chi 2$ (1,46) = 1.83, $p = .18$). Yet, the intervention group scored significantly lower at T1 than the control group on both indicators of career control (self-awareness: intervention group: $M = 3.63$, $SD = 0.59$, control group: M

= 4,15, *SD* = 0.52, *t* (46) = - 3.22, *p* < .01; career decidedness: intervention group: *M* = 2.25, *SD* = 0.55, control group: *M* = 3.22, *SD* = 0.60, *t* (46) = - 5.73, *p* < .01), as well as on self-efficacy (confidence; intervention group: *M* = 3.49, *SD* = 0.57, control group: *M* = 4.14, *SD* = 0.52, *t* (46)= - 4.05, *p* < .01), and tentatively lower on career planning (concern; intervention group: *M* = 2.59, SD = 0.82, control group: *M* = 3.16, *SD* =.1.21, *t* (45.91)= - 1.96, *p* = 0.06). No difference emerged between the groups on the curiosity measures self- (intervention group: *M* = 3.83, SD = 0.94, control group: *M* = 3.63, *SD* = 1.19, *t* (46) = 0.63, *p* = .53) and environmental exploration (curiosity; intervention group: *M*=2.23, *SD*=1.05, control group: *M* = 2.04, *SD* = 1.21, *t* (46) = 0.56, *p* = .58). Overall, distribution of participants to groups was thus not truly random, forcing us to control for participants' T1 scores in the following analyses.

Hypothesis Testing

To ensure that results were indeed due to the intervention and not participants' original scores, we controlled for their T1 values. The Hypothesis stated that employees who participated in the ePortfolio and the event will show an increase in career adaptive responses (a-d), compared to employees who did not participate. We tested this Hypothesis with a 2x2x6 mixed design MANOVA (combining the two groups (between factor), two measurement points (within factor), and six indicators of adaptive responses (within factor)), using Type III sums of squares computation to account for the different group-sizes and thus the unbalanced design (Hershberger, 2005). The use of a MANOVA is adequate in this instance as we conceptualize the different indicators of adaptive responses as part of an overall system, i.e., "a collection of conceptually interrelated variables that, at least potentially, determines one or more meaningful underlying variates or constructs" (Huberty & Morris, 1989, p. 304), an assumption that was also supported by the meaningful

intercorrelations between the diverse career adaptive responses (see Table 3.2). In pre-analyses, The Box's Test for testing the equality of variance-covariance matrices was significant at $p = .014$, a difficult to interpret finding in the face of the unequal group sizes (Field, 2009). Contributing to this finding, however, was likely the unequal variances between the two groups on two of the twelve dependent variables, as identified by Levene's test for equality of variances. More specifically, variances differed between participants' career planning at Time 1 ($F = 4.51$; $p = .04$) and their self-exploration at Time 2 ($F = 7.59$; $p < .01$). As in both cases, the larger variances were caused by the larger of the two groups, however, (career planning at Time 1: $SD = 0.82$ in the intervention versus $SD = 1.21$ in the control group; self-exploration at Time 2 $SD = 0.49$ in the intervention versus $SD = 1.15$ in the control group), this renders the MANOVA more conservative rather than lenient (Tabachnick & Fidell, 2007). As also the assumption of sphericity was not met by the data (Bartlett's test of sphericity: $X^2_{(df=77)} = 382$, $p < .01$), results of within-subject's effects were corrected via the Greenhouse-Geisser formula, which did not meaningfully affect the interpretation of relevant results, however.

Results (Table 3 top) confirmed that employees who participated in the ePortfolio and the event showed a greater increase (i.e. significant interaction between time and group) in their career adaptive responses half a year later compared to employees who did not participate, the effect sizes of this difference ($f_{(based\ on\ partial\ eta\ square\ of\ the\ interaction\ effect\ between\ group\ and\ time)} = 0.56$) being large, as compared to the standards suggested by Cohen (1988).

In order to allow for a more in-depth analysis and to create comparability with earlier studies that usually addressed different aspects of career adaptability separately (e.g., Koen et al., 2012), we followed up on this overall MANOVA with a series of further MANOVAs and ANOVAs that addressed each of the four dimensions of career adaptive responding, respectively (Huberty & Morris, 1989). The two 2x2x2 MANOVA's for career control

(testing the interacting effects of group and time on the dependent variables self-awareness and career decidedness) and curiosity (testing the interacting effects of group and time on the dependent variables self- and environmental exploration), and the 2x2 ANOVA for career concern (testing the interacting effects of group and time on the dependent variable career planning) again supported the Hypothesis (Table 3 bottom). More specifically, participants in the intervention group reported greater increases in career control (self-awareness and career decidedness (a); f = 0.55), curiosity (self- and environmental exploration (b); f = 0.42), and concern (career planning (c); f = 0.40). Given these large effect sizes (Cohen, 1988), results for control, curiosity and concern also remained statistically significant at the α = .05 level after correcting for possible alpha inflation (Bonferroni). The only exception of this pattern is career confidence, however. Here, the 2x2 ANOVA for career confidence (testing the interacting effects of group and time on the dependent variable self-efficacy) did not indicate a significant interaction between group and time (d); f = 0.05).

When split by gender, effects remained significant for female participants. For male participants, effects were not statistically significant due to the small sample size, but appeared equal if not larger, compared to women. However, given the observation of non-significant effects, caution should be exercised when interpreting this observation.

Paired Comparisons

An illustration of results is presented in Figure 1. Paired sample *t*-tests confirmed that the intervention group improved on most dimensions between T1 and T2, whereas the control group did not (see Table 3.4 for effect sizes and confidence intervals). In the intervention group, all the mean scores on the dependent variables, except for the mean score of self-efficacy, increased. The *t*-tests values lay between 2.79 and 4.51, *p* was always smaller than .01, remaining significant on the α = .05 level after correcting for possible alpha inflation

(Bonferroni). More specifically, the intervention group improved in self-awareness, career decidedness, self-exploration, environmental exploration and planning. The control group did not improve on any of these dimensions. The results of the paired *t*-tests did not indicate a difference in mean scores on the dependent variables between T1 and T2 for the control group. Overall, the hypothesis was thus supported on all dimension of career-adaptive responding except for career-related self-efficacy.

Discussion

In this study, we respond to the call for more interventions on career adaptive responses for experienced workers, predicting outcomes that are relevant for both organizations and employees. Especially workers who have been in their jobs for a long time might have difficulties adapting to the changes in today's volatile labor market (Brouwer, Schellekens, Bakker, Verheij & Steegen, 2011). Therefore, organizations need efficient and scalable interventions that foster workers' adaptive career responses. As previous intervention research has mainly focused on adaptive career behaviors among students during their school-to-work transition, our aim in this study was to test how far a relatively low-key intervention consisting of an ePortfolio and an event helps enhance career adaptive responses for workers who are no longer at the beginning of their careers. Results suggest that such intervention offers an efficient, scalable and effective option for career guidance. After the intervention, workers knew more about their personal qualities, desirable job-features, and their career options (career control), were more actively reflecting upon themselves and diverse career options (career curiosity), and set more career goals and took more action to reach these goals (career concern). At the same time, workers did not gain more confidence on being able to find another job (self-efficacy), which is in line with results from a student intervention for career adaptability (Koen et al., 2012). Possibly, once workers proactively manage their

careers, they also become more aware of potential obstacles and the ways in which their own profiles do not always match potential employers' requirements.

Contributions to the Literature

The current study makes three main contributions. First, it fills the gap in the literature on interventions for workers who are past the school-to-work transition and their early career. Such research is needed, as generalizing findings from the school-to-work transition to employees who are looking back over an extended work history is far from certain (Buyken et al., 2015). Savickas and Porfeli (2012) argue that career adaptable responses are malleable throughout one's career, yet, most empirical research on career adaptation had stayed close to its roots in vocational maturity (Super, 1955) by studying students and graduates in the context of their school-to-work transition. Consequently, there was no consensus in the literature as to how far it is still possible for experienced employees to develop adaptable responses (Verbruggen & Sels, 2008; Griffin & Hesketh, 2003; Koen, Klehe, & van Vianen, 2012), with empirical research on career interventions preparing experienced workers for a possible change actually being quite scarce (Whiston et al., 2017). The current study shows that employees who participated in the intervention improved on most of the career adaptive responses tested.

The second contribution lies in the nature of the intervention itself, as it is relatively simple, scalable and low-key, showing that it is possible to change experienced employees' adaptive responses with relatively little input. Most previous intervention research has addressed more elaborate interventions (e.g., Di Fabio & Maree 2012; Eurofond 2016; Krieshok et al., 2000; Lämsä & Hiillos, 2008; Maree, 2014; Schadt,1996). While of high conceptual value, such elaborate interventions may end up being prohibitively expensive for organizations, particularly if these organizations face financial difficulties, as in the current

case. Under such circumstances, effective interventions for many employees become particularly important, while the budget to conduct such interventions tends to be small.

Interventions such as the current one can offer efficient, scalable and effective help for employees to develop more career adaptive responses. Online tools such as ePortfolios are highly scalable, once they have been set up, and the event can welcome large numbers of participants simultaneously, which makes the intervention overall more efficient and scalable than most interventions studied earlier.

Also, in line with career construction theory's premise of fostering self-directed careers, this type of intervention focusses on worker's self-directedness not only in content, but also in structure: As much of the intervention is online, employees can decide for themselves when and where they want to participate and how to manage their own results. The event is setup in such a way that employees can choose to participate in workshops that fit their personal needs and interests.

Finally, results show that such efficiency does not imply a quick-fix solution without sustainable effects. Rather, results held over a half-year period, which is considerably longer than the effects studied or found in previous quantitative research (Whiston et al., 2017).

On a related note, this study makes some methodological additions to the literature. For one, it adds to the slim body of (quasi-) experimental work in this domain, given that much previous research has employed case-study designs, which do allow an in-depth understanding of individual cases' process of adapting, but little information as to measurable changes in adaptive responding due to an intervention, compared to a control group. Among the experimental studies, then, the timeframe was usually quite short, whereas the sustainability of effects is of utmost importance. Finally, most studies that showed positive effects address self-efficacy or career decidedness as outcome variables, but do not focus on actual behaviors such as career planning or exploration (Whiston et al., 2017), with the

current study reflecting a more comprehensive perspective on adaptive responding.

Limitations

A first limitation of this study lies in participants' voluntary participation in the intervention as well as in the study. Because of this self-selection, the intervention and control groups were not fully equivalent before the intervention (T1). Particularly employees low on perceived self-awareness, career decidedness and self-efficacy participated in the intervention. Reversely, this does suggest, however, that even though participation was optional, the intervention reached those participants who needed it the most, namely those who reported less career adaptive responses before the intervention (T1), which is an important condition for the intervention to be successful in practice. A possible concern, however, could be that results (an effect in the intervention group versus none in the control group) are due to a ceiling effect in the control group. Besides a lack of theoretical rationale for such an assumption, the data do not support this concern, however (except possibly for the dimension self-awareness). Both career planning and career decidedness rendered a crossover effect with the experimental group not only catching up, but showing higher levels than the control group at T2. The same interaction shows for self- and environmental exploration, both of which started out equal if not tentatively higher in the experimental than the control group.

Second, due to difficulties in collecting longitudinal data among volunteer participants, the sample size was relatively small. While sample sizes as small as or even smaller than in the current study are actually quite common among studies on career interventions among adult populations (e.g., Di Fabio & Maree 2012; Krieshok et al., 2000; Schadt,1996), this would, in the end, have been a concern primarily if effect sizes were looking meaningful but failing to reach statistical significance. In our case, data did support

most of the proposed effects, and thus, while confidence intervals around effect sizes are at times quite large, the significance of these effects is indeed certain.

Third, as the data-collection happened in the context of an ongoing organizational change, we needed to rely on rather short and concise measures and item selection was driven not only by conceptual but also by pragmatic considerations. Even though the scales used in the current study proved to be internally consistent, it would have been desirable to use more elaborate scales or to also study potential changes in adaptivity and adaptability in addition to changes in adaptive responding.

Fourth, we conducted the study in a state-owned organization that had traditionally been a lifetime employer, following a relatively traditional paternalistic model of career management for its employees. Therefore, change towards a more self-directed approach to managing one's career in the form of stronger career adaptive responses might have been easier to achieve in this organization than in organizational settings where employees are very aware of their own career-related responsibilities and opportunities to begin with.

Also, largely due to the focus on administrative jobs within this organization, our sample was predominantly female. While results held when studying women only, the effects on men are far less certain. While effect sizes per se suggest that results would generalize across genders, our sample plainly included too few men to allow any certainty. A study of gender in intervention effects is also relevant, as the careers of men and women still show systematic differences in stability and predictability, insecurity, disruptions, and income.

Finally, while interventions like the current one are affordable when broken down to individual cost per person, they need a minimum number of approximately 45 participants at a time, to be able to offer at least three different workshops per round and keep overhead costs affordable. A minimum number of participants implies either the involvement of a relatively large organization or the participation of a large proportion of employees. This is in line with

the call for organizations to maintain some responsibility for supporting employees in their career management, to prevent an extreme case of human capitalism, which is a non-sustainable approach to career guidance and in the long-term harms employees, organizations and society over all (Fleming, 2017).

Directions for Future Research

This study shows that the evaluated intervention can help experienced employees used to lifetime employment in a governmental non-profit organization to show more career adaptive responses. For future research, it would be interesting to see if the intervention is useful for employees in different cultures, for profit organizations or for specific groups of employees or jobseekers that face more difficulties on the labor market, like people with a disability or refugees forced to rebuild their careers in a foreign country.

In the current study, we evaluated an intervention that combines an ePortfolio with a half-day career event. We chose to combine these two, as Whiston et al.'s (2003) meta-analysis suggests computer based interventions to indeed be very efficient but not effective, unless when supplemented by counseling. As we aimed to make the intervention scalable, however, we opted for a structured group event instead of one-on-one counseling. The likely advantages of such an approach are the combination of allowing participants to start working on their adaptive responses on their own time and in a self-directed manner with the help of the ePortfolio, while also providing the interactive features, feedback options and motivational advantages of a group event. That said, while we see positive effect of this combination, we do not yet know what the effect of the separate components would be on their own and whether combining the two is even necessary. A study on the separate and combined effect of the two intervention parts could clarify this. Similarly, it would be interesting for future research to parcel out the separate effects of different intervention

components, as well as their combined effects. For example, the current study combined different types of workshops, which participants could choose from based on their own interests. With this, we cannot differentiate in the current case whether particular workshops were especially helpful to participants or whether it was indeed participants' opportunity to choose. Possibly, it wasn't even any single workshop on its own but the experience of hearing in different practitioners' different voices again and again the same message that it is important but also possible to actively prepare for one's future career within or without the current organization by undertaking a certain set of activities.

Finally, the current study addressed long-term effects of the intervention up until six months after the intervention. Future research should assess the effects of the intervention on even longer terms to see how much of the intervention's effects sustain even across years. If the effect of the intervention holds much longer, training adaptive responses possibly helps to prepare people for dealing successfully with later challenges and setbacks in their careers.

Conclusions

In conclusion, the results of this study show that the combination of an ePortfolio with an event where employees can choose workshops that suit their personal interests, can help to increase adaptive responses up to six months after the intervention. These results speak for an effective, scalable and efficient approach that can be made available to large groups of employees at the same time. In a labor market where employees must take more and more responsibility for managing their own careers by constantly adjusting to changing situations, interventions such as this can be helpful for employees and practitioners aiming to support employees in showing the right adaptive responses to deal with these changes successfully.

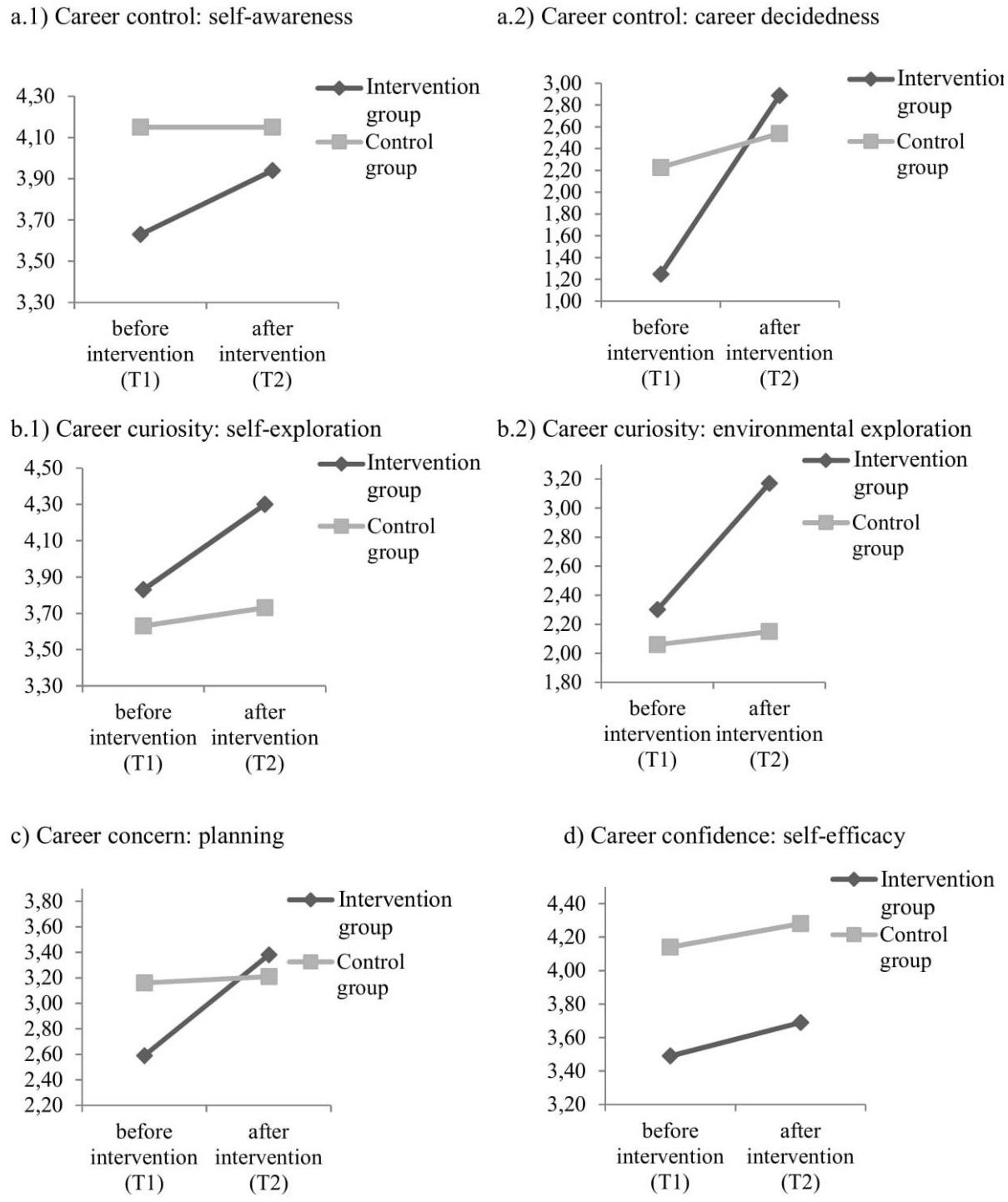

Figure 3.1 a–d. Graphic representation of career adaptive responses before and after the intervention, for the intervention group and the control group.

Table 3.1 Overview of previous published intervention studies among experienced workers.

	Study	Theory	outcome variables	Outcome of study	Intervention			Participants	Experi-mental design	Time lag
					Type	Inten-sity	Group n			
1	Bullock-Yowell et al., 2014	cognitive info processing	Negative career thinking, career decision-making difficulties	No impact on negative career thinking, potentially increased career decision-making difficulties	Group	1 hour	12	Unemployed adults	yes	None
2	Chronister & McWhirter, 2006	social-cognitive career theory	Career-search self-efficacy, outcome expectations, perceived barriers, support goals, goal identification, critical consciousness	Higher career-search self-efficacy, higher critical consciousness, more progress toward goal achievement	Group	5, 2-hour sessions	3 to 5	Abused women	yes	10 weeks
3	Di Fabio & Maree, 2012	life design	Career decision-making difficulties & self-efficacy	Decrease in career decision-making difficulties, increase in career decision-making self-efficacy	Group	6, 7-hour sessions	15	Agricultural entrepreneurs	yes	None
4	Eurofond, 2016, Flanders pilot		Qualitative	Better work–life balance, renewed sense of job satisfaction & motivation. Increase in training and improved offered employment opportunities	1-on-1	not clear	1	workers who are older, minority, low edu., or with disabilities	no	None
5	Eurofond, 2016, France pilot		Qualitative and different for each organization	No strong gains. Soft encouragement of action plans, new perspectives in organizations, better listened-to workers, option for end-of-career reviews	1-on-1 career review	Varied	1	45-year-olds in companies > 50	no	None
6	Eurofond, 2016, UK pilot		Qualitative and different for each organization/ union	Increased exploration confidence, exploration of developing opportunities, self-employment, & volunteer work, signing up to training, interviews offered, new employment & better health	1-on-1, phone, online, group	1 or more sessions	1 or small group	Not clear, many job-seekers	no	None
7	Hartung & Vess, 2016	life design	Qualitative satisfaction and impact of the intervention	Qualitative satisfaction and positive impact of the intervention	Case, 1-on-1	2, 1-hour sessions	1	24 year old caucasian woman	no	None

	Study	Theory	outcome variables	Outcome of study	Intervention				Experi-mental design	Time lag
					Type	Intensity	Group n	Participants		
8	Krieshok et al., 2000	self-efficacy	Career decision-making, self-efficacy	Higher career decision-making and self-efficacy	1-on-1	1,2 or 3 session	1	war veterans, with addiction	yes	2 months
9	Lämsä & Hiillos, 2008	social con-structionism & narrativity	Qualitative career anchors	Bridging the gap between theory and practice on women mangers	Group & 1-on-1	4 + written exercise	1	mid-career women managers	no	3 months
10	Lengelle et al., 2016	life design	Qualitative	finding 'right' words to describe feelings, experience that 'new story' makes sense & provides meaning	Case, 1-on-1	2 days	10 - 15	women	no	None
11	Maree, 2014	career construction	Qualitative, career decision-making problems, career satisfaction	positive change in the participants' career-life stories	Case, 1-on-1	2, 1-hour sessions, 1, 2-hour session	1	Mid-career workers, one 17 year old boy	no	12 months
12	Maree, 2015	career construction	Qualitative, sense of self, sense of personal authorship	Enhanced sense of self and increased sense of personal authorship	Case study	6, 1-2-hour sessions	1	Mid-career gay woman	no	4 months
13	Maree, 2016	career construction	Qualitative, sense of self, willingness to be more adaptive	Improved sense of self and willingness to deal more adaptively with career–life-related challenges.	Case, 1-on-1	2, 1-hour sessions, 1, 2-hour session	1	Mid-career Black man	no	21 months
14	Merz & Szymanski, 1997	Phillip's career counseling	Self-definition, readiness, decision making, choice and commitment	increased levels of vocational identity	Work-shop	?	?	Men & women in vocational rehabilitation	quasi	6 weeks
15	Pouyaud et al., 2016	life design	Qualitative	three-step evolution: 1, building a working alliance and exploration 2, exploration 3, search how to reach performance	Case, 1-on-1	3-4, 1-2-hour sessions	1	Women & 1 man in mid 20s, 56years	no	None
16	Reid et al., 2016	career construction	Qualitative	Understanding of the value of a structured process of reflection.	Case, 1-on-1	1 hour	1	Midlife women	no	None
17	Schadt, 1996		psychosocial well-being, career decision-making self-efficacy, self-esteem	Increase in self-esteem.	Group & 1-on-1	8 weeks	?	Midlife women	yes	2 months
18	Taylor, & Savickas, 2016	construc-tionism	Qualitative	Pictorial narrative methods can be integrated with the My Career Story workbook to enhance client reflection and agency.	Case	3 sessions	1	2 men: 26, with job & 62, unemployed	no	None

Table 3.2 Means, Standard Deviations, Correlations and Coefficient Alphas (on the diagonal).

		Adaptive response	Mean	sd	1	2	3	4	5	6	7	8	9	10	11	12
Control	1	Self-awareness	3.93	0.60	*.85*											
	2	Career decidedness	2.82	0.76	.34*	*0.70*										
Curiosity	3	Self-exploration	3.71	1.09	-.06	.20	*.94*									
	4	Environmental exploration	2.12	1.14	.13	.21	.60**	*.93*								
Concern	5	Planning	2.92	1.09	.22	.46**	.66**	.61**	*.95*							
Confidence	6	Self-efficacy	3.87	0.63	.63**	.53**	.02	.14	.25	*.77*						
Control	7	Self-awareness	4.06	0.51	.64**	.35*	-.03	-.00	.04	.38**	*.82*					
	8	Career decidedness	3.32	0.72	.33*	.32*	.19	.22	.28	.55**	.30*	*.73*				
Curiosity	9	Self-exploration	3.97	0.97	-.28	-.08	.63**	.46**	.34*	-.23	-.10	.18	*.91*			
	10	Environmental exploration	2.53	1.18	-.20	-.07	.36*	.67**	.17	-.11	-.07	.02	.48**	*.92*		
Concern	11	Planning	3.28	0.92	.17	.14	.47**	.53**	.52**	.24	.21	.51**	.44**	.37*	*.86*	
Confidence	12	Self-efficacy	4.03	0.56	.43**	.56**	-.03	.19	.14	.63**	.52**	.60**	-.13	-.03	.32*	*.71*

* Correlation significant at 0.05, ** correlation significant at 0.01, T1 and T2 $N = 48$.

Table 3.3 Effects of 2*2 MANOVAs and ANOVAs .

Adaptive response	Time					Group					Interaction Time * Group				
	F	df1	df2	*p*	$\eta^2_{partial}$	F	df1	df2	*p*	$\eta^2_{partial}$	F	df1	df2	*p*	$\eta^2_{partial}$
Overall (MANOVA)	28.23	1	230	.00	.38	0.97	1	230	.33	.02	14.20	1	230	.00	.24
Career Control (MANOVA on self-awareness and career decidedness)	31.20	1	46	.00	.40	19.52	1	46	.00	.30	13.77	1	46	.00	.23
Career Curiosity (MANOVA on self- and environmental exploration)	13.19	1	46	.00	.22	3.82	1	46	.06	.08	8.09	1	46	.01	.15
Career Concern (ANOVA on career planning)	9.41	1	46	.00	.17	0.63	1	46	.43	.01	7.17	1	46	.01	.14
Career Confidence (ANOVA on self-efficacy)	5.06	1	46	.03	.10	22.57	1	46	.00	.33	0.14	1	46	.71	.00

Note. Intervention group *N* = 20. Control group *N* = 28.

Table 3.4 Paired sample *t*-tests, adaptive responses at T1 and T2.

			T1		T2						Confidence interval around mean difference		
Group	Dimension	Adaptive response	Mean	SD	Mean	SD	*N*	df	*t*	*p*	Mean difference between T1-T2	Lower	Upper
Intervention group	Control	Self-awareness	3.63	0.59	3.94	0.55	20	19	2.79	.01	0.31	0.08	0.54
		Career decidedness	2.25	0.55	3.11	0.72	20	19	4.51	.00	0.86	0.46	1.26
	Curiosity	Self-exploration	3.83	0.94	4.3	0.49	20	19	2.82	.01	0.47	0.12	0.82
		Environmental exp.	2.23	1.05	3.11	1.11	20	19	4.28	.00	0.88	0.45	1.31
	Concern	Planning	2.59	0.82	3.38	0.8	20	19	3.26	.00	0.79	0.28	1.29
	Confidence	Self-efficacy	3.49	0.57	3.69	0.5	20	19	1.61	.12	0.20	-0.06	0.46
Control group	Control	Self-awareness	4.15	0.52	4.15	0.47	28	27	0.00	1.00	0.00	-0.17	0.17
		Career decidedness	3.23	0.6	3.46	0.69	28	27	1.60	.12	0.23	-0.07	0.54
	Curiosity	Self-exploration	3.63	1.19	3.73	1.15	28	27	0.55	.59	0.10	-0.27	0.47
		Environmental exp.	2.04	1.21	2.11	1.06	28	27	0.42	.68	0.07	-0.25	0.38
	Concern	Planning	3.16	1.21	3.21	1.01	28	27	0.35	.73	0.05	-0.26	0.37
	Confidence	Self-efficacy	4.14	0.52	4.28	0.47	28	27	1.53	.14	0.14	-0.05	0.33

Apendix. Measures of career-adaptive responding (Dutch original and English translation)

Dimension		Dutch item	English translation
Career Control	Self-awareness	Ik heb een duidelijk beeld van mijn persoonlijke kwaliteiten en vaardigheden die ik buiten mijn werk om inzet.	I have a clear picture of my personal qualities and skills that I use outside of work.
		Ik weet wat ik echt belangrijk vind en wat me inspireert.	I know what is important to me and what inspires me.
		Ik weet waar ik het werk kan vinden dat bij me past.	I know where to find work that suits me.
		Ik weet wat mij energie geeft en wat mij juist veel energie kost.	I know what gives me energy and what costs me energy.
		Ik weet hoe ik mijn kracht kan toepassen in mijn werk.	I know how I can apply my strength in my work.
		Ik weet waar mijn kwaliteiten liggen en waar ik goed in ben.	I know what qualities I have and what I am good at.
	Career decidedness	Ik heb geen duidelijk beeld van de verschillende mogelijkheden op de arbeidsmarkt.	I don't have an overview of the different career alternatives on the labor market yet.
		Ik kan een lijstje maken met mogelijkheden voor mijn loopbaan.	I can list the alternatives for my career.
		Ik heb een goed beeld van de verschillen tussen loopbaanmogelijkheden.	I have an idea of the differences between the career alternatives.
		Ik weet welke loopbaanmogelijkheden aansluiten bij de dingen die ik wil bereiken.	I know what the characteristics of the career alternatives correspond to the goals that I want to achieve.
		Ik weet niet of ik goed voorbereid ben op alle loopbaanmogelijkheden.	I don't know if I am well prepared for the career alternatives.
Career Curiosity	Self-exploration	In de afgelopen 6 maanden heb ik ...	*To what extent have you done the following in the past 6 months:*
		... nagedacht over mijn persoonlijke interesses op loopbaangebied.	… reflected on my personal career interests.
		... nagedacht over mijn persoonlijke kwaliteiten en vaardigheden.	… focused my thoughts on my personal quality and skills.
		... nagedacht over wat ik belangrijk vind in mijn loopbaan.	.. contemplated what I find important in my career.
		... nagedacht over welke aspecten van mijn werk ik leuk vind.	… thought about what aspects of my job I enjoy.
		... informatie gezocht over andere loopbaan richtingen.	… gathered information on different career paths.
	Environmental Exploration	... informatie gezocht op de arbeidsmarkt over verschillende soorten werk.	obtained information on the labor market on different job opportunities.
		... informatie gezocht over specifieke loopbaanmogelijkheden.	investigated specific career possibilities.
		... informatie gezocht over specifieke carrière of studiemogelijkheden.	investigated specific career or learning possibilities.
		... loopbaanmogelijkheden in verschillende sectoren onderzocht.	investigated career possibilities in different sectors.
		... loopbaanmogelijkheden onderzocht buiten de sector waar ik nu werkzaam in ben.	investigated career possibilities outside of my current sector.
Career Concern	Planning	Ik heb een plan voor mijn loopbaan.	I have a plan for my career.
		Wat ik in mijn loopbaan wil bereiken is niet duidelijk.	My career objectives are not clear.
		Ik heb acties ondernomen om mijn loopbaandoelen te bereiken.	I have taken action to achieve my career goals.
		Ik heb plannen gemaakt met betrekking tot mij toekomstige loopbaan.	I have made plans regarding my future career.
Career Confidence	Self-efficacy	*Ik acht mijzelf in staat om ...*	*I am confident of my ability to successfully …*
		... de juiste keuzes te maken binnen mijn loopbaan.	… make decisions in my career.
		... de richting van mijn loopbaan zelf te bepalen.	… decide the direction of my career path.
		... te ontdekken welke vacatures beschikbaar zijn.	… find out where job openings exist.
		... te beslissen op welke vacatures ik moet reageren.	… decide which job openings to apply for.
		...tijdig geschikte vacatures te vinden.	… find suitable job openings at the right time.

General Discussion

In today's world of work, workers are required to adapt their careers to ever-changing demands and circumstances. This can be a real challenge at all career stages, such as for students working on their vocational development tasks, experienced workers dealing with rapid changes in their work and work environments, and older workers who face a very different world of work than the world that they were socialized into. To adapt successfully, workers have to be well prepared, see the need, and know the tools for self-managing their own careers (Segers & Inceoglu, 2012; Vuori, Toppinen-Tanner, & Mutanen, 2012). Accordingly, the aim of this dissertation is to provide new insights and tools for scholars and practitioners who intend to help workers manage their own careers, to prepare for transitions and too adapt successfully. The outcomes of the studies show that it is possible to enhance career adaptability and adaptive responses with low-key, scalable interventions. Based on career construction theory (Savickas, 2005, 2013), I adopted the view that adaptivity, career adaptability and adaptive responses are crucial to prepare for and successfully deal with vocational development tasks, career transitions, and even career trauma's.

In the introduction of this dissertation, I pointed out the need for career interventions that can help many workers at the same time and at different career stages to prepare for a successful transition. I proposed that a combination of a web-based and structured group intervention could be a scalable and effective way to enhance career adaptability and adaptive responses on the short- and long-term, and help young workers find suitable high-quality employment after the school to work transition. I also raised the question of if and why people differ in how much career adaptability and adaptive responses they show. I suggested that this variance could be explained by several demographic factors (age and tenure) and psychological individual differences that function as workers' trait adaptivity (locus of control, generalized self-efficacy and trait curiosity). I also proposed that these individual

differences might buffer against the negative effect of age on adaptive responses. In the empirical chapters in this dissertation I was able to give answers to these questions by presenting and validating efficient, scalable and effective interventions among different populations and by analyzing the relationships between age, adaptivity and adaptive responses.

Below I will summarize the core findings of the conducted studies. Afterwards, I will discuss and highlight the most important theoretical and practical implications of these findings, and conclude that in a labor market where workers must constantly adjust to change, interventions such as the ones described in this dissertation, can help to develop the necessary adaptability and adaptive responses to deal with these changes successfully.

The Effectiveness of Career Interventions

It is clear that career interventions can be a great help to people trying to find their way on the labor market. At the same time, economic and demographic changes have caused the ability to adapt to become a very important skill to have for all workers and during all the different stages of their careers (Bouman, 2011). Therefore, there is a need for interventions that can be offered to everyone instead of effective but also intensive interventions for the luck few.

Answering to the ongoing call from diverse researchers for more intervention studies on career development (e.g. Savickas et al., 2009; Savickas, 2012; Verbruggen & Sels, 2008; Vuori et al., 2012; Whiston, Brecheisen, & Stephens, 2003; Whiston, Li, Mitts & Wright, 2017), I presented new interventions for students facing the school-to-work transition and experienced workers facing organizational downsizing, and validated these interventions with a quasi-experimental design. For both the interventions for students as well as for experienced workers, the conceptual focus was on career adaptability and adaptive responses (Savickas,

2005, 2013) and I combined a web-based intervention with a structured group workshop (including the five critical components for effective career interventions; Brown & Krane, 2000; and Brown et al., 2003) or a group event. The combination of a web-based and group intervention made it possible to reach large groups of people at the same time.

The results showed that students' career adaptability and adaptive responses, as well as experienced workers adaptive responses can be trained with partly web-based, low-key interventions, showing that it is possible to change career adaptability and adaptive responses with rather little input, with positive effects up to 6 months after the intervention. Students' enhanced level of career adaptability in turn, fostered higher employment quality in graduates' first job. In times when students struggle to find suitable work, when workers have to work longer and job seekers have to be more adjustable than ever, this new intervention can be very relevant to students, workers and practitioners who aim to help people to make successful transitions during their working life.

As the focus of this dissertation is on effective, but also scalable interventions, the study on interventions for students focused on the effect of intervention intensity by systematically evaluating and comparing between three different intervention set-ups varying in length and content (Chapter 1). The outcomes suggest that intensity in terms of hours invested truly does not seem to be the key driver of intervention effectiveness. Overall, intervention intensity seemed to have a positive effect on the outcomes, but only tentatively for the most intensive intervention in comparison to the two less intensive interventions.

How Age, Adaptivity and Adaptive Responses Interact

While according to career construction theory (Savickas, 2005, 2013), career adaptive responses are of utmost importance throughout the entire career, most empirical research on career adaptation has stayed close to its roots in vocational maturity (Super, 1955). This

dissertation adds to the literature on age and adaptation to career transitions by examining the relationship between age, adaptivity and adaptive responses among workers of several Dutch non-profit organizations. The results showed that age was negatively related to all career adaptive responses [planning and engagement (concern), career decidedness (control), self- and environmental exploration and approaching employers (curiosity)], except for career self-efficacy (confidence). When controlling for tenure, results suggested that a high tenure in one's job is related to less career adaptive responses, yet tenure was not an alternative explanation for the effect of age on career adaptive responses.

These outcomes indicate that older workers find it more difficult to show the responses necessary to adapt and successfully deal with changes in their careers. While we do not know why, this is a troubling finding in the face of more turbulent labor markets. It is important for employers, scholars and practitioners to realize that this specific group of workers needs more support and attention in order to stay involved in the workforce.

However, the negative relationship between age and adaptive responses showed to be a minor effect compared to the far greater positive relationship between adaptive responses and certain core individual differences, namely locus of control, generalized self-efficacy, and trait curiosity. The latest rendition of career construction theory (Savickas, 2005, 2013) proposes that such core individual differences, labeled adaptivity, denote people's mental readiness to meet career tasks, transitions, and traumas with fitting responses. The results in Chapter 2 showed that locus of control, trait curiosity and generalized self-efficacy were positively linked to all career adaptive responses. The only exception was that there was no link found between generalized self-efficacy and environmental exploration. Moreover, the negative relationship between adaptive responses and age appeared to be moderated by locus of control and trait curiosity.

The non-significant association between age and career self-efficacy is somewhat surprising, given that obstacles towards reemployment usually increase with age (Kanfer, Wanberg, & Kantrowitz, 2001). A possible explanation could be that older workers are not as yet aware of this dire prospect. Rather, older workers are usually more experienced and established in their careers, and their personal and social self-definitions have become shaped by their work over time (Beyer & Hannah, 2002; Kira & Klehe, 2016).

The results in Chapter 2 also add to the knowledge on how individual differences can foster career adaptive responses to a looming career transition and imply that the facets of adaptivity have an important role in the workplace, as they can help workers in later career stages to show the necessary responses to prepare for career transitions. I therefore suggest that employers and practitioners working in organizations should promote the career adaptive responses of workers throughout their career by fostering an internal locus of control, general self-efficacy, and train curiosity at work.

Theoretical and Practical Contributions

In this dissertation, I have used different methods to answer the question of how workers can improve their career adaptability and adaptive responses throughout their career. I conducted two longitudinal quasi-experimental field studies and a correlational study across three different types of samples (university students, experienced administrative personnel and a large sample of workers from different Dutch non-profit organizations of all ages and levels of education) facing a looming career transition. These studies contribute to the robustness and generalizability of the assumption that it is possible to improve career adaptability and adaptive responses at all career stages using low-key, efficient and scalable, interventions. The correlational study contributed to the understanding of the role of age and

the links between adaptivity and adaptive responses. Together, the findings in the current dissertation represent some valuable theoretical and practical contributions.

Theoretical Implications

In a labor market that keeps changing it is important for workers to know how to adapt. The first goal of the current dissertation was to design and validate interventions that help young and experienced workers to grow in their career adaptability and career adaptive responses – which according to career construction theory (Savickas, 2005, 2013) and earlier empirical research (Bimrose & Hearne, 2012; Creed, Fallon, & Hood, 2009; Creed, Muller, & Patton, 2003; Germeijs & Verschueren, 2007; Hirschi, 2010; Koen, Klehe et al., 2010; Koen et al., 2012; Neuenschwander & Garrett, 2008; Patton, Creed, & Muller, 2002; Zacher, 2014; Zikic & Klehe, 2006) should help both groups deal successfully with their imminent career transitions.

For this purpose, I presented and validated several low-key, scalable interventions that focus on enhancing career adaptive responses of workers of different age groups (Chapter 1 and 3). The outcomes showed that the interventions lead both students and experienced workers to show more adaptive responses even up to half a year after the intervention. After the interventions, students also perceived themselves as more adaptable and they found better quality employment. While this corresponds with earlier findings (e.g. Koen et al., 2012), this finding is new by showing that the rise in employment quality is indeed caused by an intervention induced rise in career adaptability, further supporting the career adaptability framework (Savickas, 2005, 2013) that suggest that career adaptability is crucial for dealing with career transitions successfully. These findings are also in line with the much broader perspective of career competencies needed by employees to engage in self-management of their career development, and research on career intervention related to these career

competencies (Akkermans, Brenninkmeijer, Huibers & Blok, 2013; Kuijpers, Schyns & Scheerens, 2006).

Intervention intensity in terms of hours invested did not seem to be a key driver of intervention effectiveness, suggesting that low-key, scalable interventions can render just as good results as interventions that include for more hours or sessions. This adds to the ongoing debate on the effects of intervention intensity (Whiston et al., 2003; Whiston et al., 2017). The use of low-key, scalable interventions indicate that career adaptive responses are not only malleable, but it requires relatively little input to enhance these adaptive responses. This implies that career adaptive response can improve over time among students and experienced employees, without the use of intensive training. The effect of the interventions also supports Savickas and Porfeli's (2012) view on career adaptable responses as malleable throughout one's career, especially because intervention effects turned out to be similar for younger as well as for more experienced workers who look back over an extended work history. The outcomes in this dissertation fill the gap in the literature on interventions for employees who are past the school-to-work transition and their early career (Savickas, 2012; Verbruggen & Sels, 2008; Vuori et al., 2012; Whiston et al., 2017), by providing valuable information on new interventions that suits this specific group.

Even though career adaptive responses seem very relevant in times of change, young and experienced workers alike differ in their response to a looming career transition. Some of this variance could be explained by several demographic factors (age and tenure) and psychological individual differences (locus of control, generalized self-efficacy and trait curiosity).

The results in Chapter 2 confirmed that career adaptive responses decline with age, what adds to the literature on the career sustainability across the working life (Van der Heijden & De Vos, 2015). Furthermore, the outcomes showed that when facing a looming

career transition, adaptivity (locus of control, self-efficacy and trait curiosity) fosters career adaptive responses known to strengthen one's success in navigating such transitions and buffers against the negative effect of age. This is in line with Savickas' (2013) career construction theory, in that the theoretical underpinnings of these core individual difference variables are anchored in self-regulation capacities of individuals to successfully find their way in unfamiliar circumstances.

However, the results also showed that the proposed links between adaptivity and adaptive responses are not as straightforward as expected. The facets of adaptivity (locus of control, trait curiosity and generalized self-efficacy) do not only directly link to the expected facets, but they also link to most of the adaptability facets where there was no direct link expected. In other words: while adaptivity fosters the directly linked adaptive responses, we might expect a more intertwined and essentially holistic set of relationships than the differentiation into the streams of control, curiosity, concern and confidence would suggest. In Chapter 2, I found that an internal locus of control moderated the effect of age on planning, engagement (marginally) and decidedness, but also moderated the effect of age on environmental exploration. Trait curiosity moderated the effect of age on self-exploration (marginally) and on approaching employers, but also on career engagement and not on environmental exploration. Different than expected, generalized self-efficacy did not moderate the effect of age on career self-efficacy. Additionally, generalized self-efficacy emerged as another significant moderator for the prediction of environmental exploration and approaching employers, albeit with a negative impact. This surprising outcome indicates that the effect of generalized self-efficacy on environmental exploration and approaching employers actually declined with age.

Selective optimization with compensation theory (Baltes, Staudinger, & Lindenberger, 1999) might explain this outcome. This theory stresses that as workers grow older they

become more likely to adopt specific strategies for minimizing losses and maximizing gains using available personal resources. Several researchers (De Lange, Bal., Van der Heijden, De Jong, & Schaufeli, 2011; Zacher & De Lange, 2011) have shown that people's goal orientation changes across the life-span, revealing evidence for loss prevention and a stronger orientation on maintenance with increasing age. As a result, as they grow older workers might change their preference from extrinsically (competition with younger workers, promotions, etc.) to more intrinsically rewarding job features (learning opportunities, social contacts, etc.) (Kanfer & Ackerman, 2004; Rhodes, 1983), explaining the decrease in externally oriented career curiosity.

Given the power of facets of adaptivity described above, the next question is, what can be done to strengthen workers' adaptive responses, ideally also for workers who previously weren't prepared for the need to adapt their careers and in an efficient and thus scalable manner.

Practical Implications

The first practical implication of this dissertation is that an efficient, scalable and effective interventions prove useful for students during the school-to-work transition and for experienced workers facing a looming career transition. The interventions obtained similar effects as a more elaborate intervention from earlier research (Koen et al., 2012), but with less trainer investment. The studies show that low-key interventions that combine web-based assignments with group workshops or events can enhance the responses necessary for adaptation, while being available to large groups at the same time.

Second, the interventions were largely built on new technological solutions in the form of an online portfolio and a Vacancy Seeker that offers an easy accessible and self-directed approach to career guidance. Such a self-directed approach is consistent with the needs and

preferences of the current generation (millennials) who have to take more personal responsibility in dealing with the changes in the labor market (Barnes et al., 2007; Carlson, 2005). Up till now, computer based interventions were seen as an efficient approach, but also as a less effective one (Whiston et al., 2017). The outcomes in this dissertation show that as the technological possibilities for career interventions have advanced, technology and the internet can meaningfully support career counselors in providing high-quality services in a scalable and affordable manner.

Third, the findings in Chapter 2 point out that older workers show less career adaptive responses compared to younger workers, which ads important knowledge for career management and HR strategies that are aimed at promoting career adaptive responses. This dissertation underscores the increasing importance of effective guidance with progressive age. Moreover, given that the positive effect of generalized self-efficacy on certain facets of career adaptive responses (environmental exploration and approaching employers) actually declined with age, practical interventions are needed that stimulate career curiosity and employability enhancement throughout the life-span (Van der Heijden, De Lange, Demerouti, & Van der Heijde, 2009).

Fourth, according to social cognitive theory, not only the person but also the environment and the cognitive and emotional processes specific to that person interact to determine behavior (Bandura, 1986). Creating a stimulating work environment and fostering an internal locus of control, generalized self-efficacy and career curiosity could be the key to help workers maintain adaptive responses throughout their careers. We suggest that practitioners in organizations should promote the career adaptive responses of workers throughout their careers by fostering an internal locus of control, general self-efficacy, and curiosity at work. As locus of control is socially learned (Rotter, 1966), organizations could try to promote an internal locus of control by helping workers to form more favorable causal attributions

(Hansemark, 1988). Organizations could try to create an environment where workers are stimulated to make their own choices, choose their own career paths and where they have enough freedom within their jobs to feel autonomous. In addition, when developing an internal locus of control, it is vital that workers believe in their ability to bring about change, and to control their own life and career; after all, "Self-efficacy concerns not the skills one has, but the judgments of what one can do with whatever skills one possesses" (Bandura, 1986, p. 391). Organizations can promote a work environment with emphasis on talents and strengths, instead of shortcomings, to enhance such a positive judgment. Curiosity could possibly be fostered by including exercises to promote exploration in formal learning settings and informal learning contexts through supportive organizational policies and procedures. Organizations should try to create a psychologically safe workplace environment in which curiosity is stimulated and acknowledged through evaluation, career development, and reward and compensation procedures (Reio & Wiswell, 2000).

Fifth, the results in Chapter 2 show that it is possible to offer an efficient, affordable and effective option for enhancing experienced employees' career adaptive responses in the context of a looming organizational restructuring, with effects lasting up to six months after the intervention. Thus, the interventions presented may stand model for further advancements in this domain. This dissertation can be helpful to employers, practitioners and individual workers who aim to enhance career adaptability and adaptive responses at all career stages.

Directions for Future Research

In this dissertation, I have evaluated different interventions that all combined online assignments with a group intervention and I systematically compared interventions of different content and intensity to find out if more intensity causes better results. I combined the two intervention types because earlier research suggests computer based interventions to

indeed be very efficient but not effective, unless when supplemented by counseling (Whiston et al., 2003; Whiston et al., 2017). Because the aim of the studies was to make the intervention scalable, I opted for a combination with a group intervention instead of one-on-one counseling. The studies show positive results for this combination, but the effect of the separate components of the interventions remains unclear. It would be interesting for future research to parcel out the separate effects of different intervention components, as well as their combined effects. For example, the study for experienced workers (Chapter 3) combined different types of workshops, which participants could choose from based on their own interests. It is therefore not possible to differentiate whether particular workshops were especially helpful to participants or whether it was indeed participants' opportunity to choose itself that was helpful. Possibly, it wasn't even any single workshop on its own but the experience of listening to different practitioners' voicing the same message.

On a related note, I expected that a more intensive intervention would have a larger impact on students' career adaptability and adaptive responses than a less intensive intervention (Chapter 1). The results however did not provide clear support that more is always better. The most intensive intervention with two workshops did have the strongest effect, but the second most intensive intervention did not have more impact than the least intensive, both with only one workshop. A possible explanation could be that time between two workshops allows students to reflect on the outcomes and let the self-exploration sink in. Therefore a study in which more different setups of the intervention are tested would add to the knowledge on what setup is most efficient and effective.

In Chapter 2, I found that age has a negative relationship with adaptive responses. Besides age, I also included tenure as a possible alternative explanation for the effect of age. The frameworks on successful aging at work suggest other variables besides age and tenure that might be taken into account in future scholarly work (e.g., person-related; knowledge,

skills, abilities and other personal characteristics or context-related; work characteristics and life circumstances); (Rudolph, 2016). Moreover, previous research indicates that age reduces the remaining time and opportunities in one's work (occupational future time perspective, Carstensen, 2006), while work characteristics (job complexity and job control) moderate the relationship between age and perceived opportunities (Zacher & Frese, 2009). Therefore, it could be fruitful to include variables such as work characteristics as moderators in future research.

The results in Chapter 1 are based on outcomes form Dutch university students. Yet, as Savickas and Porfeli (2012) point out, individuals in different countries vary in their career adaptability, as different countries provide different demands and opportunities to develop and express adaptability. The study in Chapter 3 shows that the evaluated intervention can help experienced employees used to lifetime employment in a governmental non-profit organization, to show more career adaptive responses. For future research, it would be interesting to see if these interventions are also useful for students and employees in different cultures, for profit organizations or for specific groups of students, employees or jobseekers that face more difficulties on the labor market, like people with a disability or refugees forced to rebuild their careers in a foreign country (e.g. Wehrle et al., in press).

The studies discussed in Chapter 1 and Chapter 3 addressed long-term effects of the interventions up until six months after participating. Future research should assess the effects of the interventions on even longer terms to see how much of the intervention's effects sustain even across years. If the effect of the intervention holds much longer, training adaptive responses possibly helps to prepare people for dealing successfully with later challenges and setbacks in their careers.

Besides it would be interesting to know if there are any differences between people who participated in one of the interventions and people who participated in the control group in

terms of not only career adaptive responses and fit, but also in terms of how often they change jobs and whether it becomes easier for them to find suitable work, whether they become more active in initiating change, whether the jobs they find are not only better in terms of fit, but also in terms of learning opportunities, career opportunities and salary and so on.

Scalable Counselling Interventions for Career Narrative Construction

Within career construction theory Savickas (2012) further distinguishes between workers as having different perspectives on the self as agents, actors and authors. Individuals begin self-construction as an agent during their first social interactions in life. They form an identity and personal profile with specific depositional traits, like personality. Later individuals become actors who direct their own actions. This self-extension requires the formulation of goals to strive for, then projects and eventually a career. Then they develop in to narrating authors, who explain the actions of the actor (McAdams & Olson, 2010; Savickas, 2012). When people see themselves as an agent, they need vocational guidance to match their personal profile to an occupation. When they see themselves as an actor, they need career education or coaching to enhance career adaptability and help prepare for transitions. When people see themselves as an author, they need career counseling to construct a career by telling autobiographical stories and by reflecting on themes to specify personal uniqueness, to enhance a sense of identity and create meaningful vocational action. The current set of studies focuses on interventions for the actor perspective of the self. According to Savickas (2012), career counseling that is focused on the next level, the author perspective of the self, arguably helps people to prepare for and participate in the new world of work forged by the digital revolution and global economy. Constructing a career narrative guides participants towards understanding when they experience their works as meaningful, valuable or satisfying and makes it easier to write the next chapter of the story, to take action and show career adaptive

responses (e. g. Hartung & Vess, 2016; Lengelle, Meijers, & Hughes, 2016; Maree, 2016; Pouyaud, Bangali, Cohen-Scali, Robinet, & Guichard,2016; Reid, Bimrose, & Brown, 2016; Taylor, & Savickas, 2016). In this dissertation, I have validated career interventions that mainly focus on participants as agents by enhancing career adaptability and adaptive responses, and offering help with preparing for change. In line with career construction theory, an interesting next step would be an intervention that focuses on people as authors by helping them to construct a career narrative. The counseling model for career construction is a set sequence of questions and analysis during multiple one-on-one coaching sessions (Savicas, 2005). There are many studies that show the positive effect of one-on-one career counseling according to the career construction approach (e. g. Hartung & Vess, 2016; Lengelle et al., 2016; Maree, 2016; Pouyaud et al., 2016; Reid et al., 2016; Taylor, & Savickas, 2016), but there are not many scalable interventions that foster the development of the career narrative. There is a study on an online career narrative tool (Severy, 2008), but the authors state that because of the amount of writing involved in creating a narrative online, many participants did not manage to complete all activities in the intervention. The authors suggest that using a similar set-up to the studies in this dissertation, a combination of a computer based intervention with a group counseling session, may increase the retention rate and help provide the motivation necessary to complete the online assessment. In future research, it would be relevant to see if it is possible to construct and validate an effective and scalable intervention that focuses on the worker as an author.

Antecedents of Proactive Behavior and Use of Scalable Interventions

Career interventions can be a helpful tool to enhance career adaptive responses, but an important condition for the success of an intervention is that workers are indeed participating when given the chance. Especially with (partly) online interventions, it can be a challenge to

motivate and entice participants (Severy, 2008). An interesting direction for future research is therefore the factors that are related to why and when workers participate in scalable career interventions.

There are many possible factors that can influence worker's career adaptive responding and the likeliness of workers to participate in interventions. Looking at the literature from a broad perspective, there are many similarities between career adaptive responding and proactive behavior (Parker & Collins, 2010), that is, behavior which aims at "taking control to make things happen" in the way that it is self-initiated, future oriented, and that it "involves aspiring and striving to bring about change in the environment and/or oneself to achieve a different future" (Parker, Bindl, & Strauss, 2010, p. 828). More specifically, career adaptive responses may represent a form of proactive coping. This sub-form of proactive behavior describes future oriented coping that tries to detect and proactively manage potential threats to one's well-being (Aspinwall & Taylor, 1997) and, like adaptive responding, centers on the effective use of resources, realistic goal setting, and on realizing a vision, rather than simply evading threats or harm (Davis & Asliturk, 2011; Sohl & Moyer, 2009).

Thus, when trying to predict the factors that influence adaptive responses or the use of interventions that strengthen these responses, it may be worthwhile to learn from the literature on antecedents of proactive behavior. Parker et al.'s (2010) conceptual model on proactive behavior proposes that at the core, proactive behavior depends on three motivational states related to a sense of "can do", "reasons to", and "energized to." [see Klehe, Zikic, van Vianen, Koen, & Buyken (2012) for an overview on how to match these two theories]. **'**Can do motivation' includes self-efficacy perceptions (Can I do it?), control appraisals and attributions (e.g., How feasible is it?), and the perceived costs of action (e.g., How risky is it?). 'Reason to motivation' addresses the 'why' of proactive behaviors. While Parker et

al.(2010) mostly focus on abstract, high level concepts about the meaning that one draws from an activity, 'reason to' may – just in line with self-regulatory ideas on breaking down important distal goals into more proximal and thus imminent and measurable goals with quicker feedback and rewards - possibly also include short term commitments. 'Energized to motivation', finally, refers to affect related motivational states (e.g., enthusiasm, cheerfulness) that influence proactive behavior (Parker et al., 2010).

These motivational states could be important conditions for workers to participate in interventions or take adaptive actions on their own. Future research could look into the possibility that workers are indeed more likely to show career adaptive responses or participate more often in interventions that aim to enhance career adaptive responses when their 'can do', 'reason to' or 'energized to' motivations are strengthened.

Can do motivation. Worker's 'can do' motivation could possibly be strengthened when they are given more control and autonomy with respect to organizing their own work and career or by putting more emphasis on talents, strengths and opportunities instead of shortcomings and the fulfillment of duties and obligations. Workers might also feel they are more capable of participating in interventions when sufficient time is made available, when there is clear communication about the possibility to participate and when the necessary tools are easily accessible. Bandura's (1986) social cognitive theory describes how individuals learn by attending to and observing the behavior of role models. In organizations, the behavior of role models who are high in status or power receives particular attention (Bandura, 1986; Brockner & Higgins, 2001; Kark & Van Dijk, 2007). Therefore, managers could play an important role in showing workers why and how they can participate in interventions.

Reason to motivation. Besides managers pointing out the relevance of interventions, workers might also experience more 'reason to' motivation if they have had a

chance to discuss their personal career ambitions with colleges or managers, when they have a clear view on what the intervention is aimed at or when there is a short-term event coming up where career adaptive responses would be relevant, for instance in a workshop or a meeting on career plans.

Energized to motivation. Workers could possibly feel more enthusiastic about participating, feel more 'energized to', when within the company there is more emphases on the benefits of change and career adaptive responses, instead of emphases on the dangers of not participating in career development or showing adaptive responses. The conceptual underpinning of this idea comes from the literature on locomotion and need for closure (Kruglanski, Pierro, Higgins, & Capozza, 2007). Workers who have high (rather than a low) locomotion or a low (rather than a high) need for closure, are better at adapting to change than others. A locomotion tendency is defined as a propensity toward action (Kruglanski et al., 2000). According to Kruglanski et al., it is "the aspect of self-regulation concerned with movement from state to state and with committing the psychological resources that will initiate and maintain movement in a straightforward and direct manner, without undue distractions or delays" (p. 793)

The need for (nonspecific) cognitive closure has been defined as a desire for a definite answer to a question: any firm answer, rather than uncertainty, confusion, or ambiguity (Kruglanski, 1989). Workers high on need for closure have a tendency to conform to norms and therefor would deal with change much better in an organizational climate that is supportive of change. Locomotion can be enhanced by positive experiences with change. Therefore, it would be interesting to conduct research on interventions that take place before an organizational change, and that lower the need for closure (e.g., by an emphasis on openness and concern for quality and accuracy of performance), and augment locomotion tendency (e.g., by success and esteem-enhancing experiences). These notions seem worthy of

pursuit in future studies and one could look at the possibility that the interventions presented in this dissertation, might also enhance locomotion and moderate the negative effects of need for closure.

However, an alternative approach could be that emphases on benefits or dangers is not a matter of good or bad but of fit. Some people might be much more prone to positive arguments, while other might have a stronger focus on negative arguments. The conceptual underpinning of this view comes from the literature on regulatory focus (Higgens, 1997)**,** which argues that individuals can pursue two different kinds of regulatory goals: promotion and prevention. Promotion goals entail striving to achieve an ideal self, and so produce a sensitivity to positive outcomes; translated in to strategies that involve the eager pursuit of gains or successes. In contrast, prevention goals entail striving to avoid disasters, and so produce a sensitivity to negative outcomes; translated in to strategies that involve the vigilant avoidance of losses or failures.

People with a promotion focus tend to show especially high motivation and persistence on tasks that are framed in terms of promotion (Shah, Higgins, & Friedman, 1998). These people might therefor be more interested to participate in a career intervention when they are presented with information on what they might gain, like more insight in what is really important for you in your work, more insight in opportunities for a next step. In contrast, when people are driven by prevention goals, they tend to show high motivation and persistence on tasks that are framed in terms of prevention (Shah et al., 1998). These people might me more willing to participated when made aware of the risks of unemployment when you do not stay up to date or plan ahead in your career.

Another possible factor to take in to account is that workers seem to experience more enthusiasm and motivation towards their job when they have an open occupational future time perspective (Akkermans, de Lange, van der Heijden, Kooij, Jansen, & Dikkers, 2016).

Therefore, to create a stronger ‘energized to’ motivation, it might be helpful to create an environment where specifically older workers perceive many remaining opportunities and are challenged within their job. Otherwise, more simple approaches like making interventions as much fun as possible might also be a good way to evoke more energy amongst workers to participate.

To better understand when and why workers participate in interventions that, according to my findings, are beneficial to successful career transitions, it is worthwhile to investigate the relationships between the conditional factors for proactive behavior and intervention success.

Concluding Thoughts

Work is an essential part of many people’s lives that builds their identities, impacts their health, their self-worth, and their outlook on the future. Right from the start, until the end of their working lives, people are confronted with challenging changes, predictable and unpredictable situations, wanted and unwanted transitions. To enjoy a long, successful and satisfying work life, people have to be ready for change and able to adapt when facing a transition. People differ in how they deal with change. Some people naturally possess the demographic factors or psychological characteristics, that make it easier for them to adapt, while others struggle to show the necessary responses. Therefore, effective interventions that can help workers find their own path in the world of work are necessary and should be available to as many people as possible. The outcomes in this dissertation show that it is possible to offer workers at different stages of their careers efficient, scalable and effective interventions to enhance their abilities to adapt and deal with the changes and transitions they face in their working life.

Summary

Adapting to new and unknown circumstances can be an exciting challenge or a difficult and strenuous task. Especially when it comes to something as crucial as peoples' work and careers. Having a job is very important to people in many ways. Being employed in a job that suits you is positively linked to mental and physical health (McKee-Ryan, Song, Wanberg, & Kinicki, 2005; Paul & Moser, 2009).

However, finding and keeping the right job is becoming more difficult. Today, jobs are subject to high-speed changes and uncertain prospects and workers are often confronted with planned as well as unplanned transitions (e.g., Greenhaus, Callanan, & DiRenzo, 2008). The uncertainties and demands of a rapidly changing labor market call for more flexible career paths in which workers can transition between jobs and even organizations. The responsibility for career management has shifted more and more from the employer to the employee (Kossek, Roberts, Fisher, & Demarr, 1998). Therefore, workers have to be well prepared, see the need and know the right tools for managing their own careers (Segers & Inceoglu, 2012; Vuori, Toppinen-Tanner, & Mutanen, 2012).

Based on career construction theory (Savickas, 2005, 2013), I adopted the view that adaptivity, career adaptability and adaptive responses are crucial to prepare for and successfully deal with vocational development tasks, career transitions and even career trauma's. First, adaptivity is described as the readiness to adapt and being prepared to change in general. It denotes the personal characteristics of flexibility or willingness to meet career tasks, transitions and trauma's with fitting responses. Second, adaptability, described as the self-regulation recourses to manage change, make it possible for people to demonstrate the necessary cognitions and behaviors that form career adaptive responses. Career construction

theory suggests that the adaptation process occurs along four interrelated factors of adaptability: control, curiosity, concern, and confidence. These factors then express themselves through career adaptive responses (Savickas, 2005, 2013). In other words, workers need to have a sense of control over the progress of their careers, be curious about their personal qualities and alternative career options, be concerned with the future and have the confidence to master the career-related challenges ahead.

Accordingly, the aim of this dissertation is to provide new insights and tools for scholars and practitioners who aim to help workers manage their own careers, prepare for transitions and adapt successfully. In the introduction of this dissertation, I pointed out the need for career interventions that can help many workers at the same time and at different career stages. Career interventions in general show positive effects when it comes to helping workers prepare for transitions (Whiston et al., 2003; Whiston et al., 2017), yet most interventions are quite time-consuming and particularly suitable for one-on-one coaching or small groups, making them less scalable. Also, there is still a lot unclear about interventions' long-term effects and the effects of intervention intensity. Computer-assisted interventions have the potential to reach and engage much larger groups of people (Hirschi, 2017), but over the last 20 years, the number of studies that include computer guided interventions have been scarce (Whiston et al., 2017).

I proposed that a combination of a web-based and structured group intervention could be a scalable and effective way to enhance career adaptability and adaptive responses on the short- and long-term, and help young workers find suitable high-quality employment after the school-to-work transition as well as older workers prepare for a looming career transition. I also raised the question if and why people differ in how much career adaptability and adaptive responses they show. I suggested that this variance could be explained by several demographic factors (age and tenure) and psychological individual differences that function

as workers' trait adaptivity (locus of control, generalized self-efficacy and trait curiosity). I also proposed that these individual differences might buffer against the negative effect of age on adaptive responses. In the empirical chapters in this dissertation I was able to give answers to these questions by presenting and validating efficient, scalable and effective interventions among different populations and by analysing the relationships between age, adaptivity and adaptive responses.

Empirical Findings

I have used different methods to answer the question of how workers can improve their career adaptability and adaptive responses throughout their career. I conducted two longitudinal quasi-experimental field studies and a correlational study across three different types of samples (university students, experienced administrative personnel and a large sample of workers from different Dutch non-profit organizations of all ages and levels of education) facing a looming career transition.

In Chapter 1 and 4, I presented new interventions for students facing the school-to-work transition and experienced workers facing organizational downsizing and validated these interventions with a quasi-experimental design. For both the interventions for students as well as for experienced workers, the conceptual focus was on career adaptability and adaptive responses (Savickas, 2005, 2013) and I combined a web-based intervention with a structured group workshop (including Brown and Krane's (2000) five critical components for effective career interventions) or with a group event. The combination of a web-based and group intervention made it possible to reach large groups of people at the same time.

The outcomes of the studies show that it is possible to enhance students' career adaptability and adaptive responses, as well as experienced workers' adaptive responses with partly web-based, low-key, scalable interventions. The positive effects lasted up to 6 months

after the intervention. Further, students' enhanced level of career adaptability fostered higher employment quality in their first job upon graduation. In times when students struggle to find suitable work, when workers have to work longer and job seekers have to be more adjustable than ever, this new intervention can be very relevant to students, workers and practitioners who aim to help people to make successful transitions during their working life.

In Chapter 1, I also looked at the effect of intervention intensity by systematically evaluating and comparing between three different intervention set-ups varying in length and content. The outcomes suggest intensity in terms of hours invested, truly does not seem to be the key driver of intervention effectiveness. Overall, intervention intensity seemed to have a positive effect on the outcomes, but only tentatively for the most intensive intervention in comparison to the two less intensive interventions.

In Chapter 2, I examined the relationship between age, adaptivity and adaptive responses among workers of several Dutch non-profit organizations. The results showed that age was negatively related to all career adaptive responses [career decidedness (control), self- and environmental exploration and approaching employers (curiosity), and planning and engagement (concern)], except for career self-efficacy (confidence). These findings indicate that older workers find it more difficult to show the responses necessary to adapt and successfully deal with changes in their careers

In Chapter 2, I also linked adaptivity to the four facets of adaptation (control, curiosity, concern and confidence), by operationalizing adaptivity as the individual differences, locus of control, generalized self-efficacy, and trait curiosity and analyzing their relationship with adaptive responses. The results showed that locus of control, generalized self-efficacy and trait curiosity were all positively linked to all adaptive responses. However, these links turned out not as straightforward as expected. The facets of adaptivity (locus of control, trait curiosity and generalized self-efficacy), did not only directly link to the expected facets of

adaptive responses, but they also linked with the unexpected facets, showing a more intertwined and essentially holistic set of relationships than suggested by career construction theory (Savickas, 2005, 2013).

Furthermore, the negative relationship between age and adaptive responses showed to be a minor effect compared to the far greater positive relationship with the three individual differences. Moreover, the negative relationship between adaptive responses and age appeared to be moderated by locus of control and trait curiosity. Surprisingly, effects were reverse for generalized self-efficacy in that the effect of generalized self-efficacy on environmental exploration and approaching employers actually declined with age. These outcomes add to the knowledge on how individual differences can foster career adaptive responses to a looming career transition and imply that the facets of adaptivity have an important role in the workplace, as they can help workers in later career stages to show the necessary responses to prepare for career transitions.

Conclusions and Implications

In this dissertation, I presented and validated several scalable interventions that focus on enhancing career adaptive responses of workers at all different stages of their careers (Chapter 1 and 3). The outcomes of these studies contribute to the robustness and generalizability of the assumption that it is possible to improve career adaptability and adaptive responses at all career stages using low-key, efficient and scalable, interventions.

Results showed that the interventions lead both students and experienced workers to show more adaptive responses even up to half a year after the intervention. After participating in an intervention, students also perceived themselves as more adaptable and they found better quality employment. While this corresponds with earlier findings (e.g. Koen et al., 2012), this finding is new by showing that the rise in employment quality is indeed caused by an

intervention-induced rise in career adaptability, further supporting the career adaptability framework that suggest that career adaptability is crucial for dealing with career transitions successfully (Savickas, 2005, 2013).

Furthermore, intervention intensity in terms of hours invested did not seem to be a key driver of intervention effectiveness, suggesting that low-key, scalable interventions can render similar results as more time consuming interventions. This adds to the ongoing debate on the effects of intervention intensity (Whiston et al., 2003; Whiston et al., 2017). The effects of low-key, scalable interventions indicates that career adaptive responses are not only malleable, but it requires relatively little input to enhance these responses. This implies that career adaptive response can improve over time among students and experienced employees without the use of intensive training. The effect of the interventions also supports Savickas and Porfeli's (2012) view on career adaptable responses as malleable throughout one's career, especially because intervention effects turned out to be similar for younger as well as for more experienced workers who look back over an extended work history.

Even though the outcomes in Chapter 1 show that career adaptive responses seem very relevant in times of change, young and experienced workers alike differ in their response to a looming career transition. Some of this variance could be explained by several demographic factors (age and tenure) and psychological individual differences (locus of control, generalized self-efficacy and trait curiosity). By showing that career adaptive responses seem to decline with age, this dissertation adds to the literature on career sustainability across the working life (Van der Heijden & De Vos, 2015). At the same time, adaptivity described as the core individual differences locus of control, trait curiosity and generalized self-efficacy fostered career adaptive responses and buffered against the negative effect of age. This is in line with Savickas' (2013) career construction theory, in that the theoretical underpinnings of these individual differences variables are anchored in self-regulation capacities of individuals

to successfully find their way in unfamiliar circumstances. When facing a looming career transition, a high level of adaptivity (locus of control, self-efficacy and trait curiosity) actually helps to engage in the adaptive career responses known to strengthen one's success in navigating such transitions. Likely, the more people perceive their lives to be under their own control, the more likely they are to take action in their own careers and prepare themselves for the future. The more general belief people have in themselves, the more likely they are to have a positive outlook on their specific career related abilities. The more curios people are in general, the more likely they are to quickly find their way in new situations by searching for the necessary information, the more likely they are to learn new things and feel at ease in unknown circumstances.

Besides theoretical contributions the outcomes of this dissertation also have several practical contributions. One of the practical implications is that an efficient, scalable and effective intervention proves useful for students during the school-to-work transition and for experienced workers facing a looming career transition. The interventions obtained similar effects as a more elaborate intervention from earlier research (Koen et al., 2012), but with less trainer investment.

Also, the interventions were largely built on new technological solutions in the form of an online portfolio and a Vacancy Seeker, that offer an easy accessible approach to career guidance. Up till now, computer based interventions where seen as an efficient approach, but also as a less effective one (Whiston et al., 2017). The outcomes in this dissertation suggest that the technological possibilities for career interventions have advanced and that technology and the internet can support career counselors in providing high-quality services in a scalable and affordable manner.

Furthermore, the findings in Chapter 2 point out that older workers show less career adaptive responses compared to younger workers, underscoring the increasing importance of

effective guidance with progressive age. This is relevant knowledge for career management and HR strategies that are aimed at promoting career adaptive responses.

Finally, according to social cognitive theory, not only the person but also the environment and the cognitive and emotional processes specific to that person interact to determine behavior (Bandura, 1986). Creating a stimulating work environment and fostering an internal locus of control, generalized self-efficacy and curiosity could be the key to help workers maintain adaptive responses throughout their careers. Overall this dissertation can be helpful to employers, practitioners and individual workers who aim to enhance career adaptability and adaptive responses at all career stages.

Concluding Thoughts

Work is an essential part of many people's lives that builds their identities, impacts their health, their self-worth, and their outlook on the future. Right from the start until the end of the working live, people are confronted with challenging changes, predictable and unpredictable situations, wanted and unwanted transitions. To enjoy a long, successful and satisfying work life, people have to be ready for change and able to adapt when facing a transition. People differ in how they deal with change. Some people naturally possess the demographic factors or psychological characteristics that make it easier for them to adapt, while others struggle to show the necessary responses. Therefore, effective interventions that can help workers find their own path in the world of work are necessary and should be available to as many people as possible. The outcomes in this dissertation show that it is possible to offer workers an efficient, scalable and effective intervention to enhance their abilities to adapt and deal with the changes and transitions they face in their working life.

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